"THE LEAN VALUE NETWORK SYSTEM; CO-INVESTMENT AND CO-INNOVATION AS DRIVERS FOR A SUSTAINABLE POSITION IN THE MARKETPLACE"

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ABSTRACT

The current situation companies find themselves in, where the battle for market share is fiercer than ever, cost cutting becomes too often an end in itself. This leads to loss instead of creating new possibilities. A change in the way of thinking is therefore needed. Lean thinking places 'optimizing the total value' instead of 'minimizing the cost' as the main goal. This approach can also be found in the way the supply chain is organized. Principles of Lean can be applied across company borders throughout the whole supply chain. Even the end customer becomes an integral part of the value chain, enabling the customer direct access to company processes and information, e.g. Built-to-Order, Track-and-Trace. The customer (the demand part of the chain) is now able to steer company processes and actually the entire production process throughout the chain. Thus the chain must be configured to suit the demand (customer), which directly drives the total value chain. Extensive coordination, exchange of information and interaction between companies are the new challenges. Therefore, in order to really maximize the value of the total system, companies increasingly work together on innovation. This co-innovation increases their agility to adapt to market developments.
In this paper several case studies of companies will be discussed, which have started to adopt lean within their organizations and thereby influencing the entire chain. A benchmark will be performed that will indicate the 'leanness' or 'agility' and extent of co-innovation of the organizations in relation to each other. Suitable indicators of this leanness and co-innovation are turnover and profit per capita, and the innovation investment multiplier respectively. The organizations will be analyzed according to the 3C model (continuation – conception – configuration), which identifies these three stages, including their relations, in the process of co-innovation.

Keywords:
value chain, value system, lean, co-innovation, continuation – conception – configuration (3C-model)

INTRODUCTION

In order to stay afloat in the current dynamic markets it is of utmost importance to anticipate in time on the market developments. The development of appropriate products is the key to ensure continuity of business. The goal of a company is to make money; money is made by simultaneously increasing Throughput, decreasing Inventory and decreasing Operational Expenses (Goldratt, 1986). As the time to market can be minimized by cooperation with other companies, one can see that companies more often work together on the development of new products and even share the investment risk. The process describing this co-innovation throughout the value chain is modelled by Beelaerts (2006) by the 3C model. Beelaerts identified three aspects that drive the innovation process. These aspects are:

- Continuation: defines the demand where a company can add value.
- Conception: unique technology or smart and original processes, supported by Intellectual Property (IP) in cooperation with co-innovation parties, based upon the customer demand.
- Configuration: formation of a chain, system or network of stakeholders that have interest in bringing the new product to market.

As such this co-innovation and co-investment can be seen as drivers for a sustainable position in the market place.

The traditional value chain is gradually changing under the influence of the growing importance of innovation of products and processes. The value adding activities of many companies, and especially those which introduced lean principles within their organisations, do not include the primary activities as defined by Porter (1985) anymore. These developments lead to the following research question:

What are the changes that the traditional value chain is undergoing?

To answer this question a case study is performed for the Boeing Company and Cisco Systems.

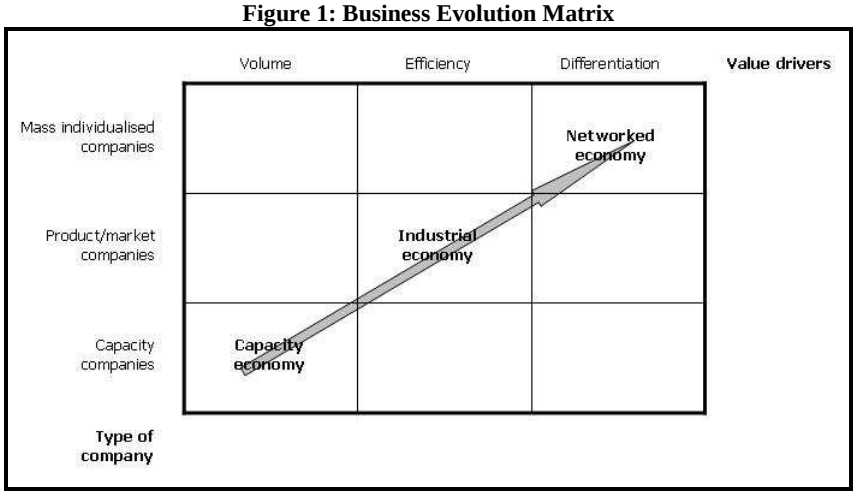
The structure of this paper is as follows. First the theoretical framework is presented followed by two case studies from industry, after which the preliminary conclusions are discussed.

THEORETICAL FRAMEWORK

Canting Value Chain

Nowadays most advanced industrial companies manufacture and/or supply a wide range of product varieties for ever smaller market segments, because technology enables them to get closer and closer to the needs of their particular clients (Asseldonk, 1998). This is completely in line with the lean philosophy where a company has a strong customer focus and moves more toward the end of the whole value chain in order to meet the (end) customer demand.

