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Industrialization Lessons to Africa and Other Developing Economies

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Abstract

Economies around the world have different industrialization experiences. Only a few countries are successful in transforming their economies. Majority of countries are unsuccessful and still in a backward agrarian economic system. The purpose of this paper is to explore industrialization lessons that could be adapted to Africa and other developing countries. Some economies that represent industrialized and developing economies are selected purposively. Different literatures are explored to articulate important lessons. The result confirmed that government's commitment, role, and timing of industrial policy implementation are important factors of industrial achievements. However, natural resources endowments are not found to be a precondition of industrialization. This paper employed secondary sources and further research on primary sources are acclaimed.

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Introduction

Industrialization can be defined as a process by which an economy is transformed from the lower productive agriculture sector to the more productive industrial sector. In other words, industrialization confirms the decline in the proportion of primary sector/ agriculture and an increase in the share of industry & tertiary sector of the nation's GDP. As a result of the shift of the labor force from agriculture to the manufacturing sector, both sectors' productivity increases and brings overall growth to the economy. However, the share of agriculture value-added in the GDP has to be declined due to improvement in the economy's industry sector. Most countries in Africa, South America and Asia are considered in developing or under developed category, which are in need of transforming their agrarian and backward systems. Industrialization is characterized by the shift of rural workers to industrial labor, efficient labor division, economic growth, technological progress, financial investment in new industrial structures, and advancement of human capital. Macmillan, Rodrik, and Gallo (2014) confirmed that when labor and other resources move from agriculture into modern economic activities, the whole productivity increases and income expands. Industrialization has been pursued in different countries over time with varying degrees of success using several strategies. The speed and timing in which industrialization occurs is the key that differentiates the successful countries from the unsuccessful. The successful countries are already industrialized or on the right track of industrialization. The unsuccessful countries are still in the backward agrarian economic system. Each of the economies has its peculiarities in industrialization achievements as of regional locations, and the government's commitment and role. Therefore, the objective of this paper is to explore the World industrialization experience from the literature and articulate lessons that help to adapt for Africa and other developing economies.

Industrialization phases

Great Britain started industrialization in the early eighteen century and followed in the US and certain parts of Europe after the middle of the eighteen and in the initial periods of the nineteenth century (Cameron R., 1985). Of the European countries the revolution was followed by Belgium, Switzerland, Germany, and France (Szirmai, 2012; Cameron R., 1985). Before the industrial revolution, Agriculture and other primary products were the dominant shares of Great Britain and the European economy. The United States was a country with abundant natural resources and scarce labor & capital before its industrial revolution (Gritzner, 2008). Until the beginning of the nineteenth century, the US did not join modern manufacturing production. European powers, particularly Great Britain, France, and Spain, compete and fight to control US natural resources and market, although the US learned a lot from European powers and employed it to develop American nationalism (O'Brien, 1991). In Japan and other East Asian NIEs, industrialization took over in the twentieth century. Japan, one of the East Asian countries, recorded high growth and rapid industrialization in the twentieth century though many world nations remain at a low level of development status. Economies such as South Korea, Taiwan province of China, Singapore, and Hong Kong provinces of China have achieved significant industrialization since the 1950s. However, Japanese industrialization started at the end of the nineteenth century by achieving fifteen years of the continued development of modern industries like silk and cotton spinning (K. Ali Akkemik, 2009). In China, the main economic feature of the country from 1949 to 1979 was public ownership. The dominant state-owned enterprise development system originated from communist Russia and Germany, which were good friends of China (Hannan K., 1998). During World War II, seventy percent of registered businesses paid-up capital in China belonged to state-owned enterprises (Joe Studwell, 2013). However, in that period, the performance of industrialization was abysmal. The success of industrialization achievements in China started after 1979 opening up and the government undertakes new reforms. Before 1979 China followed heavy industry

strategy directions and achieved distorted structural changes like high manufacturing value added of GDP, low manufacturing employment, low primary sector value-added share of GDP, and high agricultural employments (Lin Y. J et al., 2015). The industrialization processes in Africa pass through the phases of state-led import substitution, structural adjustment program, or the Washington consensus and the investment climate reform phases (Newman C. et al., 2016).

