The Contribution of Female Human Capital toward Economic Growth in Zimbabwe

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Abstract

Most Societies want more investments in women education and health because of the greater social returns (external benefits) accruing from women's human capital as compared to that of men. An Improvement in women's health increases productivity by increasing life expectancy and reducing mortality. Female education equips girls at all education levels with skills to effectively compete in the labour market and contribute to their economies. Education also has some significant consequences for the composition and skills of the labour force the ultimate driver of economic growth. This research uses published statistics on growth domestic product, labour, capital, education enrolment at different levels and life expectancy to calculate the contribution of female human capital towards economic growth in Zimbabwe. The study further more introduced a Cobb Douglas Production function as the mathematical model that was suitable to study separate male and female human capital. Human Capital was taken as education enrolment at different levels and life expectancy as a proxy for health for the years 2000 to 2016. Alongside we made use of labour, capital and gross domestic product. The results indicated that female human capital is significant and therefore has a positive impact on economic growth. Further-more recommendations have been given to the government, institutions as well as individuals on the steps to be taken towards a female empowered economy.

Keywords: Zimbabwe; Female human capital; Production Function; Economic Growth; Human Resource Development.

1. Introduction

Human capital is simply skilled labor force. (Ekundayo and Ajay 2017) Refer to Human Capital as the collection of various knowledge, talents, skills, experience ability and wisdom possessed by individuals in a population. Severine and Lila (2009) pointed out that Human Capital is the knowledge, expertise and skills one accumulates through education and training. Goldin Claudia (2016) stated that human capital is "the skills the labor force possesses and is regarded as a resource or asset". It encompasses the notion that there are investments in people (e.g., education, training, health) and that these investments increase an individual's productivity. Human Capital analysis assumes that schooling raises earnings and productivity mainly by providing knowledge, skills and a way of analyzing problems (Becker 1964). Romer (1994) stated that human capital was a factor of economic growth which captures the abilities, skills and knowledge of worker. It plays a dual role in the process of economic growth first, as a factor of production and a source of innovation. There is a general consensus regarding the role of (gender neutral) human capital in the growth process- increasing educational attainment and health status increases labor productivity resulting in greater economic growth. Separate human capital is separate female and male education and health capital. Women have fewer economic opportunities than men, more men than women work in most countries, and women often get paid less for similar work. As a result, the tremendous potential economic contribution from women remains untapped in a number of countries (K Kochhar; S Jain, M Newiak 2016). The production side of the economy is modeled to have physical strength and mental capabilities. Men are endowed with more physical strength than women, but both sexes have endowment of mental input. Women have a comparative advantage in the mental labor input and as a result the increase in capital intensity that accompanies economic growth and the relative wage of women. (David Cuberes; Marc Teignier, 2013). Restricting female education causes a reduction in the human capital of the next generation as women's educational attainment tends to substantially lower child mortality and fertility (Minh Quang Dao 2013). Women who are engaged in education get married and give birth to children at an older age and this reduces fertility rates. Female labor force participation is the key driver for economic development and growth in most developing countries, female labor force participation has significant effects on economic growth and leads to an increase in education, improves the health, communication and infrastructure. Female education plays a vital role in the reduction of poverty and contributes to sustainable growth in developing countries (S Anam and N Rafaz 2017). Human Capital acting on Economic growth effect can be classified in two ways; as a production factor and it is used to improve the productivity of other factors such as investment in physical capital. It is also a carrier of knowledge, as it generates independent innovation and promotes the absorption of new technologies (Xianyu and Yong Shi 2016).

There is a perception that the female half of the population is underutilized in the growth process hence societies are misallocating half of their resources. This gender inequality is quite visible in developing countries and is considered as one of the major hindrance in their economic growth (Morris 2007). Zimbabwe as a country is no exception, as it remains a male dominated society in all aspects- economic, political and social. Women face high levels of violence both in private and public spaces which affects their economic participation. The country has a high maternal mortality rate that affects the economically active women. The period of economic decline that Zimbabwe went through from 2000-2009, affected women adversely by eroding their savings and driving them deeper into poverty. Therefore, there is need for a paradigm shift towards a female emancipation in developing economies as it has been noted that women indeed play key roles towards economic growth. (Zimbabwe women's economic empowerment study). The better use of the world's female population not only promotes economic growth, but also facilitates a social uplift of the society. One of the UN millennium development goals is on women's education because increasing the level of education contributes significantly to the reduction of high level of mortality, increase productivity skills and innovation as this directly affects the growth of human capital consequently economic growth especially in developing countries like Zimbabwe.