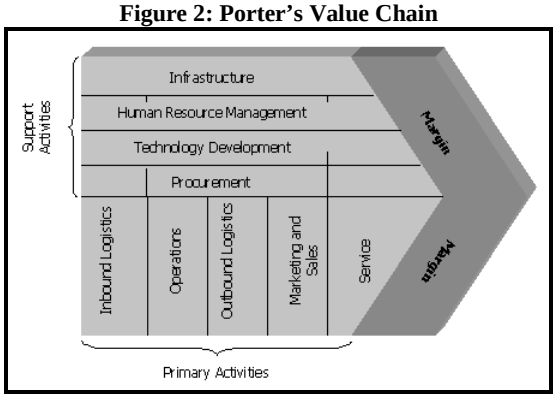
Figure 1: Business Evolution Matrix



Source: adapted from Asseldonk (1998)

The traditional value chain is based upon mass production, focussed on efficiency as the main value generator. The value chain (see figure 2) as defined by Porter (1985) is primarily based upon push. However, the lean value chain is build around pull and as can be seen in figure 1 aims to facilitate mass individualization by focussing on differentiation. The evolution matrix is a theoretical approach to the evolution phase of a company. On the horizontal axis the company's value drivers are placed. On the vertical axis the type of company is depicted.

Figure 2: Porter's Value Chain



Source: Porter (1985)

There have been many authors who have studied processes around innovations in value chains. The theory of the concept of co-innovation, devised by Beelaerts (2006), is a perspective on value chain innovation based on a combination of six publications (Chesbrough, Prahalad & Ramaswamy, Leifer, Porter, Von Hippel, Moore) on the relation between the value chain and innovation. Benefits and drawbacks of co-innovation have been explored and supported by qualitative data (Bossink, 2002; Odenthal et al., 2004). However quantifiable research on co-innovation is still under developed.

For any business, 'continuity' is of primary importance. To achieve continuity a company needs customers who purchase their products or services on a regular basis. Business starts with customers and it is therefore essential to know your customers and to have a strong focus on customer desire. The customer can be seen as a part of the value chain (Prahalad, Ramaswamy, 2004).

The needs and desires of the customer can be used as input for the development of new products or services (Von Hippel, 2005). Supported by the Intellectual Property (IP) shared with partners unique technologies and smart processes can be developed for the development of new products and services or 'conception'.

The third driver, 'configuration', is of organisational nature. Early involvement of suppliers and forging partnerships seems to provide significant reductions in risk, costs and development time (Zsidisin, Smith, 2004, 2005). For partnerships to benefit from the two above mentioned drivers it is necessary to organise the development process well and to collaborate with investment and risk sharing partners in order to create and accelerate added value. In co-innovation investment and risk sharing partners are involved in the development of new products or services from the very start. Prime contractors or integrators are seeking partnerships with their suppliers as they view partnerships as an alternative to "make" in the "make or buy" decision. In addition partnerships can be seen as an alternative for vertical integration (Leenders et al., 2006). Characteristics of these enhanced partnerships are researched by (Lamming, 1993) and (Tidd et al., 2001). They identified that partnerships are developed to reduce the supply base for the main contractor, to involve partners in the development of products, to increase cost transparency and learn together.

The ability of the leading innovator to multiply the innovation investments and its production share over the partners is expressed by the Innovation Investment Multiplier (IMP) and Production Multiplier (PM) respectively (Beelaerts, 2006). They are defined as the total innovation investment or total production divided by the investment or production share of the innovator.

Lean is the logical next step in already known methods for work process tracking and improvement as Total Quality Management (TQM) and Six Sigma. This process of introducing lean principles can be applied beyond company borders. As such the whole supply chain from supplier to the end customer should be seen as one integrated system.

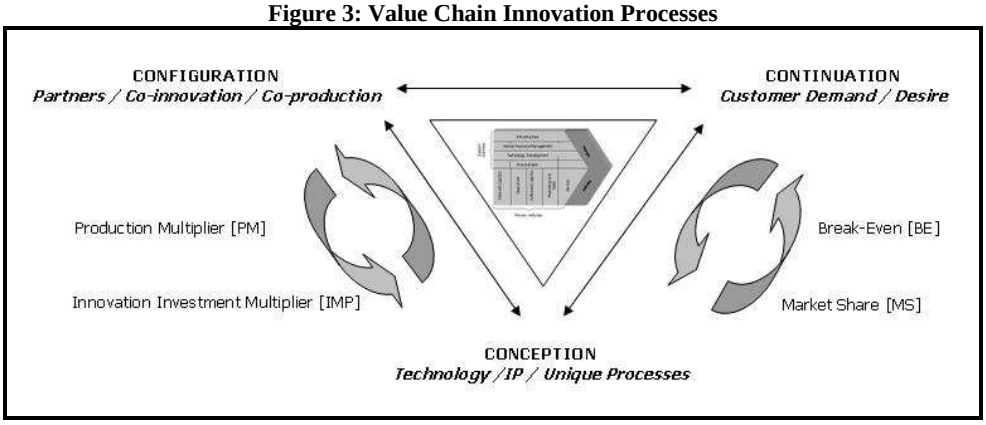
Traditionally lean was only focused on production. However, it does not make sense to only have a lean production when the rest of the organisation is not. Especially when one realises that production is just one link in a company's value chain. Karlsson and Ählström (1996) state that the lean enterprise consists of the following four elements:

1. Lean development: supplier involvement, cross-functional teams, simultaneous engineering, integration instated of coordination, strategic management and black-box engineering.
2. Lean procurement: supplier hierarchies and larger subsystems from fewer suppliers.
3. Lean manufacturing: elimination of waste, continuous improvement, multifunctional teams, vertical information systems, decentralised responsibilities and pull instead of push.
4. Lean distribution: lean buffers, customer involvement and aggressive marketing.

Lean thinking places 'optimizing the total value' instead of 'minimizing the cost' as the main goal. Within lean cost cutting has to be seen in perspective of eliminating non value adding activities (Womack, Jones, 1996). Within the lean philosophy TQM and Six Sigma are strategies that are frequently applied. Six Sigma has proven to be one of the most emerging business strategies in the 21st Century for accelerating innovation and continuous improvement activities in both manufacturing and service environments for achieving both operational and business excellence (Anthony, 2007). A lean organisation is a more flexible and a more adaptive organisation (Murman et al., 2002) with respect to its environment.

