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Opportunities for Collaboration in the 'Asian Century'

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Abstract. The migration of manufacturing into Asia, notably China and India, has been accompanied by varying degrees of concern by western (traditional) businesses. Initially the use of *offshoring* by high volume/low value manufacturers was seen as a means by which they could remain price competitive; however the more recent moves by Asian manufacturers into the high value/low volume markets has become both an economic and a political issue in what currently is shaping up to be a more serious economic downturn than the "2008/9 GFC". The move towards *reshoring* has been driven by the equalisation of wage rates in Asia and the softening of labour attitudes in western manufacturing countries, specifically in North America: where recently some runaway plants returned home, and there are some positive economic incentives to encourage more domestic sourcing. The paper discusses the current and future opportunities for Western companies in this scenario and suggests there is scope for collaboration between Asian and Western organisations.

Keywords: network business models, global value chains, collaboration, Asian business models, producibility

1 Introduction

In recent years the trend in the global economy has been the "so-called rise" of the economies of many developing countries that were rapidly converging with those of the more developed countries: "The drive behind this phenomenon was the four major emerging-market countries, known as the BRICs: Brazil, Russia, India, and China. The world was witnessing a once-in-a-lifetime shift, the argument went, in which the major players in the developing world were catching up to or even surpassing their counterparts in the developed world" [1]. Forecasts of BRICs growth (based upon their growth rates during the middle of the last decade and extended straight into the future) suggested the *developing world's* high growth rates from the middle of the last decade and extended them straight into the future, juxtaposing them against predicted sluggish growth in the United States and other advanced industrial countries. They suggested the Chinese economy was on the verge of overtaking the United States as the world's largest economy. "Chinese growth is slowing sharply,

from double digits down to seven percent or even less. And the rest of the BRICs are tumbling, too: since 2008, Brazil's annual growth has dropped from 4.5 percent to two percent; Russia's, from seven percent to 3.5 percent; and India's, from nine percent to six percent" [1]. Sharma [1] cites work by Rodrik [2] who has shown that before 2000, the performance of the emerging markets as a whole did not converge with that of the developed world the per capita income gap between the advanced and the developing economies steadily widened from 1950 until 2000. Rodrik suggests that except for the few small countries that benefited from natural-resource bonanzas (notably Brazil and Russia), all of the successful economies of the last six decades owe their growth to rapid industrialization. One thing that is agreed is that Japan, South Korea, Singapore, Taiwan, and China all were efficient at moving their labor from the countryside (or informal activities) to organized manufacturing; but this has changed. Roubini [3], in an international survey of the 'health' of leading economic blocs and countries reaches similar conclusions reporting; "In China – and in Russia (and partly in Brazil and India) – state capitalism has become more entrenched, which does not bode well for growth. Overall, these four countries (the BRICs) have been over-hyped, and other emerging economies may do better in the next decade: Malaysia, the Philippines, and Indonesia in Asia; Chile, Colombia, and Peru in Latin America; and Kazakhstan, Azerbaijan, and Poland in Eastern Europe and Central Asia".

2 The Asian Business Model

The Economist identified a number of significant differences between the Asian and Western business models. India's *diversified conglomerates* have a major impact on industrial activity; for example the *Tata Group*, with wide spread industrial activities is responsible for some six per cent of the National GDP. Diversified conglomerates widen market base and enhance market power using economies of scale and scope. They offer profit stability by their improving financial performance. Growth counters competitive threats and the access to latest technology is improving quality as well as productivity. The structure of these organisations has facilitated access to funds for growth but this is seen to be becoming problematic and they are looking overseas for acquisitions and funding. [4]

China's *State Owned Enterprises (SOEs)* dominate major industries. SOE's have a distinct legal form and they are established to operate in commercial affairs. They may also have public policy objectives. Ideally they are differentiated from other forms of government agencies or other state entities that are established to pursue purely non-financial objectives that have no need or goal of satisfying shareholders with a return on their investment through share price increase or dividends. A number of commentators make the point that the influence of the SOE is declining as policy favours a shift towards the Western stakeholder model. Since the 1980s, the Chinese government and the ruling party have followed a policy of *zhengqi fenkai*, which formally separates government functions from business operations. The policy has been applied gradually, first to the consumer goods industry, then to high tech and heavy manufacturing, and, more recently, to banking, as officials have attempted to

strengthen domestic businesses and the economy to prepare them for unfettered global competition.

