

The Need for Agro-Based Value-chain Industrial Clustering in Ethiopia

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Abstract

Economic development theory envisages that economies based on agriculture would promote productivity and production of the agriculture sector to become the backbone for the transformation of the economy from agricultural to industrialization. To realize this in a sustainable way, the development of industrial clustering of agro-based, value-chain industries are crucial. Clustering is a geographic concentration of firms, suppliers, support services, specialized infrastructure, producers of related products, and specialized institutions (e.g., training programs and business associations) that arise in particular fields in particular locations (Porter, 2007). Agricultural-based industrial clustering, therefore, refers to the geographic location of farms and processing firms directly involved with products from the farms. In Ethiopia, the Agricultural Development Led Industrialization [ADLI] policy required the development of medium and large scale industries dedicated to supporting agricultural industries. However, existing industrial zones around the country do not appear to possess the capacity to meet ADLI's objective and, also the zones, as they are currently, configured do not exhibit the important qualities of clustering. Past studies failed to identify the shortcoming of existing industrial zones from the perspectives of clustering and the rationale for agro-based value-chain cluster of industries in the country is now at a high point. The objective of this paper is to evaluate the capacity of medium and large scale manufacturing industries from the point view of industrial clustering advantages and to identify the rationale for demanding exclusive agro-based value-chain clustering. The methodology for putting the paper together is by drawing from the ongoing doctoral research¹ by the author. That study is based on a mixed research approach using both quantitative and qualitative data. The research question addressed in the paper was what is the rationale for the future development of exclusive agro-based value-chain industrial clustering? The paper found from the study that existing medium and large scale manufacturing industrial zones were not concentrations of firms capable of generating multi-functional connections, i.e. value-chain. Another finding was that most of the firms dependent on local agricultural raw material had to source from farms at more than 100 kilometers away. Again, of the exporting firms surveyed in the study only 10.8 percent were exporting final products after adding value through processing. The paper is structured into five sections; the introduction, literature review, methodology, findings and conclusions.

Keywords: Industrial Clustering, Economic Transformation, Agro-based, Value-chain,

INTRODUCTION

In most developing countries the agricultural sector is crucial for attaining food security, providing inputs for the industrial sector, and boosting export earnings. African countries have a real opportunity, individually and collectively, to promote economic transformation and to address poverty, inequality, and youth unemployment through agricultural industrialization (United Nations Economic Commission for Africa, 2013). In contemporary practice, industrial clustering has gained importance as an economic policy tool to promote economic development and to eradicate poverty through enhancing innovation, employment, income and to create opportunities for the local community to become drivers of a broad-based local economic development program (UNIDO, 2009).

Industrial clusters, particularly agro-based ones which are concentrations of producers, agribusinesses, and institutions engaged in the same agricultural or agro-industrial subsector and interconnect and build value networks, are starting to be seen as key approaches to help advance the agricultural sector of many developing

¹ *Factors affecting the performance of Medium and Large Scale Manufacturing Industries in Ethiopia: Case study of selected cities in Ethiopia* by the Author

countries (FAO, 2010). A major advantage of being part of a cluster is that it reduces geographical and informational costs for firms. This type of organizational form is particularly advantageous in the African context characterized by poor infrastructure and weak information systems. In general, clusters make market access easier, are characterized by labor pooling, facilitate technological spillover, and create an environment conducive to joint actions (Economic Development in Africa Report, 2011).

The Ethiopian Agricultural Development Led Industrialization (ADLI) policy was instituted to initiate and strengthen linkages between agriculture and industry by increasing the productivity of traditional farmers, promoting commercial farming, and reconfiguring the manufacturing sector to create the necessary conducive conditions for a revamping of agricultural-led industrialization. It is now a reality in Ethiopia that clustering same or similar type firms do post considerable benefits including economic and knowledge transfer. The clustering of micro-and small-scale enterprises, occurring both informally and formally (with government development programs), has achieved great success. These clusters are mostly found in urban centers, rural towns and touristic areas. Some examples are the informal footwear cluster in Mercato, the formal garment cluster in Addis Ababa, the formal metal and wood work cluster in Mekele, the formal bamboo work cluster in Hawassa. General observation indicate, however, that these clusters need specialized support services and institutional monitoring regarding quality training and operational advice to enhance their market linkages (Ali, M., 2012).