In order to achieve a lean organisation all business processes have to be re-assessed on their value addition and changed if necessary; in other words, the company processes have to be innovated (see figure 3). Drivers for innovations are identified according to the 3C model. Projecting the 3C model onto the value chain redefines the traditional Porter value chain.

Figure 3: Value Chain Innovation Processes



Source: adapted from Beelaerts (2007)

Identifying value activities requires the isolation of activities that are technologically and strategically distinct (Porter, 1985). Activities that have strategic implications for a company are classified as primary activities in the value chain. Applying lean principles (Womack, Jones, 1996) – specify value, identify the value stream, product flow, customer pull, pursue perfection – to the company's primary activities can result in the conclusion that some activities do not add significant value to the chain. They actually become supporting activities or are not being carried out in-house at all anymore. One can also realize that activities that previously have been termed as supporting activities have become much more important and now do add significant value to the chain. In the past, the time of capacity economy (see figure 1), the ratio of value addition between the primary and supportive activities was generally 80/20 (Pareto). Nowadays however, in the time of a networked economy (see figure 1), it is observed that this is the other way around where especially Procurement and Technology Development are the new value generators. The innovation investment multiplier (IMP) and the production multiplier (PM) indeed show that the more leverage a company obtains from the value system, its own production value declines and so does the organisation around those processes. As such, the value chain of Porter is canting.

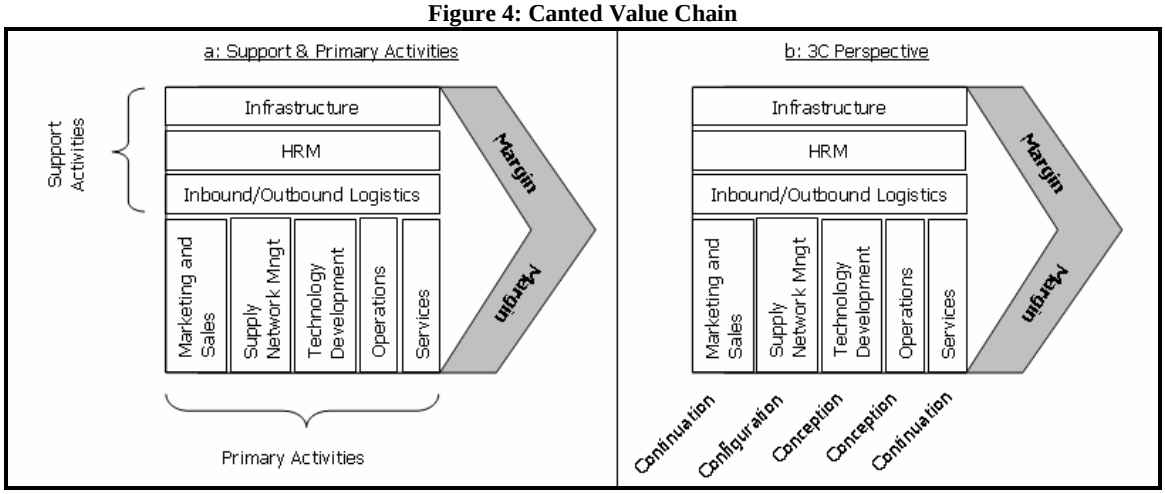
From case studies performed by the authors it is found that an increasing number of companies do not include the traditional primary activities in their value chain anymore since those activities are no longer the company's value generators. One can now re-arrange the activities into the lean value chain. Re-arranging the activities is a first step in the value chain innovation process. As one of the aspects upon which the lean philosophy is based is pull and customer focus, every activity upstream the value chain is initiated by downstream demand or derived demand; that is, the demand for products and services is derived from the demand for a customer's products and services (Dwyer, 2002). Therefore, the first activity in a lean value chain should be Marketing – defining the demand – and Sales – facilitating the pull.

Scaling down the number of suppliers is also a consequence of the lean process. There is a shift from many to just a few (strategic) suppliers (Kraljic, 1983). When elaborated and tailored, Kraljic's portfolio approach, allows for sufficient guidance for developing effective purchasing and supplier strategies (Gelderman, Van Weele, 2002). New insights into the relationship between the usage of portfolio models and purchasing sophistication are provided by Gelderman and Van Weele (2005). Purchasing sophistication is defined as the level of professionalism and the position of the purchasing function within companies. Adopting a portfolio approach could work as a catalyst for change within the company (Gelderman, Van Weele, 2005). The shift to strategic suppliers/partners involves a much tighter cooperation between the companies (Van Weele, 2005). As such supply management elevates from an operational function to an integral part of business strategy (Niezen, Weller, 2006). Therefore the Supply Network Management function has become a primary activity that involves strategic procurement, supply network process integration and intensive relationship management with partnering companies. Furthermore, it can be observed that currently industries are so strained that real profit can only be made through an innovative approach to products and business processes. Zegveld (2006) argues that although technology is a relevant aspect of corporate change and corporate success, technology itself has no value; it is the context of its application that generates value and competitive advantage. Andrew and Sirkin (2007) state that true innovation must lead directly or indirectly to increased profits. There is a big difference between an idea and an innovation; it is called cash. The goal of a company is to make money (Goldratt, 1986). It is now fair to say that the process of turning technology into business is a primary activity.

