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Spatial Structure and Distribution of Manufacturing Industries in the Greater Accra Region of Ghana

Abstract: A key driving force and determinant of a country's worth in the globalized world is inherent in its level of industrialization. Certainly, other dimensions are crucial and come into play, however, the infamous classification of nations into industrialized and non-industrialized has added substantial merit to the concept. Essentially, industrialization in Ghana was based on the premise of the production and processing of its vast natural resources from traditionally primary products to tertiary and finished goods. While the industry can boast of employment generation and a model of economic growth in the 1960s and 1970s, inadequate implementation of industrial policies has resulted in the consistent contraction of the manufacturing subsector. Manufacturing sector contribution to GDP declined from 36.69% in 2000 to 6.7% in 2012 and therefore is considered the weakest link in Ghana's industrial drive. This paper examines the growth, spatial structure, and distribution of manufacturing industries in the Greater Accra region using districts as the unit of analysis. The Greater Accra region has traditionally been the focal point of Ghana's industrial development accounting for 23.4% of all manufacturing establishment as of 2015, most of which are concentrated in the Accra and Tema Metropolitan areas due to obvious political, socioeconomic and mobility factors. Examining historical data from 1962–2010, we found that despite the overwhelmingly large localization of manufacturing industries in Accra and Tema Metropolitan areas, a relative spatial redistribution of manufacturing industries was evident in the peripheral district of the region. Furthermore, the change in distribution is reflected in the pattern of employment at the district level, which per our findings shows a relative diffusion from the core districts of Accra to districts located in the peripheries. The study also found that industrial policies, such as free trade zone initiative, decentralization policies, foreign investment and improvements in critical infrastructure, have resulted in the relative spatial diffusion of manufacturing industries. These findings are significant because they show how areas without previous manufacturing base have witnessed the emergence of some form of industry.

Keywords: diffusion; Ghana; Greater Accra; manufacturing; spatial structure

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BACKGROUND

The notion of industrialization for economic development has been advanced over the centuries. In essence, the necessity for industrialization in any economy cannot be overemphasized. Against this background, realizing the merit accrued from the so-called industrial revolution in the West, various developing countries attempted, right after gaining independence, to replicate such initiatives as a strategy to promote regional development by adopting an import-substitution industrial approach. Other justifications put forward by Chandra (1992) for industrialization in developing countries is to reduce technological dependence on developed nations in order to propel economic production and increase productivity, as well as an alternative to an agrarian economy which is widespread in developing countries. The precondition for industrialization in any economy is reflective of resource availability both human and natural, sound industrial policies which Ghana, ever since independence, has strived to attain. Ghana has undergone major structural and economic transformation since gaining independence. One of such critical transformation has occurred in the industrial sector. Compared to other Sub-Saharan African countries, Ghana recorded relative economic growth with considerably high GDP growth in the 1950s and early 1960s (Aryeetey and Kanbur 2008). This period of reasonable growth was highly consistent with the relatively high rate of growth in the manufacturing sector in the late 1940s and early 1950s (Peil 1972). Peil (1972) further asserted that the increase in manufacturing importance was attributable to the expansion of the market at that time, specifically the rise in the price of cocoa and the availability of disposable income and rise in foreign investment. Killick (2008) posited that considerable structural transformation in the industrial sector was partly due to social and political factors. The role of the state in the industrial development was quite prolific during the post-independence era of Ghana. Steel and Webster (1992) asserted that the limited capacity of the private sector during the period after independence resulted in greater public investment in the manufacturing sector. For instance, during the 1960s the number of state-owned industries increased from 38 manufacturing firms in 1965 engaging about 23,378 people to 46 manufacturing firms in 1966 (Peil 1972; Central Bureau of Statistics 1967). Critical to the industrialization process is the emphasis on the localization of firms. Despite the contribution of the manufacturing sector to promoting development, Aryeetey and Kanbur (2008) identified this sector as the weakest link in Ghana's economic growth. The evidence of geographic location as a catalyst for industrial competitiveness has been extensively researched (Ghosh and McLafferty 1987; Bigman and ReVelle 1978, 1979; De Felice 1972; De Smith 1981). Miron (2010) stated that "Any strategy by which a firm survives and prospers in competition has a locational aspect".