Methodology

Africa that represents developing countries and some industrial economies such as newly industrialized countries, China, Japan, USA, and United Kingdom from Europe are purposively selected to draw lessons of industrialization. Many research articles are reviewed from different sources and Google scholars. Some books are also considered. Of the review of literatures the experiences of different industrialization models have explored. Lessons are articulated for Africa and other developing economies from different perspective.

World Industrialization Experiences

European Industrialization

The first industrial revolution takes place in the early 18th century in Great Britain. The industrial revolution reformed its agriculture-dominated economy and enables them to start a new industrial-based structure. According to N.F.R. Crafts (1977) in England, the industrial revolution was a means of structural transformation in the economy that involved a rapid rise in industrial production and increased manufacturing in the national economy. Technological innovations were the main engine of the industrial revolution, particularly in Great Britain. Continuous innovation of technology employed to transform the economy from primary products to secondary products, colonial power use to control markets for industrial input sources, and manufacturing products were the main pillars of industrialization in Great Britain and other European powers. For instance, the technological innovation of spanning jenny changed the dominant cotton export to textile and woolen clothes export. Then, the countries transformed their manufactures to metallurgy, shipping, and other engineering industries that in return, increased the demand for transport, ship, and other insurance services (P.K. O'Brien, 1991). Cotton and textile from consumer goods; engineering products, iron and steel from producer goods; and coal from intermediate goods are some of the products that were repeatedly mentioned in the British industrialization (Cameron R., 1985). Britain was the only country that deployed over 50 percent of the labor force out from the agricultural sector in the 1850s (Crafts, Leybourne, and Millies, 1991). Compared with other countries, many people were residing in urban areas in the same period. The county was known for high savings and a significant portion of its saving flow to the external world. This implies that the endogenous growth model played an essential role in the transformation or industrialization of Great Britain. Mercantilist policy and colonial power also played an undeniable role in Britain's industrialization as sources of inputs and manufactured product markets. Many raw materials were taken from the colonial stats, and secondary products were dumped back to colonial stats. Great Britain was controlled the US, Europe, Asia, and African markets for its industrialization. As of O'Brien (1991), for example, Great Britain excluded American industrial goods from home markets and motivated its businesses to dump products in the United States to bankrupt domestic manufacturers. This shows that the foreign trade supported by Britain's mercantilist policy discouraged home products of all colonized countries but encourages and supports its manufactured products to control the colonial markets. As to Sylla & Toniolo (1991), many problems, including regional and national conflicts that affected European development, were dropped in the 19th century. As a result majority of European countries industrialized following their development directions. Actually, countries like Belgium followed the British type

industrial development due to similar resource endowments, nearness, and ease of communication facilities (Cameron, 1985). Thus, Great Britain and other Europeans used their power as sources and ways of speedup the industrialization processes; however, this kind of modernization does not work in the condition of the twenty - one century.

