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Research Article

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Electrical Energy for Rural, Small Scale and Value Creation Industrialization in Mbozi District-Songwe, Tanzania

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Abstract

The study aims at investigating the impacts of steady electrical energy supply on industrialization. To reveal the nature of the relationship between the two variables i.e. steady electrical energy supply and industrial development, the study which was carried out in Mbozi district in Songwe region-Tanzania employed a survey research design. Moreover the investigation applied the strata-multistage sampling technique to derive to 101 respondents. Using documentary review and questionnaire the facts was gathered regarding the study in which processors, constructors, farmers and traders was a sample frame. Using a latent variable analysis, rotated component matrix and average variance expected data analysis tools it was revealed that steady supply electrical energy contribute positively towards industrial development. It was conclusively found that steady electrical energy supply and industrialization detailing rural industrialization, small scale industrialization and value addition was statistically significant at p>=0.05. Thus it is with these positive results what this study suggests to policy makers that the environment for sustainable electrical energy should be created for rural industrialization, small scale industrialization and value creation policies to be realized.

Key Words: *Electrical energy, industrial development, rural industrialization, small scale industrialization, Value Addition*

Introduction

Industrial economy has been currently the title head of most of economic development stakeholders which then calls for steady electrical energy. This is from the fact that growth in industrial sector is a good start over economic transformation [1]. For instance growth in manufacturing industrial sector become a market of the unprocessed raw materials from small scale farmers, fishing firms, small scale livestock keepers, and the minority mineral extracting firms [3]. Apart from being a market especially with extracts from SMEs (i.e. in upstream supply chain system) but also the industrial sector propensity sustain the down-stream activities such as creation of market efficiency, offering of outbound logistical activities, packing, storage and more other materials/processed goods [3].

Rural industrialization is the result of steady supply of electrical energy [4]. Rural processing industries need electrical energy for running machinery used in conversion process, heating and lighting [5]. Egg incubation, milk preservation and fermentation industries in rural areas require steady electrical energy [6]. The vegetables, fruits and other perishable goods need steady refrigerated electrical running machinery [7]. Solidification, cooling, freezing as well as melting rural industries need stable energy supply in ensuring steady operations and production [8].

Small scale industrialization such that over agricultural commodities processing, preservation and refrigeration of fresh vegetable and fruits industries is influenced by steady supply in electrical energy [9]. Moreover small scale industries such that which involve melting and joinery, welding require steady supply of electrical energy (Pivovar, Rustagi & Satyapal, [10]. It is the proof that socio-economic transformation to be brought through small scale industrialization cannot be sustained in the environment where there is no or inadequate and unsteady supply of electrical energy [11].

Electrical energy in its adequacy and stability play a great role towards development of industrial sector [12]. The energy needed become important from running industrial machines during conversion of raw materials/ inputs to outputs [13]. This means that development in industrial sector create a steady market for farms/ earth extracts what help in commercialization (value creation) over firms' activities in upstream, mid stream, and down-stream. The transformation model detailing conversion of inputs to outputs what exemplifying the relationship between steady energy supply and value creation industrialization is as shown here below:-

Inputs/Resources/Materials Transformation (Value creation) → Outputs (Singh, 2019)

(Steady energy supply)

Stunted growth over industries in Sub-Saharan African countries is because of unsteady supply of electrical energy which could foster processing of most of agricultural extracts. Most of small holders' farmers in Africa has continue conducting farming activities in subsistence form because unsatisfactory growth in rural industrialization of which could be the market for the farm raw materials from this revealed disadvantageous group [14]. Under-development in rural industrialization has revealed to be rooted due to none or unsteady access to electrical energy.

Little or none access to steady electrical energy in developing countries has found to be the root cause of insignificant growth over small scale industries [15]. Insignificant growth in small scale industrial sector in most of developing countries is because of inadequate access to electrical energy [16]. More-over in developing countries the sources of electrical energy which could be used as alternatives to HEP, coal, natural gas such as wind, solar, biogas, geo-thermal are not reliable to facilitate value creation or commercialization of extractive economic activities, processing and other operation activities.