PURPOSE OF THE WORK

The Greater Accra region, and more importantly Accra, has traditionally been a focal point in the industrial development of Ghana. Manufacturing industries are highly concentrated in the Greater Accra region due to obvious political, economic and social

factors. Peil (1972) argued that Accra gained prominence as the manufacturing hub of Ghana due to the centrality of administrative activities, improved communication infrastructure, as well as access to the necessary raw materials, labour and market. Accra is symbolic, as it produced the first industrial establishment in the then Gold Coast in 1859 (Macmillan 1920; Peil 1972). Subsequent establishments, such as a large scale brewery factory, brick and tile factory, a squash factory, and a printing press, were evident in the 1930s. Over the years, liberalization and decentralization initiatives have resulted in the diffusion of manufacturing firms from the core central district of Accra to the peripheries particularly. For instance, Tema, a largely unpopulated district in the Greater Accra region increased in the size of population from 898 people in 1931 to 102,838 people in 1970 (Peil 1972). A considerable body of scholarships produced a very comprehensive narrative on the industrial development of Ghana. However, the majority of these studies (Teal 2014; Enu and Havi 2014; Anaman and Osei-Amponsah 2009; Aryeetey and Kanbur 2008; Aryeetey and Harrigan 2000; Aryeetey and Tarp 2000; World Bank 1985) approaches the analysis of industry and manufacturing in particular from an economic and monetary perspective. The spatial aspect of industrial development and transformation is largely overlooked. This paper seeks to remedy such trend by examining the spatial structure that drives the diffusion of modern manufacturing establishments from the core to the peripheries. This paper explores the internal and external factors that drive the current spatial structure of manufacturing industries in the Greater Accra Region. In economic geographic literature, spatial structure entails spatial distribution (degree of concentration, density, and interactions – communication, migration, transportation), as well as spatial policy for the redistribution of manufacturing industries. By manufacturing industries, we imply all categories of manufacturing firms including large-, medium- and small-scale industries.

METHODOLOGY

From a methodological perspective, aggregate agglomeration patterns based on employment data covering a period between 1960 and 2010 was used. Considerable literature on spatial distribution of manufacturing industries in the context of national or regional specialization and industrial agglomeration use disaggregated production and employment data (Amiti 1999; Haaland et al. 1999; Brühlhart 2000; Middelfart-Knarvik et al. 2000; Kim 1995; Paluzie et al. 1999; Wollnik 2006; Fedderke and Wollnik 2007). This technique involves the link between employment changes and area characteristics (Keeble 1976; Lever 1985). Data for this paper was drawn from the Ghana Statistical Service including previous industrial censuses (1962, 1987, 2003) and regional and district level analytical reports (2000, 2010), as well as relevant literature on industrialization to strictly explore the geographical specificities of manufacturing industries in the Greater Accra Region. The unit of analysis are all the districts in the Greater Accra region. Over the years since gaining independence, new administrative districts have been established based on government policy of decentralization.

GHANA'S MANUFACTURING INDUSTRY

To fully appreciate the current spatial structure and distribution of manufacturing industries at the district level in Greater Accra region, it is imperative to explore

a brief historical antecedent of industrialization in the context of its economic, political and social development. Industrialization in post-independence Ghana was high influenced by the recommendations of Sir Arthur Lewis based on his commission report on Industrialization in the Gold Coast (Lewis 1953). The report, according to Ewusi (1981), highlighted the necessity for free enterprise mode of production with very little interference from the government. An import-substitution industrialization strategy centred on the promotion of large-scale, capital-intensive manufacturing enterprises was pursued in order to propel economic development in Ghana (Aryeetey and Harrigan 2000; Aryeetey and Tarp 2000; Killick 1978). Manufacturing industries in Ghana are structured into micro-, medium-, small- and large firms. The structural dynamic and size of manufacturing determine the growth and development of the economy (GSS 2014). The size of the labour force engaged in manufacturing industries has changed considerably over the years (Teal 2014). As evident from table 1, there is a considerable shift in the size of firms based on the three industrial census surveys. The majority of people engaged in the manufacturing sector during the 1960 survey were predominately firms with 1–4 people and 5–9 people representing small- and micro-scale enterprises. This trend shifted to firms with 500 or more people in 1987 representing large-scale enterprises and firms with 5–9 people in 2003. People engaged in manufacturing includes both employees and unpaid apprentices who according to GSS (2005) constitute a significant share of the small-enterprise workforce.