4.2 United States of America Industrialization

Manufacturing was not allowed in the US when the UK's initial colonial administration; instead, foreign mercantilism attacked to rescind America's hopeful manufacturers. Great Britain was a country that creates different obstacles against American manufacturers and supports its merchants in the form of long-term credit with short scarifies and secured long-lasting monopoly advantages. However, the American Congress tried to protect manufacturers by ratifying the number of tariff laws. For example, between 1794 and 1816, the American congress passed protection/barriers 24 times (Gritzner, 2008). Different acts that protect domestic firms from foreign attacks with the primary role of facilitating the free market had stimulated many American industries into worldwide winners. In the US, entrepreneurs and investors played a leading role in intensifying the country's industrialization through adaptation, the invention of technologies, and capital formation (William R. Nester, 1998). Manufactured goods diversification, division of labor, and specialization had grown faster. As a result, the cost of life decreased, and life standard households improved. The rural lifestyle started to change to the urban setting. The government played a role in human capital development to construct public infrastructure and other facilities. Series of revolutions (Agricultural, industrial, communication, and transport, etc.) were taking place to ascertain industrialization (Gordon C. Bjork, 1964; William R. Netser 1998). Each of the revolutions was a vital ingredient of the overall industrialization of the nation. Besides, the US maximized its advantages at the time of the European War to grow its economy and become a strong power in the world. At the time of the European War, the US sold its products to all countries (all rivalries) in the struggle and took worldwide markets uncontrolled by European competitors. As a result, America's trade stretched quickly in the 1790s, higher than 30 percent before the war, and enhanced five folds of exports between 1792 and 1807, which implies that US industrialization benefited from the external environment too (William R. Nester, 1998). The primary bases of the United States of America transformation from a small agricultural capacity into the world's greater industrial supremacy were the government role in the construction of infrastructures, human capital development, entrepreneur’s role in learning from European technologies, their effort in adaptation, invention, and production of technologies, proper use of abundant resources (Gordon C. Bjork, 1964; Cameron. 1985). Moreover, the country's capacity to maximize benefits from the external environment was undeniable. Industrialization in the United States has shown dynamic progress and changed the world economy's structure; however, recently, the proportion of manufacturing value-added indicates a declining trend. In 2006 the world share of the USA's manufacturing value was about 20 percent, but in 2016, it declined to 16 percent, and manufacturing employment was 9.6 percent in 2016 (UNIDO, 2018). In conclusion, in the US, the government's role in leading and supporting the countries development was indispensable. The role of entrepreneurs and investors in the adaptation, creation, and innovation of technologies and capital formation were essential factors of American industrialization. Moreover, the growing market, the advantages /experiences gained from Britain's industrialization, and American nationalism were some of the primary sources of its industrialization success.

Asian Industrialization Models

After World War II, Japan is a country that recorded astonishing industrialization in Asia. It has been shown rapid economic growth and industrialization performance. Researchers tried

to find answers for the secret of Japan's rapid industrialization. The government of Japan's industrial policy that fosters dynamism in the private sector was one of the main factors to the Japanese economy's rapid industrialization (Kohama H., 2007). When the government created a commitment to national growth, it put in place workable policy and created effective and efficient institutions that can implement policies and strategies (Chiang, 2018). So, the secret of Japan's fast industrialization was not abundant resource endowments, not FDI, but due to the existence of a strong and committed government. The government in Japan played a paramount role in the economic activities to a more considerable extent than the western governments played in their respective countries, and this significant role of the government named the industrialization model of Japan as a developmental state. Growth and transformation of the economy was the primary concern of the policy. The government was working with the business community cooperatively. The private sector, known formerly "Ziabstu" and later "Keirtsu" are business entities that played a memorable role in the adaption of technologies for industrialization of Japan that worked cooperatively with the government (Chiang, 2018). Foreign firms played a crucial role in the country's structural change through technology transfer in partnership with private sectors. Moreover, Japan maximized benefits from the external environment. The USA stretched to provide its aid and multidimensional support to Japan to have a strong ally to protect potential communist expansion. This is because the US anticipated that its support could stimulate the Japanese economy to replace China as East Asia's economic center (Chiang, 2018). Moreover, the USA made military procurement from Japan for Korea and the Vietnam War, which further helped Japan's upswing become the region's economic power. Newly industrialized economies such as South Korea, Taiwan, Singapore, and Hong Kong had passed similar growth paths to reach their current industrialization status. These economies recorded amazing structural transformation within a short period. All of the economies started growth in 1950 and assured industrialization in less than 50 years. Let's see South Korea and Taiwan's industrialization features as representative of all NIEs. South Korea and Taiwan are repeatedly named developmental states that demonstrated the fast industrialization of NIEs of East Asia. These economies acquire the name developmental states because both countries mobilize resources within the country and abroad for educational attainment, infrastructure supply, and for the success of industrial development activities. Taiwan and South Korea have some similar conditions. The two economies have limited natural resources for development. Both economies were divided into states and colonized by Japan. As a result, security threats from counterparts were considered as one of the push factors to their fast industrialization. Though Korea and Taiwan Province of China are divided states, competition with their counterparts provided them extra energy to achieve rapid industrialization development. More importantly, the foundation of industrialization of these economies are considered as the presence of committed government with appropriate policies, the extrovert participation of the private sector, and the international political conditions which are termed as the "US, Japan, and China factor" takes the fundamental part of development shares (Chiang, 2018; Helen Hughes, 1988; Haggard, 1988). The government played a crucial role in South Korea and Taiwan's industrialization through its appropriate policies and different reforms to achieve the policy goals. Governments have implemented continuous and sustaining economic growth policies for a long time. Rural land reform, financial reform, and goal-oriented private sector support were some of the reforms that brought changes in the economies' economic structure. According to K. Ali Akkemik (2009), governments in South Korea and Taiwan started development activities through the export of primary products with import substitution industrialization. However, the narrow domestic market gave both economies lessons to adapt quickly to comparative advantage export-led industry policy and strategies. Before adopting a comparative advantage export-led growth strategy, foreign currency shortage was a bottleneck problem of Taiwan and