But despite of the contributions over presence of industrial or growth of industrial sector but to developing countries like Tanzania the industrial sector is not propounded to that extended manner to cutter the need of being a market for extracts from small scale firms [16]. Less development in manufacturing sector in Tanzania growing at 10% create less pull up forces to cause labor productivity in the village/rural areas not discarded. Less development in industrial sector in Tanzania is associated with access to inadequate energy supply indeed in rural areas in which it has revealed that access to electrical energy was at 4% while 30% was that in urban area [17]. At the same time period it was reported that the whole 96% source of energy in rural areas was unsustainable biomass.

The dilemma revealed being the focus of this study was over insignificant rural industrialization, small scale industrialization and non- commercialization despite of the underlying sustainable industrial development policy of 2020 and Tanzania Development Vision of 2020 of Tanzanian state becoming a middle income country. Either a number of studies have stipulated on the advantages of steady energy supply on industrial development as they have shown above but those studies have not touched on whether deficiency or absence of small scale industrialization policy. Non growth over small scale industries is the actual problem to find that little/unsteady energy supply is prominent with small scale processors even those who are found in towns as what was revealed from the field area i.e. Vwawa and Mlowo in Mbozi. Moreover rural industrialization was found to be a discrepancy to find that the research area such that from 'Itaka' spatial distributed with maize and coffee farms there was no even the installed TANESCO electrical infrastructures but solar systems which was also found to be not steady. In towns such as Vwawa and Mlowo varities non-processed and non-valued (raw) agricultural extracts were observed sold. This is the indicator that in the area was facing the problem of stunted growth over processing industries of which accessibility steady and adequate electrical could be a solution.

A paved way of achieving the small scale industrialization, rural industrialization and commercialization the discrepancies revealed by this study has started and moreover continue to be shown by the government of Tanzania though different initiatives for ensuring steady and adequate electrical energy. The initiatives said are those over installation of big H.E.P (Mwl. Nyerere Hydro-Electrical Power) project, establishment of Rural Energy Agency (REA) which is specifically dealing with installation of electrical infrastructure in rural area at lowest affordable charge. Moreover to ensure great accessibility electrical energy the Kinyerezi I and II Natural gas electrical power plants in Dar es Salaam has been launched. As a pilot survey conducted on October, the government through a Ministry of Energy (2019) started home natural gas piping (being a downstream supply chain) to some of customers in Dar e Salaam. This is then a good indicators that in the near future Tanzania will become sustained with steady energy source indeed what has shown over formalization of other alternative sources of energy(such as wind, solar, bio gas) especially in rural areas.

The Implications to The Study

Industrial economy has the main agenda of most of developing countries. This has been the targets many countries has been struggling to attain in-order to smear a gap that exist due to mismatch of the reported country economic growth and the actual standard of living of people. To policy makers and other economic development stakeholders this study is suggesting on the steady and sustainable energy supply for the expected sustainable industrial growth to be attained. The study has addressed three main strategies to be achieved to equal distribution of the income derived from promoting industrial economy which ensures efficient exploitation of electrical energy for industrial sector growth which were rural industrialization, small scale industrialization and value addition/commercialization policies. These innovations had a main focus of transforming most of rural areas represented by Mbozi district in which most of its parts are remote but popular for growing of cash such as coffee) and food crops (such as maize, rice, Ovacado) as well keeping livestock. This either exam plies other areas in Tanzania and worldwide at large of such nature.