The two primary activities of Operations and Services remain unchanged. As Porter (1985) states, Operations are activities associated with transforming inputs into the final product form and Services are activities associated with providing service to enhance or maintain the value of the product. By definition operations and services are value adding processes and remain important value generators to a company.

It can be observed that the importance of the traditional primary activities Inbound and Outbound Logistics is growing. However, they are inherently integrated in the expanding importance and coverage of the activities of Supply Network Management, Technology Development and the application of lean principles through processes such as JIT and build-to-order. Therefore, the stand-alone primary activities Inbound and Outbound Logistics as such are disappearing. This can be seen by the enormous growth of specialised logistics companies like DHL, FedEx and UPS. Cisco Systems is an example of a company that has completely outsourced their logistic activities. Nevertheless, there will always be inbound and outbound operations necessary as a support function to the new primary activities. In figure 4a the re-arranged value chain is presented.

Figure 4: Canted Value Chain

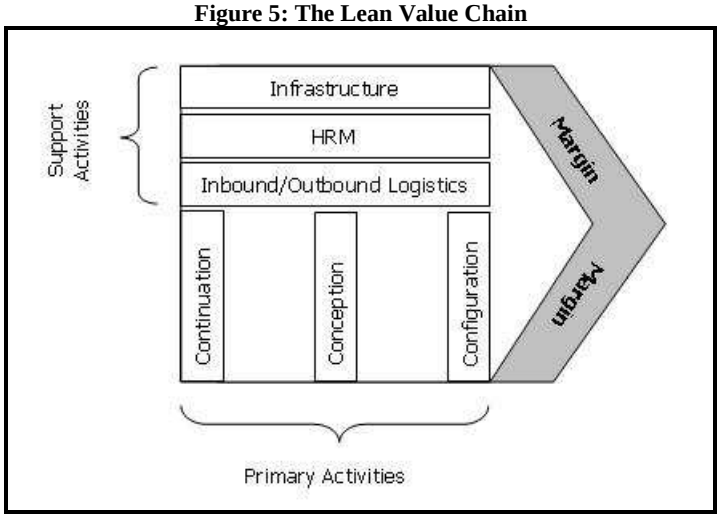


Source: adapted by Beelaerts, Santema , Amoa, Fiksiński (2007)

As one rethinks the new primary activities in the re-arranged canted value chain and reflects on them from a 3C model perspective, the classification as presented in figure 4b can be discerned.
Marketing and Sales can be seen as part of the continuation process; defining the demand where value can be added and selling what has been demanded by customers.
Supply Network Management is involved with the integration of processes in the value system. It can be seen as an activity part of the configuration process; forming a supply chain or network of business partners.
The Development of new Technologies and Operations is what is actually defined by the conception process; creating new technologies or smart and unique processes.
Services involve after-sales activities that concern retaining and tying in customers. They can be seen as part of the continuation process as they are customer oriented and thus contribute to ensure continuity of business.

Now regrouping these primary activities leads to the situation presented in figure 5.

Figure 5: The Lean Value Chain



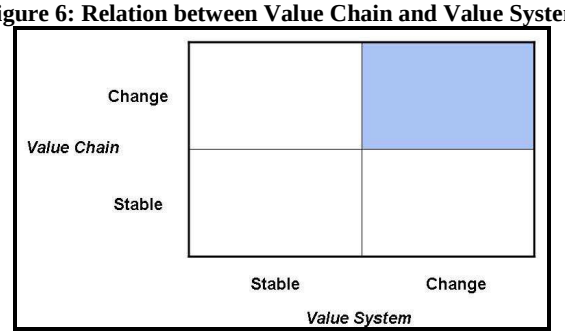
Source: adapted by Beelaerts, Santema, Amoa, Fiksiński (2007)

The authors suggest that the ultimate lean value chain consists of exactly the three innovation drivers, namely continuation, conception and configuration. As such one could argue that a sustainable position in the market can be obtained and maintained by continuous innovation. Prahalad acknowledged already in 1993 that innovation is the fundamental job of a general manager.

As mentioned above, the bottom line of the lean philosophy is the optimisation of the whole value chain and system. A truly lean enterprise would succeed from the points of view of end users,

shareholders, the workforce, suppliers and partners, and society (Murman et. al., 2002). The value is being added by the firm on demand of the end-customer, through interaction with suppliers and the (end)-customers. Hewlett Packard is 'making the computer personal again'. Dell interacts on one side closely with the consumer, facilitating build-to-order sales, and on the other side Dell capitalizes on the strength of the supplier-consumer interaction to sell its own product; 'Intel inside'. The joint efforts of the consumer and the firm – the firm's extended network and consumer communities together – are co-creating value through personalised experiences that are unique to each individual consumer (Prahalad, Ramaswamy, 2004). This implies that the effects of the changes in the value chain must extend further than company borders. Changes in the value chain of a company will eventually have an effect on the whole value system. This entails that the way the partners in the value system work will have to change too, which in turn has an effect on the inter-organizational relationships between the partnering companies. Van Weele (2005) says in this respect that the dyadic relationship between supplier and manufacturer is not only influenced by the characteristics of the product and the involved organisations, but also by the relationship between these organisations and other organisations which are part of the supplier network.
The other way around, changes in the value system also influence the value chain. As the value system is dynamic and changing – induced by the market situation – the value chain changes in order to anticipate on the developments of the environment. Figure 6 shows this relation between the value system and the value chain. The upper right corner indicates the situation where both the companies' value chain and its value system have undergone change. This would imply that there has been some kind of interaction. Ideally, this interaction would then have been achieved through cooperation, co-innovation and co-investment.

