

7. CONCLUSION AND RECOMMENDATIONS

7.1 Propositions

This thesis tested three propositions in order to address the research problem. A summary of the propositions tested is presented in the table below.

Proposition	Finding	Comments
The typology of transnational FMCG supply chains originating in India and South Africa is not different than that identified in the literature.	Supported	The functional and structural attributes for all the cases were analysed and compared.
The issues identified within transnational FMCG supply chains originating in India and South Africa were, but not limited to: a. increased product cost. b. reduced supply chain service levels. c. reduced supply chain flexibility. d. increased product lead time. e. increased inventory. f. unstructured policies. g. un-aligned business strategies.	Partially supported	The impact on operational performance (service level etc) was different amongst the cases. The financial and the governance performance were similar.
The supply chain managers were taking the following steps to address the issues with transnational FMCG supply chains originating in India and South Africa, but not limited to: a. adopting newer and advanced technologies. b. redesigning supply chain organisation hierarchy. c. investing in better measurement controls for the product quality. d. investing in additional inventory for longer lead time products. e. focusing on core functions of the organisation and subcontracting the non-core functions.	Supported	The steps were focussed around addressing the issues highlighted in the previous proposition.

Table 7-1: General links between proposition, finding and comments

7.2 Summary of major findings

The roles and responsibilities of the supply chain functions among all four research cases were not similar. The various roles were not given the same names and the responsibilities of a particular role differed among the cases. The extent to which supply chain-related roles were involved with the various supply chain activities was also different among the cases. This was due to the differences in the maturity levels of the supply chains.

The fact that the typology of a particular product segment in both countries, as identified in the case studies, was similar to that of any other FMCG supply chain in terms of functional and structural attributes, as identified in the literature review, meant that one of the aims of this research had been fulfilled.

This thesis also identified an appropriate analytical model to analyse transnational FMCG supply chains. Three operational performance models were studied and compared. The SCOR model was used to compare the supply chains of the cases based on specific performance indicators. This allowed the study to benchmark and compare the various supply chains effectively. The use of financial indicators was also found to be helpful as it identified the impact of the transnational supply chain on the economic health of an organisation, which was one dimension that had never been studied previously in conjunction with the performance indicators. However, the full potential of the governance model was not utilised in this research from a benchmarking perspective as the cases presented different levels of supply chain maturity (e.g. Surya when compared to other cases). However, it is

recommended that this model could act as a common platform to compare or benchmark different but similarly matured supply chains.

The impact of macroeconomic factors on the supply chains was also studied, which is an aspect that has never been dealt with before in the literature on the FMCG industry. Both countries displayed similar political (democratic) and diverse demographic (multiple languages and tribes) setups. From the economic perspective, both countries had adopted similar trade regimes such as joining the WTO, spending a similar percentage of their GDPs on logistics infrastructure, entering into trade agreements (BIMSTEC/SACU), imposing VAT and encouraging trade liberalisation. Both countries were trying to reduce their environmental impact (carbon) footprint.

It was established in all four cases that the various FMCG supply chains had adopted simple manufacturing processes, although their distribution processes were complex (which was also identified in the literature review). The supply chain structures for the Indian cases were more geared towards the decentralisation of their DCs, while for the South African cases, the supply chain structures were mostly centralised. The use of so many different languages in India resulted in increasing supply chain complexity (different language labels, etc.), while this was not the case in South Africa. In South Africa, a common labelling system could work as most of the customer base could speak one common language, English. Some of the latest trends, such as “dealer owned brands” or “private labelling” were not evident among the cases.

Detailed process maps were developed for transnational FMCG supply chains based on SCOR and Porter's value-chain model. The issues identified within the transnational supply chains in the two countries, such as inadequate use of technology, measurement criteria and supply chain adaptability, were found to be different to some extent. However, some of the issues identified such as lower product quality, higher sales returns, lower supply chain responsiveness, higher inventories, unclear policies, and structural and cultural concerns were similar in the two countries. These issues were similar to those faced by any other FMCG supply chain, as identified in the literature.

The fundamental characteristic of FMCG supply chains, i.e. the bullwhip effect, was not found in transnational supply chains in all four cases. This was because orders were received directly from customers and shipments were direct deliveries as well, thus ignoring the order batching and demand projections.

The Indian cases encountered unique issues such as the non-existence of supply chain policies and the lack of a regulated transport infrastructure, while the South African cases faced unique issues related to supply chain skills and foreign exchange. Outsourcing, identified as one of the latest trends in transnational supply chains, was well adopted by the South African cases; however, in the Indian cases, logistics were controlled by the FMCG firms themselves with support from ad hoc transporters. The highly fragmented trucking industry, which handled most business-related transportation in India, made it difficult for firms to manage the plethora of carriers required to handle shipment volumes, while in South

Africa, well-established 3PL entities supplied transportation services to FMCG firms.

While customers demanded improvements in products at ever-lower prices, producers and distributors of FMCG products in both countries were facing increasing competition in nearly every product category. The traditional methods of supply chain design and management did not always apply in this new era of transnationalism, owing to complex tax regulations, non-standardised transportation, uncertainties across the value chain and the low rate of technology adoption. However, the supply chains of the South African cases were found to be mature enough to design new supply chain principles, despite the slower economic growth of the country compared to that of India. In terms of factors such as the embracing of the latest technology and the involvement and clearly defined roles of third-party entities in the supply chain, the FMCG supply chains in South Africa embraced these complexities and designed their supply chains to efficiently move products from sourcing through to fulfilment and were reaping the rewards of the market size and growth potential that this sector offered.

It was stated that these unique issues possibly resulted from the two countries' different political systems and government support structures or the different maturity levels of their supply chains. As the question of the competence of supply chain managers lay outside the scope of this research study, the reasons for this uniqueness could not be further explored.

The packaged food cases were facing issues such as short shelf life, strict food regulatory laws, manufacturing complexities and less outsourcing options; while the personal care cases were facing issues such as product proliferation and supplier unreliability. The cases from the packaged food segment were also faced with strict international regulations that they were not fully aware of. The use of advanced technologies such as RFID was identified as being essential for this segment.

The steps that supply chain managers were taking in order to confront the issues facing them were quite similar in both countries, such as focusing on policies, analysing advanced technology, outsourcing non-core functions such as distribution, and focusing on improving quality and service delivery. In the Indian cases, supply chain managers were also focusing on establishing contracts with suppliers/customers; while in the South African cases, supply chain managers were focusing on investing in infrastructure and branding into transnational markets.

In the packaged food cases, supply chain managers were focusing on improving the quality of their products; while for personal care cases, supply chain managers were focusing on improving the branding.

The supply chain managers were also focusing on reducing the number of SKUs in order to exercise better quality management control over the product portfolio. However, the steps they were taking lacked a full understanding of international regulations, end-to-end supply chain visibility, aligned supply chain and

operational strategies, functional integration, a framework for outsourcing, change management and strategies for collaboration.

Another interesting fact identified was that a few of the supply chain optimisation activities negatively impacted the performance of the supply chain. Such optimisation initiatives as LCCS were perceived to improve the efficiency and reduce the cost, however, resulted in increasing the supply chain risks.

Some of the additional findings such as financial accounting practices and forex control have never previously been identified in other research. Therefore, it is suggested that a special effort was required to manage these issues, as supply chain managers were never faced with these issues in the past.

This thesis also focussed on developing a framework of supply chain operating model that was proposed to address the issues identified, and was aligned with the steps taken by the supply chain managers. The framework was evolved from the common typology identified among the cases, and it developed a common supply chain strategy with interlined supply chain elements.

7.3 Recommendations to the industry

This thesis identified certain industry trends from the literature review and the gaps identified from the field research, and these formed the basis for the recommendations made to the industry. The recommendations were identified from a point of view – what the CEs of these cases should have considered changing or implementing to address the identified issues and to improve the efficiencies and effectiveness of their transnational supply chains.

It was evident from the findings of this thesis that the four cases used a similar supply chain typology and setup. However, it was also evident that none of them had deployed an operating model to govern and streamline supply chains. It was recommended that the proposed framework of the supply chain operating model be developed and tested in order to improve the efficiencies and effectiveness of their supply chains.

It was found during the literature review that the SCOR model was well suited to designing supply chain processes for FMCG firms, although not many firms were using it. It was recommended that an end-to-end process framework that provided the functionality of standardising and benchmarking processes be used by the FMCG industry.

Underlying organisation structures support the supply chain. Based on the earlier two recommendations (operating model and process structures), it was prudent for these cases to standardise their supply chain organisation structure. It was recommended that FMCG industry deploy an organisational structure that was

aligned with its supply chain maturity, with a few functions shared among multiple businesses whereas other functions were regionalised.

It was established from the cases that all the four cases used basic supply chain technology (such as ERP). It was recommended that the FMCG industry, with fast paced products and close interactions with end customers, deploy advanced supply chain technologies. Some of the advanced technologies such as RFID, POS, data mining and APS were in use by a few firms of the FMCG industry such as Walmart and Tesco.

It was identified that all the four cases were not completely adhering to the international regulations. This finding was suggested as a huge drawback in transnational environment where strict regulations were forced and introduced regularly. There were quite a few international regulatory bodies there were measuring and controlling the supply chain activities in the FMCG industry. Adherence to these international regulatory bodies was recommended as the most of the supply chains in the FMCG industry were becoming transnational.

It was identified from the literature and the findings from the research that the cases were not assessing their supply chains regularly. In order to meet the ever-changing customer requirements and business and economical dynamics, it was recommended that transnational supply chains evaluate their supply chain setups and models regularly. It was recommended that such reviews need to be conducted every three to five years at the strategic level, every year at the tactical

level, every six months at the operational level and every month at the scheduling level.

With the four cases jumping on the bandwagon of adopting best practices and the findings from the literature suggesting that it resulted in further supply chain risks, it was necessary that these cases develop a comprehensive supply chain risks program. It being the hot topic, supply chain risk management was recommended to be at focus of all supply chain activities to reap benefits in tight supply chains.

Linked to risk management, the finding from the literature that supply chain were focusing on their environmental footprints, however that was not found with the cases, it was recommended that the FMCG supply chains focus on the impact of its activities on the environment.

It was established from the findings that there was a lack of focus on supplier relationships especially in the terms of established contracts. This impacted on the service levels of not only the finished goods, but also the internal supply chain. An international contract management framework was recommended as a high priority in order to initiate the process of setting up contracts with suppliers and customers.

This thesis identified two approaches for supply chain improvement – “agile” and “lean”. It was recommended that the FMCG supply chains consider both supply chain approaches. However, it was also recommended that the FMCG supply chains focus on becoming “lean” first (as this approach was much simpler

compare to the other) and then “agile” in order to gain quick competitive advantage.