2. Female Human Capital and Economic Growth

Female human Capital includes female education, health, labor force participation and income. Education levels of girls and young women have improved considerably in most developing countries in recent decades and this has increased the opportunity for women to enter the labor market. As is the case for labor force participation, education plays a critical role in determining the nature of employment taken up by women. Education raises the reservation wage or the amount that one earns when they have a certain skill (S Verick 2018). Less discrimination against women is associated with an increase in female education which in turn increases the opportunity cost of childbearing and lowers fertility (M Doepke; M Tertilt 2018). Female labor force participation is a key driver for economic development. In most developing countries it has a positive association with economic growth and this further results in an increase in health, communication and infrastructure. Restricting female education causes a reduction in the human capital of the next generation as women's educational attainment tends to substantially lower child mortality and fertility (Minh Quang Dao 2013). Scholars such as Mussarat Khadija Khan (2015); Anette

Anderson (2010); Majlinda Mazalliu and Jeton Zogjani (2015) brought to light the effect of female labor force on economic growth through their researches on human capital that concentrated on females. Their study made reference to early scholars who pioneered the study of female human capital and economic growth. According to the research, Greater female education has been found to lower fertility rates. Blau (1986); Cain and Weininger, (1973), while fertility rates have been shown to result in lower rates of infant mortality and longer life expectancies (Benefo and Shultz,1996). Psacharopulous (1994) highlighted that the rate of return to female education is positive and marginally higher than that to male education. Stokey (1994) evaluated this view in her study and she noted that the female variables become insignificant when continental dummies are added, females act as a dummy for geographic regions or ethnic groups that educate women differently from men. (Stokey 1994 p.53). Dollar and Gatti (1999), supported the argument that gender inequality to be harmful for growth.

2.1. Current Situation of Female Human Capital in Zimbabwe

Zimbabwe has a strong human resources base as a result of its growing young population. Through the creation of jobs initiatives and skills development efforts, the government of Zimbabwe is striving to enhance the country's human capital potential. In this section we will discuss female education, health, labour participation and Income as part of the female human Capital in Zimbabwe.

2.1.1. Female Education

Zimbabwe's education system was considered once to be one of the best in Africa, however in recent years it has faced a major set- back. However, following an increase in enrolment rates in tertiary education it has improved. The government of Zimbabwe has increased employment opportunities by improving skills development, specifically through increased investments to Technical and Vocational Education, ultimately fostering growth in the labour market and effectively contributing to the advancement of the country's future socio economic climate (Human Capital Research Report: Zimbabwe Country Profile 2018). The constitution of Zimbabwe (see: Chapter 1.27.2) asserts the need to ensure that girls are afforded an equal opportunity with boys. Zimbabwe has achieved parity at primary and secondary school levels in terms of enrollment and completion rates. As such the Gender Policy of (2013-2017) was drafted and in terms of education and training the policy's objective is to ensure access to education for boys and girls and their retention at all levels of education and to ensure access to training opportunities for men and women to make possible their equal participation in the workplace, market place and governance structure. The policy strategies include support efforts to design and implement programs aimed at creating an enabling environment for the retention of girls at secondary school levels and to encourage women and girls to study stereotyped science subjects and also to take up training in the technical courses. (Zimbabwe National Gender Policy 2013-2017).

The education population of Zimbabwe is represented by the number of both females and males enrolled in primary, secondary and University across Zimbabwe. These are represented below:

Table 1. Primary School Enrolment in Zimbabwe

Year	Male	Female	Total
2000	1240786	1198345	2439131
2001	1252012	1209671	2461683
2002	1260632	1219462	2480094
2003	1248408	1214421	2462829
2004	1245157	1219525	2464682
2005	1244999	1216933	2461932
2006	1238656	1206864	2445520
2007	1238656	1206864	2445520
2008	1240000	1216000	2456000

2009	1242470	1236520	2478990
2010	1327098	1308647	2635745
2011	1335000	1310000	2645000
2012	1344958	1321493	2666451
2013	1344909	1318278	2663187
2014	1344234	1314456	2658690
2015	1344626	1313789	2658415
2016	1344538	1317472	2662010

(Source: Ministry of Primary and secondary education Zimbabwe statistical report 2016)

The table above indicates the enrolment numbers of primary school pupils in Zimbabwe from the year 2000 to 2016. The enrolment numbers were constant and steady from 2000 to 2006. We see an increase in the number of pupils enrolling for primary education from 2009 which recorded 2478990 to 2663187 in 2013. This shows that there was growth in primary education in Zimbabwe as shown by the increase in the number of school enrolment.

