



Structural Modelling of Psychological Limiting Factors for Economic Growth

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/SAJSSE/2020/v8i430223

Editor(s):

(1) Dr. Velan Kunjuran, University Malaysia Kelantan (UMK), Malaysia.

Reviewers:

(1) Rizwan Raheem Ahmed, Indus University, Pakistan.

(2) T. Mohanasundaram, Ramaiah Institute of Technology, India.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/63722>

Original Research Article

Received 03 October 2020
Accepted 09 December 2020
Published 22 December 2020

ABSTRACT

The main objective of this paper was to develop a structural model of psychological limiting factors for economic growth. Specifically, the paper aimed to determine the psychological demographic characteristics, psychological environmental factors, psychological human behaviour and psychological economic factors those influence economic outputs in Kagera and Mwanza regions in Tanzania. The paper used the cross-sectional survey/data from Mwanza and Kagera regions. The sample size of the study was 211 individuals, randomly sampled. The data analysed by using Partial Least Square-Structural Equation Modelling (PLS-SEM) method. The study found that psychological demographic characteristics, psychological human behaviour and psychological economic factors have significant direct impacts on economic growth. However, the psychological environmental factors have a negative impact on the economic growth, but it is not statistically significant. Moreover, the study established the quasi-sinusoidal theory of happiness timing, which explains the nature and timing of happiness of an individual on boosting the economic growth, which responds to Easterlin Paradoxical paradigm. The study concluded that the economic output (GDP) in any production system is depends on how economic agents define their own "live value" (psychological well-being) and the level of psychological control of factors of production (subjective well-being). However, the optimality of utility choices of the economic agents' decision is enclosed by level of happiness (psychological outcome). Hence Kagera region is performing worse because of its low psychological well-being. The paper suggested

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the implementation of psychological booster strategies (PBS) such as the homing nurtures, mental balance exercises programmes and establishment of youth economic support (YES) centres.

Keywords: Structural modelling; psychological well-being; economic growth; subjective well-being; happiness model.

JEL: A12; A 13; A14.

1. INTRODUCTION

The economic growth is a key agenda for many economists in the world. The sustainability and predictability of the economic growth are still fundamental challenges for many countries in the world, mostly in Africa. Tanzania as the one of the African countries that has been implementing various global, regional and national economic plans with endless effort her economy is still unpredictable, unreliably, and unevenly grows across the country. The country is still challenged with a structural imbalance and modest economic growth [1]. Some regions in the country are characterised with the lowest regional GDP per capita, for example Singida, Kigoma, Kagera, Dodoma, Tabora and Mara [2]. Meanwhile, other regions such as Dar es Salaam, Mbeya, Iringa, Njombe, and Arusha are characterised with the highest economic growth in the country [1]. Puzzlingly, the regions such as Kagera and Mwanza are highly differ in economic growth, although they almost share a lot of economic opportunities. For example they share Lake Victoria in a large proportion, and having a close inter-regional trade [3]. Still yet, Kagera region has the least economic growth in the lake zone. Its GDP per capita is 41 percent below the average national GDP per capita in 2018 [4]. But, neighbour region Mwanza which has a direct trade connection, its economy grows at 0.04 percent above the national GDP per capita in 2018 [3]. In fact, Kagera region is expected to be the region that performs better in economic, but realistically, it is not performing well as expected. These empirical facts create the economic questions as why Kagera region differs economically with their neighbour Mwanza, and other regions in the Lake Victoria zone despite to its vast economic opportunities. Moreover, what are the specific limiting factors for economic growth in Kagera that significantly differ from that of other regions in the lake zone? Do other factors matter for economic growth instead of economic variables that are opportunistic to all regions in the zone of Lake Victoria? Therefore, [5] support this research

problem as concluded that the socioeconomic and political measures have been seriously failed to provide a full account on policy decisions at the organizational, corporate, and governmental levels. In addition, they emphasise that economic output /economic growth is heavily influenced by issues related to well-being as people's evaluations and feelings about their lives [5]. However it is still debated on this issue in the literature.

This paper motivated to fill both methodological and geographical gaps. We evidenced that the psychological well-being theories are found to have empirical misfits (shortcomings) [5]. Moreover, neo-economic theory models human behaviour in assumption of self-interested individual choices, thus it ignores the cognitive limitation (bounded rationality) as this paper considers [6]. Furthermore, the eudaimonic theory doesn't captures the Aristotle's philosophy of worth pursuing in life (objective standard of goodness) as this paper includes [7], and the hedonic theory assumes the positive subjective well-being (SWB) is subjected to the positive perceived outcome/judgment of an individual. This theory cannot be a rival to its own level [7]. This paper addressed this theoretical weakness by integrating the hedonic and Eudaimonic theories. Empirically, it is still unknown what are the actual non-economic limiting factors for economic growth in Tanzania, particularly in Kagera region; hence it is still a puzzle. Moreover, the impact of psychological factors on economic growth, it is still debated widely, under the Easterlin paradoxical effects [8,9]. Researchers reached diametrically opposed conclusions. For example, [8,9] stand on paradoxical effects [10,11,12,13] stand on positive effects, while [14] stand on negative effects. Until now there is no consensus that had been reached as the results it creates the policy dilemma for decision makers. Thus, this paper is intervened the debate by applying new methodological approach and geographical context to fill both the observed methodological and geographical gaps. The paper use

Tanzanian settings and integrates the theories of individual well-being which are neo-classical economic theory, eudaimonism and hedonism approaches as the previous studies overlooked. Therefore, a main objective of this paper is to develop a structural model of psychological limiting factors for economic growth in Tanzania. The paper specifically, aimed to determine the psychological demographic characteristics, psychological environmental factors, psychological human behaviour and psychological economic factors those influence economic output in Kagera and Mwanza as well as in Tanzania at large. This paper is structured as follows; introduction, methods, results, discussion, conclusion and policy recommendation.