This thesis highlighted that S&OP process was not properly used by the four cases. It was recommended that the FMCG supply chains not only use and adapt S&OP process, but also focus on involving finance as a part of planning. The latter concept was called integrated business planning that involved finance along with sales and operations to develop joint plans.

It was established that all the four cases had higher working capital and related issues. Hence, a focus on optimising work capital was required. It was recommended that the FMCG supply chains take control of their working capital by deploying supply chain visibility tools and better contract management (as mentioned beforehand).

It was evident from the findings that not all the four cases were using the functionality of manufacturing and distribution outsourcing to full extent. The Indian cases were required to focus more on this issue. It was recommended that FMCG firms further make use of outsourcing to a full extent in order to realise quicker value.

It was identified in this thesis that the four cases were not aligning their supply chain planning models. Also, it was evident that the non-integration of optimisation between the different planning levels nullified the benefits achieved from optimisation at a specific level. Therefore, it was recommended that integrated

planning levels were used by a FMCG supply chain to improve efficiency and reduce costs.

Appendix D10 presents some of the similar models that were used in FMCG or other industries. It was proposed that these models could also be used as a point of reference to build specific models for transnational supply chains.

In addition to the above recommendations to the industry, the researcher felt that it was necessary to share the learning from applying an academic research approach to business problems.

The academic research approach did not excite most of the respondents from the four cases, and the value and return on the time spent and information shared by them for such an exercise was questioned. It was the buy-in from the top management from these cases, as they were able to identify issues within and to benchmark their supply chains with others, made this research study a reality. The continuous support from the chief executives assisted the researcher to progress quickly with this research study.

Despite of the support from the chief executives of the four cases, the access to the information was limited. In order to gain access to the documents, the researcher had to liaise closely with almost all of the respondents.

Lots of qualitative information was available from the respondents, which was central to this thesis. However, the availability of quantitative data, which was

found necessary to support the qualitative findings, was limited. The researcher had to analyse additional documents and try other sources such as newspaper publications and annual reports to obtain quantitative data that was relevant for this research study.

The learning from attending the supply chain conferences benefited the researcher by testing to some extent the validity of conducting this research study. The researcher gathered latest research topics and business issues tabled at those conferences and analysed them in context of scope of this research study. The researcher also got a chance to discuss the research proposal and preliminary findings with the peers in the field of supply chain management.

7.4 Suggestions for further research

Several related areas of research were identified during the course of the literature review and while conducting the field research.

- a. There was a need to identify the commonalities and differences among the supply chain skills between the two countries, India and South Africa, based on the typology and the analytical framework (operational, financial and governance models).
- b. In addition to the above, it was found that the area of assessing the competence of supply chain managers in these two countries was not properly addressed in the literature. Although this area falls into the field of the humanities, it was nonetheless suggested that it should be considered from a supply chain perspective (i.e. in the field of management).
- c. The need to assess the maturity of a supply chain and its influence on the performance and structure of other supply chains became evident. Such a study would provide supply chain practitioners with a platform to achieve comparative supply chain benchmarking.
- d. The present research work could be further extended to the other industries¹¹³ in the two countries. This may involve extending the identified typology and analytical framework to other industries within the established trade regimes of the two countries.
- e. This research work could also be further extended to achieve an understanding of the impact of enhancing the efficiencies of transnational FMCG supply chains on the relationships, business growth and other industries in these two countries.

¹¹³ These were identified as retail, hi-tech and pharmaceutical (perceived to have similar transnational factors).

- f. The present research involved comparing certain findings from the cases with the situation in South America (Brazil). However, the full scope of this thesis could be extended to carry out a similar study in countries in South America and Asia that have similar infrastructure and supply chain setups, as demonstrated by the cases.
- g. It is necessary to analyse the key newly identified issues such as unaligned financial accounting systems and forex controls in detail. This kind of further research will provide supply chain managers with remedies to address these issues.
- h. It is necessary to ascertain the trade-off criteria and decisions regarding inventory and cost between transnational and local supply chains. Such a framework could be developed based on a detailed dataset obtained from a single case study.
- i. The negative impact of the best practice models on the performance of supply chains was definitely an area that required further detailed research. It is suggested that the analysis conducted on only a few best practice models should be extended to other models in order to understand the complete set of impacts and to identify appropriate remedial frameworks to address the related issues/risks.
- j. The present proposed framework could also be developed further to identify its applicability and validity to transnational FMCG supply chains.

7.5 Conclusion

This thesis was focused on identifying the typology of FMCG supply chains, the issues affecting them and the steps that supply chain managers were taking to deal with these issues in the packaged food and personal care segments in India and South Africa across four selected cases. The literature was reviewed in terms of supply chains, the FMCG industry, the roles of supply chain managers, the related analytical framework, the trade regimes of the host country and the transnational aspects that had a direct bearing on the subject of this study.

Issues covered in the literature included the unclear definition of the term “supply chain” in the FMCG industry, the unaligned roles and responsibilities of supply chain managers, the inadequate use of the latest trends and the impact of trade regimes on the FMCG industry. In a novel way, the research study identified the microeconomic impact of a country’s trade regime on the structure and performance of its supply chains.¹¹⁴ These issues were also focused on in the cases that were researched.

Responding to the main research aim, which was “to identify issues within transnational FMCG supply chains originating in India and South Africa”, the study analysed the supply chains in terms of three different dimensions: typology, performance issues and the steps that supply chain managers were taking to deal with these issues. The collective case study approach was found to be useful in conducting the within-firm and across-firm comparisons of the findings of the case

¹¹⁴ This was never addressed previously.

studies. The typology developed for the research cases could be used by other developing countries.

This thesis also identified the SCOR model as the most appropriate model to analyse the operational performance of supply chains. This thesis, again in a novel way,¹¹⁵ used financial and governance models in conjunction to analyse the various supply chains. A framework for supply chain operating model to address the identified issues was also proposed.

This research study also developed detailed process flows specific to transnational FMCG supply chains. Various issues were identified regarding the two selected product segments, i.e. unaligned policies, longer lead times, lower supply chain responsiveness, requirements for marketing and foreign exchange controls, the inappropriate use of modes of transport, etc. It was found that supply chain managers were addressing these issues by aligning supply chain policies to business policies, implementing advanced technologies and investing in upgrading infrastructure, to name a few such responses.

It was found that the challenges identified within transnational FMCG supply chains could be managed if supply chain managers took appropriate steps that were specific to the FMCG industry and that considered the holistic view and goal of each supply chain. Gaps were identified in the steps taken by supply chain managers and issues were identified related to the use of so-called “best practice models”. Further research was proposed to address these findings in detail.

¹¹⁵ This was never attempted by the related previous supply chain research.

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APPENDICES

Appendix A: Information from cases

A1: Overview of research – Introductory letter

Dear Sir/Madam,

I am a Doctoral research student with Wits Business School, University of Witwatersrand, Johannesburg, South Africa. As a part of this research project, I am interested in learning more about the issues within transnational supply chains in the Fast Moving Consumer Goods (FMCG) industry in India and South Africa. The objective of the research is to help expand the body of knowledge about this important aspect of the FMCG supply chains.

This research project uses three dimensions to identify and to analyse the issues within transnational FMCG supply chains. The first dimension is the supply chain operations reference (SCOR) model. The supply chain performance indicators and the metrics are used as a basis to depict the FMCG supply chains. Please refer to 'www.supply-chain.org' for further readings on the SCOR model. The second dimension is the financial indicators. The elements from the income statement and the balance sheet are used to represent the financial indicators. The third dimension is the supply chain grid which is used as a platform to identify the softer issues.

To do all this, of course, means going to someone such as yourself who has experienced this. Your organisation has been identified as a leading FMCG company in your sector that has gone through the phase of becoming transnational. This research project involves investigating the transnational setup,

the supply chain topology, architecture, structure, technology, policies, strategies and measurements. This project is purely a research exercise and doesn't intend to produce the results and findings for a commercial purpose. All the responses will be treated as strictly confidential.

The output of this project will be a list of issues faced by the transnational FMCG supply chains and the steps the supply chain managers take to address these issues. The outputs of the research will be shared with your organisation.

Please note that this survey is not an evaluation tool to assess supply chain maturity and knowledge of a respondent; thereby it doesn't incorporate any sections and will not present any results pertaining to the supply chain knowledge and maturity of a respondent.

I look forward to your consent in participating in this research. Over a period of next few months, I will be liaising closely with you to discuss this research project and the next steps. Your assistance to make a real contribution to the accuracy and success of this study will be greatly appreciated and will help us at the Wits University to know more about the issues within the transnational FMCG supply chains.

(Dinesh Kumar)

Appendix B: Protocol of the interviews

B1: Supply chain setup of the cases

1: Please categorise your firm into one of the following categories.

1. Regional local firm
2. National local firm
3. Multinational firm
4. Joint venture, mergers or strategic alliance with overseas firms.
5. Other e.g. franchises

2: Please state how many overseas suppliers your firm has.

1. 0
2. 1-10
3. 11-100
4. >100

3: Please state how many overseas manufacturing plants your firm has.

1. 0
2. 1-10
3. 11-30
4. >30

4: Please state how many overseas distribution centres your firm has.

1. 0
2. 1-10
3. 11-30
4. >30

5: Please state how many overseas customers your firm has.

1. 0
2. 1-100
3. 101-1,000
4. >1,000

6: Please state how many finished goods stock keeping units your firm has.

1. <100
2. 100-400
3. 401-1,000
4. >1,000

7: Please state how many supply chain employees your organisation has.

1. <10
2. 10-50
3. 51-100
4. 101-1,000
5. >1,000

8: Please state how much involved are you with the supply chain activities.

1. Fully involved
2. Somewhat involved
3. Not involved

9: Would you be interested in participating in further research?

1. Yes
2. No

10: Would you prefer that your firm not be mentioned as one of the firms participating in the research?

1. Prefer to be mentioned
2. Prefer not to be mentioned

B2: Specific information obtained from the cases

B2.1 Typology of the supply chain

Functional attributes

- a. What products are procured by your firm?
- b. What sourcing type your firm uses?
- c. What is organisation of the production process?
- d. Does your firm have repetition of operations?
- e. What is the distribution structure of your firm?
- f. What pattern of delivery your firm follows?
- g. What is the mean of deployment of transportation for your firm?
- h. What types of loading restrictions exist?
- i. How are the relations of your firm with your customers?
- j. Is future demand/forecast available to share with the partners?
- k. What is life cycle and shelf life of your products (short, medium or long)?
- l. How are finished products sold in the market?

Structural attributes

- a. What is the network structure for your firm?
- b. What is the degree of globalisation in the supply chain network in your firm?
- c. What is the location of decoupling points in your firm's network?
- d. What is the legal position in your firm?
- e. What is the direction of the co-ordination in your firm's network?
- f. What type of information is exchanged in your firm's supply chain?

