

The Logistics and Supply Chain Implications of the Emerging Business Model

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Abstract: In what may eventually be called the fastest recovery from a recession in modern business, we should be considering the key lessons that have already started to emerge from the 2008/9 financial crisis which witnessed the demise of global corporate giants and unprecedented government actions and responses. We have seen all three 'business directions' (strategy, structure, and implementation) undergo radical change. Historically dominant companies have migrated from industries in which they were acknowledged leaders and have been replaced by organisations that were hitherto unknown in circumstances that take us beyond current practices into a world of emerging business models.

Keywords: New Business Model; Issues for Logistics and Supply Chain Management.

I. Introduction

Business operates everywhere in an environment that is increasingly dynamic and challenging. Markets have globalised, technology has become all embracing, and relationships with suppliers, customers and competitors are undergoing constant change. New business models are emerging, ones in which competitive advantage is based upon managing processes that facilitate rapid and flexible responses to 'market' change, and ones in which new capabilities are based not only upon developing unique relationships with partners and stakeholders, but also with competitors.

The business model that has often taken second place to strategy in management thinking and focus is changing. Normann advocates that "a new strategic logic" is emerging. He suggests that: "...managers now need to be good at mobilizing, managing, and using resources rather than at formally acquiring and necessarily owning them. The ability to reconfigure and to use resources inside and particularly outside the boundaries of the traditional corporation more effectively has become a mandatory skill for management". As suggested by Normann *op cit*, the contemporary approach to managing resources is to leverage partnership opportunities rather than invest. In this context; assets, capabilities, capacities, and processes are regarded as the key resources that are necessary to compete in the changing business environment [1].

II. The Changing Business Environment

The 'noughties' saw a number of developments in the business environment. The relentless move towards globalisation peaked and has been modified to reflect the sourcing and consumption opportunities of the expanding BRIC type economies. The enthusiasm for outsourcing has been dulled by the increase in labour rates and related costs throughout Asia, and exacerbated by massive product recalls in the automotive industry. We are observing transformational structure moves by large organisations as they question decades of activity in traditional product-markets. Other major organisations are identifying new segments in existing markets and are undertaking product and production process redesign to position themselves within these emerging market opportunities. Whilst they all have implications for logistics and supply chain management, space prevents a comprehensive review of them all. Some of the more interesting developments however are reviewed here.

Flows of Capital and Flows of Trade

Timmons suggests there has been a fundamental shift in global business towards emerging markets (the BRIC countries) and has identified some complications. She argues that because Western companies and countries are debt laden (as well as being concerned about their futures), and companies in the emerging market countries are "swollen with cash", a new enthusiasm for deals has already emerged in India, China and other developing countries [2].

Experienced financial markets managers have suggested the recent intensive activity is an indicator of a shift in global business. They argue that western economies are expected to show very slow rates of growth for some time to come. In these markets there are companies for sale (including raw materials companies) and there are companies with cash (or access to cash), and many of the emerging market countries such as India and China have large domestic banks capable of financing very large deals.

It is noted that these 'deals' however are not without risk; two acquisitions by the Tata Group, Jaguar/Land Rover and Corus Steel have produced disappointing results and have led to a more careful analysis of potential mergers and acquisitions. One market manager suggested that companies are now focusing more on acquisitions that can help them sell to consumers in emerging markets where consumption is growing, rather than in Western markets where demand is relatively weak. The Kraft acquisition of Cadbury for

example was considered attractive because it gave direct access to countries such as India.

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These developments are interesting and we may now witness a reverse of the flows of raw materials outbound and added value products inbound. Currently there is considerable interest by Chinese manufacturing companies in acquiring Australian mineral producers (exchange rate fluctuations are given as a dominant reason) however, should some of these happen, it is not unreasonable to expect that limited levels of manufacturing may occur in Australia (and other minerals supplying countries) as energy prices continue an upward trend, and the costs of transporting the relatively low cost coal and iron ore increase and impact on the costs of production; it is reported that China is experiencing significant increases in labour costs and both these cost increases (transportation (two-ways) and labour costs) will have a significant impact on profitability.