Table 2. Secondary School Enrolment in Zimbabwe

Year	Male	Female	Total
2000	449661	395567	845228
2001	455539	403968	859507
2002	453628	402273	855901
2003	446854	405921	852775
2004	446551	405646	852197
2005	444143	411624	855767
2006	431542	399946	831488
2007	425000	400000	825000
2008	402000	396000	798000
2009	393787	384448	778235
2010	438123	420376	858499
2012	474924	461810	936734
2013	482560	474901	957461
2014	493741	485903	979644
2015	519448	507536	1026984
2016	539766	525038	1064804

(Source: Ministry of Primary and secondary education Zimbabwe statistical report 2016)

The table above shows the secondary school enrolment in Zimbabwe for the years 2000 to 2016. Over the years the data indicates that there are more male children that enrol into secondary education as compared to females. However, the female pupils increased from 384448 in 2009 to 525038 in 2016 this could be attributed to the various women empowerment programs that have helped to promote the girl child. Over the years, the total number of both males and females has shown a gradual increase meaning there is an increase in the number of access to secondary education for the Zimbabwean youth.

Table 3. University Enrolment in Zimbabwe

Year	Male	Female	Total
	22 735	10640	31375
2001	22 505	12 598	35 103
2002	22 811	12 795	35 606
2003	26 486	14 512	40 998
2004	28000	18712	46 712
2005	31500	22165	53 665
2006	33 729	20 595	54 325
2007	32 977	21867	54844
2008	34 524	24 771	59 295
2009	29 456	18 957	48 413
2010	30 536	23 011	53 547
2011	30 132	22 963	53 095
2012	33 264	26 891	60 143
2013	35000	28000	63000
2014	37000	29000	66000
2015	39000	30000	69000
2016	42 012	41 521	85 549

(Source: Zimbabwe Education Report 2017)

The table above indicates the enrolment for male and female education into universities in Zimbabwe for the years 2000-2016. Over the years, female enrolment into Universities has shown a gradual increase although the male enrolment is higher than female education throughout, female enrolment increased from 10 640 in 2000 to 26 891in the year 2012 this could be attributed to the various career development programs for young women and hence encourage them to advance their education.

2.1.2. Female Health

Better health increases workforce productivity and wages by reducing incapacity, debility and the number of days lost to sickness. Poor health and corresponding loss in work- hours is related to a decline in workers' physical and mental capacities, productivity and overall wages. Healthier individuals have higher life expectancy which stimulates growth by accelerating demographic transition and thus have greater incentives to invest in training and in the acquisition of improved skills (K. Ogundari; T Awokuse 2018). Women in most developing nations are faced with many health issues due to their societal roles and lack of functional health facilities and poor economic situations. Furthermore, inaccessible health care services, high cost of medical services continue to pull back women from entering the labour market (Umar Ibrahim 2017). Women are the dominant source of farm labour in

most southern African countries (Zimbabwe included), hence the economic benefits of improving their health is significant. As such most studies suggest that poverty is higher in female headed households and programs that target the improvement of female health will go a long way in reducing poverty (Report of the Commison on women health in Africa p 49; 2017). Female health affects working hours and wages because workers are potentially available for longer periods and healthy workers may invest in and update their skills more (Mary O Mahony; Lea Samek 2016). Women in Zimbabwe are faced with the challenge of HIV and AIDS. As of 2016, the disease had affected 1.5 million Zimbabweans. This results in a reduction in female labour force participation in the country as women are unable to handle daily tasks in the workplace due to ill health, they cannot invest in their skills upgrade as they have to fight this epidemic under harsh economic conditions and poor medical care. This has limited productivity and economic output in Zimbabwe (Borges Magazine article 10; 2017).

2.1.3. Female Labor Participation

Female labor participation refers to those individuals who work for remuneration for a number of stipulated hours over a given period. They also include those females who are not working but are actively seeking for employment and finally those who are involved in the actual production of goods and services (Stephan Klasen 2017). She goes on to state that women's employment and earnings is a powerful factor that influences their bargaining power which has implications for their children and themselves too. Countries that have lower female labor participants are disadvantaged on not having fertility declining and a high share of people working.