B2.2 Issues identified

Operational performance - Attributes

- a. How are your order fulfilments?
- b. What is your order fulfilment cycle?
- c. What is the impact on upside supply chain flexibility?
- d. What is the impact on upside supply chain adaptability?
- e. How is your downside supply chain adaptability?
- f. What is the impact on cost of goods sold?
- g. What is the impact on your cash-to-cash cycle time?
- h. How are your returns on supply chain assets?

Financial performance - Indicators

- a. What is the impact on your sales?
- b. How are your sales return and allowance?
- c. What is the impact on cost of goods sold?
- d. What is the impact on selling, general and administrative expense higher?
- e. What is the influence on your inventory for raw material, finished goods and work-in-progress?
- f. What is the impact on your cash and cash equivalent?
- g. How are your property, plant and equipment?
- h. What is the impact on your accounts payable and accounts receivable?

Governance performance - aspects

- a. What policies do you use and are those standardised?
- b. What measurements do you use?
- c. How is your supply chain culture? Is it aligned with business culture?
- d. Do you have a defined and stronger supply chain leader?
- e. What are the supply chain skills requirements?
- f. What is your supply chain strategy? Is it aligned with business strategy?
- g. How integrated your supply chains functions?
- h. Are the business technologies integrated with each other in your firm?

B2.3 Supply chain managers addressing the issues

- a. How are you negotiating sourcing related issues with your suppliers?
- b. What quality audits have you deployed on the products sourced?
- c. What steps are you taking to address the manufacturing issues?
- d. Do you make use of 3PL service providers?
- e. Do you also consider outsourcing of your manufacturing process?
- f. How are you addressing the issues related to warehousing and distribution?
- g. How do you deal with issues related to the lower customer service levels?
- h. What advanced technologies are you using to help resolve the issues?
- i. How are you resolving skills related issues?
- j. Are you adapting to such standard guidelines as ISO to standardise your firm's supply chain processes?
- k. What supply chain framework are you using to resolve the supply chain organisational and structural issues?

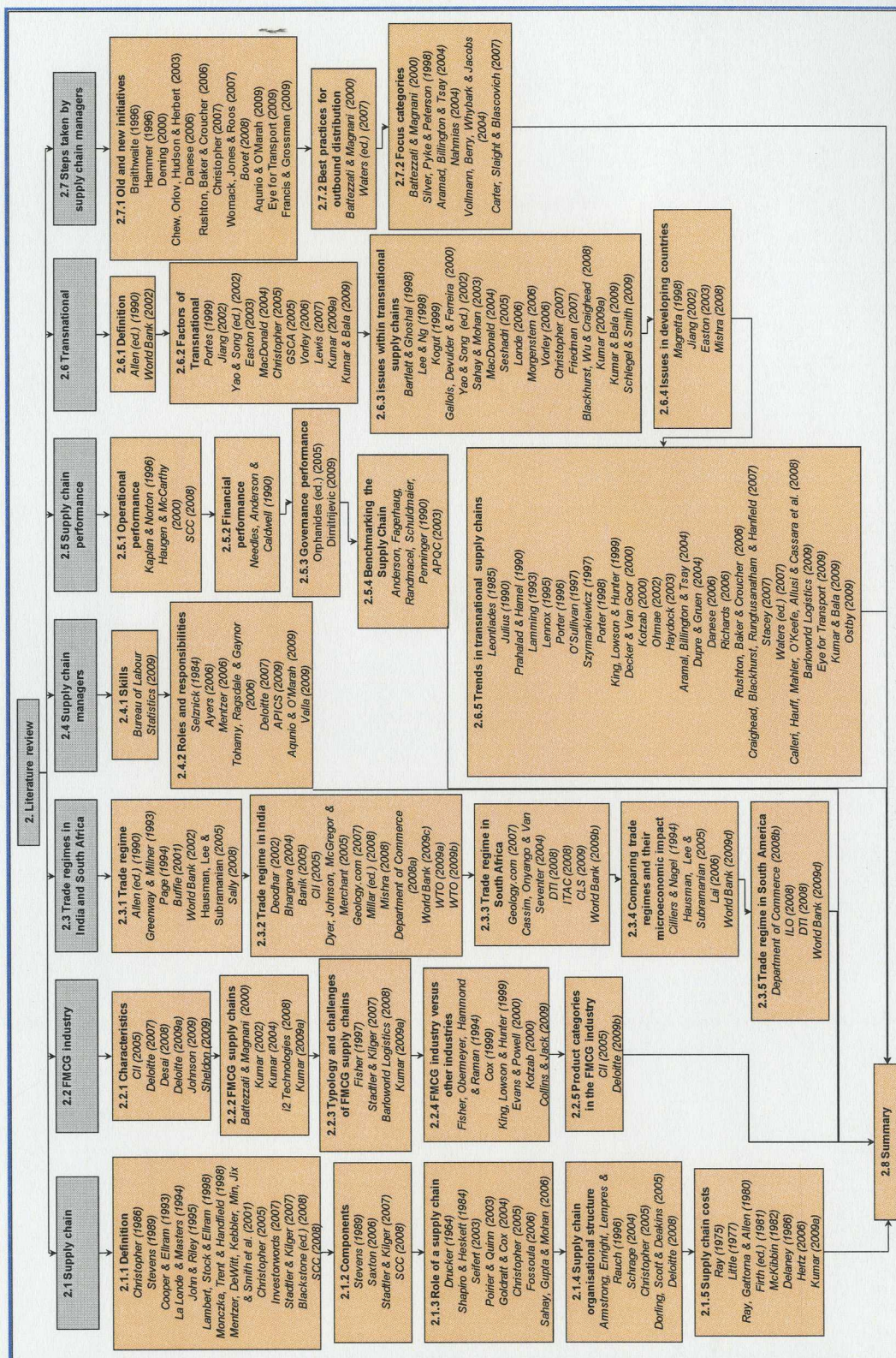
Appendix C: Consistency Matrix

Research sub-questions	Literature	Data sources	Propositions	Protocol	Data analysis
What was the typology of MCG supply chains originating in India and South Africa?	Drucker (1964), Ray (1975), Ray, Gattorna & Allen (1980), Firth (ed.) (1981), McKibbin (1982), Shapiro & Heskett (1985), Delaney (1986), Stevens (1989), Anderson, Fagerhaug, Randmacel, Schulmaier, Penninger (1990), Prahalad & Hamel (1990), Cooper & Ellram (1993), Greenway & Milner (1993), Lamming (1993), Cilliers & Nagel (1994), Fisher, Obermeyer, Hammond & Raman (1994), La Londe & Masters (1994), Page (1994), John & Riley (1995), Armstrong, Enright, Lempres & Rauch (1996), Kaplan & Norton (1996), Porter (1996), Fisher (1997), O'Sullivan (1997), Bartlett & Ghoshal (1998), Lee & Ng (1998), Leontiades (1998), Magretta (1998), Lambert, Stock & Ellram (1998), Monczka, Trent & Handfield (1998), Porter (1998), Cox (1999), Portes (1999), Battezzati & Magnani (2000), Decker & Van Goor (2000), Gallois, Devulder & Ferreira (2000), Haugen & McCarthy (2000), Mentzer, DeWitt, Keebler, Min, Nix & Smith et al. (2001), Deodhar (2002), Jiang (2002), Kumar (2002), Ohmae (2002), Yao & Song (ed.) (2002), APQC (2003), Easton (2003), Haydock (2003), Meakem (2003), Poirier & Quinn (2003), Sahay & Mohan (2003), Seifert (2003), Aramal, Billington & Tsay (2004), Bhargava (2004), Cassim, Onyango & Van Seventer (2004), Dupre & Gruen (2004), Goldratt & Cox (2004), Kumar (2004), MacDonald (2004), Schrage (2004), Banik (2005), Christopher (2005), CII (2005), Dorling, Scott & Deakins (2005), Dyer, Johnson, McGregor & Merchant (2005), GSCA (2005), Hausman, Lee, & Subramanian (2005), Orphanides (ed.) (2005), Seshadri (2005), Shafaeddin (2005), Bitran, Gurumurthi & Sam (2006), Danese (2006), Fassoula (2006), Goldsby, Griffiths & Roath (2006), Hertz (2006), Joerg (2006), Kosior & Strong (2006), Lai (2006), Londe (2006), Moran (2006), Morgenstern (2006), Richards (2006), Rushton, Baker & Croucher (2006), Sahay, Gupta & Mohan (2006), Saxton (2006), Vorley (2006), World Bank (2006), Christopher (2007), Craighead, Blackhurst, Rungtusanatham & Hanfield (2007), Deloitte (2007), Friedman (2007), Geology (2007), Investorwords (2007), Lewis (2007), Stadler & Kilger (2007), Stacey (2007), Waters (ed.) (2007), Calleri, Hauff, Mahler, O'Keefe, Allusi & Cassara et al (2008), Blackstone (ed.) (2008), Barloworld Logistics (2008), Blackhurst, Wu & Craighead (2008), Coleman (2008), Deloitte (2008), Department of Commerce (2008a), Department of	Interviews, published business and financial reports; internal project and supply chain reports; minutes of meetings; supply chain information	Proposition 1	Interviews and analysis of documents and reports (A 2.2.1)	Content analysis
What were the issues facing transnational MCG supply chains originating in India and South Africa?			Proposition 2	Interviews and analysis of documents and reports (A 2.2.2)	Content analysis