Figure 6: Relation between Value Chain and Value System



Source: Zegveld (2006)

As in this new situation the relationships between partners within the value system become tighter, this requires more intensive relationship management throughout the network. Careful internal integration and coordination are needed in relationship-building strategies (Dwyer, 2002).

INDUSTRY EXPERIENCES

In this section two companies will be analysed on the manner they organised their innovation processes and introduced the lean concept within their organizations. The analysis will be done from the 3C model perspective and will focus on the changes in the value chain.

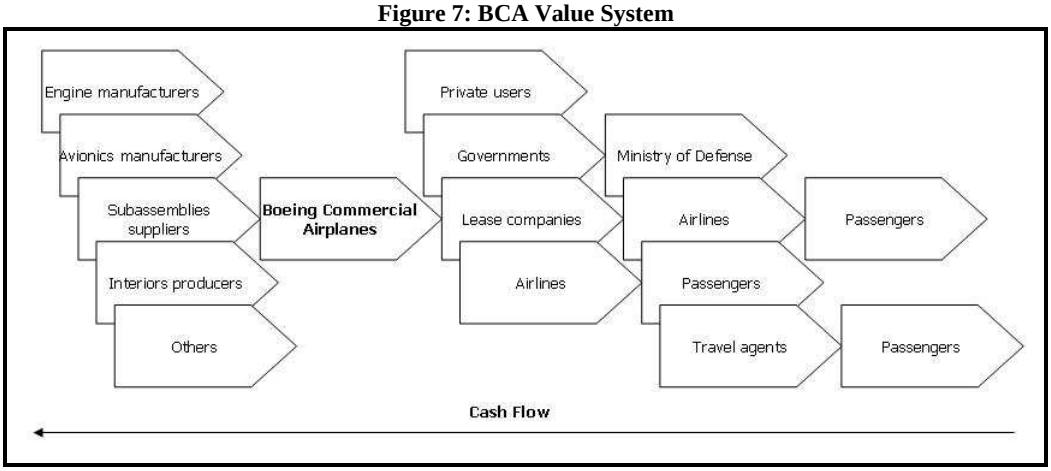
Boeing Commercial Airplanes

Boeing Commercial Airplanes (BCA) is the division of the Boeing Company involved in developing, producing and marketing commercial jet aircraft and providing related support services, principally for the commercial airline industry worldwide. Although the Boeing Company operates in five more segments the focus of this analysis will be Boeing Commercial Airplanes.

Value System

Since the start Boeing's value system has developed enormously (see figure 7). With aircraft becoming more and more complex, Boeing started to outsource the production of certain elements and parts. Boeing pursued this vertical disintegration strategy in order to reduce cost and to focus on its core competence; designing and assembling aircraft and as such acts like an integrator of the supplier network. In light of the low profit margins and high risks involved in the aviation industry, vertical disintegration is also a means to reduce/spread the investment risk. With the launch of the B787 project even the development of certain required technologies, the end-to-end design and development of the specific subassemblies was outsourced to companies from all over the World. Now both the partnering company and Boeing itself are co-investing in the development of the new product.

Figure 7: BCA Value System



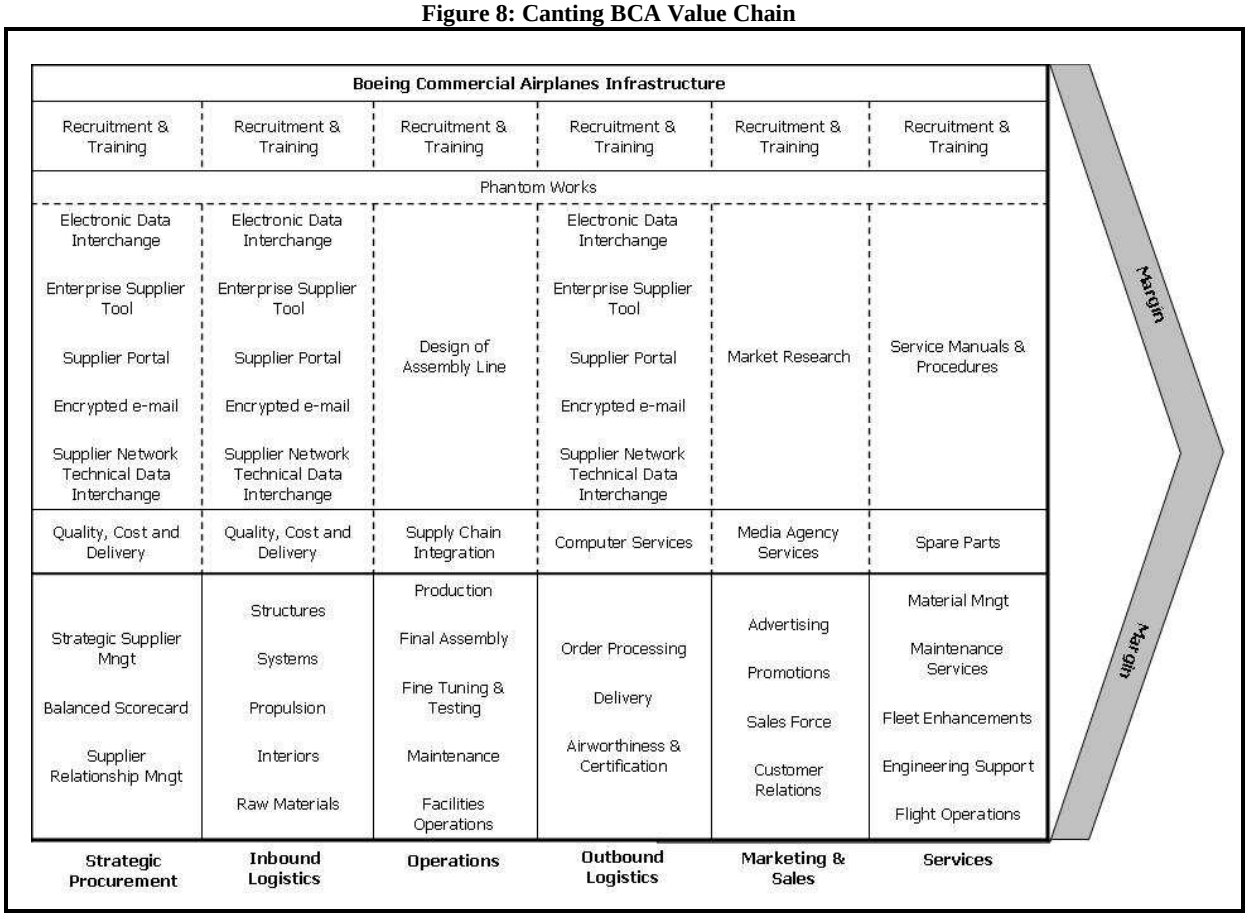
Source: Amoa, Fiksiński (2007)