3 East is East and West is West – ne'er the Twain Shall Meet?

Wooldridge [5] in a detailed review of Asian management developments identified the emerging differences in Indian and Chinese approaches to business and business models. Successful Indian businesses are predominantly led by entrepreneurial individuals and families; whereas in China Central Government's involvement can be seen. The Wooldridge contribution identifies operational differences between East and West. He identifies *Open Innovation;* as a contributor to their success; here the emphasis is not on innovation in a western context (new product-services) but more on identifying unfulfilled necessities among the less well off. For example, ***Tata Consultancy Services*** (TCS), has produced a water filter that uses rice husks (which are among the country's most common waste products) to purify water. It is robust, portable and cheap, providing an abundant supply of bacteria-free water for an initial investment of about $24 and a recurring expense of about $4 for a new filter every few months. Tata Chemicals, which is making the devices, is planning to produce one million over the next year and hopes for an eventual market of 100million people. *Frugal/Reverse innovation:* ***General Electric's*** a hand-held electrocardiogram is small enough to fit into a small backpack and can run on batteries as well as on the mains sells for $800, instead of $2,000.

The Asian business model has identified opportunities to *apply mass production to sophisticated services;* at 1,000-bed ***Narayana Hrudayalaya Hospital***, ***Dr Devi Shetty's*** surgeons operate at a capacity virtually unheard of in the U.S. The approach has transformed health care in India through a simple premise that works in other industries: economies of scale. The application of *dispersed manufacturing* is well established; geographically dispersed customers in both emerging and established global markets now demand higher quality products in a greater variety and at lower cost in a shorter time. Furthermore, also as product profit margins continue to shrink, organisations reorganize their activities and realign their strategies to provide the speed and flexibility necessary to respond to windows of market opportunity; moving from centralised, vertically integrated, single-site manufacturing facilities to geographically dispersed networks of resources. The more recent moves by Asian manufacturers into the high value/low volume markets has become both an economic and a political issue in what currently is shaping up to be a more serious economic downturn than the "2008/9 GFC. *Hybrid manufacturing models* (a combination of advanced manufacturing technology with traditional production processes) are being introduced by large manufacturing organisations, this development changes the competitive environment between East and West, and however, the impact is unlikely to be seen for some time.

Government activity has had a strong influence. For example China uses *selective interest rates* for loans to industries it selects for growth together with *industry subsidy support strategies*. *Managed exchange rate flexibility* has provided an export

advantage for manufactured products and *inter-government currency exchanges* create favourable trade terms on a selected basis.

3.1 Or Can They?

The recent move towards *reshoring* has increased a number of reasons suggesting this is a strategic response not a short-term operational reaction aimed at cost containment. Prominent among these are the increasing wage rates in Asian manufacturing together with increasing energy costs, particularly oil prices with a huge impact on transportation costs. To these should be added the advances in robotics specifically the impact of the increased flexibility of robotics; robot technology has resulted in "multi-skilled' robots now capable of being multi-tasked resulting in flexible manufacturing techniques offering lower operating costs *and* the ability to reduce the response time to customer demand.

Organisational structures have also moved on. Industries and organisations have also undergone significant changes. McKinsey [6] highlighted recently in *"Manufacturing the Future"*. While the developed countries will continue to increase their share of global production, the impact of Asian manufacturing will be significant. Although some manufacturing is returning to America and Europe from locations where it had been offshored, such as China, this trend will not recreate all the factory jobs that once existed. Two reasons support this claim: one is the application of robotics (becoming increasingly flexible *and* less expensive) and secondly the lack of skilled labour in the developed economies will be an increasing problem. There is potential here for competition in the high value/low volume sector markets to intensify; however ideally both Western and Asian interests should be seeking solutions that involve collaboration rather competition.

There are a number of reasons to suggest a structured network organisation could work. The synergy that would result from the product and process innovation that an 'East-meets-West' business model could increase the value returned to all stakeholders. Furthermore, an increased emphasis on *producibility* a measure of the combined outputs of profitability, productivity and resources mix management using *total cost analysis* (TCA) is currently being used by a number of large organisations is resulting in optimised decisions; these typically involve a mixture of offshore and onshore activities. TCA is being increasingly applied to evaluate the 'total cost' implications of manufacturing options; such as all of the associated logistics and supply chain management costs, including qualitative 'what if' scenarios concerning control off offshore operations; these decisions often resulting in decisions favouring *re-investment in domestic production.* An example of TCA at work is provided by ***Cue*** a medium size ladies wear retailer in Australia. Cue has analysed its value proposition and 'manufactures' its core range of products (60/70 per cent) in Australia; the remaining merchandise is sourced from Asia. This is because Cue requires short lead times (3/4 weeks) to maintain customer interest and to avoid excess inventory levels and a high quality, complex, product to meet customer expectations; Asian manufacturers cannot meet these requirements. However the remaining 40/30 per cent are sourced from Asia.