The development of agro-based, value-chain industrial clustering at the level of medium and large scale manufacturing in the country has not been realized. Existing industrial locations across the country present an uncoordinated mix of different categories of firms whose product lines and operations have not been complimentary and, therefore, defeatist of original expectations of cluster advantages. There is a new trend in the development of industrial locations and there are strong indications that the concept of clustering is being strategically considered. It had been hoped that the Eastern Industrial Zone (owned by private Chinese investors) located in Dukem City of Oromia Regional State, and the Government-owned Bole-lemi Industrial Zone located in Addis Ababa, both recently established, would fully embrace the cluster concept. However, the signs so far are that they may only be partially oriented towards the concept of industrial clustering.

Problem Statement

As an agricultural based economy Ethiopia can make remarkable transformational gains by properly repositioning the industrial sector to rely more on locally produced rural raw materials. Obviously, the existing medium and large scale industrial sector is not fulfilling this potentially benefiting role and it is time a deliberate effort was put in to correct the situation. The government in its effort to use ADLI as a correcting policy has not been forceful in the development of major industrial clusters that can provide the necessary impetus for the emergence of a true agro led industrial revolution in Ethiopia.

Objective

The objective of this paper is to identify potential factors for establishing agro-based value-chain industrial clustering by investigating existing medium and large scale manufacturing industrial zones from the viewpoint of *clustering*.

Significance

The Growth and Transformational Plan (2010/11-2014/15) makes it clear that industry, especially agro-processing ones, occupy a key role in the economy as a critical propellant for economic development and poverty eradication by strengthening rural-urban linkages. This paper, by reinforcing the rationale for linkages between industry and agriculture, is expected to serve as a source of relevant information for government in its determination to intervene in the industrial revamping process by directing more attention and effort toward agro-based value-chain clusters.

Scope

The paper follows a deliberate and targeted scope of focusing its investigation on four existing industrial zones in the country - Addis Ababa (Akaki-Kaliti Industrial Zone), Dire Dawa, Hawassa, and Kombolcha. The selection of these zones was based on size and geography; that is importance and location in the country. Together, with the largest being the Akaki-Kaliti industrial zone which also represents the existing situation in central industrial parts of Oromia Regional State, they comprise the major industrial locations of Ethiopia with the greatest volume and widest spread of manufacturing products and productivity. The focus is to find out why these zones have failed to integrate with agriculture and, in particular, restructure themselves into viable and potentially profitable agro-based value-chain clusters for medium and large scale manufacturing.

Research Question

The aim of the paper is to address the question: What is the rationale for the development of agro-based value-chain industrial clustering in Ethiopia?

LITERATURE REVIEW

Successful economic transformation is typically associated with a migration of labor out of the rural

agriculture sector into the urban industrial sector leading to higher economy, increased productivity levels, and progressively rising incomes in the agricultural sector toward the level of incomes in the industrial sector. For structural transformation to be successful it is critical that countries strengthen their capacity to acquire greater capabilities to produce more sophisticated, higher-value goods for which demand expands globally as incomes rise (IFPRI, 2012). Traditional economic performance has not generated enough economic diversification, job growth or social development to create wealth. Commodity-based industrialization can be an engine of growth for Africa, reduce its marginalization in the global economy, and enhance its resilience to price instability and shocks. African countries, including Ethiopia, have a real opportunity to promote economic transformation and to address poverty, inequality and unemployment of youth (United Nations Economic Commission for Africa, 2013).

Industrial Clusters

Industrial clusters are a prominent feature of all modern economies. They are geographic concentrations of firms, suppliers, support services, specialized infrastructure, producers of related products, and specialized institutions (e.g., training programs and business associations) that arise in particular fields in particular locations (Porter, 2007). Porter (1990) says that “competition” is a driving force behind cluster development. Clustering is a dynamic process and, as one competitive firm grows, it makes demand for other related industries (Porter, 2001). There are two main types of industrial clusters in the world. The first type is a natural cluster that spontaneously grows out of the concentration of economic activities based on market forces over a long period of time. The second type is government-created cluster that is induced through deliberate policy actions such as the establishment of industrial parks and export processing zones to attract certain industries to specific locations (Ali, M., 2012).