ICRW states that 50% of women who qualify as working class or age are actually in the labor force as compared to 77% of men. Women are pulled back from the labor force participation because they do not have contraception. This is common in developing countries were 84% of all unplanned pregnancies are due to a lack of access to contraceptive methods hence there is less participation in the labor force. In Zimbabwe, there are some programs that have since been developed to promote female labor force participation. These include the Akashinga Anti-Poaching unit which was founded in 2017 and is an all- female anti –poaching unit. The sole purpose of this program is to ensure that they empower disadvantaged women, victims of sexual and physical abuse and single mothers by giving them autonomy and providing them economic stability to provide for themselves. Members of this club are able to buy property and continue their education. Another program is the Mother's Foundation (TSMF) which was also launched in 2017 focused on equipping, empowering and educating single mothers and their children. They also create small businesses and jobs for single mothers enabling them to be economically stable and afford basic needs.

2.1.4. Income

According to the ILO 2017 Zimbabwe country analysis, females in the informal sector have low irregular and poverty wages and income. They lack knowledge of actual pay, benefits and overtime due to lack of payslips, and most payments are determined by management. Their income is based on target work so failure to meet targets results in non -payment hence their income is minimum to regardless of the circumstances (UNESCO 2017). Income - poverty is when a family's income fails to meet established threshold that differs in most countries. They do not earn sufficient money to meet basic needs such as food and clothing and this is the case with most households in Zimbabwe following the cash crisis that has since wiped the country. Currently, they are income generating projects such as the Lupane Women's Trust whose aim is to develop income generating projects. It was developed in 2017 and has since assisted many women to improve their live-hood amid the limited employment opportunities in the country. The organisation has poultry projects and distributes eggs to female vendors to sell and generate their own income and to boost their working capital. They also train youth and women in horticulture. The International youth foundation in partnership with USAID and the embassy of Sweden in 2013 developed the Zimbabwe: Works (Z:W) five year initiative which trained nearly 29 000 young people, 61% of whom were women in life skills, financial literacy and business development skills. The main reason behind this program was because the formal sector in Zimbabwe is unreliable way to earn income hence life skills training is a way that prepares young people to navigate uncertainty and succeed in creating their own live-hood and opportunities (Bill Reese 2018).

2.2. Challenges of Human Capital Investment in Zimbabwe

Female human capital in Zimbabwe is currently faced with a number of set -backs and these are listed below:

Gender Issues in Education: Many female students in Zimbabwe face gender bias when enrolling in training institutions especially when they want to enter previously male dominated trades such as mechanics, welding and other technical fields. Girls and women lack support to complete secondary education and enter TVET institutions (UNESCO 2017). Most female students are still bound by cultural beliefs that females cannot enter into technical careers rather they are pushed towards simple female domestic trades that are seen and believed will be adequate for a girl child to run her home. **Cash Crisi**s: The current shortage of cash in Zimbabwean economy is affecting

women mostly. Clinics and hospitals are unable to afford essential drugs for surgery and child birth equipment. Women cannot access cash to get the equipment or medication for child health and even their own health and wellbeing. Government clinics and hospitals suspend surgeries even birth related ones because of shortage of pain relieving drugs. This has resulted in detrimental effects on both women and children. (women and girls hub 2017-Zim's cash shortages putting women health at risk). **Limited job opportunities** in the labour market as a result of de- industrialization facing the country, most women have turned to agriculture, vending and small scale mining (gold panning). However, they are faced with lack of proper irrigation equipment to boost agricultural products as well as a limited access to markets especially for those in rural areas as there are poor road network that links the farms to the business centres. In the vending section, women have been blocked by the strict Local Authority by Laws that do not permit any form of vending in the cities. In the mining section, females have pulled back due to a lack of occupation safety and health provisions (ILO 2017: Women in the informal economy in Zimbabwe).