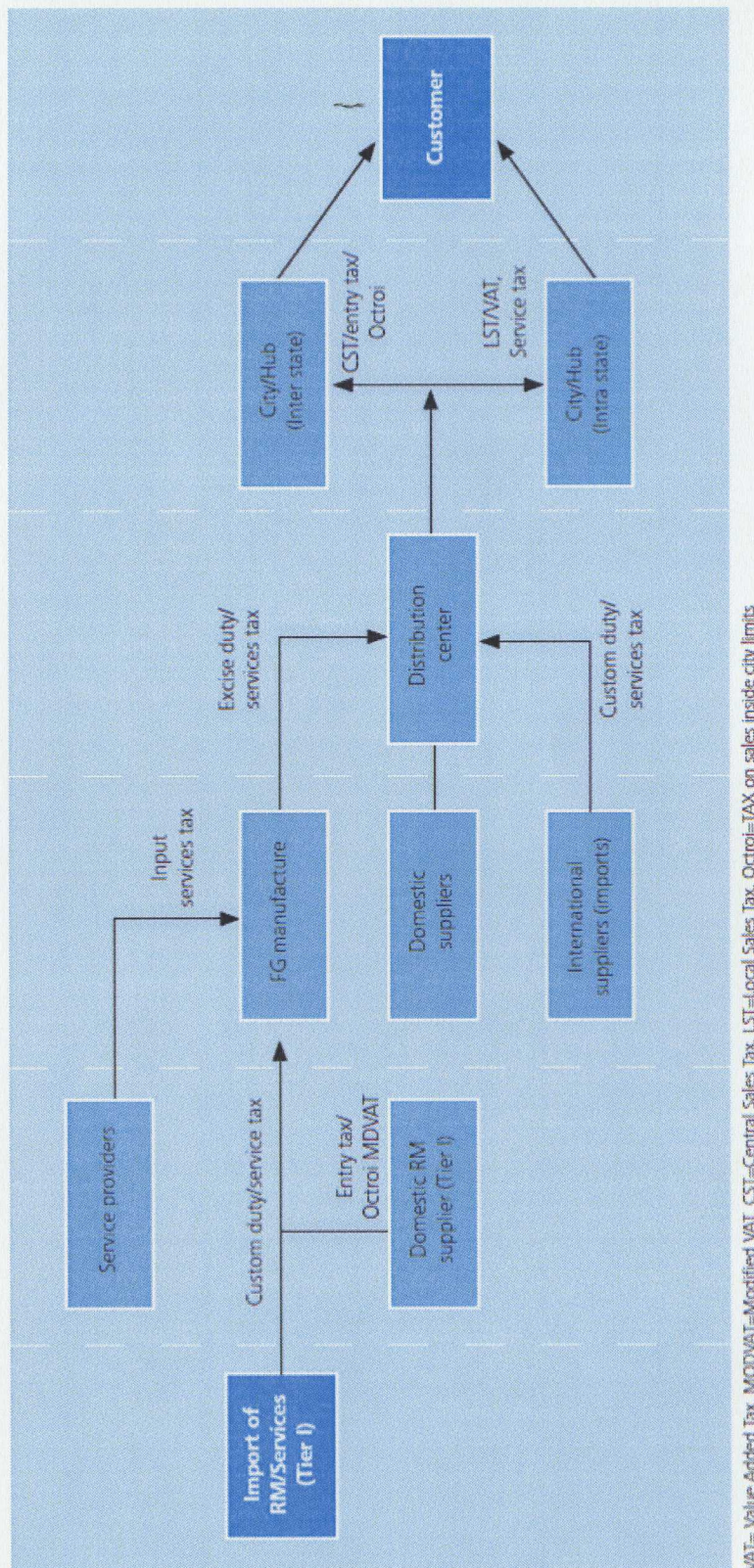
What steps were supply chain managers taking to address the identified issues within transnational MCG supply chains originating in India and South Africa?	Commerce (2008b), Desai (2008), DTI (2008), i2 Technologies (2008), ILO (2008), ITAC (2008), King (ed.) (2008), Millar (ed.) (2008), Mishra (2008), Needles, Powers & Crosson (2008), Sally (2008), SCC (2008), Soanes, Stevenson & Hawks (eds.) (2008), Anderson & Dekker (2009), Barloworld Logistics (2009), Cheng & Choi (eds.) (2009), CLS (2009), Collins & Jack (2009), Deloitte (2009a), Deloitte (2009b), Denise (2009), Dimitrijevic (2009), Eye for Transport (2009), Johnson (2009), Kumar (2009a), Kumar (2009b), Kumar & Bala (2009), Lofstock & Foucher (2009), Ostby (2009), Richey, Roath, Whipple & Fawcett (2009), Schlegel & Smith (2009), Sheldon (2009), World Bank (2009b), World Bank (2009c), World Bank (2009d), WTO (2009a), WTO (2009b)			
	Selznick (1984), Braithwaite (1996), Hammer (1996), Battezzati & Magnani (2000), Deming (2000), Chew, Orlov, Hudson & Herbert (2003), Aramad, Billington & Tsay (2004), Nahmias (2004), Vollmann, Berry, Whybark & Jacobs (2004), Ayers (2006), Danese (2006), Hugos (2006), Mentzer (2006), Tohamy, Ragsdale & Gaynor (2006), Rushton, Baker & Croucher (2006), Carter, Slaight & Blascovich (2007), Christopher (2007), Deloitte (2007), Waters (ed.) (2007), Womack, Jones & Roos (2007), Bovet (2008), APICS (2009), Aquinio & O'Marah (2009), Bureau of Labour Statistics (2009), Eye for Transport (2009), Francis & Grossman (2009), Kumar & Kumar (2009), Valla (2009)	Proposition 3	Interviews and analysis of documents and reports (A 2.3.3)	Content analysis & benchmarking with SCOR model

Appendix D: Additional documents

D1: Detailed literature map



D2: Taxation setup for supply chains in India



D3: CLS linked currencies (as of Oct 2009)

Country/Entity	Symbol	Currency
 Australia	AUD	Australian dollar
 Canada	CAD	Canadian dollar
 Denmark	DKK	Danish krone
 Eurozone	EUR	Euro
 Hong Kong	HKD	Hong Kong dollar
 Israel	ILS	Israeli new shekel
 Japan	JPY	Japanese yen
 Mexico	MXN	Mexican Peso
 New Zealand	NZD	New Zealand dollar
 Norway	NOK	Norwegian krone
 Singapore	SGD	Singapore dollar
 South Africa	ZAR	South African rand
 South Korea	KRW	South Korean won
 Sweden	SEK	Swedish krona
 Switzerland	CHF	Swiss franc
 United Kingdom	GBP	Pound sterling
 United States	USD	United States dollar

Source: CLS (2009:1)

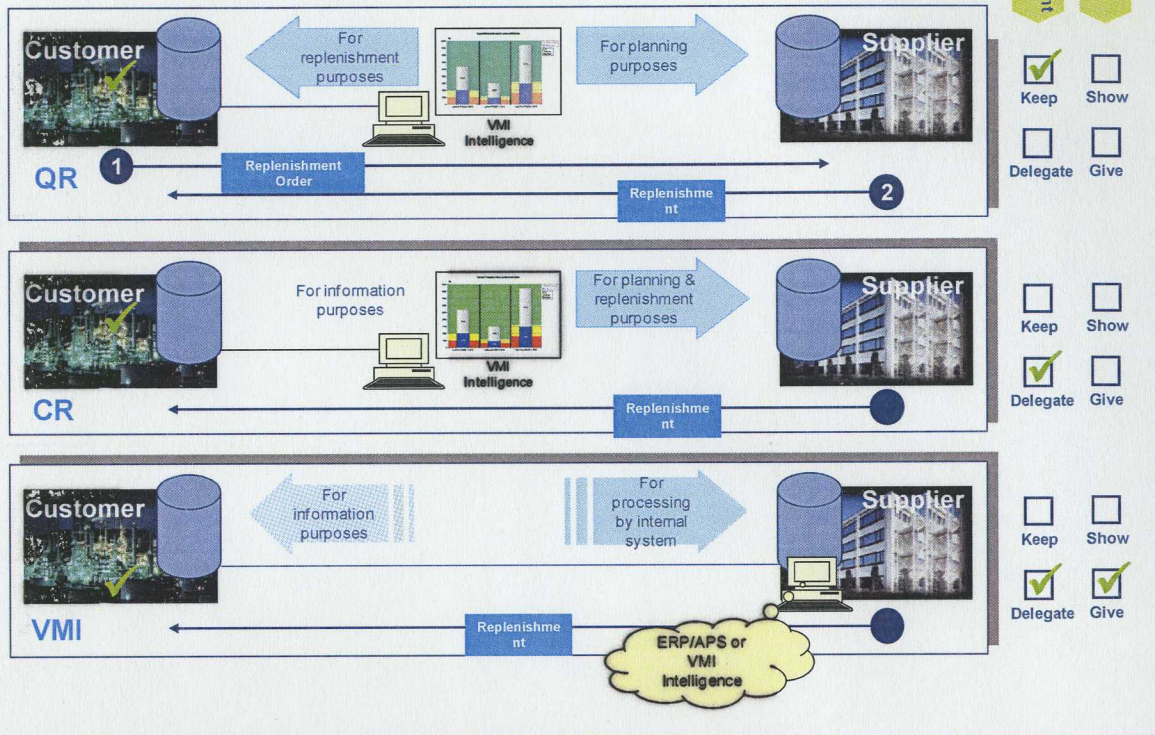
D4: Difference between transactional, information sharing and collaborative partnerships

Partnership/Relationship	Description	Supply chain integration support	Types of electronic information included
Transactional	Computer-to-Computer transmission of fixed structure transactional information. <i>Example: EDI</i>	- No support of synchronised planning. - Supports synchronised execution.	Purchase Orders Invoices Order Acknowledgement Shipment Notices Load Tendering Load Acknowledgement Freight Invoicing Freight Payments
Information Sharing	Trading partner information-sharing and exchange. <i>Example: Wall-mart's RetailLink</i>	- Supports synchronised, but independent planning. - Minimum support of integrated execution.	Order Status Shipment Tracking and Tracing Sales Forecasts Production Schedules Inventories Product Designs and Specifications Product Descriptions and Prices Promotional Calendars
Collaborative	Trading partner joint development of plans.	- Supports joint synchronised planning. - Minimum support of integrated execution.	New Product Plans Product Design and Technical Specs Product Packaging Pricing Promotional Plans Demand Plans Replenishment Plans Store Layout and Shelf Space Plans

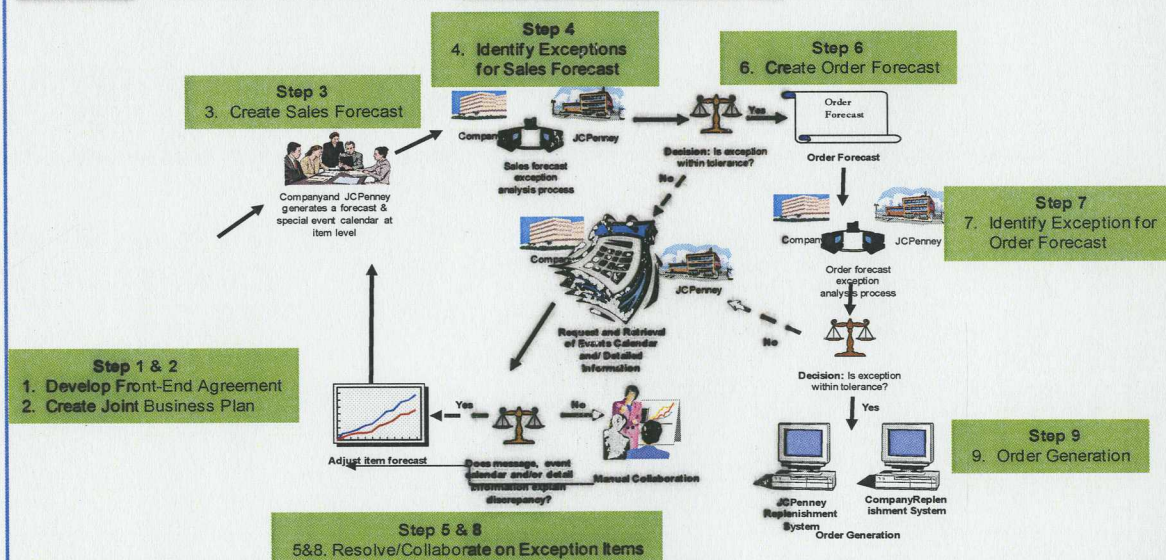
Source: Compiled from Kumar & Bala (2009)