2. METHODS

This study adopted the positivistic philosophy which is a belief in hypothesis testing social realities. It is referred to as the philosophical stance of the natural scientist which assumes that reality is fixed, measured, and knowable and that there is one truth. The cross-sectional research design was used. The population of this study was 31 regions in Tanzania mainland. The two regions were purposely selected, Mwanza and Kagera due to fact that regions differ significantly in economic performance [2]. Moreover, two districts were randomly selected from each region, made a total of four districts which are Nyamagana and Misungwi districts from Mwanza region, and Muleba and Bukoba districts from Kagera region. The 211 individuals were sampled from four districts by using a method suggested by [15] that when the population number is unknown to a researcher, a sample size is estimated by using the formula that, $N >$

$50 + 8 m$ for multivariate data analysis (where N is the sample size and m is the number of independent variables) and $N > 104 + m$ for testing individual predictors. Therefore, the minimal sample size would be 119 (obtained from the formula; $N > 104 + m$, where $m = 15$). Thus, the sample size of 211 respondents is deemed to be sufficient for this study.

2.1 Variables and Measurements

The dependent variable is an economic growth which is measured by economic output in a region (regional GPD per capita). On the other hand, the independent variables which are psychological limiting factors composed two broad dimensions of limiting factors measured in 5-points Likert Scale (Appendix B). These factors are psychological well-being (PWB) indicators which are psychological human behaviour scores (HUBE). On the other hand, the subjective well-being (SWB) indicators are psychological economic scores (ECOFA), psychological environmental score (ENVI), and psychological demographic score (DEMO).

2.2 Model Specification

This study regarded to develop a structural model of psychological limiting factors for economic growth. The five models were tested to better determine how explanatory variables impact dependent variables. The same four models were used for all five levels of the gross domestic product (GDP) per capita. The models were described in greater detail below in a general mathematical form, a GDP per capita function can be expressed.

Model I: Psychological Demographic Characteristics (Age, Marital Status, Number of family members, Income, Educational level)

$$\ln PSY_{Demoi} = \beta_0 + \beta_1 \ln Age + \beta_2 \ln Mari + \beta_3 \ln Nfam + \beta_4 \ln Inc + \beta_5 Edu + \epsilon_0 \dots \dots \dots (1)$$

Model II: Psychological Environmental Factors (Sustainability, Social awareness, Policies, Regulations),

$$\ln PSY_{Envi2i} = \beta_0 + \beta_1 \ln Sus + \beta_2 \ln Soa + \beta_3 \ln Pol + \beta_4 \ln Re gu + \epsilon_0 \dots \dots \dots (2)$$

Model III: Psychological Human Behaviour (Lifestyle, Motivation, Metacognition)

$$\ln PSY_{Hube3i} = \beta_0 + \beta_1 \ln Listy + \beta_2 \ln Moti + \beta_3 \ln Meta + \epsilon_0 \dots \dots \dots (3)$$

Model IV: Psychological Economical Factors (Prices, Fashion, Weather).

$$\ln PSY_{Ecofa4i} = \beta_0 + \beta_1 \ln Pr + \beta_2 \ln Fash + \beta_3 \ln Wea + \varepsilon_0 \dots \dots \dots (4)$$

Model V: Total Gross Domestic Product

$GDP = f$ (psychological demographic characteristics, psychological environment factors, Psychological human behaviour and psychological economical factors)

$$\ln GDP_{Si} = \beta_0 + \beta_1 \ln DEMO + \beta_2 \ln ENVI + \beta_3 \ln HUBE + \beta_4 \ln ECOFA + \varepsilon \dots \dots \dots (5)$$

Where, $\beta_{i=0,1,2,3,4}$ are coefficients constants of the OLS estimation model, and PSY denotes psychological limiting score, the rest variables are defined on the respective word equations.

instruments used to collect the data (self-reporting checklist questionnaires). It was carried out by assessing the reflective and formative measurement models. This study considered the internal consistency reliability, measured by ρ -A coefficients, with a cut-off value of 0.70. This method is suggested to be the best among the Cronbach's alpha and composite reliability [16]. Hence, the ρ -A coefficients of this study ranges from 0.932 to 0.975, which indicates the existence of high internal reliability consistency of the reflective constructs (Table 1). Moreover, the convergent validity was measured by the average variance extracted (AVE) of the latent's construct which has a minimal acceptance value of 0.50 [17]. In this study the AVE ranges from 0.863 to 0.925 which indicates that the construct explain at least 86.3 percent of the variance of its item (Table 1).