Literature Review

Theory Guided the Study

The study applied the Structural Change Model found by Lewis (1954). This Model explains the structural transformation of a subsistence/agricultural economy to modern /Industrial economy. The model dictates that the surplus outputs from agricultural and more other primary economic sectors in necessary to cause unproductive labor force employed in these activities move to modern/industrial sector and therefore reducing the problem of labor productivity in traditional agrarian sector. The theory proposed that to attain to surplus output then human resources is to be empowered with available and adequate resources including electrical energy. Other factors revealed important for industrialization included the innovative technology and market efficiency [18]. Despite of the constructive proposals put down by Lewis (1954) but the theory did not show that structural economic change cannot be sustained if rural industrialization, small scale

industrialization and value addition policies are avoided. These were the issues addressed by this study under discussion in which it only if these three major polices at to be put into practice which then are to be sustained by ensuring steady electrical energy both in rural and urban areas what will boost for socio-economic transformation said.

Empirical Literature Review

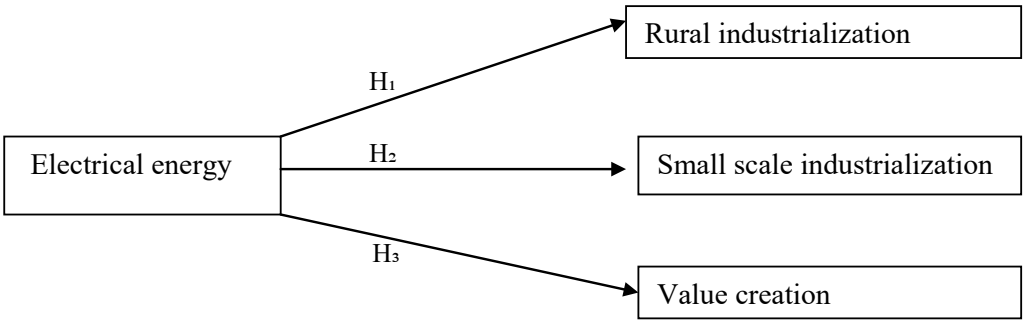
Steady electrical energy supply over 99.9% in Rotterdam–Germany is the factor which makes Germany being among the leading industrialized countries [19]. Sustainable electrical energy supply in Germany from Coal source is the one which make it become big industrialized developed country with about 4,000 large scale processing and 100 constructive heavy industries. Indeed Germany has grown with and medium processing industries of more than 10,000 due to steady supply of electrical energy [20].

Malaysia has succeeded to transform its economy by 80% by sustaining the entrepreneurial and SMEs processing and light joinery constructive industries [21]. This transformation has found to be sustained that make Malaysia a strategically leading countries for it to become socially and economically upper middle country in the World [22]. This either found to be achieved through sustaining the supply of electrical energy indeed with small scale processors of agricultural fruits processing and joinery light industries [23].

The 65% growth in industrial sector in Uganda has influenced it attain a medium income state. This is the socio-economic transformation policy which has enabled rural industrialization which then has reversed the situation of movement of young productive force from rural area to urban areas with this reverse transformational equation,

$$\text{Urban}_{\text{Emmigration}} \longrightarrow \text{Rural}_{\text{Immigration}} \text{ ((+) migrant rate)}$$

Rural industrialization in Uganda has revealed to be influenced by stable supply of electrical energy just in the remote rural areas.



Source: Kasmaei, Rofoue[24].

Research Hypotheses Statement

Three null research hypotheses were formulated to cutter for the gap prevailed

i) The steady supply of electrical energy positively and statically influence rural industrialization

ii) Sustainable supply of electrical energy positively and significantly impact on small scale industrialization

iii) Stable supply of electrical energy positively and significantly contribute towards value creation industries

Methodology

The study employed a survey research design .The study was carried out in Mbozi district. The area was chosen as Mbozi in Songwe region is a popular area for growing of food (such as maize) and cash crops (such as coffee) but to find it is not an industrial area to call for commercialization of farming activities. The facts being gathered from Itaka, Mbozi Mission, Vwawa and Mlowo it was revealed that rural industrialization is not sustained in the rural areas such as Itaka with only one medium sized coffee processing industry found at Mbozi Mission which is 14kms far from Vwawa town and non-industrialized Itaka coffee growing area which is >30kms from Mlowo town. The area was further chosen to be a research area due to low development in small scale processing industries and this low level in industrial development was mostly realized at Mlowo and Vwawa because of being the upcoming town areas. This is then a proof that despite of Songwe being a third region in production of food crops in Tanzania but most of small holders from this area found not to commercialize their farming activities [25]. Indeed this is indeed consistent with the reason why Tanzania count for low development in industrial sector (9%) [26].