D5: Collaboration

Overview of types of collaboration: QR, CR and VMI



1. Develop front-end agreement
2. Create joint business plan
3. Create sales forecast
4. Identify exception for sales forecast
5. Resolve/collaborate on exception items
6. Create order forecast
7. Identify exception for order forecast
8. Resolve/collaborate on exception items
9. Order generation



Source: Compiled from Joerg (2006) and Cheng & Choi (eds.) (2009)

D6: Information collected from cases

D6.1: Supply chain roles from the cases

	Indian cases └── South African cases ──┘			
Segment	Packaged Food		Personal Care	
Cases	Surya	AVI	Dabur	Amka
Roles				
Supply chain manager/director	Yellow	Yellow	Yellow	Yellow
Special supply chain projects leader	Yellow	Yellow	Yellow	Yellow
Inventory manager	Orange	Green	Green	Green
Production manager	Orange	Orange	Orange	Orange
Distribution manager	Green	Green	Green	Green
Finance manager	Blue	Blue	Blue	Blue
Warehouse manager	Green	Green	Green	Green
Procurement manager	Green	Green	Green	Green
Sales manager	Red	Brown	Brown	Brown
Marketing manager	Red	Red	Red	Red
Chief information officer/IT manager	Grey	Grey	Grey	Grey
Chief operating officer/CEO	Yellow	Red	Red	Red
Customer relations officer	Red	Blue	Blue	Yellow
HR manager	Orange	Orange	Orange	Orange

The different colour represents the different roles of the supply chain related functions. For example, in across-case comparison, the yellow colour represents that the supply chain manager/director, the special supply chain projects leader, chief operating officer/CEO and customer relations officer (of the research cases) had similar roles and responsibilities. Also for with-in case comparison, one person had the responsibilities of all of the roles of the same colour.

D6.2: Involvement of roles with the supply chain activities

Segment	Packaged Food		Personal Care	
Cases	Surya	Amka	Dabur	AVI
Roles				
Supply chain manager/director	Y	Y	Y	Y
Special supply chain projects leader	Y	Y	Y	Y
Inventory manager	Y	Y	Y	Y
Production manager	Y	Y	Y	Y
Distribution manager	Y	Y	Y	Y
Finance manager	N	N	N	N
Warehouse manager	Y	Y	Y	Y
Procurement manager	Y	Y	Y	Y
Sales manager	Y	S	S	S
Marketing manager	N	N	S	S
Chief information officer/IT manager	N	N	N	N
Chief operating officer/CEO	Y	N	N	N
Customer relations officer	N	Y	Y	Y
HR manager	N	N	N	N

Wherein,

Y = Full involvement

S = Some involvement

N = No involvement

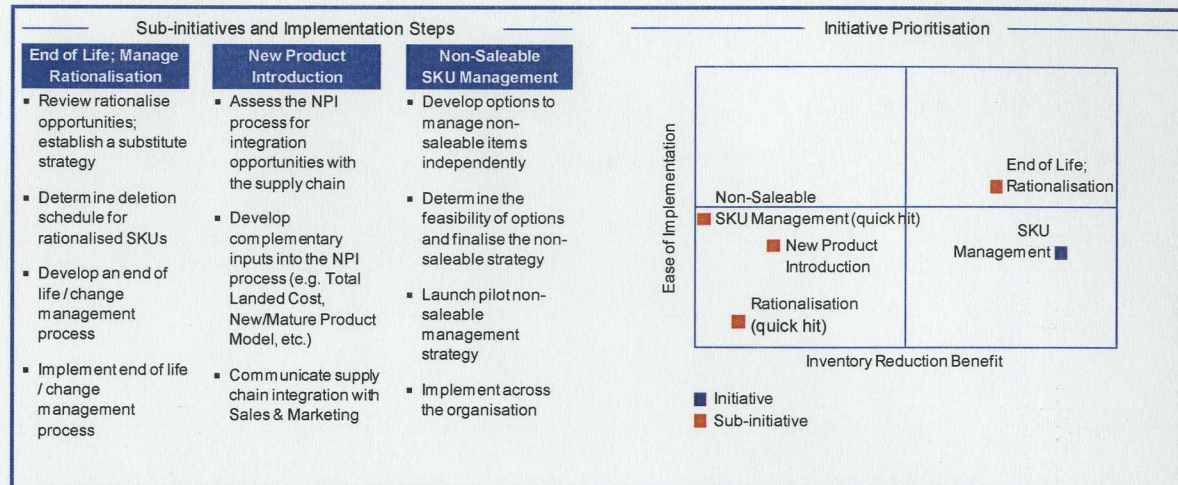
D6.3: Quantitative data obtained from research

Data regarding supply chain metrics															
Case	Surya	Dabur	Amka	AVI	India	SA	Packaged food	Personal car	Brazil	China	US	Thailand	EU	Japan	Canada
Metrics															
Inventory days	32	33	25.4	23	32.5	24.2	27.5	29.2	18						
Logistics cost (% of GDP)															
Labour	4.5	5.5	21	25	13	15.9	14.75	13.25		18	10	16	11	11	
Fuel	58	64	30.5	33.5	61	32	45.75	47.25							
Equipment	37.5	30.5	48.5	41.5	34	45	39.5	39.5							
Distribution of logistics cost (%)															
Administration cost	5.25	2.75	12.5	19.5	4	16	12.375	7.625							
Inventory carrying cost	39.5	48.5	32.5	29.5	44	31	34.5	40.5							
Transportation cost	55.25	48.75	55	51	62	53	53.125	51.875							
Urban and rural growth rates (%)					Rural	Urban									
Tooth paste					17.4	12.2									
Shampoo					10.3	14.6									
Coconut oil					22	13.5									
Hair oil					20.4	14.3									
Transportation cost (in US cents / km)					7	5.6					1.9		5.5	3.7	2
Export timelines for a container															
Number of documents to export					8	8									
Time taken in days to export					22.5	30									
Cost to export (US dollars)					856	1445									
Carbon emission (%)					1.3	1									
Modes of transport (%)															
Rail	42	60	13	21	51	17	31.5	36.5							
Road	58	40	87	79	49	83	68.5	63.5							
Outsourcing															
In-house	99	91	85	63	95	74	81	88							
Outsourced	1	9	15	37	5	26	19	12							

Source: Compiled from research

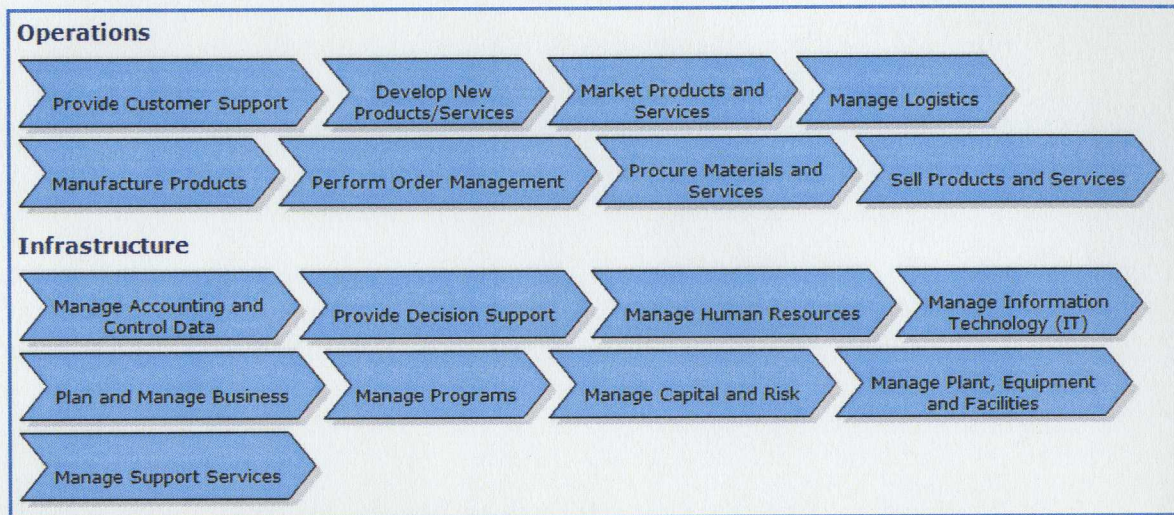
D 7: SKU rationalisation

A generic approach for SKU rationalisation was developed for the research cases, as shown in figure below.



D8: Process flow setup

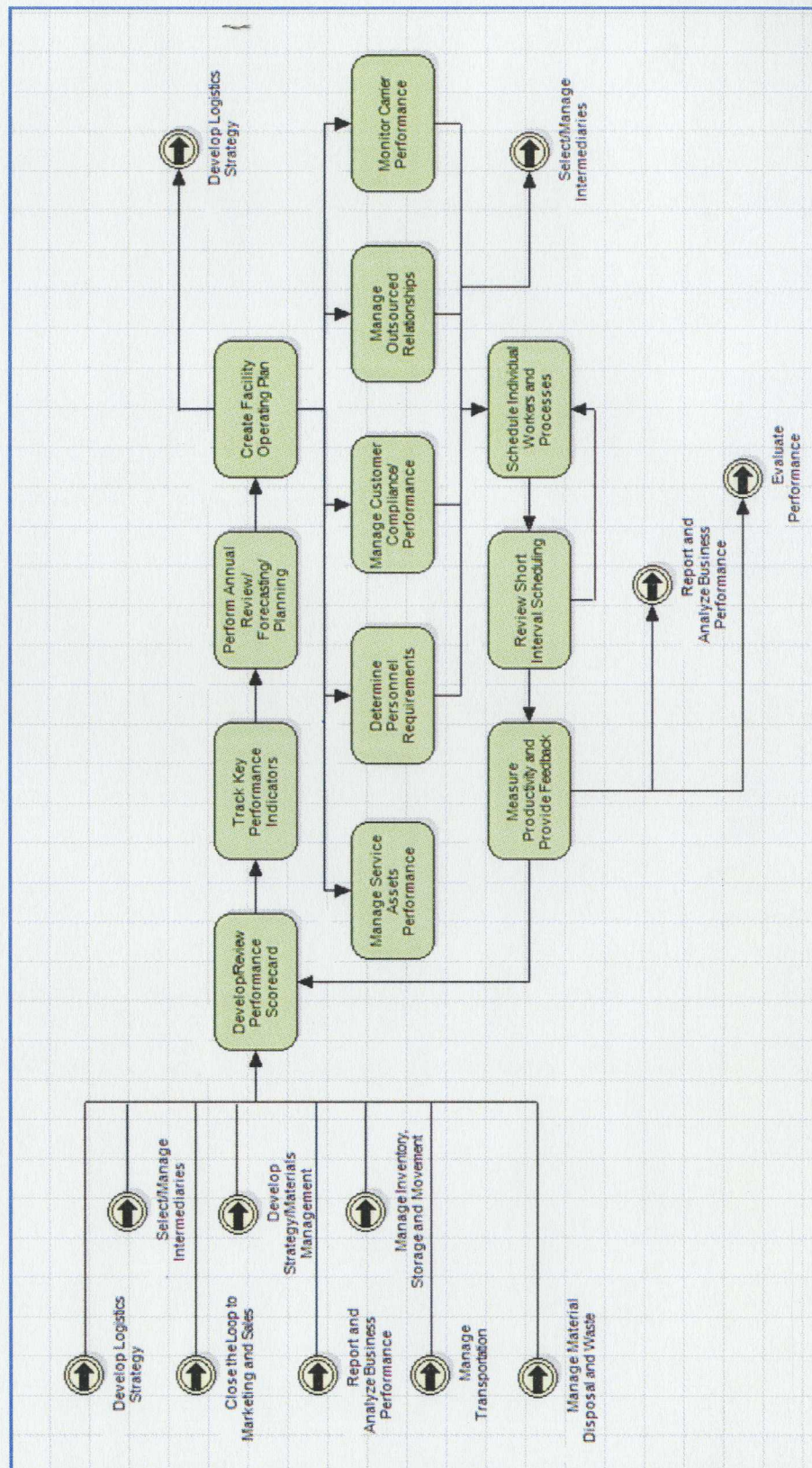
The high level processes are show here for the FMCG setup, categorised into Operations and Infrastructure (support) as per the Porter's (1998) value chain model and SCC (2008).