3. RESULTS

3.1 Respondents Profile

The 211 respondents sampled from Mwanza and Kagera regions. The respondents from Mwanza were 111 individuals and those from Kagera region were 100 individuals. The demographic characteristics of respondents in gender category were female 75, equal to 55.15 percent, the respondents in age class of 18-30 years were about 52.60 percent and that of 61-70 years were about 2.4 percent. The marital status of respondents that dominated in the sample was married status which was about 62.6 percent. The dominated occupation cadre of respondents were farmers which composed about 62.6 percent of the total sample. The dominated educations level was primary leavers who were about 55.9 percent of the total sample. Only 35.07 percent were secondary leavers and about 9.0 percent were college/university graduates.

On the other hand, the formative measurement model was evaluated by considering the convergent validity, formative indicators colinearity and statistical significance [17]. The convergent validity of latent variables was examined by using the correlation of the construct with alternative measures of the same concept, the procedures is referred as the redundancy analysis [18,19]. Moreover, the colinearity of the latent variables was examined by using variance inflation factor (VIF) value (Table 2).

3.2 Evaluation of the Outer Measurement Model

The evaluation of an outer measurement model aimed to assess the quality of the

Table 1. The construct reliability and validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)	P values
Demo	0.966	0.969	0.974	0.882	0.000
Ecofa	0.956	0.958	0.971	0.919	0.000
Envi	0.973	0.975	0.980	0.925	0.000
Hube	0.920	0.932	0.950	0.863	0.000

Source: Analysed Field Data (2020)

Table 2. Latent variable correlations and the variance inflation factor (VIF) value

	Original Sample (O)	Sample Mean (M)	Std. Deviation (STDEV)	T Statistics (O/STDEV)	VIF	P Values
Demo -> AGDP	0.663	0.665	0.057	11.674	1.340	0.000
Ecofa -> AGDP	0.532	0.531	0.045	11.737	1.241	0.000
Ecofa -> Demo	0.379	0.379	0.071	5.381	1.096	0.000
Envi -> AGDP	0.274	0.279	0.090	3.053	1.380	0.002
Envi -> Demo	0.419	0.421	0.067	6.237	1.218	0.000
Envi -> Ecofa	0.288	0.290	0.078	3.669	1.233	0.000
Hube -> AGDP	0.375	0.375	0.053	7.069	1.286	0.000
Hube -> Demo	0.297	0.298	0.069	4.283	1.000	0.000
Hube -> Ecofa	0.315	0.314	0.071	4.411	1.096	0.000
Hube -> Envi	0.418	0.420	0.069	6.101	1.157	0.000

Source: Analysed Field Data (2020).

The Table 2 shows the correlation of the latent variables and VIF values. Both the correlation values are statistically significant at 99 percent level of confidence. On the other hand, the VIF values are extremely low than the cut-off value of 0.5. These values indicate the absence of colinearity among the latent variables.

3.3 Evaluation of the Inner Measurement Model

In the previous section we confirmed that the outer measurement model was valid and reliable. In this section, the evaluation of the inner structural model outcomes was done. This study considered the coefficient of determination (R^2), the predictive relevance of the model (Q^2), T-statistical value, effect size (f^2), relevance of the path coefficient (β value), and goodness-of-fit (GOF) index. The R^2 values ranges from 0.088 of Demo to 0.555 on averaged GDP per capita (AGDP). As a guideline, R^2 values of 0.75, 0.50 and 0.25 can be considered substantial, moderate and weak respectively [20,21]. The Q^2 statistics are used to measure the quality of PLS path model, which is calculated using blindfolding procedures [22]. The predictive relevance of the structural model (Q^2) of this study is ranging from 0.074 on Demo to 0.524 on AGDP (Table 3).

As a guideline, Q^2 values should be larger than zero for specific endogenous construct to

indicate predictive accuracy of the structural model for that construct [17]. As a rule of thumb, Q^2 values higher than 0, 0.25 and 0.50 depict small, medium and large predictive relevance of the PLS-path model respectively [17]. Hence, the AGDP has a large predictive relevance and *Envi* and *Ecofa* have medium predictive relevance in the PLS path model. The *Demo* has the least predictive relevance in the PLS path model.

Next, the relevance of the path coefficient (β value) and the size effect (f^2) were examined. The path coefficient (β value) denotes the expected variation in the dependent construct for a unit variation in the independent construct(s) [23]. The β value of every path in the hypothesised model was computed, the greater the β value the more the substantial effect on the endogenous latent construct [19]. To test the significance of the path coefficient and T-statistics value, the bootstrapping procedures using 5000 subsamples was carried out for this study. The PLS algorithm, which is a sequence of regressions in terms of weight vectors evidences that *Demo* has the most effect on the economic growth, and the *Envi* has a negative impact on the economic growth (Fig. 1), although it is not statistically significant, the *Ecofa* and *Hube* have the moderate effect on the economic growth (Table 4).