The target population was farmers, processors and traders of coffee, maize, fruits, and vegetable commodities totaling to about 446,339. Indeed the small scale firms involved in Welding and Fabrication, Carpentry and Joinery service provision were also researched. By employing the confidence level of 90% the sample size became 101. Indeed the use of strata-multistage sampling technique gives rise to the proportional distributable sample for each unit of inquiry shown in Table 1. Multistage sampling came to emphasize rural industrialization which then is the reverse auction to pull people move from urban to rural

areas. Moreover multi-stage sampling installed insisting the researches as it is with this one underhand which was conducted from the village [27]. Stratification purported to put emphasize that if steady electrical energy is to be sustained just in the village rural areas then the issue "rural industrialization is adequately to be achieved [28]. The stratification was indeed employed to put mark why electrical energy is to be sustainably fostered for the small scale industrialization policy being executed. Moreover stratification with this study make the study unique as there is no way rural industrialization; small scale industrialization and value addition policies are to be sustainably attained if energy supply won't be made steady both to small and large processing firms; small and large constructive firms found in rural and urban areas.

Table 1: Deduction of Unit of Inquiry

S/N	Strata	Population sample frame	Sample
1	Rural area processors	99,000	17
2	Town area processors	86,000	16
3	Small scale processors	110,000	18
4	Large scale processors	15,000	13
5	Small scale constructors e.g Welders, carpenters	10,300	10
6	Small and large scale farmers	97,000	15
7	Small and large commercial firms	29,009	12
TOTAL		**446,339**	**101**

Source: Pilot survey (2020)

Primarily the facts about the study underhand were collected by applying questionnaires and participant observation. Secondary data were gathered from the reports published by NBS, BoT, Ministry of Business, Industries and Investments. The processed and cleaned data were analyzed inferentially by using latent variable analysis, rotated component matrix and average variance expected. The facts using these analysis tools were guided by three equation models: -

$$(1).\ E_1 = \alpha_1(YS) + \alpha_2(CCP) + \alpha_3(CaCP) + \alpha_4(IE) + \alpha_5(SJFP)$$

Where E1= Steady electrical energy; YS= Yoghurt solidification firms; CCP= Cereal crops processing; CaCP = Cash crops processing; IE= Incubations; SFJP = Sugar cane/ fruit juices processing

$$(2).\ E_2 = \beta_1(WF) + \beta_2(CJI) + \beta_3(FPI) + \beta_4(VPF) + \beta_5(FJPI)$$

Where E2= Steady electrical energy supply; WF=Welding and fabrication; CJ=Carpentry and Joinery; FPI=Food processing industries; VPF= Vegetables processing firms; FJPI = Fruit juice processing firms

$$(3).\ E_3 = \gamma_1(CP) + \gamma_2(DP) + \gamma_3(L/BP) + \gamma_4(PaP) + \gamma_5(PP)$$

Where E3= Steady electrical energy supply; CP=Champinion products; DP=Differentiated products; L/BP=Labeled/branded products; PaP=Packed products; PP= Preserved products

Findings & Discussions

Electrical Energy and Rural Industrialization

With this subtitle the study aimed at investing the positive influence of rural electrification on rural industrialization. Steady supply of electrical energy in rural areas function to emerge different small and large scale processing activities such as of incubation of eggs, solidifying the butter into yoghurt, sugar cane juice processing, processing of cereal crops into value added products [29]. Thus it is with invention over energy in rural areas in which the said reverse of attaining a positive

Urban $\longrightarrow$ Rural($+_{\text{Migrant rate}}$) will be revealed from which the youths will be observed moving from towns to village (ie the pull force will be reversed). It is with this model of rural-industrialization in which India used by developing more non-agricultural activities in the rural areas for about 65% against 35% for primary agricultural activities (Aggarwal, 2015).The same has been used by Uganda in achieving economic transformation in which investment over manufacturing over manufacturing sector is about 60% against 40% that of agrarian sector [30]. The Table 2 shows a latent variable analysis test factual results obtained from the field.

