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ROLE OF MANUFACTURING SECTOR IN INDIA FOR GROWTH

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Abstract

A competitiveness-supporting economic environment can help national economies to weather business cycle downturns and ensure that the mechanisms enabling solid economic performance going in to the future are in place. Competitive economies are those that have in place factor, driving the productivity enhancements on which their present and future prosperity is built. The World Economics Forum (WEF) defines competitiveness as the set of institutions, policies, and factor that determine the level of productivity of a country. Indian manufacturing sector need to undertake more indigenous research and development to align manufacturing with the principles of Sustainable developments. Other than catering to the growing needs of India, such R& D activity will also aid in making Indian manufacturing world leaders, along with china and some developed countries, in clean or green technology.

Key Words ; Manufacturing, Growth, R&D, Technology

Introduction

Climate Change has been scientifically categorized as a serious threat facing humanity by independent world bodies such as the International Energy agency (IEA) , Millennium Ecosystem Assessment (MA) and the Intergovernmental Panel on Climate Change (IPCC). Such an event has been made possible by Green-House Gas (GHG) emissions through various anthropogenic activities over the year around the world. In fact, the negative impact of climate change resource scarcity and related effects will be pronounced for India considering its population density , large shore line and other features relevant to the well being of its citizens. Manufacturing is one such anthropogenic activity that since the dawn of the industrial revolution has been a critical part of the backbone of industrialized countries and , recently, of emerging markets such as China and India. With the advent of globalization a number of manufacturing operations are being carried out in these emerging economies that house the foreign affiliates of major companies in the developed world. Such outsourcing of manufacturing activities has also added value to the large manufacturing base existing in emerging markets such as China and India.

The Indian manufacturing sector having come of age comprised a little over 1 percent of global manufacturing output as reported in 2012 and has contributed 15 percent of the share Indian GDP in 2014. With manufacturing poised to contribute significantly to the Indian GDP in the foreseeable future it is vital for Indian manufactures to embrace concepts of sustainability. This is because India along with China is currently clubbed among the top emitters of green house gases. Such high emissions of GHGs continuing into the foreseeable future will involve government mediated checks and balances for reducing the carbon footprint. Moreover sustainability based credentials are also required for improving global trade due to demand for quality products that are environmentally benign in their production use and end-of-life. Therefore early adoption of sustainability based technologies

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and services against this background will give Indian manufacturers an upper leg vis-à-vis their rivals.

Sustainability and Make-In-India

Sustainability and in particular sustainable development is all-round development focusing on being benign to the environment. Climate – change and scarcity in resources, including water, are encouraging economies around the world to embrace this concept so as to leave a properly functioning planet to posterity. Sustainable development is a cradle-to-cradle approach as opposed to being cradle-to-grave wherein recycling reusing and remanufacturing of discarded components are actively utilized to both minimize negative impact on the environment and improve the standard of living of society at large through good quality products and services. It should be noted that "cradle-to-grave " is the approach that has been followed through over the years where a product is discarded at the end of its useful life. The concept of sustainable development has a lot in store for the betterment of Indian manufacturing. The drive to adapt Indian manufacturing to the principles of sustainability will go a long way in achieving success in the prime Minister's "Make in India" movement that has been envisaged for modernizing India's manufacturing infrastructure and prowess thus making it truly competitive at a global level. This is due to countries such as China an emerging and rapidly industrializing competitor and Germany an industrialized nation with its energy plan called energiewende, adopting clean technologies for mitigating climate change in a wide range of sectors including manufacturing. Such early adoption of green technologies for tackling planetary crises has given these countries an early lead in creating manufacturing equipment and also processes that while improving productivity are also benign to the environment. Consequently the race to develop these technologies by these countries would in the least lead to improvements in efficiency of manufacturing operations which would translate into lower costs for the manufacturing sector thus improving their profitability. Therefore development of clean manufacturing technologies bodes well for a growing economy like India even after excluding the threat of climate change. The successful roping in of sustainability into Indian manufacturing can lead to the development of both novel processes and advanced machine tools needed for the fabrication of both plain-vanilla and sophisticated components in sector ranging from automotive through to healthcare and aerospace.The Indian machine –tool industry in particular should not lose this opportunity to design and produce equipment meeting green credentials that will majorly strengthen the manufacturing infrastructure. The concept of sustainable manufacturing entails the use of the state of art advances in science and engineering together with research and development for achieving its twin goals of product quality and minimal environmental impact. As a result beyond leading the global pack in technology sustainable manufacturing would create employment opportunities at various skill levels with the concomitant sophisticated knowledge base that would be sought after by other nations. Last but not least such modernization in Indian manufacturing will also make the country self-sufficient in terms of civilian and defense applications.