The co-operation and interdependence, or tie-in effect, has resulted in inter-organisational relationships that are highly dependent of information exchange, which is a characteristic of a networked economy. Relationships take on new meaning for the Commercial Airplanes group (Avery, 2006).

Value Chain

Since the first introduction of lean principles at BCA a lot has changed in its value chain. Six primary value activities have been identified. In addition to the traditional primary activities of Porter, the authors argue that strategic procurement has become an activity that effects the company's bottom line to such an high extend that it should be considered as a primary activity as well. Figure 8 shows the value chain for Boeing according to the traditional value chain of Porter.

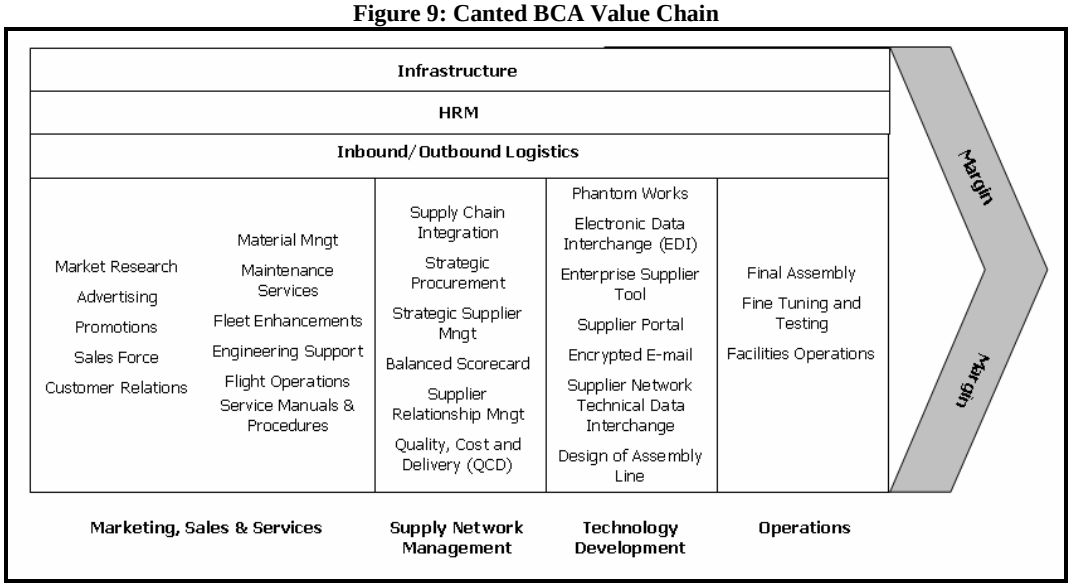
Figure 8: Canting BCA Value Chain



Source: adapted from Boeing (2007)

Although the value chain is already canting, mainly induced by the introduction of lean principles, the authors argue that if Boeing would continue in applying these new processes to a greater extent throughout the whole company and all of its programs, the company's value chain would take the form of the canted value chain presented in figure 9. Isolating the value chain of the B787 program, it already reflects this canted value chain.

Figure 9: Canted BCA Value Chain



Source: Beelaerts, Santema, Amoa Fiksiński (2007)

The primary activities from the BCA canted value chain can be categorized applying the 3C model.

Continuation

- Marketing & Sales are all the activities associated with investigation and analysis of the Global aviation market and the selling of aircraft to the customers. It consists of the sales force and all the advertising, promotions and necessary customer relations. Services are all the activities associated with providing service to enhance or maintain the value of the delivered aircraft. These services are to improve fleet utilization, reduce costs, manage information, upgrade or reconfigure airplanes. Boeing has divided these services in global customer support, material management and spares, maintenance and engineering services, fleet enhancements and modifications and flight operations support (Boeing, 2006).

Conception

- Technology Development consists of a range of activities that can be broadly grouped into efforts to improve products and processes. Boeing's Phantom works is the research and development department that serves as an innovation and technology driver for all the value activities. Phantom Works consist of an advanced systems team, which focuses on the needs of specific value activities. It also consists of an advanced technology team, which focuses on providing engineering, information and manufacturing technologies for all value activities. As such the development of new technologies by Phantom Works is of crucial importance to stay ahead of competition.