4 Facilitators: The Value Chain Network Model

Marsh [7] and others (e.g., [8], [9], [10]) have commented upon the flexibility of the value chain network. Marsh qualifies the value chain network as innovative with; "… in the early years of the twenty-first century, the realization grew that making products is just one part of the 'value chain' of company operations. Others include design and development, and the way products are maintained or 'serviced' after installation. To be considered a great manufacturer, companies do not need to make anything, even though they will almost certainly know a lot about what this entails. Increasingly, elements of the value chain are being left to a variety of businesses in different countries. The management of this mix is becoming a highly prized skill. Marsh predicts that; " as the new industrial revolution proceeds, the connections will become denser, more complex and more susceptible to sudden shifts in technology or market forces … The fragmentation of activities will become greater as more businesses in different countries find they can participate".

Production processes of technology are undergoing dynamic change and can meet this challenge (for example; the digitisation of manufacturing, continuous manufacturing, additive manufacturing, and flexible manufacturing) offering opportunities for global partnerships to western countries from designing and manufacturing innovative components (and introducing innovative processes) across a number of industries. The value chain network model is sufficiently robust to undertake this task. Currently the focus of value chain management is on coordinated value adding activities based upon *consumer centricity*. However there is evidence to suggest a new generation of value chain thinking that is becoming based upon *market-centric networks*; large organisations such as General Electric, ABB, Millenium (a Bio Tech/Pharmaceutical organisation), and Siemens are pursuing strategies of entering new growth markets (such as renewable energy, life sciences/ biotechnology and medical devices) and are being innovative in how they compete by collaborating with local organisations using local resources creating networks structured around mergers, acquisitions, and strategic alliances. These organisations been active in the M&A sector building global networks of RD&D, manufacturing and marketing capabilities that are typically local-market based, that are able to be product-service specific, manufacture locally (avoiding foreign exchange problems) and use local distribution networks. For example, General Electric has established RD&D Centres in a number of Asian countries and is pursuing opportunities in these and global emerging markets and is using innovative process management as its strategy of "frugal" innovation suggests.

The expansion of global value chains has changed some views on how productivity should be measured. This is because a product may not only be worked upon across a range of organisations, each adding value as it leaves their premises; but it may cross a number of international borders where there may or may not be taxation payments that distorts the vendor/purchaser price and therefore the added value. The McKinsey Report [6] segmented global industries by identifying value adding intensities by manufacturing components. It demonstrates that the industries*: global innovation for local markets* (34 per cent of global manufacturing added value); *regional processing* (28 per cent of global manufacturing added value); regional processing)

energy/resource intensive commodities (22 per cent of global manufacturing added value); *global technologies/innovators* (9 per cent of global manufacturing added value); and *labour intensive tradeables* (7 per cent of global manufacturing added value), each require varying levels of input expertise. It follows that any organisation or perhaps country would identify where, in this context, its capabilities and expertise can best be utilised and in this way plan around these to enhance productivity across the network of a global value chain.

4.1 Facilitator: The Factory of the Future

The forgoing suggests some major structural changes in the notion of what manufacturing is, what it is, and how it operates. Barkai and Manenti [11] argue that current market trends require the future production environment to be highly adaptable and reconfigurable to respond to rapid changes in market demand, technology innovation and changing regulations. Flexible manufacturing technologies employed by most automakers are a critical ability in this process and the foundation for profitable growth, but these alone will not suffice in a long term strategy to fend off the competition. The authors suggest a practical "design anywhere, make anywhere**,** sell anywhere" strategy is needed, and propose, arguing that: "Factories of the future will be a global network of production facilities managed as single virtual factory. This type of manufacturing network consolidates multiple resources and capabilities to form an end-to-end fulfillment network that we call fulfillment execution system (FES)."

Barkai and Manenti [11] argue that current market trends require the future production environment to be highly adaptable and reconfigurable to respond to rapid changes in market demand, technology innovation and changing regulations. Flexible manufacturing technologies employed by most automakers are a critical ability in creating *collaborative competitive advantage* and the foundation for profitable growth and can be designed with resources management as an objective. The authors suggest a practical "design anywhere, make anywhere**,** sell anywhere" strategy is needed, and propose, arguing that the FES (fulfillment execution system) is an approach to a *coordinated management* of demand, capacity and resources, and outbound order fulfillment across the entire network of manufacturing plants and along the value creation chain. Data gathered will be connected to corporate-level intelligent decision support tools, creating visibility and intelligence on operational data. It enables manufacturers identify problems, isolate root causes, understand the state of execution processes, and adopt corrective actions quickly across multiple plants.

IDC Manufacturing Insights Predictions [12] introduced *Global Plant Floor* model following much the same approach: a network of factories, managed as a unique virtual factory that consolidates the number of different manufacturing plants in terms of resources, processes, and products with the ability to harmonize, supervise and coordinate execution activities across company's and suppliers' manufacturing operations, with greater level of real-time visibility; and, with Centres of Operational Excellence and plant-floor IT seen as essential to this transformation. Together these

concepts propose a coordinated international multi-plant operation that may located anywhere by using ICT facilities.