An agro-based value-chain cluster is, simply, a concentration of producers, agribusinesses and institutions engaged in the same agricultural or agro-industrial subsector, and interconnect and build value-networks by sharing common challenges and opportunities. Agro-based clustering is seen as the strategies to transform the agricultural sector to a modern industrial based production system in developing countries whose main economic base is agriculture (FAO, 2010).

Public Policy and Clusters

The main rationale of industrial policy is to accelerate the pace of economic growth through industrial development, by radically increasing value-addition at every opportunity along the value-chain. However, the context for the initiation of industrial policy has significantly changed as a result of new rules governing international trade, the rise of global value chains and marketing networks, and other aspects of globalization (Duru, M., 2012). The case for industrial policy rests, mainly on the intention for the argument that government action is necessary to promote structural transformation (Economic Development in Africa Report, 2011). Clusters normally arise at the level of regions or economic areas, not entire nations, because of the importance of proximity to cluster benefits. Economic policy, then, must not just focus on the national level but on the regional and local levels. Federal leadership in cluster-based policy would also encourage cluster-based approaches at the state and local levels (Porter, 2007).

Benefits of Industrial Clustering

Cluster development is attributable to several factors, including technology transfer, knowledge transfer, development of a skilled work force in related industries, the benefits of agglomeration economies, and social infrastructure (Kumar, 2005). Clusters drive productivity and innovation. Firms that are located within a cluster can perform more efficiently, share technologies and knowledge more readily, operate more flexibly, start new businesses more easily, and perceive and implement innovations more rapidly. They can also efficiently access “public goods” such as pools of specialized skilled employees, specialized infrastructure, access to finance and others. There is growing statistical evidence that regions with stronger clusters achieve better economic performance and faster innovation (Porter, 2007).

Moreover, the trust that naturally develops within clusters helps provide the basis for joint actions and cooperation to invest in common facilities and facilitate smoother commercial transaction, reducing risk and uncertainty. Industrial clusters typically lead to large markets that enable enterprises operate at a larger scale arising from the division of labor within clusters (Ali, M., 2012). Clusters also create conducive environment for *kaizen*¹ development; kaizen solution is encourages everybody in the enterprise to be entrepreneurial. Various studies point to the importance of industrial clusters in facilitating access to informal finances (Ali and Peerlings, 2010b). This is especially important in developing countries like Ethiopia where labor is abundant and capital is scarce.

Developing countries have immense potential for industrialization in food and beverages (agro-industry), and textiles and garments, with good prospects for sustained employment generation and higher productivity (UNIDO, 2013). However, most of the industrial clusters in developing countries have performed