The Global/Regional Decision for Automotive and Consumer Durables Manufacturers

The 'nineties' and the 'noughties' saw a large expansion of the major European and North American automotive manufacturers in Asia. Initially these companies were attracted by the potential for lowering their labour costs. As these resource markets expanded they have become massive consumer markets with the growth of local incomes such that now the PRC is the world's fastest growing market. More recently, the Indian automotive market has also seen massive growth rates in a very short timeframe. Importantly, this growth has been accompanied by market led product and manufacturing process design. The launch of the Nano by Tata for example fulfilled a need for product and service design to reflect current local requirements and capabilities.

The significance of these developments has not passed without comment. Industry Week reported the concern of the world's top car makers that China and India could pose a significant competitive threat in coming years. India's Tata Motors introduced the Nano mini-car to the Detroit Science Centre and China's 'Build Your Dreams Motor Company' (BYD) brought its four-door electric e6 straight to the floor of the auto show. Both countries are now becoming increasingly important markets in the global sales strategy of top automakers. Executives from the once large automotive manufacturers suggested that Chinese automakers buying brands like Volvo are accessing a valuable distribution network, critical technology and "instant credibility", with China surpassing the United States in total sales volume last year and Indian sales expected to double by 2016" [3].

There is further evidence emerging of increasing activity in these markets. Fiat, for example, intends launching a new small car designed for India in two years, joining the gaggle of foreign auto makers targeting the fast-growing market. Fiat India Automobiles, a joint venture between Fiat and India's Tata Motors, said the launch in 2012 was part of its strategy to capture a tenth of Asia's third-biggest automobile market in the next five years. The small-car segment is also seeing phenomenal growth. More than three-quarters of all sales are small cars, with India-based Maruti Suzuki the overwhelmingly dominant producer with a 55% market share. Toyota, Volkswagen, Renault, Ford and General Motors have all unveiled cars, or plans for cars, designed to capture a significant share of the Indian market [4]. Renault-Nissan and Bajaj Auto (India) announced their plans to compete with the Tata Nano in making an ultra low-cost mini-car and plans for the new compact to be cheaper, greener and deliver "path breaking" fuel economy [5].

A Volkswagen-Suzuki alliance is also anticipated. Suzuki dominates several emerging economies and comprises more than half the vehicles on the road in India which may lead to the German carmaker sinking more than 300 billion yen (\$3.8bn) into Suzuki. Analysts have therefore been speculating for some months that Suzuki represented one of the most attractive automotive assets in Asia for a potential buyer. Suzuki, with its strong pedigree in motorcycles and scooters, has sought to make its mini-cars and vans the first vehicle that drivers choose as their economies shift from two to four wheels. A number of South-East Asian nations, including Vietnam and Indonesia, are considered to be close to the "tipping point" at which a nation of motorcyclists becomes a nation of motorists [6].

Another influence will be electrically powered vehicles. Here there is already evidence of a considerable amount of intra-industry collaboration. A partnership between Renault-Nissan Alliance and Project Better Place will result in electric vehicles being mass-marketed in Israel. Renault will supply the electric vehicles, and Project Better Place (based in Palo-Alto, California) will construct and operate an 'electric recharge grid' across the entire country; the Israeli government will provide tax incentives to customers. There are numerous reports of existing and new market entrants emerging, either as individual manufacturers or as partners in collaborative networks. Whilst many are already established in the industry, the others are coming from contributing and complementary technologies.

China's largest independent carmaker Chery Automobile produced its first plug-in electric car this week, the latest Chinese automotive company to produce an alternative energy vehicle. Another Chinese car maker, the BYD Co (a company that Warren Buffet has considerable investment in) began selling its plug-in electric hybrid car in China in December [7]. In addition, Volkswagen and Toshiba recently unveiled an accord to jointly develop electric drive units and other elements that VW said will allow it to become the first manufacturer of an affordable, mass produced electric vehicle.

The two groups are also planning the development of battery systems for the next generation of electric vehicles [8].