3. Research Design

There have been a number of models that have been developed to incorporate the impact of human capital of economic growth. The Neo – classical growth models developed in the 1950s stated that output of an economy increases as a result of larger inputs of capital and labor (all physical inputs). Those variables that were non - economic like human capital and health have no function in these models. Under this model there is assumption that we conform to the law of diminishing returns to scale. That is when the stock of Capital increases, growth (Y) slows down and an exogenous variable like technology must be considered in order to keep the economy growing. However, there were some considerations that there are other factors affecting economic growth either than the physical capital and labor. As a result, Paul Romer (1988) developed the growth models and he broadened the concept of capital to include human capital. In his model, there is an argument on the Law of diminishing returns to scale that is if we invest in capital and also employ educated and healthy workers the labor will be productive and have the ability to use the capital and technology more efficiently. Under this ideology we have an increasing return to scale. The research adopts the endogenous production model known as the Cobb- Douglas production Function to analyze the contribution of female human capital on economic growth in Zimbabwe between 2000-2016. This Function is one of the most important functions in the theoretical and empirical analyses of growth and productivity. The aggregate production function estimation parameters are used to evaluate the role of human capital on economic growth, development, technological change, productivity and labor (J. Alani 2018). The growth model is constructed using separate human capital (female and male) as explanatory variables. The male and female human capital are represented by composite averages of education and health index.

Therefore, based on the above introduced economic growth models, the model that has been adapted for this study is as follows:

$$GDPt = f(cap_t, Lab_t, FHC_t, MHC_t)$$

Where GDP is gross domestic product, cap is physical capital, lab is total labor force, FHC is the female human capital and MHC is male human capital, finally t is the time represented from 2001 to 2016.The dependent variable is economic growth and the independent variables are physical capital, labor, female human capital and male human capital. This is represented in a linear expression below:

$$l\, gdp_t = b_0 + b_1 lcap_t + b_2 llab_t + b_3 lfhc_t + b_4\, lmhc_t + e_t$$

In the above expression, b0 is constant and b1, b2, b3, b4, show the extent to which economic growth will change due to a change in physical capital, labor force, female and male human capital.

3.1 Variable selection

The concepts of a research design include dependent and independent variables. These maybe defined as items which take the form of different quantitative values. If one variable depends upon or is a consequence of the other variable it is called a **dependent variable** however, if a variable does not depend on the consequence of another variable it is termed as an **independent variable**. In this study Economic growth is the dependent variable while labor, human capital, investments are independent variables.

This is illustrated below;

Table 4. Variables explanation

Variable	Description
Gross Domestic Product	It shows the size or growth of an economy at a given time
Labor	The labor represents the total labor force in the economy at a given time or the part of the population that is involved in economic activities
Human Capital	In this study we have taken education enrollment and health to represent human capital because education and health have a positive impact on economic growth, Education equips the labor force with skills whilst health ensures a strong work force that is productive
Capital stock	This is the physical capital and stock that is used in the production process

4. Empirical Analysis

The study was to investigate the contribution that female human capital has made towards economic growth in Zimbabwe between the years 2000-2016. In this research we defined human capital as education and health which took the form of life expectancy at birth. Education and health all positively affect economic growth, that is the more the population in a given time is educated, then they are able to be more productive, the same applies to health, the healthier the labor force the more the output as workers are both physically and mentally fit to perform economic activities.

4.1 Data Sources

For the purpose of the research various ministerial offices in terms of the variables used in the analysis were contacted to confirm the data published in the bulletins. This served as support for what - ever information that has been obtained from the statistical bulletins of Zimbabwe. The explained variable is GDP, which is a proxy for economic growth. Gross Fixed capital formation is a proxy for explanatory variable physical capital. Another explanatory variable is labor force, female education and health. The table below is a summary of the sources of data used in the study:

Table 5. Data Sources

Indicator	Sources
GDP(Gross Domestic Product)	Zimbabwe Statistics Bureau (2016)
Total Labor Force	World Bank Development Indicators 2018
Human Capital:	Ministry of Primary and Secondary Education (2016)
Education Enrollment	Zimbabwe Education Report (2017)
Health: Life Expectancy	World Bank Development Indicators (2018)
Capital Stock: Physical Capital/ Investments	World Bank Development Indicators

(Source: Constructed by Researcher, 2019)

The research made use of secondary data which was obtained from various government departments in Zimbabwe of surveys that were carried out in the related subject matter. The researcher also made reference to reputable world data centres such as the world- bank development indicators and the IMF economic statistic database. The sample size was for the years 2000-2016. The data of each variable was collected for these years. The data included; GDP data, Capital, total labor force, human capital. Data (education enrolment and health which is life expectancy). The data used in this study was from 2000-2004 then 4 years were omitted in the GDP data these were 2005,2006,2007,2008. The GDP trend in Zimbabwe is given below in the current US$ and it showed a decline in

these years and a negative growth which could not be included in the calculation as this would be against our hypothesis that GDP will increase because of an increase in female human capital.