The high level processes are broken down into level 2 sub-processes, for example "Manage Logistics".

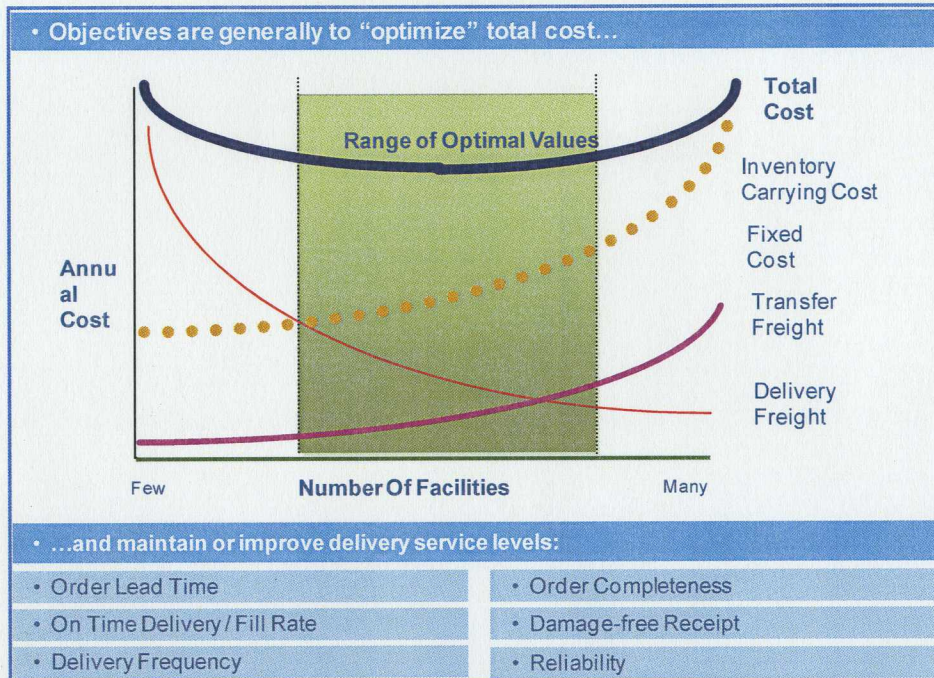


The level 2 sub-processes were further broken down into level 3 activities, for example “Manage Logistics Performance”.



D9: Trade-off between inventory and service level

All the cases were faced with the trade-off decisions between the inventory investment cost and the service level. The figure below shows the trade-off curve.



Source: Kumar (2009a:28)

D10: Details on other models

D10.1: Use of information technology

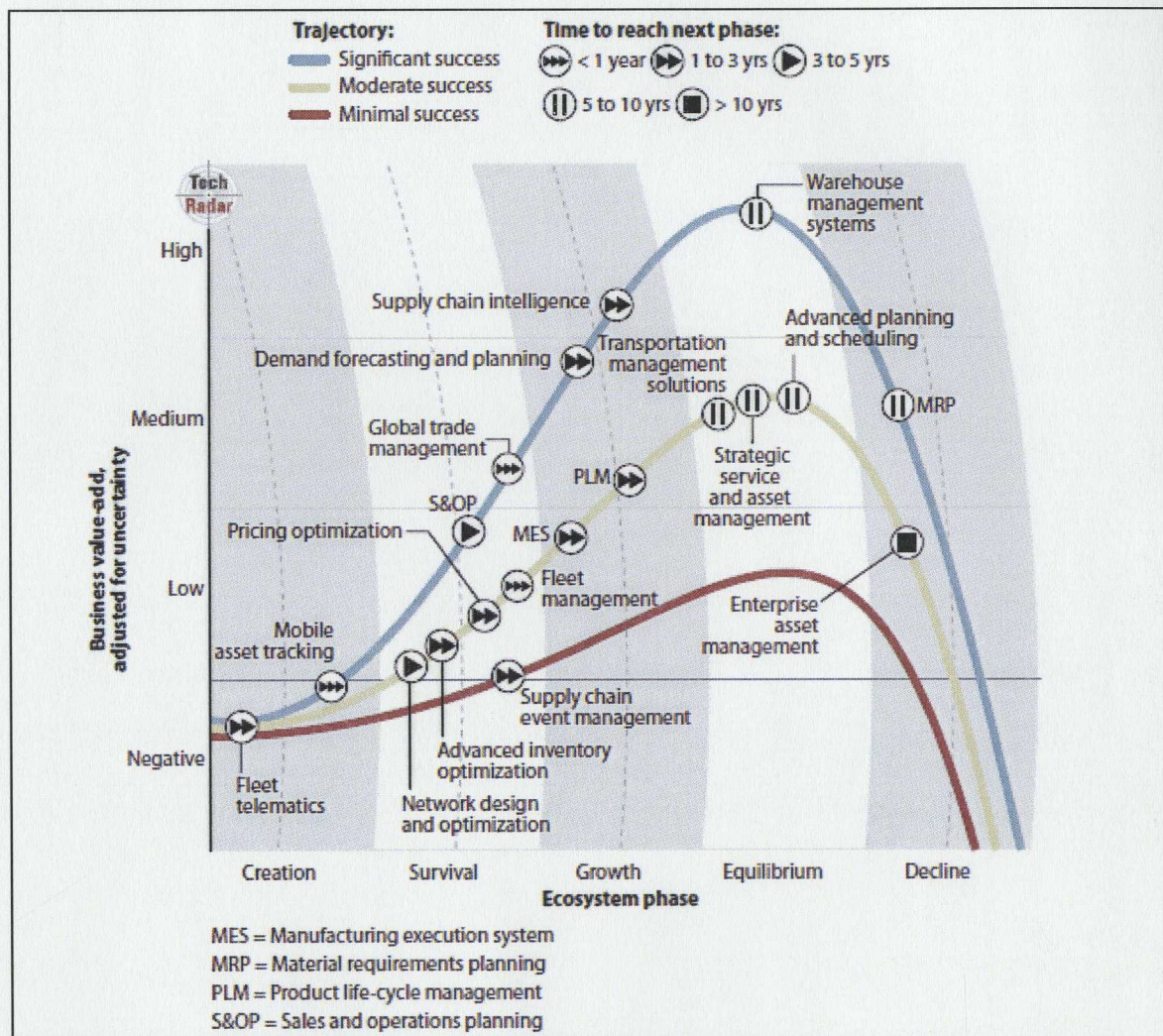
A Deloitte report (2009a) stated that regulations and policies governing the international flow of food materials required accurate identification of the source of the product with other related information such as date of manufacture, ingredients and expiry date. Delen, Hardgrave & Sharda (2007) discussed the use of technology such as RFID to enable this type of supply chain visibility. Rennie (ed.) (2009) also supported this notion. Bottani & Rizzi (2008) performed a quantitative analysis on the use of RFID in the consumer goods environment and found that the use of RFID at the pallet-level tagging stage made economic sense, while the use of RFID at the case-level tagging stage was not profitable in a multi-echelon environment.

According to Webster, Beach & Fouweather (2006), electronic commerce (B2B and B2C) enabled an improved supply chain strategy. They stated that industry was not ready at that time (2006) for fully fledged electronic commerce; however, with the further advancement in technology since then and the ongoing maturity of supply chains, FMCG supply chains could make use of electronic commerce technology to a greater extent.

In terms of supply chain planning, numerous APS systems were available with successful reference cases in the FMCG industry (Aberdeen, 2006). Eschinger (2008), the research director at Gartner, stated that an APS system included solutions such as demand planning, inventory management, distribution

management, transportation management, supplier relationship management and procurement management.

The figure below represents the positioning of APS systems with respect to other systems, as identified by Connaughton (2008) in the Forrester report (TechRadar: SCM systems).



Source: Connaughton (2008:3)

D10.2: Adherence to international regulations

The international regulatory FMCG industry bodies such as EPCGlobal were focusing on developing and training FMCG organisations across the globe to be aware of the various food regulations and to prepare them to develop programmes that would allow them to adhere to these regulations (EPCGlobal, 2009). Kumar (2009a) and Parthasarathy (2009) discussed the various regulatory frameworks. Fryer & Versteeg (2008) pointed out that food regulatory requirements differed by state, country and economic zone. The processing constraints for some types of products such as shelf-stable low-acid foods were heavily regulated across the world.

Below are a few of the regulatory bodies across the world, there were regulating the food standards:

1. British retail consortium
2. Global food safety initiative
3. Consumer goods forum (previously the food business forum)
4. Safe quality food
5. International featured standards institute
6. Food and drug administration
7. Health and human services
8. Centre for food and Applied nutrition
9. Food safety and inspection service
10. Environmental protection agency.