4.2 "Producibility" and the Global Value Chain: Opportunities for Collaboration

Producibility is a total design activity that includes all relevant activities within the value chain network and creates intra and inter-organisational partnerships by applying *total cost analysis* to evaluate an optimal structure to achieve end-user satisfaction. It is a management process whereby the product-service design process is integrated with the manufacturing process in an attempt building *strategic effectiveness* into the value proposition by integrating both design and manufacturing processes to achieve *production efficiency* (i. e; manufacturing business model, quality specifications, volume and delivery targets at target costs and commercial prices), (Boothroyd et al [13]). However to be an effective network model the concept requires expansion:

> *Producibility* is the *total design* activity that includes all relevant activities within the value chain network and creates intra and inter-organisational partnerships to achieve *stakeholder* satisfaction. It is a management process whereby the *product-service-design* process is integrated with the design of manufacturing processes and the subsequent the operational processes of physical distribution and service support management.

Clearly not all of the activities need to be performed by any one organisation; but given the assets, capabilities and capacities of current and potential network members, together with the end-user expectations, it is now possible to design the product-service, the manufacturing processes, the physical distribution processes, and the maintenance service activities concurrently. By identifying the 'value-added intensity profiles' within each network member it is possible to construct *industry value-adding chains* [6]. A producibility-approach makes a structured -value - adding chain possible. This is becoming economically viable with the contributions of Barkai and Manenti [11], the *Fulfilment Execution System* (FES) and IDC Manufacturing Insights' *Global Plant Floor* model introduced in 2012 [12]. Together these concepts propose a coordinated international multi-plant operation that may located anywhere by using ICT facilities.

5 Concluding Comments

Producibility is not new it has a number of precedents; value engineering, value analysis, and design for manufacturing assembly, to name a few. Examples can be found, the four lane strategy of Caterpillar embraces producibility principles as do the frugal/constrained innovation strategies of General Electric [14] and of Panasonic [15]. However this paper suggests an extension of Boothroyd et al.'s original model to include distribution and service activities within the concept. Adopting producibility

introduces: operational processes that participate in building strategic effectiveness into the value proposition; integrated design, manufacturing and distribution processes to achieve operational efficiency (i.e., the manufacturing business model, quality specifications, volume and delivery targets at target costs) and; the inclusion of the commercial business model (physical distribution, resale (end-user access) availability and 'serviceability') designed into the total product-service package. The developments of ICT (information communications technologies) are now able to combine the innovative expertise and operational efficiencies of both East and Western business models provided the political will is applied to make it happen.

References

1. Sharma, R.: Broken BRICs: Why the Rest Stopped Rising, This Week on Foreign Affairs.co, 28 March (2013)
2. Rodrik, D.: No More Growth Miracles, Project Syndicate, 8 August (http://www.project-syndicate.org/commentary/no-more-growth-miracles-by-dani-rodrik#AUE7uJEi2dmwZ1dG.99) (2012)
3. Roubini, N.: The world economy's winners and losers in 2013, The Guardian, 2 April (2013)
4. Economist, The: Nipping at their heels, 22 January (2011)
5. Wooldridge, A.: Penguin Specials: State Capitalism – The Invisible Hand: A Special Report from The Economist, Penguin Books, London (2012)
6. McKinsey Global Institute: Manufacturing the future: The next era of global growth and innovation, McKinsey and Company (2012)
7. Marsh, P.: The New Industrial Revolution, Yale University Press, Newhaven (2012)
8. Porter, M.: Competitive Advantage: Creating and Sustaining Superior Performance, Harvard Business School Press, Boston (1985)
9. Normann, R., Ramírez, R.: From Value Chain to Value Constellation: Designing Interactive Strategy, Harvard Business Review, July/August 1993, 71 (1993)
10. Walters, D., Rainbird, M.: Managing in the Value Chain Network, Prestige Books, Sydney (2012)
11. Barkai, J., Manenti, P.: The Assembly Plant of the Future, Industry Week, January (2011)
12. IDC Manufacturing Insights Predictions: Manufacturing: Success in the Intelligent Economy Web Conference, December 8 (2012)
13. Boothroyd, G., Poli, C., Murch, L.: Automatic Assembly, Dekker, NY (1982)
14. Immelt, J., Govindarajan, V.: How GE is disrupting itself, Harvard Business Review, October (2009)
15. Wakabayashi, D.: Panasonic downsizes product design and price to fit emerging markets, The Australia/Wall Street Journal, 10 July (2009)