South Korea. Nonetheless, export-led industry strategy adaptations provided a breakthrough solution for foreign currency strain and helped push further development activities. Almost all manufactured products are produced by fulfilling the minimum standard of export to compete internationally. The industrial composition of production in the two economies changed from traditional light industries towards heavy and chemical industries step by step. In the industrialization process, learning by doing, skill training, technical knowledge development, adaptation, and technology innovation are the acquired capacities through well-designed government systems. Therefore, human capital developments with technological adaptations through learning by doing were the important factor to achieve sustainable growth in both economies. The two economies have meaningful experiences in supporting the private sector to play their roles in industrialization. In particular, Korea followed Japan's model of private sector support. According to Chiang (2018), as "Zaibstu" in Japan played a significant role in the country's industrialization, working cooperatively with the government, "Chaebol" in Korea played the same role. Chaebol is a "family-controlled commercial and industrial combination" business entity. Particular banking loans and induced capital were some of the incentives provided to "Chaebol" to benefit from large scale production. However, Taiwan made a smooth playground for all private sectors and SMEs (small and medium enterprises) to play an essential role in the province's industrialization. Technological adaptation, learning by doing, and inventions were mainly undertaken by these private sectors. As a result, the two economies tried to create competent companies that participate in the global markets. In comparison, Taiwan enterprises have developed competency to gain an advantage in the international market, whereas Korean business entities cannot develop their independent competencies to play more roles in global markets (Chiang, 2018). In both cases, however, the private sector's roles in the industrialization of NIEs were one of the lessons taken in these economies.

Korea and Taiwan industrialization acquired benefits from the external environment. As usual, the US works a lot to protect the communist expansion directly on its own and indirectly through Japan. Due to these reasons, the US and Japan supported the comparative advantage export lead strategies in these economies by dividing activities that make the industrialization process of the economies as one factor of success (Helevei, 1998 cited by Min-Hua Chiang, 2018). Japan acted as a key supplier of capital equipment (export technology) and carried out foreign direct investments. On the other hand, the US was the largest destination market of manufacturing goods for both economies and its direct financial assistance. This confirms that Japan and the USA's coordinated support largely backed Korea and Taiwan's rapid industrialization. Moreover, NIEs have shown dramatic changes after the Chinese opening up of 1979. When South Korea and Taiwan were challenged by rising production costs domestically, and the western countries' trade protection policy narrows their perspective in the 1980s, China's cheap labor force, geographic proximity, and welcoming approach helped the two economies to achieve and sustain the overwhelming industrializations in the region. China's large market and low input prices attracted many Taiwan and South Korean companies to establish branches in different parts that helped industrialize their respective economies (Chiang, 2018). Thus, it is possible to conclude that South Korea and Taiwan maximized benefits from the external environment to successfully achieve industrialization goals. Currently, Taiwan and South Korea have reached the top of industrialization. As of Hirohisa Kohama (2007), Korea's primary sector share of GDP decreased from 36.9 percent in 1960 to 3 percent in 2005, whereas the industrial sector share increased from 15.9 percent to 35.8 percent in the same period. The service sector proportion of Korea's GDP progressed from 47.4 percent in 1960 to 61 percent in 2005. The same trend is exhibited in Taiwan too. The primary sector's percentage of the economy in Taiwan declined from 28.1 percent in 1960 to 1.7