Table 6. The Total value of GDP in Zimbabwe measured in Us Dollars

Year	GDP (current USD)
2000	6689957600
2001	6777384700
2002	6342116400
2003	5727591800
2004	5805598400
2005	5755215200
2006	5443896500
2007	5291950100
2008	4415702800
2009	9665793300
2010	12041655200
2011	14101920300
2012	17114849900
2013	19091020000
2014	19495519600
2015	19963120600
2016	20548678100

(Source: World bank development Indicators- Zimbabwe 2019)

The decline in GDP which is overall output was spear headed by several factors. The land re allocation of 2000 and 2001 which redistributed large land, reduced commercial farming output. As a result, output fell by nearly 50% between 2000 and 2008. In the year 2006, the country had an outstanding debt at the IMF, the funds that were meant to foster development and eradicate poverty were channelled to government expenditures that benefited the minority. This prompted migration to neighbouring countries resulting in labor force decline in 2003.this gave rise to a reduction in the tax base and there was insufficient revenue to support government expenditures and the reaction by government was printing more money. (Globalization and monetary policy institute 2011 report). Zimbabwe went through high levels of inflation which transformed into hyperinflation between 2006-2007 which saw the closure of most industries as they could not afford production, there was an overall decline in economic activity accompanied by fiscal losses due to foreign exchange subsidies to public enterprises and government price support to exporters. Hence the year 2005-2008 reflected negative output in Zimbabwe as shown in table 6.

4.2 Empirical results

The study made use of education enrolment at three levels which were primary, secondary and university. The formula used in the calculation of human capital was as follows:

Female human Capital= Female education index + Female health Index /2

Male Human Capital= Male education Index + Male health index / 2

The Zimbabwe education system is taken into 3 categories. The first being primary level which has 7 years of schooling, then secondary level which has 6 years of schooling and finally university which has 4 years. To construct the education, index the following formula was used:

$$\text{Weighted education} = 7h_{t1} + 13h_{t2} + 17h_3$$

H stands for enrolment for both male and female at time t and the population is the total enrolment at a given time t. To get the index transformed from 0 to 1 we take the minimum and maximum values observed in the time series such that:

$$\text{Education index} = \frac{(Actual-minimum)\ weighted\ education}{(Maximum-Minimum)\ weighted\ education}$$

The health index is a proxy of life expectancy so we use life expectancy to express health in quantitative terms. The standardized health was done by taking the maximum years and minimum years in life expectancy in the time series. To transform the indices from 0 to 1 we used the following formula;

$$\text{Health index}=\frac{(Actual-minimum)\ life\ expectancy}{(Maximum-minimum)\ life\ expectancy}$$

The results presented in table 4.2 present the fitness of the model that has been used in the calculation of the contribution of female human capital towards economic growth in Zimbabwe. Female human capital (health and education), labour, gross capital formation, male human capital (health and education) proved to be satisfactory variables in determining the contribution of female human capital toward economic growth. This is confirmed by the R square of 99.0%, this is an indicator that female human capital, male human capital, labour force and gross capital formation explain 99.0% of the variations in the dependent variable which is gross domestic product (GDP). So we can safely conclude that the model applied to link the relationship of the variables was favourable.

Table 7. Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.995[a]	.990	.985	734137457.556

(Source: Data analysis, Researcher, 2019)

The p- value shows the level of relation of the independent variable to the dependent variable. If the significance value is less than the critical value which is the probability value (p) which is statistically set at 0.05, then we will conclude that the model is significant in explaining the relationship; otherwise the model would be regarded as non-significant. Table 4.3 provides the analysis of variance (ANOVA). The results indicate that the model was statistically significant. The results also allude to the fact that independent variables are good determinants of economic growth or GDP in Zimbabwe. This was further pointed out by an F statistic of 202.103 and the p value of 0.000 which is less than the conventional probability of 0.05 significance level. The study rejects the null hypothesis of no significant effects by the dependent variables tested. The ANOVA test for null hypothesis therefore showed there is significant contribution towards economic growth in Zimbabwe by female Human Capital.