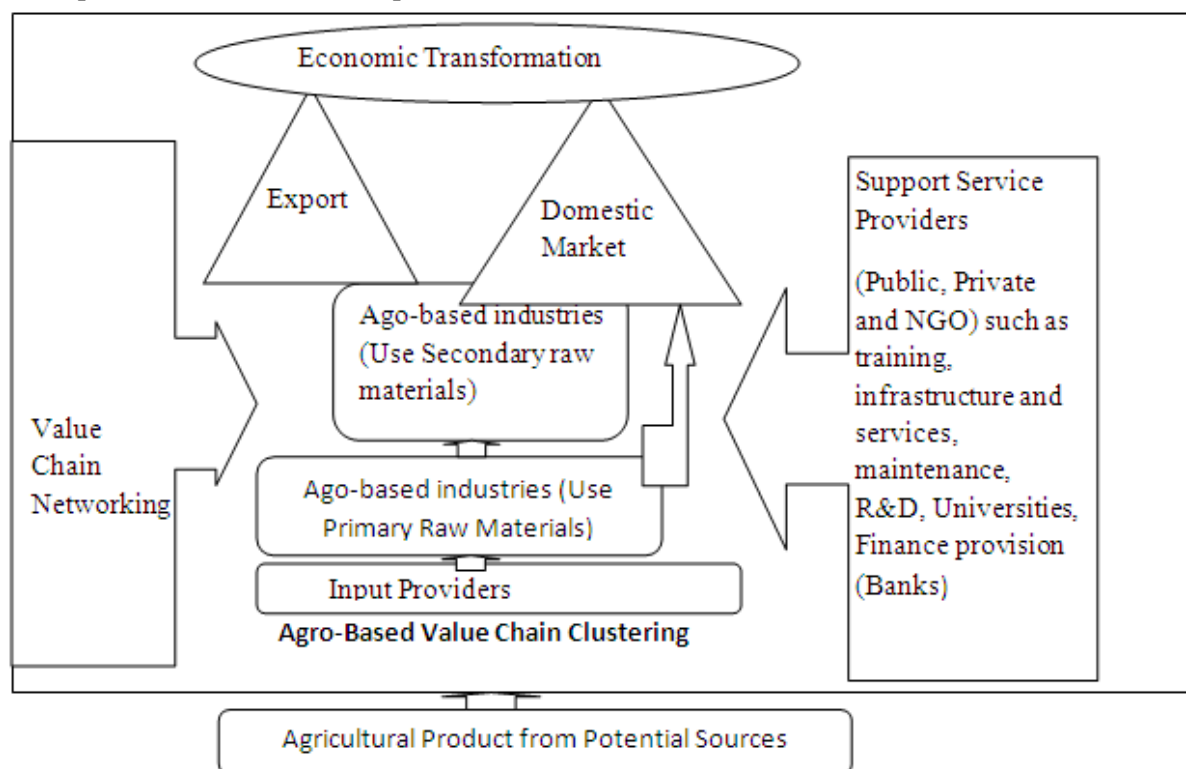
¹ This is a well-known industrial quality and productivity enhancement mechanisms

poorly relative to what appears to be their growth potentials (Pakistan Economic and Social Review, 2012). The high-tech industry cluster of Bangalore in India, the wine cluster in Chile and the Sialkot surgical instruments cluster in Pakistan are examples of many successful cases of natural clusters in developing economies. However, a considerable number of natural clusters in developing countries and especially in Africa are lagging behind, unable to generate the envisaged advantages of clustering (Ali M., 2012).

The Ethiopian Experience

The most common types of cluster in Ethiopia are of the natural order. They are commonly found where labor intensive manufacturing methods are employed and they are mostly located in urban centers, rural towns and touristic areas. Known examples are the footwear-making cluster in Mercato (Addis Ababa), the metal and wood work cluster in Mekele, the bamboo works cluster in Hawassa, and the handloom cluster in Addis Ababa. The government formulated a cluster development strategy for micro-and small scale enterprises (MSEs) in January 2011 to support the development of the MSEs. The main objective of the strategy was to alleviate problems of securing working and selling premises often faced by MSEs. Unfortunately, the attention giving to MSEs is lacking in the medium and large scale industrial sector. However, it is a fact that Ethiopia's economy is largely based on agriculture and that the development of agro-based value-chain industrial clustering of medium and large scale industries can substantially accelerate national economic growth.