percent in 2005, and industry sector proportion also decreased from 29.8 in 1960 to 25 percent in 2005, while service sector GDP contribution increased from 41.8 to 73.3 in the same year (Kohama, 2007). The implication shows that these economies are reached their manufacturing maturity and started to shift towards the service sector like that of developed economies. During World War II, seventy percent of registered businesses paid-up capital in China belonged to state-owned enterprises (Studwell J., 2013). In that period, the performance of industrialization was abysmal. However, following 1979 of the prominent leader Deng Xiaoping's new leadership into power, different reforms are undertaken. Basically, the heavy industry strategy was changed by a comparative advantage dynamic industrialization strategy. Here "Dynamic" means the comparative advantages of manufacturing products are not uniform but changes according to benefits gained over time. Implementations of comparative advantage dynamic industry strategy started after 1979 and helped correct the distorted industrialization and replaced the realistic industrialization achievements. This assures that the leadership role in countries' industrialization is very crucial. Reforms on the privatization of state-owned enterprises are implemented step by step. For instance, in the period between 1966 and 2003, about sixty percent of state-owned enterprises were partially or fully transferred to the private sector (Garnaut, et al. 2005). As a result of successful achievements in reforms, China got WTO accession in 2005. Both WTO accession and continued successful reforms helped China to attract an inflow of FDI. The country also tried to work closely with international organizations (World Bank and IMF) and enjoyed project-specific financial support. However, the World Bank and IMF neo-liberal instructions and financial deregulations were not acknowledged and implemented as was recommended (Studwell J., 2013). Instead, China followed its strategies to reach the level of present-day industrialization status. The government undertook different reforms to attract foreign investment and to upgrade industrialization. Free trade zones, special economic zones, coastal development strategies, national economic development zones, delta zones, northern ports, high-tech development zones, and processing zones development are among many attraction systems to accelerate industrialization in the country (Lin et al., 2015). As a result, many foreign firms are able to work with domestic firms. This partnership helped to flourish in foreign-affiliated and domestic enterprises. In addition to these efforts, foreign firms are attracted by the enormous Chinese market and Chinese cheap labor & resources to produce exports more cost-effectively (Lin J. Y., Yao Y., & Yueh L., 2006). The partnership of foreign and private firms also becomes the hub of technology transfer and export manufactures. The dynamic export-led industry strategy brought astonishing export gains. The government of China put targets in economic zones for technology transfer and export gains. Enterprises that do not meet the export target and technological transfer goals were kicked out from the government support and can reach up to liquidation. This mechanism significantly assisted China's industrialization development to become a world-class status. As a result, many Chinese businesses have benefited from their efforts and foreign partners about using new technologies in a production application, how to improve the quality of products, and how to compete and win on the international market. Enterprises that learn from the competition continuously have grown and able to recall China as a "world manufacturing site," and unfit enterprises are removed from government support and reach up to liquidation in the industrialization process. China has not only commenced reforms in big cities and SOEs but also promoted industrialization in rural areas using the mobilizing motto" leave their rice fields without leaving home town" and "move to manufactories without leaving home towns" (Huasheng Song, Jacques Francis Thisse, and Xiwei Zhu, 2012). As a result, the Town Village strategy (TVE) has fitted with the abandoned labor in the rural area and has generated permanent revenues by serving the light industry product market. Due to this fact, rural firms created many jobs far from big cities and asserted industrialization across China (Song H. et al. 2012). Due to own efforts, China has become one

of the East Asian countries that recorded incredible industrialization recently. Currently, China contributed 25 percent of the world's production, and as a result, China is considered the world's manufacturing site (UNIDO, 2018). In world manufacturing value-added and employment generation, China has shown incredible improvement. For example, world manufacturing employment increased from 33.1 percent in 1990 to 40 percent in 2018, while the industrialized economies share of industrial employment degenerated from 30.2 percent to 17.5 percent, China's manufacturing employment world share increased from 33.6 percent to 36.4 percent in the same period (UNIDO, 2019).