D10.3: Standard process model

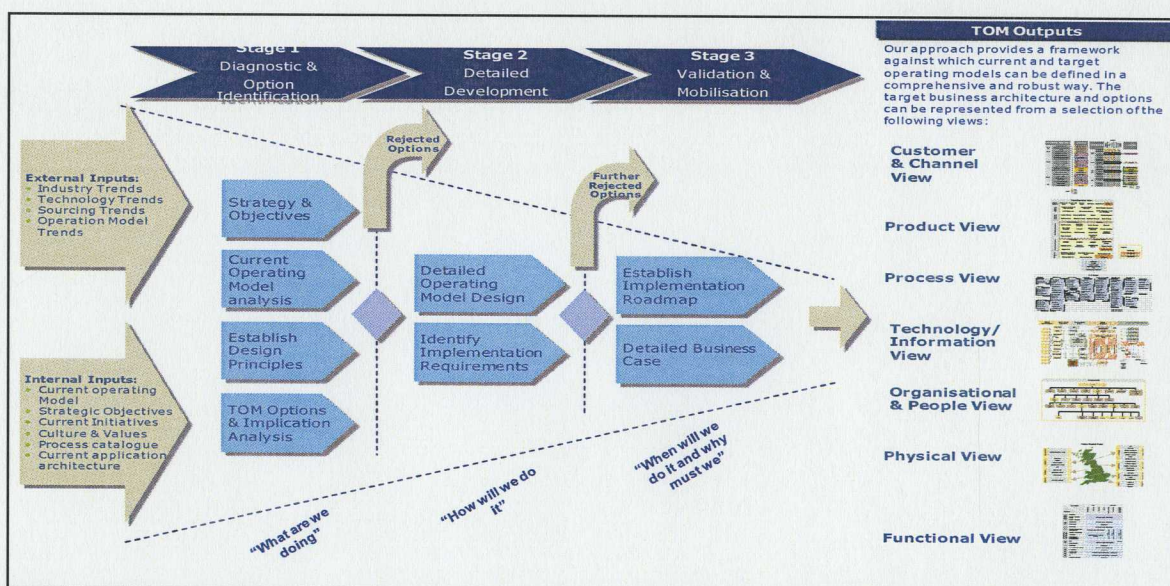
SCC (2008) recommended that FMCG firms should use the SCOR model to design and benchmark supply chain processes in order to achieve competitiveness. Huan, Sheoran & Wang (2004) supported this notion. Also, ISO has developed ISO 22000, which focuses on guidelines for applying standards, safety management, traceability and quality management for the foods and drinks industry. GSCA (2005) also proposed a similar end-to-end process framework for supply chains.

D10.4: Use of supply chain operating model

A TOM approach has been recommended in order to build an aligned and efficient supply chain. A Deloitte report (2008) stated that a TOM aligns operating capacities and strategic objectives and provides a comprehensive view of the core business areas and processes, organisational and functional structure, and information resources of a firm. The objectives of the TOM were to:

- To design an effective procurement organisation with a clearly defined structure, objectives, responsibilities and governance processes that realise cost savings for the firm; supporting each stage of the design process with relevant deliverables.
- To ensure an appropriate implementation approach to smooth the transition and to build a future organisation fit for optimal performance.

The scope of TOM also included the organisational design and the change management in addition to the process design. The figure below represents a typical TOM approach.

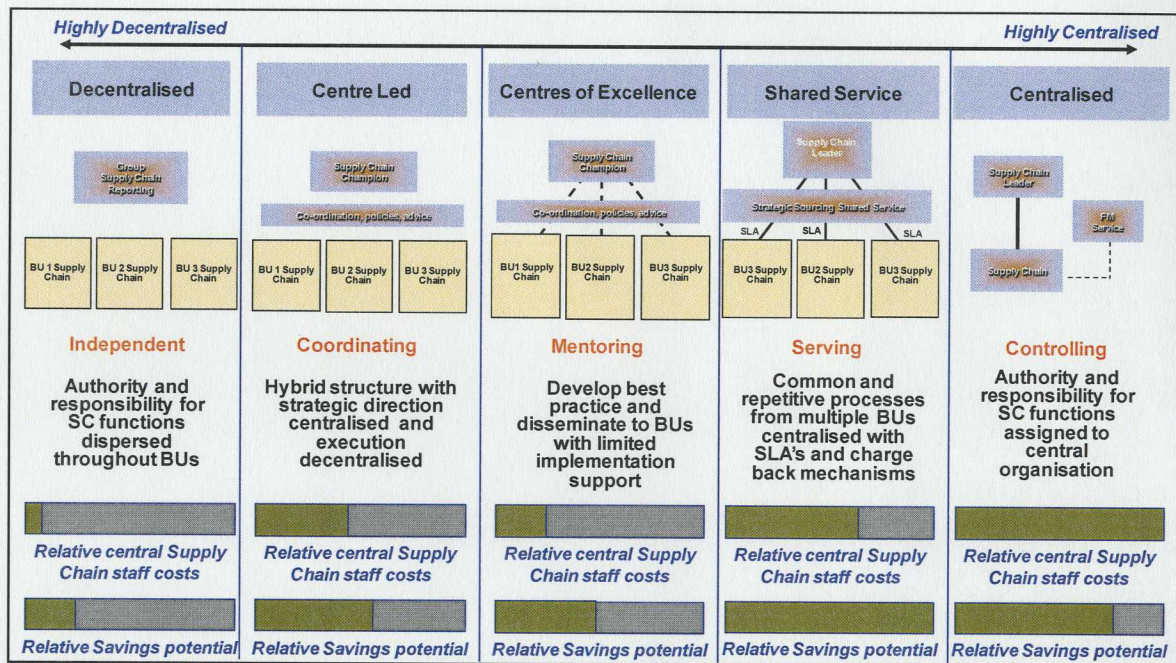


Source: Deloitte (2008)

D10.5: Supply chain organisational structure

Stacey (2007) stated that the organisational structure was important in harnessing the efficiencies of the supply chain functions. Ketchen & Hult (2007) discussed linking organisational theory with supply chains in order to develop value-based supply chain frameworks.

The figure below shows options for setting up organisational structure based on the costs and the saving potential.

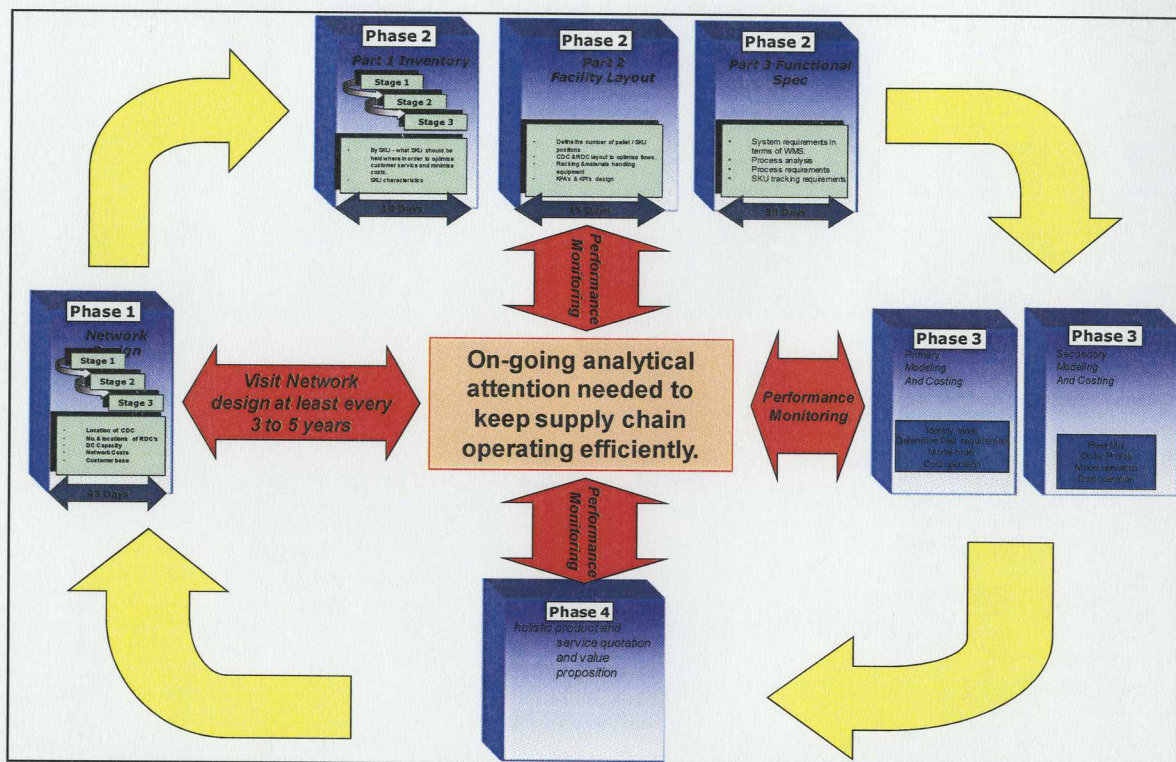


Source: Compiled from Ketchen & Hult (2007) and Stacey (2007)

D10.6: Regular supply chain analysis

Kumar (2009b) recommended that regular reviews of supply chains should be conducted focusing on costs, processes, people, technology and KPI at different levels.

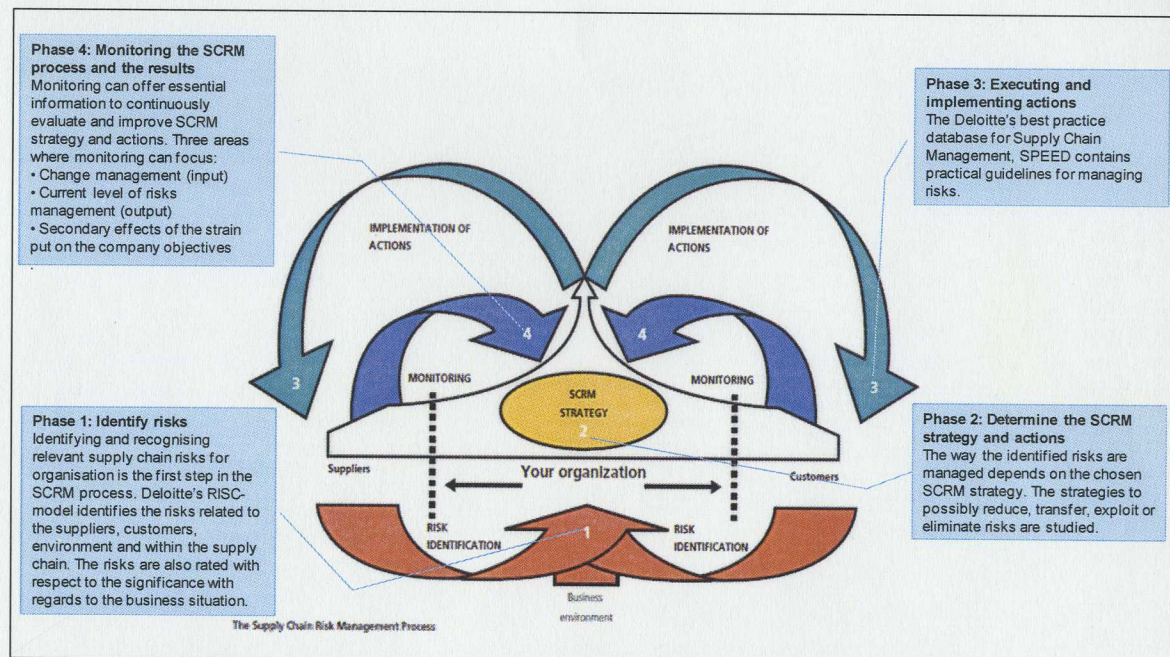
The figure below shows a typical four phase analysis setup of the FMCG supply chain.