Table 2: Latent Variable Analysis Test

S/N		YS	CCP	CaCP	IE	SFJP
1	YS	1				
2	CCP	0.23*	1			
3	CaCP	0.002	0.40*	1		
4	IE	0.090	0.090	0.10*	1	
5	SFJP	0.008	0.31**	0.086	0.32**	1
Note: YS= Yoghurt solidification firms; CCP= Cereal crops processing; CaCP = Cash crops processing; IE= Incubations; SFJP = Sugar cane/ fruit juices processing ***P<0.01 ; **P<0.05; *P<0.1						
Source: Field data (2019)						

With correlation coefficient as a latent variable analysis results over yoghurt milk preservation/processing, r=0.23 shows the extent to which steady electrical energy in rural areas is positively associated with growth in rural industrialization over the yoghurt milk processing. This fact either is contrarily from its statistical insignificance which indicates these types of industries to be not enabled in remote rural areas because of none, little access or unsteady supply electrical energy. This is from the fact that the 'r' obtained as it is to other constructs is <0.5 (a moderate acceptable threshold level).Other proven facts showing lowly developed industrial sector in rural areas was over cereal crops processing industries, r=0.40, the cash crops processing industries, r=0.10; incubation preservation industries, r=0.31 and sugar cane/fruits processing industries, r = 0.32.

The results given above of milk processing industry , r= 0.23 is the real situation revealed from the research area in which despite of Mbozi being good in keeping livestock but what was found to be sold in the local market in most cases was unprocessed-fresh milk. The Yoghurt was there but its preservation was locally done to prove for a poor quality not to excel. Moreover the cereal crops processing industry, r=0.40 is a proven fact that actually there was no wheat, millet, sorghum flour processing industry but milling machines. Furthermore most of these milling machines were found in towns where electrical energy for running those milling machines was accessible. Few milling machines found in rural areas used a diesel as a source of energy which found to be more costing and indeed polluting. Either this fact resembles that over a diesel being not a user friend source of energy to the environment because of much polluting [31].

The cash crops processing industry were rarely found, r= 0.10 in the research area. It was found one medium sized coffee processing plant found in Mbozi Mission. The other one was the micro sized coffee processing plant in the area near Karasha (a junction to Mbozi Mission and a road way from Mlowo or Vwawa/Tunduma-Zambia).

Incubation of eggs industry, r = 0.31 is little to say despite of people at Itaka remote area being also good in livestock keeping such as poultry but no preservation plant of egg products was there. These facts were consistent with those over non propoundation of sugar cane processing plant. Inadequate extension over fruit manufacturing sector was also realized with Ovacado fruits which were found rottening in the farms and also many of them being found in the local market in 'raw form'. These realities are consistent with what has shown here below given r =0.008.

The fruit juice processing industries, r =0.32 is not satisfactory to conclude development in fruit processing plants were not there in research area. This is a reality from the research area in which at least it was feasible to find small scale fruit processing industries in Vwawa and Mlowo towns. This is the fact as it is from these town areas where electrical energy was somehow accessible of which this does not generalize over sufficiency of the rural industrialization though with p>=0.05 indicate a statistical significance to be fostered. This statistical significance either implies that steady electrical energy contribute significantly to the industrial development though from the research area such as Itaka where none was observed the so called electrical infrastructures.