Conceptual Frame work of the Paper



Source: Developed by the Author

RESEARCH METHODOLOGY

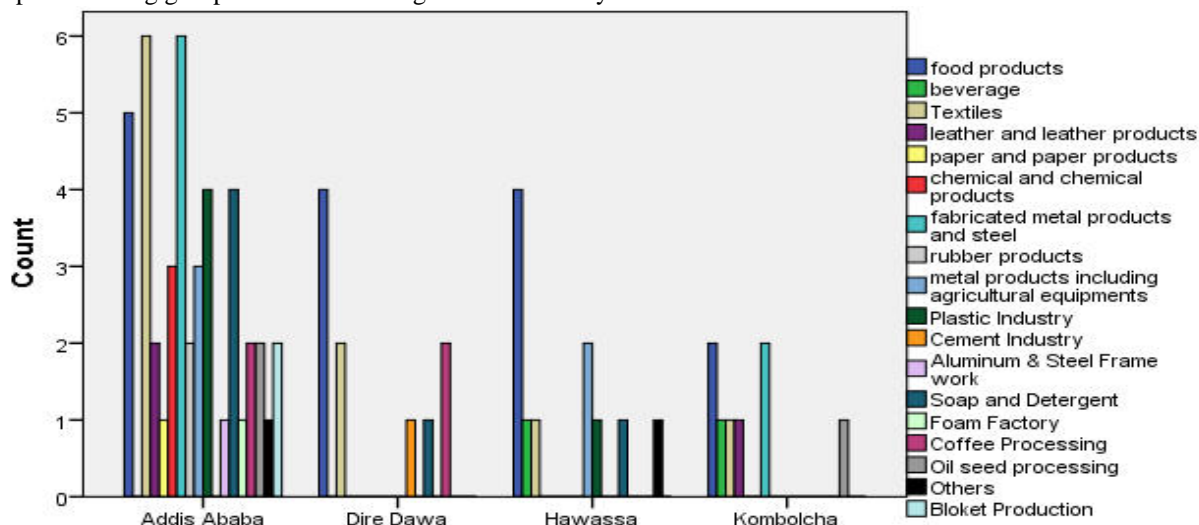
This paper derives from an ongoing doctoral research by the author. The study, a mixed method research, conducted field surveys for both primary and secondary data and results plus analytical findings have provided information for this paper. The paper relies on specific variables to address the basic question concerning exclusive agro-based value-chain industrial clustering in Ethiopia. The dependent variable is a demand for agro-based value-chain clustering; the independent variables are the geographic concentration of firms based on functional complementarity, the source of industrial raw materials, proximity of agricultural raw materials to industrial location, extent of linkages between firms and agents of innovation, type and range of export products, the industrial location and relation to services and stakeholders.

FINDINGS

The graph below shows Addis Ababa Akaki-Kaliti industrial area comprising about 16 different product categories, Dire Dawa's 5, Hawassa's 7, and Kombolcha's 5. This implies that the existing industrial areas in the country are not developed in accordance with the objective of clustering and of functional connections.

Obviously, in this situation it is impractical to create production linkages, transfer technology, and enhance innovation among resident firms.

Graph1. Existing group of industrial categories in the study area of industrial zones



Source: Sample Survey of the Ongoing Research Study

Table 1 below shows that firms located in regional cities such as Dire Dawa, Hawassa, and Kombolcha, with relative proximity to the agricultural sector, depend highly on local agricultural products while firms in Addis Ababa depend highly on imported raw materials. This indicates that better conditions for agro-based clustering exist in the regional cities and also in small local towns close the source of raw materials.

Table 1 Location of the industrial firms and sources of industrial raw materials

Location of the industrial firms	Sources of Industrial Raw materials			Total
	Imported	Local	Both imported & local	
Addis Ababa(Akaki Kaliti sub city)	21	20	4	45
Dire Dawa	1	5	4	10
Hawassa	2	5	4	11
Kombolcha	2	5	1	8
Total	26	35	13	74

Source: Sample Survey of the Ongoing Research Study

In the study, 73 percent of survey respondents (who are managers of medium and large scale manufacturing firms) revealed that agricultural raw materials were mainly transported over more than 100 kilometers, suggesting that the location of firms and the source of agricultural raw materials were not complimentary to each other in terms of nearness and distance.

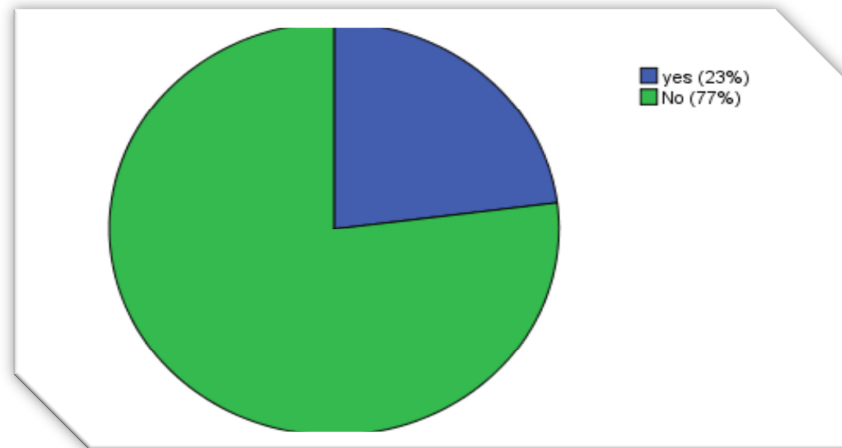
Table 2 Distance of the local source industrial raw materials from the firm location