Table 1. Firm size distribution of manufacturing in Ghana

Size of Firms	People engaged					
	1960		1987		2003	
	Total	%	Total	%	Total	%
1–4	145.185	57	7.400	5	35.834	15
5–9	41.112	16	21.264	14	48.982	20
10–19	17.023	7	14.306	9	30.784	13
20–29	5.909	2	7.235	5	12.405	5
30–49	4.921	2	8.594	5	14.538	6
50–99	7.212	3	13.116	8	18.270	8
100–199	7.840	3	15.866	10	16.819	7
200–499	11.000	4	22.596	14	26.240	11
500+	14.045	6	46.707	30	39.644	16
Total	254.247	100	243.516	100.0	243.516	100.0

Source: Central Bureau of Statistics, Industrial Census 1962, 1987, 2003 Industrial Census Report, GSS

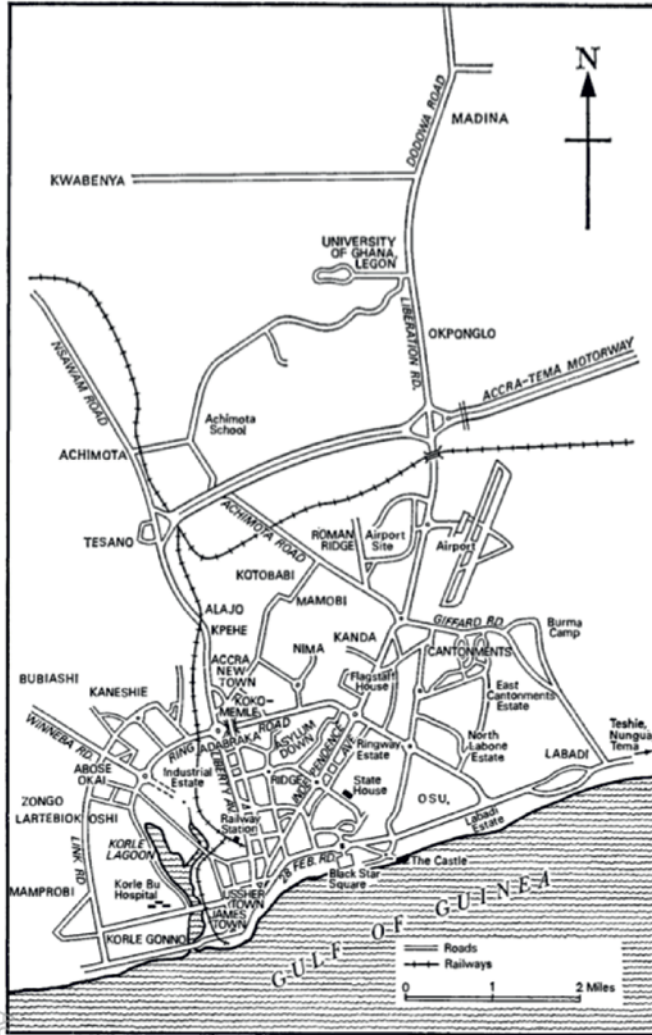
The economy of Ghana has low manufacturing base largely due to the outcome of the high import-driven activity, depreciation of exchange rate and adverse balance of payment consequences (GSS 2015). The decline in industrial performance was attributed to policy failure, inadequate technical personnel and poor management, inability to generate backward linkages, the overdependence on foreign sources for raw materials which according to Killick (1966) and Ewusi (1981) have been limited because of scarce foreign exchange resources and the volatility in the price of cocoa on the world market which Ghana was highly dependent on. The Ghana Statistical Services (GSS) in a survey posit that the small size of the Ghanaian market and the failure of manufacturers to