  The goal of Phantom Works is to provide breakthrough technologies that improve the performance, quality and affordability of Boeing's products and services. The advanced technologies and advanced systems comprise lean and efficient design processes and tools like Electronic Data Interchange (EDI), Radio Frequency Identification (RFID), Enterprise Supplier Tool, Supplier portal and Supplier Network Technical Data Interchange. Phantom Works also studies affordable structures and manufacturing techniques but also future concepts and ideas for the aerospace industry.
- Operations are all the activities necessary for Boeing to turn the incoming supplies into a finished aircraft. It consists of the final assembly, testing of aircraft and the necessary facility operations.

Configuration

- Supply Network Management comprises all activities that involve the integration of processes throughout the value system. They comprise among others strategic procurement, early supplier involvement (ESI), strategic supplier management, supplier evaluation (balanced scorecard) and supplier relationship management (Boeing, 2007). These activities are identified as Boeing has adapted a new working relation with their suppliers. Supply Chain Integration helps to reduce complexity in Boeing's production processes. According to Steve Schaffer, vice president of Global Partners for Boeing Commercial Airplanes, 'The renaming of our supplier organization to Global Partners does a far better job at showing the world that Boeing considers its suppliers an extension of its internal processes' (Avery, 2006). The focus has shifted toward supplier relationship management and the organization of the supplier base. As such the traditional Inbound Logistics has been integrated in the Supply Network Management. Boeing has minimized their supplier base from 3.800 key suppliers to 1.200. They are now focusing on long-term supplier relationships.

  With the B787 project the suppliers are involved in the total development and production process. This co-innovation involves a major shift of responsibilities and makes the partnering companies strongly interdependent. It has a reason that Boeing suppliers are called Global Partners. Beelaerts (2006) has shown that by involving other partners in the development process and spreading the investment risk the total investment by Boeing alone has been confined to $4.2 billion instead of the total of $13.4 billion. This has resulted in an innovation investment multiplier (IMP) of 13.4/4.2=3.3 throughout the value system. BCA has 52.000 employees resulting in a turnover per capita (TC) of $430.000. IMP and TC are both indicators for the intensity of co-operation with and leverage on partners in the value system.

In addition to the primary activities there are the three supporting activities:

- The BCA Infrastructure consists of activities such as corporate management, corporate finance and accounting, quality management, legal and governmental affairs. It also entails the Boeing culture, the way of working and doing business. The infrastructure covers all the value activities.
- Human Resource Management: consists of all the activities involving recruitment, hiring, training, and (career) development of all the personnel. HRM is also found in all the value activities.
- Inbound / Outbound Logistics: consists of the supporting functions of purchasing inputs used in Boeing's value chain and support of the other primary activities.

From what has been observed in the analysis of BCA it is possible to identify what type of company Boeing is (see figure 2).
Mass-individualized companies identify themselves by the fact that they are focused on variety of products completely in line of personal preferences and requirements of customers; an example of such a company could be Dell. For Boeing this might be too far fetched, because the market it serves is not characterised by mass-products due to their complexity and relatively low numbers of deliveries (app. 1200, >100 pax A/C per year). In addition the products Boeing produces are in a great deal customized to the requirements of the airlines or other customers and are designed for a segment of the market; however, they are not designed for specific routes or to fulfil specific customer requirements for 100%.
Secondly, Boeing can also not be depicted as a Capacity company, because it is not focused on delivering bulk products. Boeing produces assembled products and functions as an integrator. Boeing can preferably be described as a Product/Market company, because it manufactures assembled products for a specific segment of the market. This might be the long haul, short haul, low-cost or freighter market for example, and within these examples also different range/payload capability relations.

The second variable that determines the position of Boeing in the business evolution matrix is the specific value driver. Boeing can best be placed in the Efficiency and Differentiation region. This is because its focus is still to optimize efficiency driven by lean principles. Since this is improving, Boeing shifts more to the differentiation side, where customers are treated by their specific wishes. The focus will be to answer more to customer requirements and in an earlier stage. It can be concluded that BCA is moving up in the business evolution matrix (see figure 1). BCA could be placed on the intersection of the upper right quadrant between efficiency and differentiation on one hand and mass individualised and product/market companies on the other hand.

CISCO Systems

CISCO Systems is a World player in the field of innovating and delivering network solutions for the internet.

Continuation

Cisco Systems is a transparent and customer driven organization with a clear mission. John Chambers, CEO makes it laud and clear. "The soul of Cisco is customer success and satisfaction". Cisco Systems is a major player on the market for availability and accessibility of information at any place at any time against the lowest costs by using technologies like IP (Internet Protocol) and broadband via the internet (fixed) and wireless applications.
The ratio of processing orders via the internet is 97% which demonstrates the accessibility for the customers. To measure customer satisfaction all customers are being asked every year to answer 150 questions. Customer satisfaction is measured regularly during the year and is part of incentive and salary policies.
By this customer service information Cisco Systems improves products, services and processes to satisfy the customer. Cisco rates the customer service regularly for management and continuous improvement actions. New products and services are derived from this process. Cisco identified that customers value delivery time but especially its predictability. Market share is for Cisco the most important factor to benchmark itself with the competition.

Conception
Cisco Systems delivers products and services to 'route' information using internet and broadband technology to deliver the information in a suitable form for the customer using the most efficient network wireless or via cable. The strategy is to interlink network systems to exchange information received from products IP-marked. Every product with an IP address can be linked to data exchange and communicate between demand and supply. Linking RFID's to Cisco broadband technology makes it possible to improve efficiency of demand and supply systems. Voice over IP (VOIP) is another technology Cisco is making use of in internet router equipment for communication via the internet. Paying per minute belongs to the past; internet opens up new possibilities making even free voice communication possible (e.g. Skype).