Table 8. ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	435699752159570400000.000	4	108924938039892600000.000	202.103	.000[b]
	Residual	4311662452691877900.000	8	538957806586484740.000		
	Total	440011414612262300000.000	12			

(Source: Data Analysis by the Researcher, 2019)

The table 4.4 below, indicates that female human capital which is FHC, is statistically significant as shown by (b=1.9, P=0.001) this signifies that when female human capital increases by 1% there is a 1.85% rise in economic growth. The table further indicated male human capital which is MHC is statistically significant as presented by (P=0.030, b=-1.056). However, the negative coefficient tells us that economic growth and male human capital work in opposite directions, when male human capital rises by 3% there is an opposite reaction to economic growth presented by the negative coefficient of -1.056. The labor force is statistically insignificant with a P value of 0.107, however it is important to economic growth, because the labor force is there to produce goods and services that increase GDP. In the like manner, Capital is also not statistically significant as indicated by a P value of 0.487, however Capital is also important in an economy it can be in the form of the investments that government makes in plant and machinery or knowledge that aids in economic activities, and this is positively related to economic growth. From the results it is safe therefore to conclude that female human capital that is education and health when they increase have a significant effect on growth and have contributed to economic growth in Zimbabwe in the time series under study which is (2000-2016).

Table 9. Contribution of Independent Variables to GDP

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-682547567.678	4372605788.361		-.156	.880
	Labor force, total	1630.164	897.747	.245	1.816	.107
	Gross capital formation (current US$)	-.386	.529	-.049	-.728	.487
	female human capital	31130990172.258	6001819184.735	1.850	5.187	.001
	Male human capital	-20679003700.288	7819265973.321	-1.056	-2.645	.030

(Source: Data Analysis by the Researcher, 2019)

4.3 Discussion

Zimbabwe is a developing economy, and the economic growth over the past years has been low and almost insignificant with negative growth rate in 2006,2007,2008. The female part of the Zimbabwean economy is bound by social and cultural norms in society and do not have access to economic opportunities. The girl child still has a challenge in acquiring education and is faced with challenges such as gender discrimination. Due to harsh economic

conditions in Zimbabwe, it has been difficult to achieve most of the policies to improve education and health due to budget cuts as the government has very little revenue due to slowed economic activity.

The research has made an effort to provide evidence on the contribution of female human capital towards economic growth. The analysis was based on regression analysis under the Cobb Douglas production function for Zimbabwe's time series data from 2000 to 2016. For this purpose, gender specific data on human capital along with labor force, capital and male human capital were used to test the female human capital contribution to economic growth in Zimbabwe. Female human capital is significant and positively related to economic growth while male human capital is also significant but not related to economic growth, these results were consistent with that of Mussarat Khan (2016), who carried out the similar study in Pakistan and proved that female human capital is positively related to economic growth and contributes towards it. The negative relationship to economic growth indicated by the male human capital probably stems from the fact that females have many roles in society as compared to males. Most developing countries are lower class manufacturers and have low tech enterprise that produce primary goods so human capital is important for developing countries hence making the male human capital selective. The results further more indicated that if we invest more in human capital both male and female, there can be a more productive work force and an increase in total factor productivity, because when human capital rises economic growth also rises. A two-way relationship was observed between health status and economic growth as such, improved female health is likely to increase life expectancy and reduce mortality which further improves productivity. The next component of the study was the labor force impact on economic growth. The labor force serves as the main ingredient of the production process because labor force produces goods and services however, the results reflected that labor force did not have an impact on GDP, as they were not statistically significant although it has a positive impact on economic growth. Therefore, we can conclude that it is not the labor force that impacts growth directly but the skills within the labor force that are acquired through education will have an impact on economic growth. The capital plays a part in economic growth as well, although it was statistically insignificant it is important that there is an investment in plant equipment and machinery to aid in production which further improves economic growth.

5. Summary

This research calculated the contribution made by female human capital in Zimbabwe between the years 2000-2016 by making use of the published statistics on labor, capital, female human capital and male human capital for the years 2000-2016. Education and health represented human capital. The education enrolment numbers at different levels of education were used to separate female human capital from male human capital. Life expectancy of male and female was used to represent health. Zimbabwe's current situation of female education, health, labor force participation was discussed as well the challenges that are being faced. Based on the discussion, there are economic as well as social barriers that hinder the progress on female health and education. Harsh economic conditions have played a role in that most women cannot afford basic health care as well as education advancement this has further escalated poverty. The empirical analysis was made using a production function which took the form of a Cobb Douglas production Function and further more regression analysis was introduced as both suitable models to analyse human capital. The results for the study, female human capital and male human capital were found to be positively related to economic growth. As such, human capital is an important element for national growth in modern economies as such policies toward improving education and health would help to foster growth as well as

lower the poverty in most developing countries like Zimbabwe. Based on the results it would be more beneficial to encourage more women to advance their education and promote entrepreneurial activities for them, this is because educated women would be better equipped to accept modern health practices and break the chains of cultural norms thus this would also benefit the population in that it becomes healthy and ready to work. In this regard, policy Recommendations were made toward female health and education.