break into export markets has been the cause of the slow growth of the manufacturing subsector (GSS 2006). Notwithstanding its challenges, the manufacturing industry stands out among the other industrial establishments in the subsector including construction, mining and quarrying, electricity and water and sewerage (GSS 2014; Ackah et al. 2014). Manufacturing has not only dominated the economy of Ghana over the past five decades and creates the largest number of jobs in the industrial subsector of the economy but also increasingly contributes substantially to the Gross Domestic Product (GDP) of the country (GSS 2014). The subsector's resilience in the midst of turbulent moments of economic challenges over the years owes its credence significantly to industrial policies pursued since gaining independence that have concentrated on the manufacturing subsector (Ackah et al. 2014). More than 90 percent of business establishments or firms in the industrial subsector are in the manufacturing one (GSS 2015) where manufacturing still contributes to two-thirds of industry output and remains dominant in the distribution of firms (Ackah et al. 2014). Ghana's manufacturing activities include the production of food, beverages, tobacco, textiles, petroleum refinery, cement, wood and veneer processing, processing of shea nuts/oil seeds, lubricants and biofuels, garment processing, food processing machines and spare parts, plastic waste recycling, data processing, telecommunication, software development, jewellery and furniture making (Ackah et al. 2014; GSS 2005).

The spatial structure and distribution of the industrial subsector correspond with industrial clustering that government policies have promoted over the years and growth affinity of firms in the industrial subsector. Even though the perceived business costs and competitive hostility are two of the strongest factors that influence the degree of emphasis placed on operations strategy choices among manufacturing industries in Ghana (Amoako-Gyampah and Boye 2001) historical legacies and policies made way for the heavy concentration of industrial establishments within the major cities of Accra and Tema where these firms engage in similar commercial activities (industrial clustering) and are visibly and physically concentrated in relatively narrowly defined geographical areas (Ackah et al. 2014). Industrial policies pursued since independence has concentrated on the manufacturing subsector which still contributes to two-thirds of industry output and remains dominant in the distribution of firms in Ghana.

Industrial clustering in Ghana has resulted in a heavy concentration of industrial establishments in narrowly defined geographical areas within the major cities of Accra, Tema, Kumasi, and Takoradi (Ackah et al. 2014). Most of the industries in the country are located in the Accra Metropolitan Area (AMA) and Tema, all in the Greater Accra region (GSS 2005). The manufacturing industry has dominated the industrial sector in the Greater Accra region and remains one of the most important industrial activities in the region (GSS 2005) being responsible for approximately 69 percent of the value of output from the industrial sector. The greater Accra region has the highest number of manufacturing business establishments having about 23 percent of the national proportion (GSS 2015) creating both skilled and unskilled jobs (GSS 2014). The performance of the industrial subsector does not only remain the core of the economic development of the Greater Accra region but also contributes substantially to Ghana's economic stability and development.

Figure 1. Spatial structure of Greater Accra



Source: Peil (1972: 158)

MANUFACTURING INDUSTRIES IN THE GREATER ACCRA REGION

This section provides some evidence of the spatial redistribution of manufacturing industries in the Greater Accra region. To analyze the distribution and structure of manufacturing industries, we compare employment data at the district level based on analytical census reports, as well as evaluation of extensive literature on the historical development of manufacturing industries in Ghana. Ever since the British moved the capital of the colony from Cape Coast to Accra in 1877, the region has consistently developed as major commercial and transportation hub (Peil 1972). Manufacturing has developed in Accra due to the administrative and communication systems in place and proximity to the source of raw materials, its utilization of both skilled and unskilled

workers and the concentration of consumers in Accra with a wage-earning population (Peil 1972). During the age of rapid industrialization in Ghana during the 1940s and throughout 1960, manufacturing was restricted to towns in Central Accra and the Ring Road where the majority of large firms were located (see Map 2). Industrialization and for that matter manufacturing expanded to the Tema region under the Nkrumah government (Killick 1978). In order to ensure adequate structural linkages between the industrial core of Central Accra and the newly established manufacturing hub in Tema, a first class international port in 1961 and a motorway which linked Tema, Ghana's leading industrial city, with the capital Accra were constructed (Oquaye 1980) This initiative paved way for subsequent establishment of manufacturing industries in other districts and metropolises.