McKinsey research suggests electric vehicles, including battery-electric and plug-in hybrid electric cars, could make up as much as 16% of new car sales in New York City alone, by 2015 (70,000 cars) [9].

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General Motors is a typical example of the changes that occurred to large automobile manufacturers towards the end of the recession 2008/9 recession. It will be remembered that GM was made technically bankrupt and was released once having convinced the US Government of a sound business plan. Some of the features of the plan were in current practice. For example, an initiative to develop/leverage co-operative partnerships to develop product-technology and workforce reductions had already been planned. However, more radical moves to reduce costs and to regain competitiveness were expected and these included; reducing costs by importing a significant percentage of vehicles from manufacturing plants in low-wage countries (i.e. Mexico & China), reducing the number of manufacturing locations (47 to 16 plants was originally quoted but this number has since been reduced), a reduction in the number of Brands (4), and a plan to reduce distributor networks significantly.

As well as plant rationalization, supplier arrangements were also to be reviewed followed by a reduction in their number. Whilst it's clear that many of these actions will eventually reduce costs by reducing inventory levels throughout the supply chain networks, the practice of importing vehicles and service parts in the short term will most likely add to the inventory costs, and the level of working capital investment may well increase before showing a significant reduction over time.

Since electric vehicles represent an entirely new technology compared with the current automobiles on the road today, automotive manufacturers will need to forge new supplier relationships and create a new set of quality checks as it pieces together the integral components. This requires an entirely different approach to manufacturing operations, thus allowing manufacturers to adapt quickly to evolving market demands and the requirements for electric vehicles by implementing new production processes across a *distributed manufacturing network*. Cost will be a key piece of the puzzle when it comes to their ability to claim success. The manufacturing process will be a fundamental driver of this challenge. Industry analysts suggest that U.S. manufacturers have the potential to halve manufacturing costs in as little as five years. Reducing oversupply, sourcing parts globally and increasing efficiency through their processes and product supply network can help all U.S. automakers reach this tall order [10].

The “Fifteen/Fifty” Solution or “Reverse Innovation” to take advantage of ‘Emerging Market’ Opportunities

In addition to the global/regional decision previously discussed, ‘brown and white goods’ consumer durable manufacturers are now also being confronted with new opportunities from the ‘emerging markets’. Many of the more ‘sophisticated’ markets of the global organisations which have softened in recent years have therefore prompted companies such as General Electric and Panasonic to re-think their product-market strategies. They (and other similar organisations) have reviewed the needs and the capabilities and resources of the ‘emerging markets’ and have evolved strategies in which their existing product ranges have been modified to meet the essential needs of these markets so they may be manufactured locally. GE is now active in healthcare markets in China and India, where the demand is for low cost, limited feature equipment that simplifies the products.

Both GE and Panasonic have recognised the decline of their businesses in western markets and are planning a future in the emerging markets, albeit they will require very different manufacturing and marketing approaches. Both organizations are looking to localise/shift decision making to sourcing/consumption markets and adapt their structures to reflect the realities of local circumstances in planning processes, and are tasked with the responsibility of developing relevant product-service strategy’. Their aim is to offer a ‘fifty percent solution’ at fifteen percent of the cost of a one hundred percent solution; in other words the product is redesigned to offer only the ‘important’ features, those essential characteristics that are required for effective use recognising market needs that are less sophisticated. Furthermore, the redesign process takes account of local manufacturing capabilities and capacities.

The Panasonic ET-Win business model is another example of a company that has re designed and engineered its product range to become increasingly competitive. The EM-WIN program in emerging markets, Brazil, Russia, India, China, Vietnam, Mexico, Indonesia, Turkey and the Balkans countries is proving to be a successful strategic model and sales to EM Win markets are forecast to exceed sales of their conventional product ranges to North America and Europe.