Table 3. The coefficient of determination (R^2) and the predictive relevance (Q^2) values of the model

	R^2	Q^2 (=1-SSE/SSO)	$Q^2_{predict}$	R^2 -P Values
AGDP	0.555	0.524	0.143	0.000
Demo	0.088	0.074	0.087	0.032
Ecofa	0.189	0.165	0.104	0.001
Envi	0.275	0.245	0.196	0.000

Source: Analysed Field Data (2020)

Table 4. The path coefficient (β -Value) of structural model and size effect (f^2) value

	β -Value	f^2	Std. Devi (β -Value)	T Statistics (β -Value)	P Values (β -Value)
Demo -> AGDP	0.544	0.496	0.065	8.426	0.000
Demo -> Ecofa	0.313	0.110	0.073	4.314	0.000
Demo -> Envi	0.298	0.101	0.065	4.610	0.000
Ecofa -> AGDP	0.306	0.170	0.056	5.472	0.000
Ecofa -> Envi	0.078	0.007	0.079	0.996	0.319
Envi -> AGDP	-0.110	0.020	0.069	1.599	0.110
Hube -> AGDP	0.163	0.046	0.064	2.560	0.011
Hube -> Demo	0.297	0.096	0.069	4.283	0.000
Hube -> Ecofa	0.222	0.056	0.077	2.892	0.004
Hube -> Envi	0.305	0.111	0.070	4.354	0.000

Source: Analysed Field Data (2020)

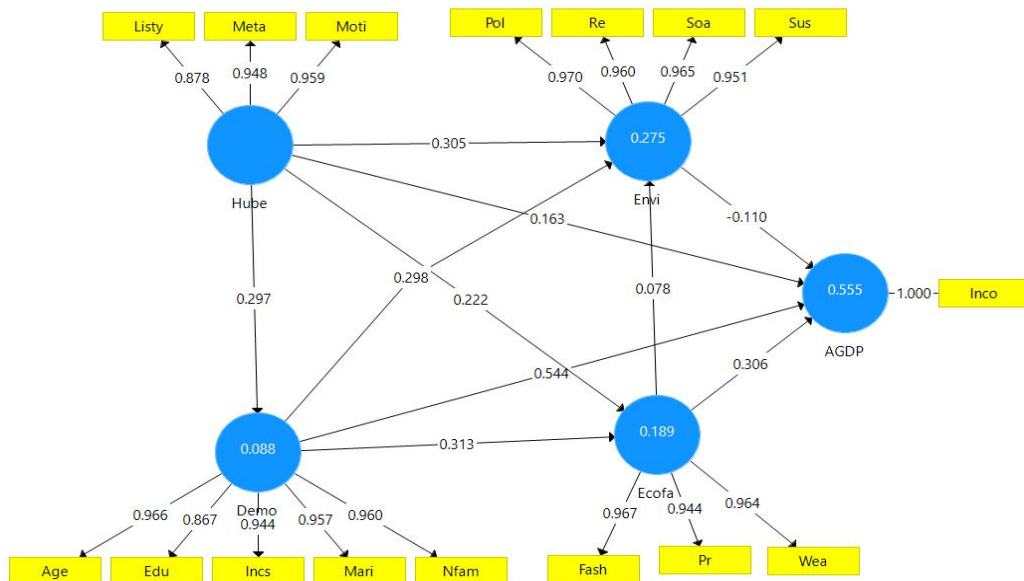


Fig. 1. The partial least squares algorithm for formative and reflective indicators

Source: Analysed Field Data (2020)

Moreover, the effect size (f^2) was estimated. The f^2 is the effect of a removal of a certain predictor construct on endogenous construct's R^2 value [17]. Thus, it defines whether the removed latent exogenous construct has a significant influence on the value of the latent endogenous construct [23]. The *Demo* has a highest size effect and *Envi* has the least size effect on the model (Table 4). As a rule of thumb, values higher than 0.02, 0.15 and 0.35 depict small, medium and large effect sizes (f^2) respectively [24].

To examine the model accuracy, the goodness-of-fit (GOF) was applied as an index for complete model fit to verify that the model sufficiently explains the empirical data [22]. The

GOF values lies between 0 and 1, where values of 0.10 (small), 0.25 (medium), and 0.36 (large) indicate the global validation of the path model [23]. A good model fit shows that a model is useful [25]. The GOF is calculated by using the geometric mean value of the average communality (AVE values) and the average R^2 values, and the GOF of the model is calculated by Equation.

$$GOF = \sqrt{\text{Average } R^2 * \text{Average communality (AVE)}} \quad [22]$$

The higher value of GOF shows that empirical data fits the model satisfactory and has substantial predictive power in comparison with baseline values [23]. The GOF of this study was

0.4984 which indicated that the model was largely fitted the empirical data; hence the model is relevant and has a high degree of accuracy (Table 5).

3.4 Mediation Analysis of the Structural Model

After analysis of the direct impact of the structural model, we strived to examine the mediation effects on the linear model. This was done by calculating the variance account for (VAF) ratio for each indirect path. The VAF is the ratio of the indirect effects to the total effects in the structural model. The structural model showed no full mediation of the latent variables, hence the direct impact of the latent variables (psychological factors) on economic growth was

granted (Table 6). The VAF values that are less than 0.20 indicate no mediation, while values above 0.20 but less or equal to 0.80 indicate the partial mediation, and values above 0.80 indicates full mediation effects [26].

3.5 Importance-performance Map Analysis (IPMA)

For better conclusion the relative importance of the constructs in the structural model was established by using IPMA. The IPMA is useful tool in policy design as it gives the factor(s) to be prioritised in policy setting. The importance – performance was examined by using the path coefficients (high coefficient indicates higher impact). The path coefficients of IPMA are presented on the algorithm (Table 7).