Electrical Energy and Small-Scale Industrialization

In here the study motivated to show the impacts of steady electricity supply on the growth of small scale industries. The small scale industrialization being the local content policy that ensures SMEs involving in farming, mining, fishing and other primary activities benefit from their activities then without unsteady and inadequate supply of electrical energy then the policy cannot be realized [32]. Actually and it is the fact that if the focus is over large scale processing industries, the benefits (marginal benefits) for these large firms to help small scale industrialization won't be realized what was also said by Nwanakwere and Uzoeto [33]. Indeed the non- recognized impacts of large scale industries is from the fact that large industries which uses strong robotic machinery which indeed replaces human resource (labor force) become harmful to individual economies. With small scale industrialization means the skills/mind of indigenous or local experts in processing will be fully involved. That means to ensure that employment opportunities are propounded then the government should promotes for small scale processing industries as it is with small industries which involve local people will be exercising their specialization in hundred percent different from large scale industries of which many of them may be run by foreigners and use strong machinery which replaces the indigenous labor force [6].

The level of growth in small scale industries in Tanzania is low to about 9% (National Bureau of Statistics, 2019). Either These facts were consistent with what was found from the research area as shown in Table 3

Table 3: Rotated Component Matrix

***Con*structs**	**1**	**2**	**3**	**4**	**5**
WF			0.079**		
CJ		0.100*			
FPI	0.090**				
VPF				0.008*	
FJPI					0.067*

Note:WF=Welding and fabrication; ***CJ***=Carpentry and Joinery; ***FPI***=Food processing industries; ***VPF***= Vegetables processing firms; ***FJPI*** = Fruit juice processing firms

***P<0.01 ; **P<0.0; *P<0.1

Source: Field data (2019)

From the Table 3 given rotated component matrix over welding and fabrication industries = 0.079 shows a positive relationship to exist between steady electrical energy supply and growth of small scale industries of which in this case welding and fabrication entails. This positive association is the same to other four (4) constructs though the discrepancy is that insignificant growth of these small scale industries was revealed from the research area. The reason behind this insignificance mostly is a because of none/little accessibility to electrical energy as these metal processing industries need adequate and sustainable energy source.

Carpentry and Joinery industries given the rotated component matrix =0.10 is still not adequate to observe most of these activities are carried out in towns. In rural areas carpentry activities are conducted rarely because of inadequacy or none access to sustainable electrical energy supply.

The level of growth of food processing industries such as milk processing, cereal crops processing firms (such as maize) was a discrepancy revealed from the field area. This was proved by rotated component matrix = 0.09 showing weak association existing between variables steady energy supply and development in cereal crop processing industries which after all does not ignore the positive relationship between the variables. The small figures over rotated component matrix were there to show inadequate access to electrical energy that lead to stunted growth in small scale industries and that is why positivistic was there intruded. The same results were shown over statistical significance with P>=0.05 (for the sub-construct, food processing industries) the result which was consistent with other sub-constructs (See Table 3). This is either is the indicator that there is no way you cannot associate small scale industrialization and steady electrical energy supply the facts which are consistent with that by Ogbuabor, Orji, Manasseh and Nwosu [34].

The results as reported over welding/fabrication, Carpentry and Joinery and Food processing small scale industries is the same as those pertaining vegetables processing firms and fruit juice processing industries equals to 0.008 and 0.067 respectively which is non-satisfactory. The reason behind this gap not to conclude sustainable growth of these types of industries was revealed to be due to none access or unsteady supply of electrical energy, though they could be other factors such as blunt technology and lack of skills to be used in processing/manufacturing of a product which then are not the focus of this study.