The localization of manufacturing firms in Central Accra was so prolific to the extent that it overrepresented in the concentration of people engaged in the manufacturing sector compared to other regions with larger administrative boundaries and natural resources (see table 2.). Furthermore, the Central Accra area had a relatively higher regional distribution of percentage shares of the number of industrial establishments employing 30 or more people which rose from 48.1% in 1962 to 60.9% in 1970 (Ewusi 1981). Studies show that although more manufacturing industries fail to break into export markets hence the slow growth of the subsector, the manufacturing industry employs approximately 14 percent of people in the region (GSS 2006). According to the 2003 industrial census report, manufacturing industries in the Greater Accra region employed a proportion of approximately 28 percent of the national employed in the subsector.

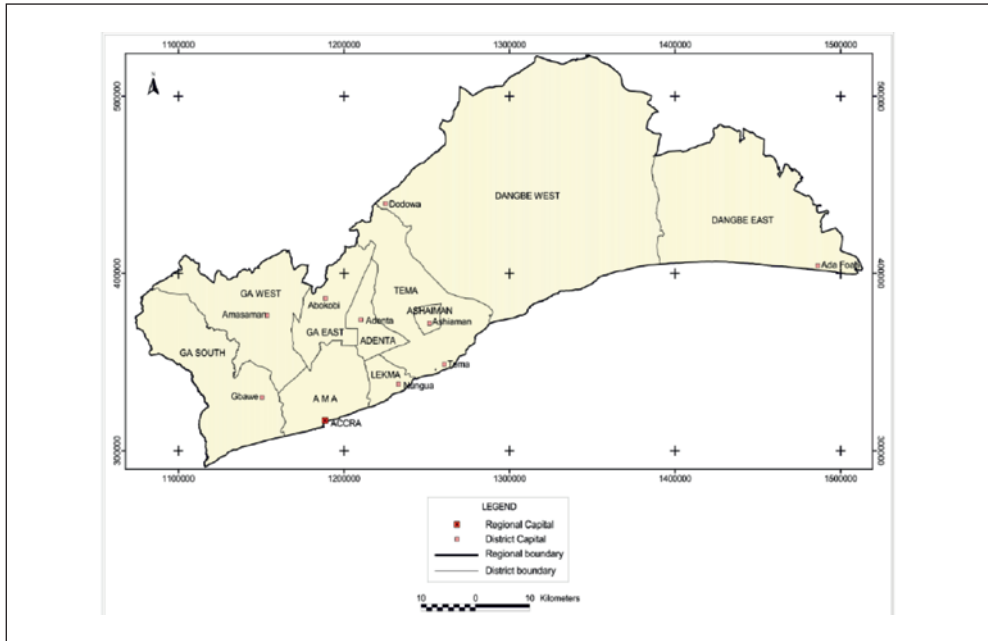
Table 2. Percentage distribution of people employed in the manufacturing sector by regions (1962–1970)

Region	1962	1963	1964	1965	1966	1967	1967	1969	1970
Western	36.54	35.96	31.98	32.51	33.59	32.30	26.51	20.24	17.99
Central	1.07	1.05	1.04	0.90	1.00	0.93	1.36	2.29	2.89
Accra C.D	26.16	24.11	34.65	34.09	40.39	45.11	46.77	45.45	51.47
Eastern	4.37	3.72	3.87	4.81	3.57	4.02	2.74	8.38	5.66
Volta	0.09	0.09	0.06	0.06	0.01	0.08	–	1.83	2.09
Ashanti	19.19	28.57	22.07	20.05	17.41	13.63	18.49	17.18	16.35
Brong Ahafo	12.17	5.61	6.29	4.84	3.15	2.97	3.24	3.27	3.38
Northern	0.36	0.40	0.48	0.51	0.34	0.24	0.26	0.30	0.43
Upper	–	–	–	0.17	0.50	0.48	0.96	0.40	0.90
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Industrial Census Several Issues and Ewusi (1981: 68)