Panasonic expects EM-Win to increase sales of consumer products by almost 20 percent. The company uses local production & contract manufacturing to contain costs. It requires the re-design of products & processes in order to reach realistic cost levels. Panasonic has identified a need to perform a complete overhaul of how it conceives, designs & manufactures its products. By reducing features & localizing design & manufacturing, costs can be reduced to reach acceptable prices: pricing targets are; TV US\$50, air conditioners \$US100, washing machines \$US200. Eliminating features simplifies the manufacturing processes and requires fewer parts and permits standard parts & platforms [11]. Markets currently exist and competitors such as Samsung Electronics & LG Electronics are pursuing similar

strategies. And as discussed above, the automotive market will be following parallel strategies.

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The impact on logistics and supply chain costs are likely to be significant due to the re-engineering of the product range around standard components and platforms. Furthermore Panasonic can move closer to realising the current 'holy grail' of moving demand and the supply response closer together as they will be manufacturing *in* the markets rather than servicing them from some distance. In both industries (automotive and consumer durables) it can be expected that international distribution companies, such as UPS and DHL, may well emerge as significant in the distribution and inventory management of these service parts, particularly so if the key organizations within the automotive industry can agree on a considerable element of standardized products and shared platform technology.

Technological Applications

The impact of *technology management* is often assumed to be limited to the development of ICT led-systems but there is another aspect to technology management, that of assembling capabilities, capacities and processes in unique combinations to meet opportunities. The application of 'freezing technology' to agri-business created an opportunity to manage time throughout the life of products that prior to these applications had limited life span saleabilities with significant implications for sustaining price levels. In the opposite direction micro-wave technology is being applied to 'time-short' consumers by compressing processing time on an increasing range of convenience/ready prepared meals.

Technology has also significantly impacted the design process for new vehicles in terms of both quality and time-to-market. For example, as GM enters the electric vehicle market, it will work to design the Volt with manufacturing costs in mind from the start. Today's advanced software can quickly transfer product and process designs to manufacturing, contributing to much faster new product introductions. Additionally, closed-loop feedback of pre-production and pilot phase production anomalies can be instantaneously reported back to the engineering staff for fast, corrective action. This approach can dramatically reduce the likelihood of a recall whilst greatly improving the quality of final products.

Other aspects of technology and time management concern DDM (Direct Digital Manufacturing). DDM is the process of using CAD or other data (e.g. 3D scan data) to drive an additive fabrication machine that makes usable parts—from jigs and fixtures to sellable products to replacement parts. DDM eliminates molding, machining, casting and forming. Instead of material removal or shaping, a company's finished goods are produced by adding material one layer at a time. Other than a few minutes of pre-

processing to prepare a production run and some light post-processing to clean up a part, DDM progresses directly from CAD data to final part. Eliminating the upfront and back-end operations common to traditional methods means that there is no extraneous time, cost, or labour.

Retailing is an additional industry that has been 'targeted' for technology application for some time. Sutherland suggests that another wave of development is yet to occur when 'the best of the digital world is combined with the best of the real world to rejuvenate town centres'. He is commenting on the closure of Borders (book retailers) activities in Britain and suggests that online purchasing has changed the behaviour of book buying. He identifies the next development – the Espresso Book Machine – 'on demand' printing. Hotels and airline are offering facsimile editions of the world's newspapers and now the Espresso Book Machine takes a similar approach to the production of books. It can print, glue, bind, cover and trim a quality paper back in about two minutes, at a cost of about one cent a page. The machine occupies no more space than a large photocopier! Another application discussed by Sutherland is a pizza delivery chain that is investigating the technology to download and record any DVD of the customer's choice while the pizza is cooking. He suggests; "there is a great future for shops that combine the best of the physical world with the best of the digital world" [12].

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Increasingly we are observing technology management intervention into the manipulation of time and location. Technology is enabling the acceleration and deceleration of food marketing by using freezing and ambient temperature controls to extend and/or compress selling and consumption of food products. The impact on inventory management is to increase storage, transport and in-store merchandising costs. However these costs are clearly recoverable through the acceptance of price levels by end-user and catering/institutional customers.