Electrical Energy and Value Creation Industries

With this subtitle, the study aimed at examining the effects of steady supply of electricity on growth of value creation industries. This is from the facts that for sustainable attainment of value addition industrial development then sustainable and adequate access to energy is the agenda that cannot be avoided. Export of value added products resulted from development of manufacturing industrial sector create a net exports, favorable balance of trade and favorable balance of payment [35]. Indeed it is with value added products which attracts more sales [36]. The processed value added products produced by small scale processors sustain individual income. Value addition policy brought by development of industrial sector is the actual replacement or import substitutions principle.Value addition help to commercialize traditional agrarian activities. It is with this study that value addition policy should be a song for SMEs to implement for commercialization of their businesses. These issues of quality should be involving and straight dictated from the source (supply side) to the end customer, the demand side.

The reality and what was revealed from the field were as shown in Table 4 by running Average Variance expected (AVE) at a significance level of 5% from which p>= 0.05 and standard estimate error= 0.25.The established 0.25 was purposely for capturing errors and omissions.

Table 4: Average Variance Expected

		CP	DP	L/BP	PaP	PP
1	CP	0.70				
2	DP	0.10**	0.70			
3	L/BP	0.06	0.20	0.70		
4	PaP	0.21	0.15	0.10*	0.70	
5	PP	0.07**	0.08	0.10	0.09**	0.70

Key: *CP=Champinion products; DP=Differentiated products; L/BP=Labeled/branded products; PaP=Packed products; PP= Preserved products*

***P<0.01; **P<0.05; *P<0.1

Source: Field data (2019)

From the field area it was revealed that the champions value added products was not part of the local markets. Many of the products in the local open markets were raw non-transformed ones different from expectations and indeed contrarily from what was said by Dang (2019) for the areas enabled with say 300 large scale cashew nut processing industries in Vietnam. From the research area it was found just extracts from farms and that is why the AVE = 0.10 is even less than its median value = 0.35 though a positivistic association between variables was indented, indeed to all variables. The outliers either were dealt with by having un-standardized AVE value = 0.005. This is the indicator that in the research area, industrial sector was lowly developed.

With AVE = 0.20 and its un-standardized value=0.01 over differentiated products shows the large extent to which what is found in the market mostly are homogeneous commodities in raw form. For instance at Mlowo town it was found that the maize in its raw form occupied the large of its market while if there could be manufacturing industries then it could be expected well packaged and branded maize flour. Moreover the fact as it has shown over absence of champions/differentiated products in the market was similar to labeled /branded ,AVE = 0.10 equals to un-standardized value 0.005; packed, AVE= 0.09 (un-standardized value=0.0045) and preserved products, AVE= 0.07 (AVE Un-standardized =0.0035) .This then and indeed as it has also said above over non-satisfactory and weak association between variables was because of producers, manufacturers , buyers or suppliers being accessed to none/or little electrical energy to facilitate processing/transformation of raw extracts obtained from the Earth.

Conclusion & Recommendations

Conclusion

Energy and development of industrial sector are two variables co-integrated. Its co-integration was revealed from the field in which due to none/little access to electrical energy especially in rural areas is the reason why rural industrialization is not supported. Indeed it was found that absence of adequate and sustainable energy source even in towns as reference to the research area is a reason why the small scale processing industrial development is not realized. Moreover presence of metallurgical unprocessed raw commodities in the local markets and the exports of unprocessed raw materials is the indicator that the value addition over supply chain system in farming and more economic activities is not intruded. This was then found to be mostly rooted due to none or lack of stable and uncertain electrical energy source.

Recommendations for Actions

From the discrepancies revealed above, the study recommends that, the government should ensure people/processors/preservers/constructors with steady electrical energy supply. Indeed the government should think of coming up with other sustainable alternative sources of energy such as solar, thermal, bio gas, natural gas apart from the current effort made most to Hydroelectric power (a reference to Mwalimu Nyerere H.E.P power plant). Either the main focus should go to investment over small scale processing /manufacturing /light constructive industries. Moreover the study suggests that rural industrialization Model should be adopted and thus the rural/remote areas should be sustained with steady electrical energy source. Furthermore development in industrial sector should have motive of sustaining value creation/value addition over the extracts obtained from farms, mining centers, forestry and seas/oceans/lakes.

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