Valid	Frequency	%	Valid Percent	Cumulative%
Not use local materials	26	35.1	35.1	35.1
<100km	20	27.0	27.0	62.2
100-200km	4	5.4	5.4	67.6
201-300km	5	6.8	6.8	74.3
301-400km	7	9.5	9.5	83.8
401-500km	6	8.1	8.1	91.9
501-600km	3	4.1	4.1	95.9
601-700km	2	2.7	2.7	98.6
701-800km	1	1.4	1.4	100.0
Total	74	100.0	100.0	

Source: Sample Survey of the Ongoing Research Study

The study established, as depicted in Graph 2 below, that 77 percent of the firms were not involved in creating linkages with any research and development (R&D) institutions implying, that innovation and technological transfer to enhance industrial productivity was at a minimal level.

Graph 2 the level of linkages between the industrial firms with R&D institutions

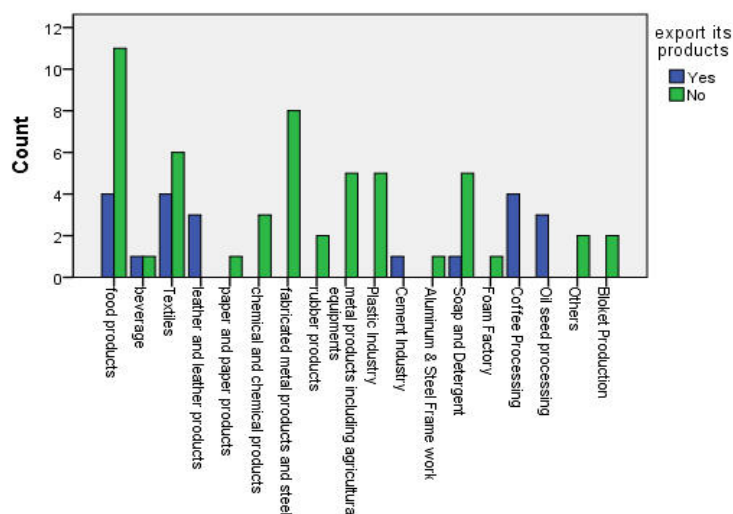


Source: Sample Survey of the Ongoing Research Study

The paper finds that existing medium and large scale manufacturing industrial locations are generally devoid of the presence of some of the important government and non-government institutions whose regular linkages with industry leads to great results. For effective productivity, industrial sites must have quick linkages with government and non-government institutions with representation within the location. Such institutions include the Ministry of Industry, Ministry of Trade, Ministry of Agriculture, Ethiopian Revenue and Customs, City Administration, Government and Private Banks, ELPA, Water Supply Enterprises, Telecommunication, Service Providers (machinery maintenance, etc.), TTV, Ethiopian Commodity Exchange (ECX), Social Affairs offices, Coffee and Tea Authority, Plants and Animals Quarantine, Security and Police Station, Martine, Industry Development Fund(IDF), Ethiopian Grains Trade Enterprises(EGTE), Standard Agency, Quality Control, COMESA, AGOA, WFP, R&D, Universities, Employee Provider Agencies, and others. However, the situation is seeing some improvement with the recent location of some institutions such as the Leather Industry Development Institute, the Textile Industry Development Institute and the COMESA in the Akaki-kality Industrial Zone; it is possible to conclude that the linkages of the firms and institutions are not properly managed.

Another finding made in the study was that already agro-based industries in the food and beverages sector, the textiles sector, the leather and leather products sector, the coffee processing sector, and the oil seed processing sector are major exporters of their products (Graph 3 below). The rationale, therefore, in demanding special attention for these agro-based industries lies in the important role they are fulfilling in economic development and poverty reduction through the generation of vital foreign earnings.