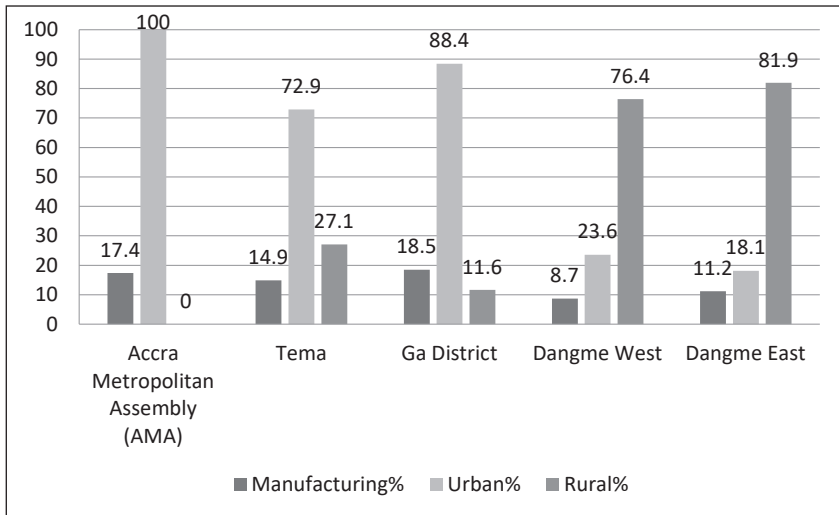
Which factors influenced the current diffusion of manufacturing firms from Central Accra to the peripheral areas? Williamson (2011) argued that as a result of the increasingly expensive nature of labor in the industrial core relative to the poor peripheries, a divergence of labor has diffused from the rich industrial core. The decentralization policy has significantly contributed towards the relative redistribution of manufacturing industries from Central Accra to the peripheries. The creation of additional districts (see figure 2) in the region and corresponding investment in infrastructural facilities such as electricity, transportation, and other incentives has resulted in

Figure 2. Map of the Greater Accra Region showing metropolitan, municipal and districts



Source: GSS 2010

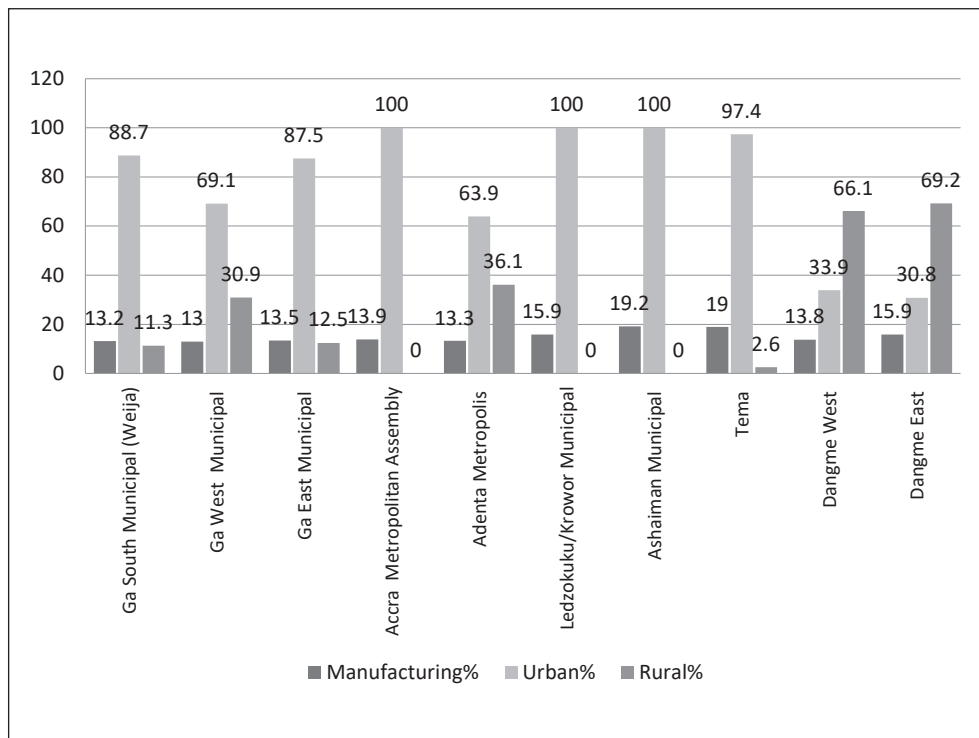
Figure 3. Percentage of people engaged in manufacturing in the Greater Accra Region by district in 2000