Table 5. The goodness –of- fit (GOF) of the structural model

Construct	AVE	R ²
Demo	0.882	0.088
Ecofa	0.919	0.189
Envi	0.925	0.275
Hube	0.863	
AGDP		0.555
Average Value	0.8973	0.2768
AVE x R ²	0.2484	
GOF = $\sqrt{(AVE \times R^2)}$	0.4984	

Source: Analysed Field Data (2020)

Table 6. Specific Indirect effects of constructs of latent variables (psychological factors)

Model with its Optimal Mediator	Original Sample	Sample Mean	T Statistics O/STDEV	VAF	Mediation	P Values
Hube -> Demo -> AGDP	0.161	0.165	3.353	0.429	Partial	0.001
Demo -> Ecofa -> AGDP	0.096	0.093	4.088	0.159	No	0.000
Hube - Demo - Ecofa - AGDP	0.028	0.028	2.969	0.075	No	0.003
Hube -> Ecofa -> AGDP	0.068	0.067	2.403	0.181	No	0.016
Hube -> Demo -> Ecofa	0.093	0.095	2.698	0.295	Partial	0.007
Hube -> Demo -> Envi	0.089	0.089	3.101	0.213	Partial	0.002
Ecofa -> Envi -> AGDP	-0.009	-0.007	0.824	0.03	No	0.410

Source: Analysed Field Data (2020)

Table 7. Impact-performance matrix of latent variables (psychological factors) on economic growth

	Unstandardized		Standardized		P values
	Impact	Performance	Impact	Performance	
Demo	274266.099	58.442	0.605	58.442	0.000
Ecofa	142418.588	66.676	0.298	66.676	0.000
Envi	-45784.500	63.110	-0.110	63.110	0.110
Hube	215376.256	70.115	0.375	70.115	0.000

Source: Analysed Field Data (2020).

The Table 7 shows the impact-performance matrix of latent variables for the economic growth. The table depicts that the psychological human behaviour have the higher importance-performance score (70.11) than all other latent variables. This means that, the psychological human behaviour have higher importance in performing the economic activities. The second important factor for economic performance is the psychological economic factors which have a score of 66.676, significantly at 99 percent level of confidence. Therefore we rank the performance of the fundamental psychological limiting factors from *Hube*, *Ecofa*, *Envi* and *Demo*, and we can rank them according to their impact (importance) on economic growth from *Demo*, *Hube*, *Ecofa* and *Envi* (Fig. 2).

3.6 Test of Hypotheses

The study was guided by four hypotheses. In accordance with the complete analysis of the measurement and structural models, it was evidenced that models were confirmed valid. Three hypotheses were statistically significant and hence were all three were accepted. The second hypothesis was rejected. That is, there is no direct positive relationship between psychological environmental factors and economic growth. The results of this study supported a richer and an accurate picture of the non-economic factors (psychological limiting factors) in affecting the economic growth.

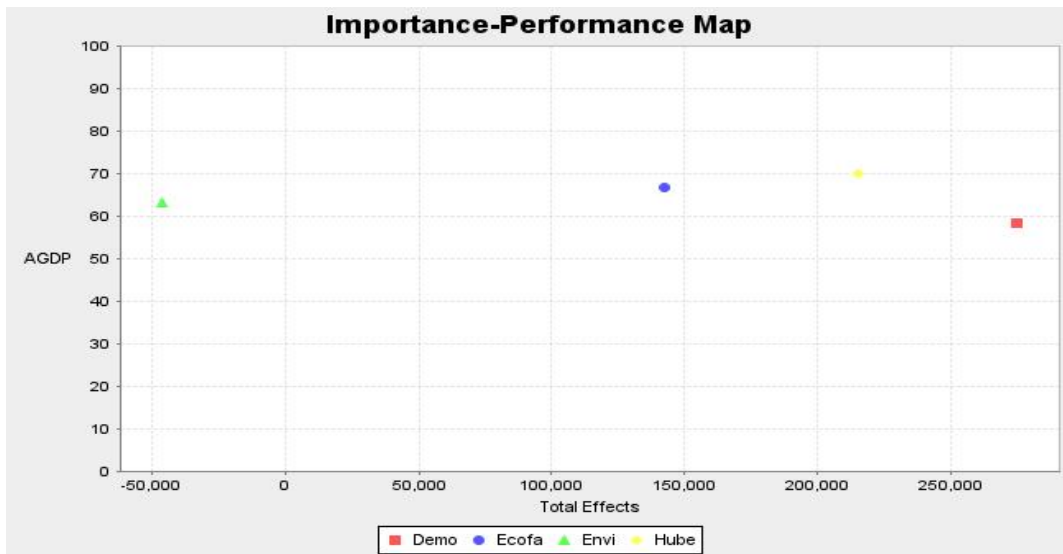


Fig. 2. Importance –performance maps for latent variables (psychological Factors) on economic growth

Source: Analysed Field Data (2020)

Table 8. The tabulation of the hypotheses tests statistics

Hypotheses Statement	Statistics			Decision
	β -value	T-value	P-value	
H ₁ : Psychological Demographical characteristics are positively and significantly influence the Economic growth	0.544	8.426	0.000	Accepted
H ₂ : Psychological Environmental Factors are positively and significantly influence the Economic growth	-0.110	1.599	0.110	Rejected
H ₃ : Psychological Human Behaviour are positively and significantly influence the Economic growth	0.163	2.560	0.011	Accepted
H ₄ : Psychological Economic Factors are positively and significantly influence the Economic growth	0.306	4.611	0.000	Accepted