5.1 Conclusion

The study was to calculate the contribution of female human capital towards economic growth in Zimbabwe. Based on the results and analysis from the regression analysis, Female human capital was positive and significant, females did contribute to the economy of Zimbabwe by, a 1% rise in female human capital resulted in a 1.85% increase in economic growth. This study has presented evidence on the need to encourage female education and female health as they are directly related to growth and development. The male human capital was significant at 0.030 however with a negative effect on economic growth recorded at -1.056. The male human capital is selective. The labor force is positively related to economic growth as represented by a beta coefficient of 0.245. The study recommends that there is need for the government of Zimbabwe to fully encourage female education and skills development as well as improve the health sector as women economic participation raises economic growth and development.

5.2 Policy recommendations

The following are the policy recommendations that may be put into place to improve female human capital in Zimbabwe and extend economic growth;

Gender Capacity Building -There is need to support women and girls complete their secondary education and enter TVET institutions and improve their skills and education level. Policy makers can put in place a quota system for TVET institutions as regards enrolment so as to get more women and girls into skills training programs. All teachers and employers participating in training programs should receive gender training so they avoid gender discrimination and are aware of social constructions and norms. Equal opportunities must be given to both males and females in terms of access to financial resources for skills development and technical knowledge in the form of science, Technology, Economics, Arts and Maths (STEAM), this will aid in improved productivity and foster growth.

Development of clear channels of Education funds - Due to the dwindling resources, unclear roles and obligations in the financing of skills development programs and inadequate prioritization and focusing of resources, there should be a levy/ rebate system such that training levy funds must be based on the levies imposed by the private sector dedicated to the training of employed workers and must focus on skills training and upgrading of workers to meet the specific needs of the industry. The priority areas of funding should be determined through elaborate and consultative strategic planning process. Funding should be based on clearly pre-determined criteria and on outputs/results.

Public Health Education - It is important that government designs systems that protect and improve health at the community at population level. This maybe in the form of disease prevention, better sanitization and promoting healthy behaviors. This can be through education campaigns to the public about healthier choices, facilitating healthier lifestyles through community supports and prevention of outbreaks such as cholera by ensuring safe food

and water in communities. Female health groups can be designed in rural communities to create awareness on female health practices to women to reduce mortality rates.

Anti- gender biased reforms in Institutions

Institutions should to seek to improve gender equality in the work place by revising the requirements for job applicants and opening the chance to women in fields that were labelled for man in previous years such as engineering. Companies should also minimize the gender pay gap by creating clear pay range for each job and by so doing they encourage women to stay on the job without feeling as minorities. Another issue in companies is that of harassment of females. This should be minimized in work places to create safe working environments. Finally, institutions should seek to advance the skills of their employees through continuous learning programs in the work place to help them upgrade their education levels and thus improving productivity The banking sector should open channels for accessing of resources to females for projects, and education loans such that they also participate in economic activities and are not held back by lack of funds.

Individual involvement toward women empowerment

It is the duty of every member of the society to be involved in the social, economic and political empowerment of women in order to make their roles more effective in economic growth. If women in Zimbabwean communities are given the chance to make their own decisions, they will be able to contribute more in the uplift of the society and growth as well. Individuals therefore need to eliminate all forms of gender biases toward female headed projects but rather have support groups for more women to start income generating projects and this will reduce poverty in many societies. Despite its traditional role, apprenticeship lacks standing. It is often seen as the training provider of the last resort by parents and policy makers as well as the apprentices themselves. General information campaigns about the role of traditional apprenticeship training and skills development need to be put forward. Market Surveys may be conducted to determine what trades and skills have market potential and the type of skills that are in demand. There is also a need to upgrade the skills of master crafts persons assuming better skills will make them more productive and a trickledown effect on apprenticeships.

6. Prospects

Education and health are important aspects of human capital, further research could be made on other components of human capital such as income, labor force participation and a model could be applied to compare which of the components of human capital play a greater role in growth and development. In addition, an analysis could be made on human capital expenditure at a regional level and how that has helped to eradicate poverty regionally in Zimbabwe. Finally, this same study could be applied to the regional level as a way of identifying which societies have less female human resource contributing to social and economic uplift of the society.

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