The manufacturing sector also offer good opportunities for innovations that are crucial to product development. An instance of such opportunities occurs when bottlenecks are observed in the design of a product while carrying out the fabrication process. Redesigning the product which could be an incremental or new fangled innovation could iron out such bottlenecks. Such bottlenecks could also pave the way to modifying the process or designing

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altogether a new process for fabrication. In fact such innovations can even significantly impact areas other than manufacturing. The current administration in the US having realized the loss in such opportunities by the offshoring of manufacturing activities has in recent years set a National Network for Manufacturing Innovation (NNMI) to partly encourage limiting manufacturing activities within American borders. Moreover the Indian strength in innovating under constraints of scarcity should be tapped into where possible for delivering apt frugal-innovations. There is significant scope for manufacturing frugal products that are good in quality and also affordable to the Indian society at large thereby raising the standard of living. In this regard the recent application of frugality to engineering and not being limited to a grassroots phenomenon are noteworthy. The frugal nature of these innovations would also aid in engendering sustainable development which underlies the majority of products and services unleashed in vibrant economies the world over.

Need for More Research and Development

Overall the Indian manufacturing sector needs to undertake more indigenous research and development (R&D) to align manufacturing with the principles of sustainable development. Other than catering to the growing needs of India such R&D activity will also aid in making Indian manufacturing world leaders along with China and some developed countries in clean or green technologies. India has excellent centers of research to tap for rejuvenating Indian manufacturing. The centers of research alluded to include academic institutes such as the Indian Institute of Technology (IIT), Indian Institute of Science(IISc) and other premier academic institutions with their excellent academics and pool of research scholars and various defense and non-defense related national laboratories. A strong nexus among the Indian private sector many of whose entities are world class companies national laboratories and academia would also go a long way in achieving this goal.

Potential areas for sustainable Manufacturing

Apart from research in traditional areas of manufacturing from the viewpoint of sustainability the Indian academia and industry could also focus on some of the latest disruptive technologies. The advent of 3-D printing or additive manufacturing technology is one such technology that in recent decades has revolutionized some areas of manufacturing for components made primarily of non-metallic materials. This technology is in a primitive state as far as metals are concerned and especially for metallic materials used in critical sectors such as healthcare and aerospace and research will hopefully bridge the gap with parts produced through conventional or subtractive manufacturing processes in the foreseeable future. Additive manufacturing has the potential to reduce the cycle time and also give a near net shape without taking resource to traditional processes for finishing the component as is currently done in the fabrication of 3-D printed parts in a wide range of sectors including aerospace. Therefore from an Indian perspective on sustainability more research and development could be directed at additive manufacturing to unlock its potential for possibly manufacturing with a lesser carbon footprint and also lesser amounts of raw materials for realizing frugal products that are affordable. Such research combining frugality sustainability and disruptive technologies could also be our unique approach that could be exported to other countries. Moreover the additive manufacturing process can be readily utilized in repairing components without resorting to replacements. Such ease of repair fits well with the cradle-to-cradle concept of sustainable manufacturing. Furthermore

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the additive manufacturing technology also facilitates the creation and testing of new materials having enhanced properties that could find new application.

Other areas beckoning for attention include automation with robots artificial intelligence big-data and cloud computing to name a few. All of these areas have the capacity to modernize Indian manufacturing prowess while catering to our requirements through sustainable development. However the use of these new concepts should also be tampered with the large pool of labour at various levels of skill available in this country.

REFERENCES

1. Kant, Amitabh (2013)," For a Manufacturing Revolution ", The Times of India, July11.
2. Mitra , A. (2011). Trade in services: Impact on employment in India. The Social Science Journal, Vol.48(1),pp.72-93.
3. Szirmari, A and B . Verspagen (2011), " Manufacturing and Ecnomic Growth in Developing Countries, United Nations University, UNU-MERIT, Working Paper Series, 2011-069.
4. UNIDO. (2005) . Productivity in developing countries: Trends and policies . Vienna : United Nations Industrial Development Organisation.
5. Rao.C.B(2015).Tecnology ang Innovation, A Development Monthly,
6. Verma, Samar (2002) ," Export Competitiveness of Indian Textile and Garment Industry ", ICRIER Working Paper,94, Nov
7. Vivarelli, M .(2013). Technology, employment and skills : an interpretative framework. Eurasian Business Review,3,pp66-89.
8. Readings:
9. Indian Brand Equity Foundation(IBEF)
10. www.yojna.gov.in