Source: Analysed Field Data (2020)

4. DISCUSSION

The impact of the non-economic variables such as psychological factors has been discussed broadly in various angles. Most of the researchers directed their enquiries on how the subjective well-being influences the economic growth [10,11,12,8]. The most issue that are aimed by many researchers is subjective well-being as the happiness. Earlier studies limit the definition of subjective well-being to happiness of an individual; hence create the diametrical conclusions on how PWB affects the economic growth [8,9,13]. In reality, the happiness is the outcome of both physiological and psychological impulses/forces on the individuals. In the other words, the happiness of an individual is the final product or outcome of both psychological and physiological impulses. For example, an individual can be happy because of marriage, or getting a job, or can be unhappy (sad) due to losing a job or marriage or anything that are valuable or interestingly. One of the challengeable questions is the "timing" of happiness of an individual, when an individual can be happy, and how longer the happiness can last? Is it (happiness) a permanent, temporary or "alternating" phenomenon? Actually, the happiness is not a permanent phenomenon to the individual, in most cases; the happiness may be temporary or alternating phenomenon to the individual [27,28,29].

Economists critically urge on the impact of happiness, hereafter the psychological outcome, on the economic growth. The first prominent paper by [8] evidenced the paradoxical effects of psychological outcome (subjective well-being) and economic growth. The paradoxical paradigm acutely criticised by [13] who evidence the positive relations. Recently studies such as [10,11,12] evidenced that happiness impulse has an impact on the individual economic activities plan and success, hence they support [13]. On the other hand, some studies confirm the negative impact, for example, [14]. To off-set this problem of Easterlin paradoxical and the ongoing debate, this study broadening the definition of the subjective well-being (happiness). More specific, this study established the factors that influence the degree of or that conditioning the happiness of an individual (determinants of happiness timing). In this study, the happiness was treated as the psychological outcome/output of psychological and physiological impulses/forces. The happiness conditioning factors (HCFs) are psychological demographic characteristics, psychological economic factors, psychological

environmental factors, and psychological human behaviour. Therefore, these factors are inputs of happiness model, commonly the four fundamental psychological factors (4FPFs).

Relying on this study, the individual psychological impression on the demographic characteristics, economic factors and the human behaviour have direct impact on the family income production decision, hence are economic growth activators. The study found that the positive psychological force on environmental issues has a negative impact on economic growth. This finding has a logical sense because most of the economic activities are associated with the environmental pollutions. For example agricultural activities demand large bare land for cultivation, which results to deforestation. In addition, the economy to grow requires intensive industries, which increase both water, land and air pollutions. On the other hand, the human behaviour such as life style, motivation and metacognition were found to be the most important factors those perform the best in economic growth, although has less impact. This is because; the human behaviour which is a measure of the psychological well-being is a fundamental input to happiness model (subjective well-being). This finding confirmed the study by [10,11,12,13]. However, the negative effect of the psychological environmental factors on economic growth confirmed the study of [14]. Both the ongoing debate and Easterlin paradoxical effect were due to most of researcher using the narrowed definition and nature of happiness, which is not permanent or stable in nature, but the income of an individual can be stable and sustainable for a while or not, hence the changes or alternation of the level of happiness of an individual, versus a merely constant income level, or vice versa it creates the paradoxical effects. That is, sometimes, happiness will be positively related to high income, because the happiness of a individual changes but the income remain constant, and sometime the happiness will be positive related to low income if the an individual can loss income, but level of happiness is due to other non-income factors such as social engagement, marital status, games, etc. So in this fact, we need an empirical based theory that explains the timing of happiness which is lacks in this field.

Broadening the definition of happiness, this study suggested an empirical based theory that fits the timing of happiness of an individual. This theory, due to the nature and broaden definition of the

happiness, the timing of happiness depends on the four factors, which are psychological demographic characteristics, environmental factors, human behaviour and economic factors. These factors are known as the four fundamental of psychological factors for economic growth (4FPFs). From this empirical fact, we evidenced that, the outcome of psychological well-being of an individual (happiness/subjective well-being) was not constant, it is sinusoidally moves. Its level moves up and down as the mechanical waves, it is pulled up and down due to forces of 4FPFs. That is why sometimes happiness changes to sadness and sadness passes out when the happiness resumes, this periodic movement phenomenon continues to the entire life of an individual. This behaviour or phenomenon indicates the quasi-sinusoidal behaviour of happiness timing. In general this behaviour can be theorising the happiness model, hence it is the theory of happiness timing. This theory explains that the happiness or sadness and income cannot move together for a long time but they can meet at stage of life success or failure [27,28,29]. That is, happiness has a period of accelerating to crest (period of happiness), at crest (joyfulness), this is the upward shifting or movement. In this period, the 4 FPFs have a positive influence on the fixed income. On the other hand, happiness has a period of decelerating to trough (period of sadness), at trough (full sadness), this is period of downward movement. In this period if the income is relative fixed, the 4 FPFs show the negative influence on economic growth, because the level of happiness is reduced but the income remains constant (substantially high). But, for prolonged happiness can increase physiological and psychological positive outcomes (e.g. good health, positive mood, etc) so that it increase the opportunities or probability of gaining more economic opportunity from social engagement.