Source: GSS (2006)

the establishment of manufacturing firms in those districts. It is important to point out that the Central Accra region was subsequently delineated into the various administrative district during the decentralization process contributing towards the diffusion of manufacturing industries. Figures 3 and 4 show the dynamics of the manufacturing subsector at the district level in Greater Accra region using employment data.

Figure 4. Percentage of Persons Engaged in Manufacturing in Greater Accra Region by District in 2010



Source: GSS (2013)

Clearly, manufacturing has diffused to the peripheries although activities are quite high in the core industrial areas of AMA, Tema, and Ga District. Irrespective of the re-zoning of districts particularly in the Ga and Tema regions, areas such as Dangme West and East which form the main peripheral regions, experienced a growth in the number of people engaged in manufacturing. Furthermore, the role of urbanization and migration cannot be overlooked in understanding the spatial structure of manufacturing industries. Clearly the relative transition into some form of urbanization which facilitates the provision of critical infrastructure may account for the redistribution of manufacturing. Furthermore, the Accra Metropolis which has traditionally been the centre for industrialization has experienced a relative de-industrialization evident by the decrease in the number of persons engaged manufacturing from 17.4% in 2000 to 13.9% as of 2010. Equally, the number of people engaged in manufacturing in the Greater Accra region as a whole has decreased consistently from 16.7% in 2000 to 14.7% as of 2010. Industrial policies adopted during the period of economic recovery beyond 1983 represented a major overhaul of the manufacturing sector. One of such industrial policy is the establishment of the Ghana Free Zones Board (GFZB) in 1995. The Free Zone model contributed significantly to the inherent spatial structure in manufacturing in the Greater Accra Region. The objective of the Ghana Free Zones initiative is to promote the processing and manufacturing of goods through the establishment of Export Processing Zones. The Free Zone programme is essentially a liberalization initiative to make the whole of Ghana accessible to potential investors. Out of a total of 299 Free

Zones firms in Ghana, 212 are located in the Greater Accra Region representing 71% of registered Free Zone firms (GFZB 2011). The Tema Export Processing Zone with a land area of 1,200 acres is an example of the spatial restructuring of manufacturing firms in the Greater Accra Region.

CONCLUSION

The analysis shows how the manufacturing industry has evolved from a predominately core oriented activity to a relative diffusion to peripheral areas in the context of an industrial region in Ghana. Industrial policies towards building an industrial economy since independence tend to define the spatial structure and distribution of manufacturing industries in Ghana and more importantly the Greater Accra Region. The policies have favoured the emergence of more establishments in the manufacturing subsector compared to other industries. Manufacturing has dominated industrial activities in the AMA, Ga and Tema districts making the Greater Accra the region with the highest manufacturing firm establishments accounting for 23 percent of the national proportion. Industrial localization which has characterized manufacturing industries in some major districts in the Greater Accra region gives higher propensity for the establishment and growth of the subsector for ensuring higher productivity and increasing employment opportunities. This study shows that the life-cycle of high localization of manufacturing firms in the core regions are being increasingly threatened by the de-industrialization and diffusion to peripheral areas. The analysis of the spatial structure of manufacturing industries in the Greater Accra Region in the context of core-periphery relation has undoubtedly produced more questions than answers. For instance, are the core regions becoming less attractive for firm localization? What are the implications for growth and resilience?

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