The developments in DDM are extremely interesting. Whilst it is an expensive option if the concept is applied to market situations where time and availability are critical value drivers (e.g. healthcare equipment and high-tech products), considerable increases in productivity can be envisaged and these, less the costs of storage and, more importantly obsolescence, will create economic value.

The introduction of rapid facsimile print reproduction could revolutionise the distribution of newsprint and particularly books. For example, university book stores could well become a collection of reproduction machines supported by online catalogues developed by the universities and the publishers. This technology could also see the development of new partnership opportunities as publishing organizations align themselves with the 'large coffee franchises' introducing a totally new concept to consumers.

Offshoring, Nearshoring and Backshoring

In many ways the “production” process within the value chain network has been influenced more than any of the other network processes with developments such as globalisation and improvements to process technology changing the business environment. Global activities, that have until recently created a number of opportunities, are starting to become a less attractive proposition in a changing business model. The emerging economies that previously offered low cost production expertise that led to many networks identifying low cost/low tax locations suitable for operations are now being directly ‘impacted themselves’ as increasing labour and energy costs plus changes to taxation laws are resulting in an increasing number of organizations to rethink the advantages that the emerging economies initially offered.

Mortished identifies some alarming consequences for the ratio of low value commodity products to their transport costs over long distances writing at the time [13]:

“The economics of long-distance supply chains are being rewritten; if it is small and expensive – drugs and sophisticated electronics, for example – fuel costs have little impact, but bulky goods are under the cosh. Furniture, footwear, basic machinery, building materials – this is the stuff that China exports in vast quantities to America and it was very cheap, until now”

How many organisations had expected the current environment of rapidly increasing energy prices, and postulated their impact on transportation costs? Furthermore, of those who did how many had viable response plans in place? As it happens these predictions did not eventuate; however other cost increases have occurred and a trend towards moving manufacturing back to domestic facilities are frequently reported. As the PRC economy returns to its growth rate prior to the recession, labour rates are reported to be increasing in excess of twenty per cent.

Holstein reports on a change of direction by one major US Company, NCR, and suggests that others are also considering the shift. Like many other large U.S. manufacturing companies in the past couple of decades, the maker of automated teller machines (ATMs) relied heavily on outsourcing to trim factory costs. By hiring Singapore’s Flextronics International Ltd. to make the majority of its equipment in cheaper offshore locations in the Asia/Pacific region and South America, NCR saved hundreds of millions of dollars in plant expenses and at the same time were reasonably certain that its ATMs met quality standards [14].

In 2009, the company decided to reclaim responsibility for making one of its most sophisticated lines of ATMs from Flextronics in Brazil and instead manufacture the machines in Columbus, GA; not far from the NCR innovation centre. The main reason for this decision was

that the company was becoming increasingly concerned that outsourcing distanced its designers, engineers, IT experts, and customers from the manufacturing of the equipment, and was therefore ultimately inhibiting the company’s ability to turn out new models with new features fast enough to satisfy its client banks.

Whilst the concept of *Operational outsourcing* initially became significant many years ago as manufacturing expertise and increased capacity became available outside Europe and North America; it should also be noted that manufacturing technology became transferable, often being ‘refined’ to such a level that it no longer required experience to manage and produce output at acceptable levels of quality; and this together with the industrialisation of Asian based labour forces became irresistible to North American and European organisations who viewed cost management as a major element of competitive advantage.

A number of ‘*Outsourcing*’ variations currently exist. *Offshoring* is the practice of using external production capacity to manufacture all or part of a product in order to reduce labour and/or materials costs. Offshoring consists of transferring some or all internal processes or activities to outside providers to achieve a stronger competitive market positioning by lowering costs, and/or improving access to resources and/or customers. *Nearshoring* however uses adjacent low cost, unskilled labour sources to manage costs and reduce supply chain risks; for example US apparel manufacturers using Mexican resources to manufacture products. This can reduce inventory lead times and transportation costs significantly.