As the demand for information increases year after year it is the strategy of Cisco Systems to develop intellectual property (IP) to be used in next generation products. Generating IP is one of the core competences and demonstrated an exponential increase during the last 5 years. Recent acquisition of Scientific Atlanta enforced the technology competence of Cisco Systems.

Configuration
To become leaner, Cisco Systems has changed the outsourcing policy dramatically. The last decade a large base of subcontractors was built up to outsource manufacturing. In total 30 manufacturers were connected. The next decade Cisco Systems will change this strategy and reduce the supplier base to 4 strategic entrepreneurial partners for manufacturing. Entrepreneurial in this context means that these partners invest to improve their processes and that they are able to follow the demand from Cisco Systems. Cisco has already outsourced 100% of its production and logistic activities. The company plans to outsource even more in the near future. This will concern customer service and finance, which are already outsourced for respectively 95% and 50%. Currently Cisco Systems has 54.563 employees and their turnover in 2006 was $28.5 billion resulting in a TC of $522.000.

Within the business requirements, Cisco asks for pricing of products and services including their development costs and investments in innovation. Cisco is able to handle partnerships as they have the knowledge about the processes and as the electronic devices market is in a mature phase. Partners have obligations to perform in delivery but also efficiency. Both parties are benefiting from the learning curve effect resulting in reduction of prices and lead times.

<u>Entrepreneurial Partners in first Tier Positions make Cisco Systems Lean</u>
The partners are involved in innovations by carrying the development and roll out costs for a new product. The development costs become more transparent with this partnership approach as those cost are a part of the unit price and not hided in overhead costs. This investment strategy reduces the investment pressure for Cisco which means the capital can be used for core values such as customer success.
Examples of other areas for entrepreneurial partnerships are the customer service centre and logistics. In both cases Cisco can easily find partners which means more price transparency of the product or service supplied and lowering the investment allocation for Cisco in peripheral processes leaving more investment capacity for core values.
The logistics will be partnered with UPS- Menlo for approx $ 80 million, not only saving Cisco capital due to eliminating Logistic Service Centres (LSC), but also adding value by:

- an increase of flexibility to the customers (integrators, distributors and service providers)
- reduction of lead times
- an increase of scalability which is important to grow in emerging markets
- making cost more transparent by defining dedicated partners specifically for that costing operation

<u>Managing & Organisation from classic sequential Processes to Partnerships in a multi lateral Mode</u>
As the production value of Cisco Systems is largely contributed by the partners, the organization has to be structured and managed differently. Main management fields are Customer Relations, Technology & Innovation and Operations orchestrating partners. This is clearly the process of value chain innovation.

Operations by partners are taking over the classic 'Production' factor. Partners are becoming increasingly important and are taking over complete segments of the value chain. As such Cisco has configured a lean value network system around its own operations.
Therefore, classic hierarchical positions are eliminated from the management structure. The partners (First tier) acquire a more equal position to the Prime or Final integrator. Without the contribution of the partner like UPS-Menlo there will be no delivery of any Cisco product at any place in the world.
To manage the value network system, Cisco has installed a Business Process Operation Council consisting of all the VP's. Specifically partnership relations are managed by this council.

PRELIMINARY CONCLUSIONS

The authors suggest that the 3C model has a broader scope than the product innovation level. When projected onto the traditional value chain, with the adoption of lean principles and re-evaluating all activities, drastic changes in a company's value chain are induced.

This paper set out to answer the following research question:

What are the changes that the traditional value chain is undergoing?

One can say that a change of importance of business processes can be discerned. Some supporting activities are becoming primary and some primary activities are losing importance and are becoming supportive. Moreover, some activities are leveraged to partners throughout the value system. As such the value chain is canting and drives the configuration of a lean value network system around it.

In the new business arena where competition is fierce and companies need to stand-out in order to retain customers, continuous innovation is necessary. The case studies show that the importance of Supply Network Management and Technology Development are gaining momentum. It has been innovation on product and process level at Boeing and Cisco Systems that has contributed to the success of these companies. This trend is also seen in the airline and airport industry. It are the innovations on e-ticketing, passenger process redesign, baggage handling (RFID and systems) that increasingly determine profitability. It is no longer only a company's traditional core operations (e.g. passenger transport) that are the main value generator.
The use of technology as such has facilitated the evolution of purchasing to procurement to supply network management that now has gained such a prominent role in a company's value chain; configuring the supplier network system to optimise the flow from supplier to the end customer. Through systems like EDI, ESI, supplier portals, and Track-and-Trace, traditional activities comprising In- and Outbound Logistics are integrated within the Supply Network Management function. The increasing interdependence between partnering companies in the network makes inter-organisational relationships across the value system more important. Through co-operation companies can respond better to the market needs. It has been shown that this co-innovation and co-investment seem to be the drivers of the canting of the value chain. It is shown that by projecting the 3C model onto the Porter value chain, the ultimate lean value chain can be represented by the three innovation drivers; continuation, conception and configuration.

Achieving and maintaining a sustainable position in the market place, boils down to minimizing the time to market, realising new products or services for less and making sure that your product will outperform the one of the competition. Engaging partnering companies in the development process reduces development time and thus time to market – faster. Co-investment reduces investment in innovation on the side of the initiating party – cheaper. Finally, each partnering company brings its specific knowledge into the project, which the initiating party could not have disposed of otherwise. By moving toward the end of the supply chain and making the customer the driver of the whole process, the initiating company brings in the customers' desires into the development process. The combination of the two results in products augmented to the customer's desires – better. By the configuration of the lean value network system the ambition of faster, cheaper, better can be realised.

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