Graph 3 Industrial classifications which involves in exporting its products



Major industrial group

Source: Sample Survey of the Ongoing Research Study

Unfortunately, the study found that despite the remarkable performances of some agro-based industrial sectors, particularly in exports, the general lack of organized infrastructure to foster a cluster environment has resulted in breaks in the value-adding chain as processing often only goes halfway or less. Only 10.8 percent of the total respondent firms in the study indicated that they were exporting final product and benefiting from full value recovery. This indicates that the economic linkages between the producers and value chain networks among the industrial firms are not well exploited.

Table 3 describes inadequacy and interruptions in electricity supply, insufficiency of raw materials, weak financial capacity, low managerial capacity, and lack of skilled manpower are some of the major factors hindering full capacity utilization of firms. To eliminate the damaging effects of the hindering factors, it is suggested that industrial clustering be given primacy in all future policy directions at all levels of government in the country. As a clue, the important matter of decentralization of decisions of industrial pursuits to regional and local administrations be given serious and due attention.

Table 3 Major factor hindering capacity utilization of the firms

Valid	Frequency	%	Valid Percent	Cumulative %
Inefficiency of Managerial Capacity	4	5.4	5.4	5.4
Lack of skilled man power	4	5.4	5.4	10.8
Inadequacy and interruption of electric power	34	45.9	45.9	56.8
Insufficient of raw materials	19	25.7	25.7	82.4
Limitation of working space	2	2.7	2.7	85.1
Weak financial capacity	5	6.8	6.8	91.9
Others	6	8.1	8.1	100.0
Total	74	100.0	100.0	

Source: Sample Survey of the Ongoing Research Study

In addition to the findings made from the study, it is now a fact that the need for an aggressive program to stimulate the growth of agro-based value-chain clustering has been embraced by the Ministry of Finance and Economic Development (MoFED) as clearly espoused in the Ministry's 2013 Report. In the report, prominence was given to the crucial role of food crops in overall agricultural production for attaining food security, providing inputs for the industrial sector, and boosting export earnings. Food crop is becoming a significant contributor to the national domestic product and, in the 2011/12 Fiscal Year, the production of pulses and oil seeds increased compared to the previous year. In the same way, livestock agriculture is also showing incremental growths in its contribution to GDP. The vast potential of the sector in terms of food security, accelerating agro-processing industry, and boosting export earnings is yet to be fully exploited. The report further indicates that there is great potential for flowers, vegetables, fruits and herbs for both domestic consumption and for export. Fortunately, the ongoing Growth and Transformation Plan (2010/11-2014/15) of the Federal Government identifies positively with industrialization, and one of the logical steps needed to transform the nation's economy from an agrarian to a modern industrial one is by creating a strong bond between

agriculture and industry.

Conclusions and Recommendations

This paper set out to establish the rationale for an agro-based, value-chain clustering of industries to transform Ethiopia's agrarian economy. Clustering creates a favorable environment for value-chain manufacturing, technological transfer, knowledge and skill sharing. It also promotes economies of scale such as innovation, services, physical and social infrastructure, and others. However, it is clear that the current industrial policy of government has failed to take advantage of the massive, yet untapped agricultural potential of the country, as existing industrial zones appear not conducive to agricultural-related manufacturing processes, a situation that is contrary to the stated objectives of Agricultural Development Led Industrialization (ADLI), and this ought to be addressed.

The paper suggests a rigorous re-awakening of policy-makers, industrialist, urban and rural planners, and the investment community to the capacity of agro-based value chain industrial clustering to transform the country's economy by utilizing economic linkages between agriculture and micro and small scale enterprises.

The following are recommendations for stakeholders to consider:

- The Federal and Regional Government in collaboration have to re-establish the existing industrial zones in the perspectives of the concept of industrial clustering based on the specified potentials of each locality. This approach will require a total reorganization of each industrial zone as well as re-orientation of the business plans of tenant yet-to-operate towards the new clustering initiative.
- In the future the development of agro-based value-chain industries should be based on agricultural resource potentials and MSE structure of localities.
- Regional State Governments have to also develop agro-based value-chain industrial clustering policies and strategies based on the national policies.
- Provision of infrastructure within industrial clusters as well as expanding into the hinterland to strengthen the rural-urban linkages has to be considered. In this way, the economic transformation from agriculture and micro and small enterprises to industrialization will be realized.

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