Strategic Partnerships and Alliances

Two increasingly important forms of partnership structures have also emerged in a number of different industries. *Strategic partnering* is used to achieve long-term strategic competitive advantage and growth by *deploying core* expertise/resources of the organisation’s own and those of partner organisations in adjacent industries and markets. These may be non-equity alliances but increasingly do involve acquisitions and mergers. *Transformational partnering* is used to create ‘Vertical and Horizontal Scope’ in the value network system through investment in order to achieve long-term strategic competitive advantage and growth by *jointly developing/accessing new assets* with partners, and the *collaborative application* of processes and capabilities to achieve strategic inter-organisational response capabilities to pursue new product-service-markets. Again this typically involves acquisitions and mergers.

Other recent examples of strategic and transformational partnering include: *IKEA/Skanska* are collaborating on manufacturing and distributing prefabricated apartments. *Caterpillar and BHP Billiton* has announced a partnership to develop driverless trucks designed to increase safety and efficiency within mines. *Metcash (Australia)* is increasing its customer appeal by expanding its fresh produce ranges via acquisitions and joint ventures; it has been successful in the

acquisition of Mitre 10, a cooperative chain of DIY stores, primarily because of its experience in servicing the IGA independent food and beverage cooperatives. *Aventis pharmaceuticals & biotech Millennium* (pharmaceuticals) have codified working rules for their alliance. Companies in the aged-care sector are combining to create economies of scale. This is a collaboration of insurance companies, property developers, healthcare equipment and services companies.

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Industries, as with end-user customers, have value drivers. Typically these are a combination of knowledge, technology, processes and relationship management. As the importance of these changes over time, two important decisions have to be considered. The first is being addressed by NCR and others; the need to be able to exercise more control of manufacturing *and* of design and development. The second is that many organizations are now finding that their core markets no longer offer the high margins that are necessary to provide the cash flow required to establish (and maintain) the growth rate expectations of their shareholders; in many instances this is because of fierce competition. This is therefore forcing organizations to reconsider their strategic direction and to look for growth in new industries as they realign their business models to the changing environment.

It's also important to consider the ripple effect that these strategic changes of direction may well have on the supply chain industry in general. The recent decisions of NCR and others, in addition to the factors mentioned above (i.e. consolidation, mergers and partnerships) will most likely have a major impact on the logistics service providers (3PL's) that made large capital investments in developing the infrastructure to provide the service to such companies. It will therefore become paramount for these companies to review their own business models to ensure that they continue to provide an element of differentiation and competitive advantage to a variety of industry sectors as they look to not only retain existing customers, but also gain new ones in a changing business environment.

It is therefore not an easy task to predict all of the developments likely to evolve from changes in strategic thinking. Certainly consolidation of like-for-like facilities will occur; for example we already see extensive co-competition in the pharmaceutical industry and Metcash will extend its CPFR expertise into Mitre 10 with a potential saving of significant inventory holding. Other companies have already made the decision to completely review their value chain network. Further developments may well see the introduction of Logistics and SCM networks that are completely internet based. And others yet to appear (such as the publishing industry) may be completely digital as Apples iPad promises.

III. Concluding Comment

This paper has attempted to offer a summary of the current approaches to business model developments and the implications for logistics management. Findings from the Brookings Institution suggest that in the US fixed asset ownership of large manufacturing and mining companies suggest that fixed tangible assets fell as a proportion of total assets from 67 percent in 1982 to 38 percent by 1992. By 2000 this was reported to be less than 30 percent [15].

This trend tends to confirm the view that there is a move by a majority of organisations to favour the flexibility (even agility) of the virtual organization. The changes in the business environment landscape is having a major impact for organisations on what value is, how it is created, produced, delivered, serviced and just as importantly, maintained. We should leave the final comments to Pebler [16], who summarized the development of virtual organisation structures and offers a prescription for the virtual organization of the future:

“The virtual enterprise of the future will be much more dynamic and sensitive to the need for tuning operational parameters of the enterprise as a whole, including capital spending for both producers and service companies, optimising the whole chain of value creation. The future world will become characterised by knowledge management and collaborative decision-making by way of virtual teams. Virtual enterprises will be empowered by a willingness to do business in more productive ways and by information technologies that eliminate barriers between stakeholders”

References

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