5. CONCLUSION AND POLICY IMPLICATION

The study basically aimed to develop a structural model of psychological limiting factors for economic growth in Tanzania. To achieve this goal, four specific objectives were achieved. This paper found that only psychological environmental factors are negatively related to the economic growth, but not statistically significant. The logical interpretation of this phenomenon is that, the most of economic activities involve the destructions of the environments. For example, the industrialization

policy may has a negative impact of environmental conservation policy, particularly in the least developing countries if it is not well managed. Moreover, a farmer demands a large open land for cultivation, should cut the trees, and likely to cause erosion. The large or intensive industries increase the GDP, but increase the probability of polluting the water, land and air. On the other hand, the improving the psychological human behaviour (psychological well-being) of an individual (mental capacity) increases the ability of an individual to make decision (judging capacity), and hence able to have a psychological control on demographic characteristics, environmental factors, and economic factors. The increase of psychological control on four fundamental psychological factors increases the probability of an individual to engage in economic activities with success. Hence, we concluded that the economic output (GDP) in any production system is depends on how economic agents define their own "live value" (psychological well-being) and the level of psychological control of factors of productions (Subjective Well-being). However, the optimality of utility choices of the economic agents' decision is enclosed by level of happiness (psychological outcome). Hence Kagera region is performing worse because of its low psychological resources (Appendix A).

In policy setting, this paper imposed an implication. It is still a big challenge to incorporate the psychological booster strategy (PBS) in economic plans. This paper suggests the two levels of incorporating the PBS for economic growth planning. The first level is family based strategies (FBS) which include homing natures, mental balance exercises or parental-mental mentoring, logical positivism and self- assurance programmes. The second level is the institutional/state based strategies, for instance, the establishment of social/community psychological centres, youth economic support (YES) centres, incorporation of programmes that improve both individual physiological and psychological well-being in learning institutions, for example games and sports, logical debate, etc. As this paper limited only cross-section data, further studies should be done by using longitudinal data to attest this finding.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Author has declared that no competing interests exist.

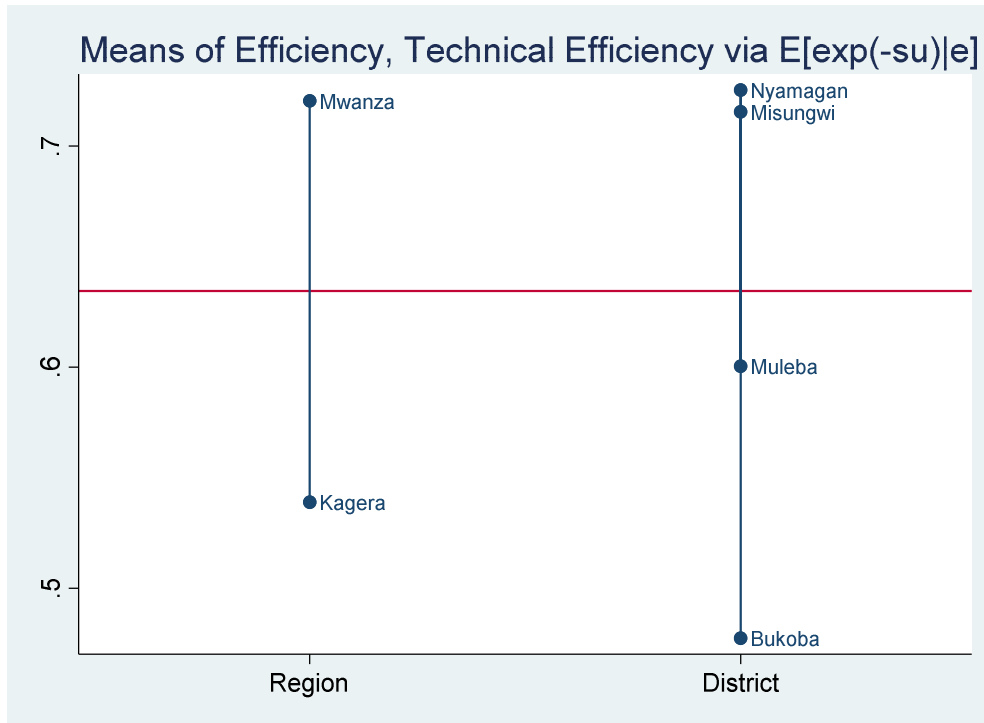
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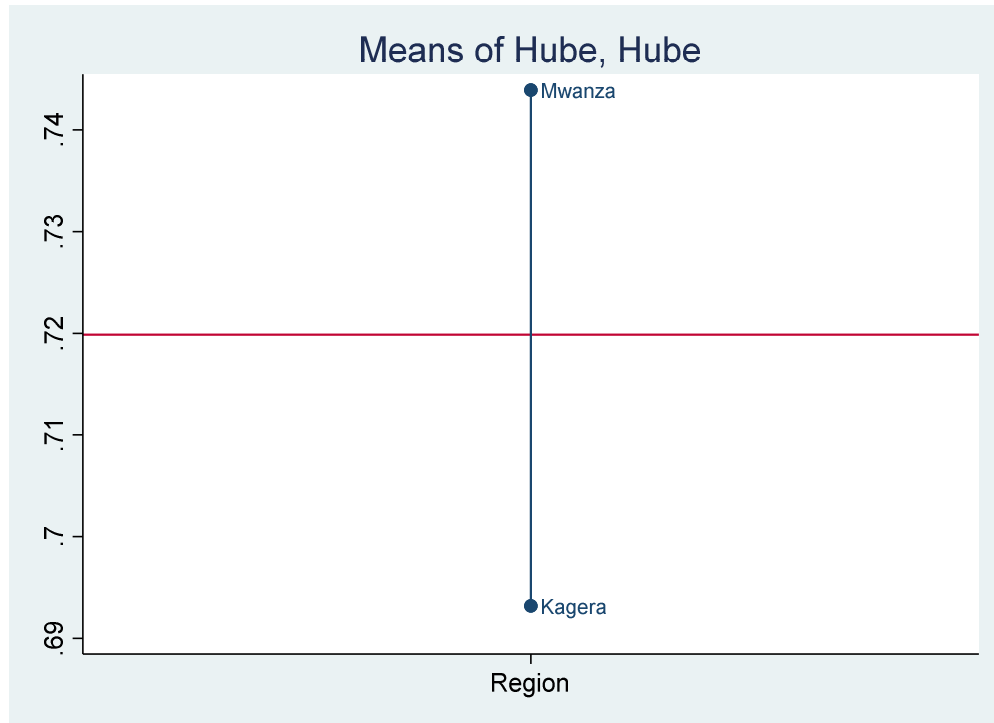
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APPENDIX A