Industrialization in Africa

Africa is a known agrarian region in the world. Member countries followed the same approach to achieve industrialization across the region. Firstly, African states were nationalizing private firms and established new ones that were considered as strategic for the respective countries. Import barriers were the hegemony in this period. Even though the manufacturing proportion in GDP increased from 6.3 to 11 percent in 1960 and 1970 respectively, the growth started declining by 1975 (Newman C. et al., 2016). This asserted that industrialization improvement only stayed for a very short period. The next phase was the Washington consensus or structural adjustment program. It came as a means for developing countries to overcome their economic disorders like macroeconomic turbulences. In the beginning of the structural adjustment program, the early policy adjustment, and a rise in inflows of foreign aid had brought macroeconomic stability and stimulus to industrial production in a few countries (Yaw Ansu, 2013). However, the manufacturing improvement achieved was not comprised of each and every country and stayed only for a short time. Instead, the ill-prepared state-owned firms paid the cost in competition and the process of industrialization in Africa countries continued as an elusive target. The third phase is the investment climate. Since 2000 the World Bank and bilateral donors changed their attention to 'the investment climate' of industrial development support. Macroeconomic stability, trade openness; good governance & strong institutions; the quality of labor force, and infrastructure are investment climate reform components of budget support program areas (Newman C. et al., 2016, cited Stern, 2001, 2002). Several African countries adopted new directions or strategies that promote investment. However, no country in Africa has become influential in industrialization. Most African countries have put in place special Economic zone programs since the 1970s, and several SEZs (Special Economy Zones) was not active for decades, but since 2014, many special economic zones in Africa countries are becoming active to attract foreign firms (Farole T. and Mobery L., 2017). However, except Mauritius, almost all African Special Economic Zones failed to pull manufacturing firms, stimulate export performance, build viable development, and, consequently, unable to contribute to the industrialization of the region (Farole T. and Mobery L., 2017). According to Newman C., et al. (2016), Some Africa countries recorded a short period of manufacturing recovery in the 1980s but not continued in the later years, and the industrialization of the region has remained very poor. Between 1980 and 1988, the proportion of manufacturing in Africa's gross domestic product increased from 12 to 13 percent of its peak. However, the proportion of manufacturing in gross domestic product decreased endlessly from 1990 to 2006 and stabilizes at 10 percent still to 2018.

Conclusion and Policy Implication

The experience from world industrialization models shows that the government's roles are crucial to attaining industrialization. In NIEs and in China the governments' set technology and export-oriented targets to the enterprises. Enterprises that achieve their export target continue to receive holistic and problem-oriented support. Enterprises that did not achieve their target though enjoyed the holistic support could be kicked out from the support and could

reach up to liquidation. Moreover, in China, foreign firms in special economic zones could allow to work in partnership with domestic firms. Technology transfer in the form of adaptation and learning by doing takes place in partnership arrangements. Duty-free inputs and other government support could be enjoyed as far as the foreign and home firms are successfully achieved the export and technology transfer targets. Therefore, Africa and other developing countries have to learn from the goal-oriented export strategy implementation of China and NIEs. Thus, the dynamic industry strategy that China and NIEs implemented is a fundamental lesson to developing economies. In all industrialization models reviewed, private sector participation was the brain of industrialization of the economies. Many innovations are implemented and headed the industrialization through private sectors—adaptation and learning by doing technologies assisted in building knowledge and skills in the industrial models. Natural resource endowments are not preconditioning in the industrialization of countries. Japan, Taiwan, and Korea are countries that do not endow with natural resources. However, all countries have achieved industrialization with their particular conditions. The Lesson here shows that resource endowments are important but the assurances to industrializations are strong government with proper policy and effective & efficient policy implementing institutions. China tried to work with international organizations but implemented these organizations' recommendations as far as it pushes industrialization forward. Neoliberal financial deregulations were not acknowledged and implemented as it was recommended for China. Thus, Africa has to implement international organization recommendations since it goes with the local conditions and forwards its industrializations. Therefore, African and other developing economies leaders and scholars have to learn from the world's industrialization experiences to fulfill the goal of industrialization in the region.

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