Technical Efficiency of Psychological Factors in Mwanza and Kagera Regions



Mean of Psychological Well-being in Mwanza and Kagera



APPENDIX B: SELF-CHECKLIST QUESTIONNAIRE

Section A: Respondent Characteristics

Kindly, you asked to provide your information regarding on the following attributes. Please be honest to fill or select the appropriate characteristic that fits you.

Name (Optional): _____ Age _____ Sex: Male _____ Female _____
 Marital status: Single _____ Married _____ Widowed _____ Separated _____ Divorced _____
 Education level: Primary level _____ Secondary level _____ college/university level _____
 Occupation: _____ Mobile: _____ Number of family members: _____ Number of dependants _____ Average monthly income/consumption in TZS _____

Section B: Questionnaires for Self-Checklist for Psychological Limiting Factors

Please tick the rating column using number from 1 to 5, describing from 1 strongly disagree and 5 strongly agree, such that the provided reason (s) for effect of psychological of the production on economic growth in Tanzania (for the particular factor/variable).

Rating level: 1) Strongly disagree; 2) Disagree; 3) Neutral 4) Agree; 5) Strongly agree					
Factor /latent variable causes (From conceptual framework (Fig. 1))	1	2	3	4	5
2.1 Demographic Characteristics					
2.1.1: Age is a factor that psychologically affects a family income productivity					
The current age encourage to work for future					
2.1.2: Marital status is a factor that psychologically affects family income productivity.					
It is better to be married					
It is better to be single					
Widowed are hardly meet the daily basic needs					

Rating level: 1) Strongly disagree; 2) Disagree; 3) Neutral 4) Agree; 5) Strongly agree		1	2	3	4	5
Factor /latent variable	causes (From conceptual framework (Fig. 1))					
	<p>2.1.3: The number of family members is a factor that psychologically affects a family income productivity The number of family members more than 5 is preferable</p> <p>2.1.4: The income level is a factor that psychologically affects family income productivity. The current level of family income is satisfactory The current source of family income is reliable</p> <p>2.1.5: The educational level is a factor that psychologically affect a family income productivity The current level of education is satisfactory</p>					
2.2 Environmental Factors	<p>2.2.1: Environmental sustainability behaviour is a factor that psychologically affects family income productivity. It is better to preserve the forest at the surrounding Not encouraged to pollute either of land, air or water</p> <p>2.2.2: Social awareness on environmental issues is a factor that psychologically affects family income productivity. The culture of preventing environments affects the production level in a family.</p> <p>2.2.3: Environmental Policy is a factor that psychologically affects family income productivity. It is not encouraged to use wood fuel than other energy sources It is better to be guided on use of land and water resources</p> <p>2.2.3: The environmental regulations/rules are factors that psychologically affect family income productivity. It is regrettable to be punished by breaking the law It is better to be bound by rules on environment conservation</p>					
2.3 Human Behaviour	<p>2.3.1: Lifestyle is a human factor that psychologically affects family income productivity. Pain is general avoidable and happiness is encouraged in daily life Rashness and irresponsibility in public life is encouraged Preference of values and personal needs are encouraged in life</p> <p>2.3.2: Motivation is a human factor that psychologically affects family income productivity. This location/region is conducive for work. The government motivates the people to work.</p> <p>2.3.3: Metacognition is a human factor that psychologically affects family income productivity. A defined person and knowledgeable to success A person with a defined way of achieving the goals</p>					
2.4 Economical Factors	<p>2.4.1: Price of commodity is a factor that psychologically affects family income productivity. The price of commodities is fair/affordable The price of commodities are changing faster</p> <p>2.4.2: Fashion of product is a factor that psychologically affects family income productivity. It is desirable to get new design of material/assets Beauty and prestigious material/assets are persuadable</p> <p>2.4.3: The unforeseen weather is a factor that psychologically affect family income productivity It is worse when the favourable condition changes to bad</p>					

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Peer-review history:
The peer review history for this paper can be accessed here:
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