Source: Kumar (2009b:6)

D10.7: Supply chain risk management

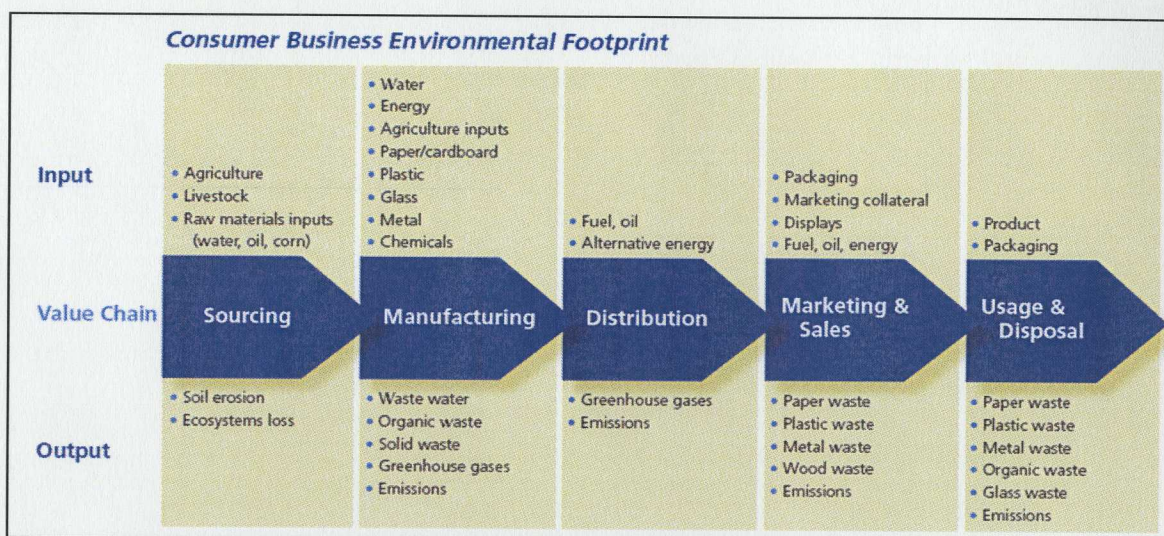
Khan & Burnes (2007) stated that supply chain risks were becoming complex with the newest challenges arising because of the change in the economic setup, business establishments and global relationships. The more efficient and global a supply chain was, the more it was at risk (Kumar & Bala, 2009). Craighead, Blackhurst, Rungtusanatham & Handfield (2007) recommended that mitigation strategies developed to tackle the risks should be based on the severity of supply chain disruptions, while Kumar & Bala (2009) presented a simple four-phase approach (identify risk, determine action, implement and monitor) for supply chain risk management. The figure below shows the four steps process of supply chain risk management.



Source: Kumar & Bala (2009)

D10.8: Environmental footprint

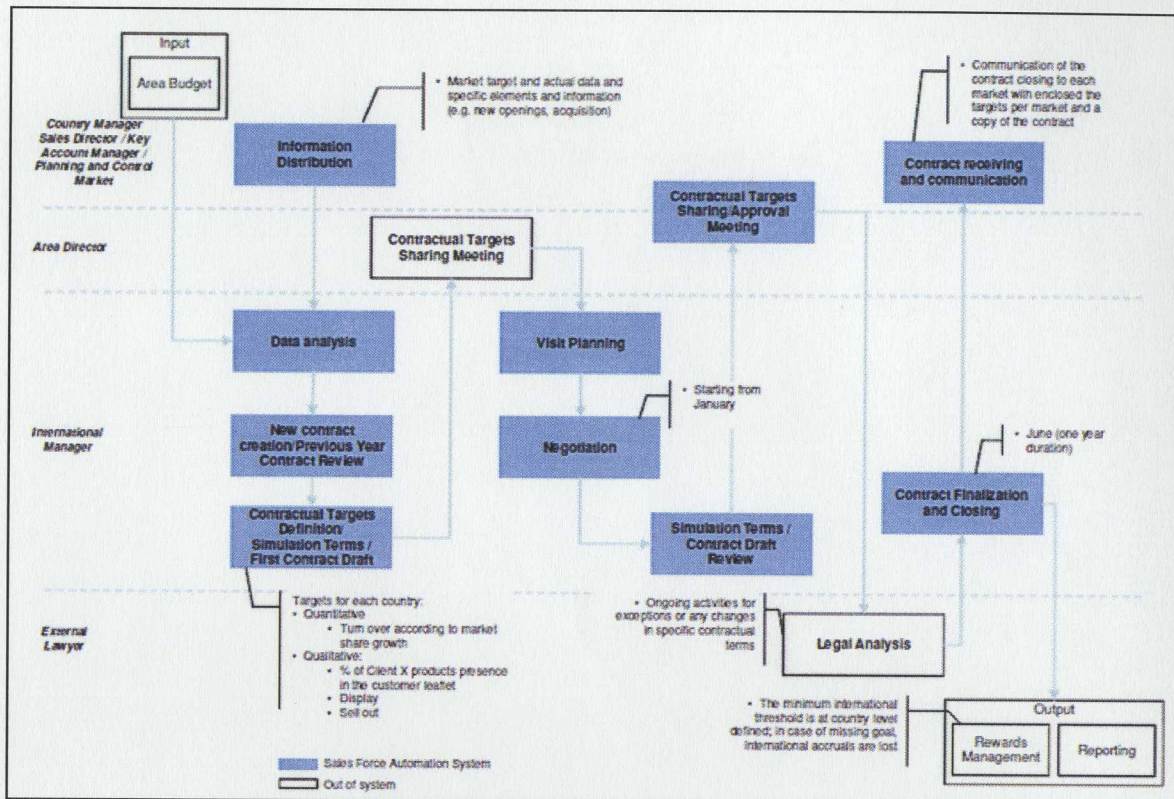
Kinra & Kotzab (2008) stated that the challenge was also to find a balance between sustainability and growth. FMCG firms relied on a wide range of natural resource inputs, such as agricultural products, water, forestry products and marine fish stocks. Consumer products and packaging were also among the largest contributors to solid waste when compared with other industries.



Source: Deloitte (2007)

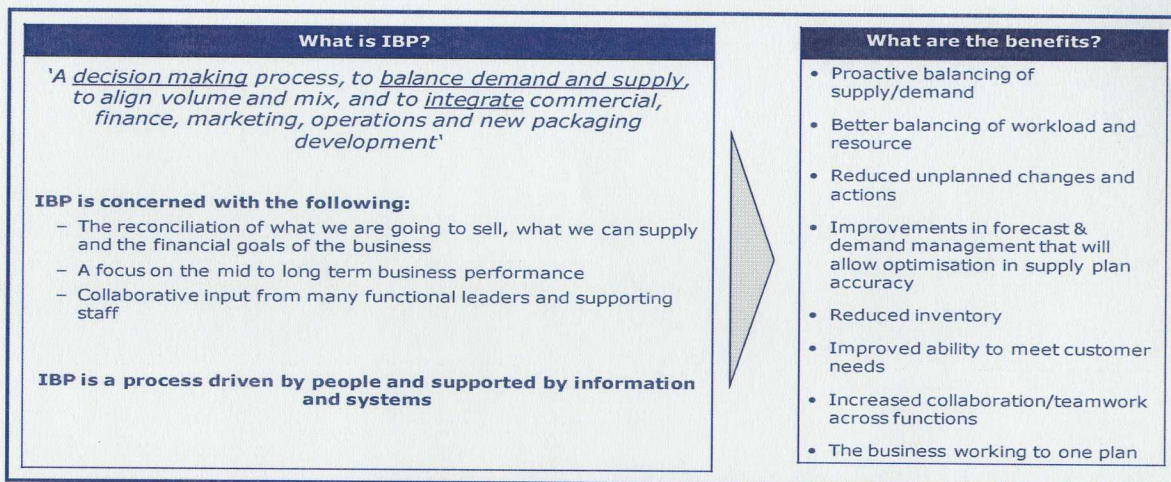
D10.9: International contract management

The figure below represents a generic process of establishing an international contract that was developed as a recommendation for the research cases.



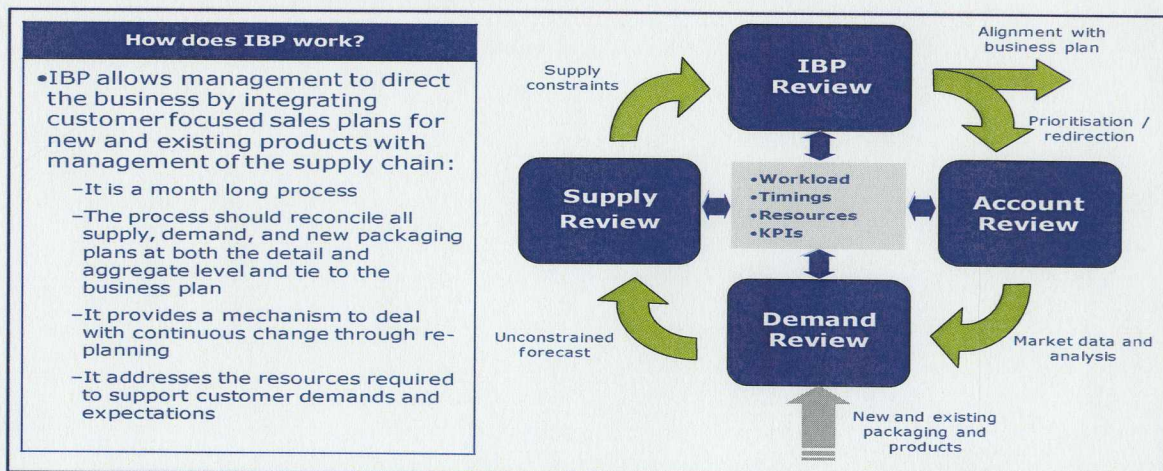
D10.10: Integrated business planning

Viswanathan (2008) conducted a survey of 129 firms and produced a report that examined the missing link between supply chain product management and finance professionals that led to suboptimal decisions, and then outlined the roadmap for an IBP approach. The report recommended that industries should adopt the IBP approach in order to achieve competitive advantages and pointed out that industries such as finance and construction were already using this approach. The figure below represents the definition and the benefits of IBP approach.



Source: Compiled from Viswanathan (2008)

The figure below represents how IBP process works.

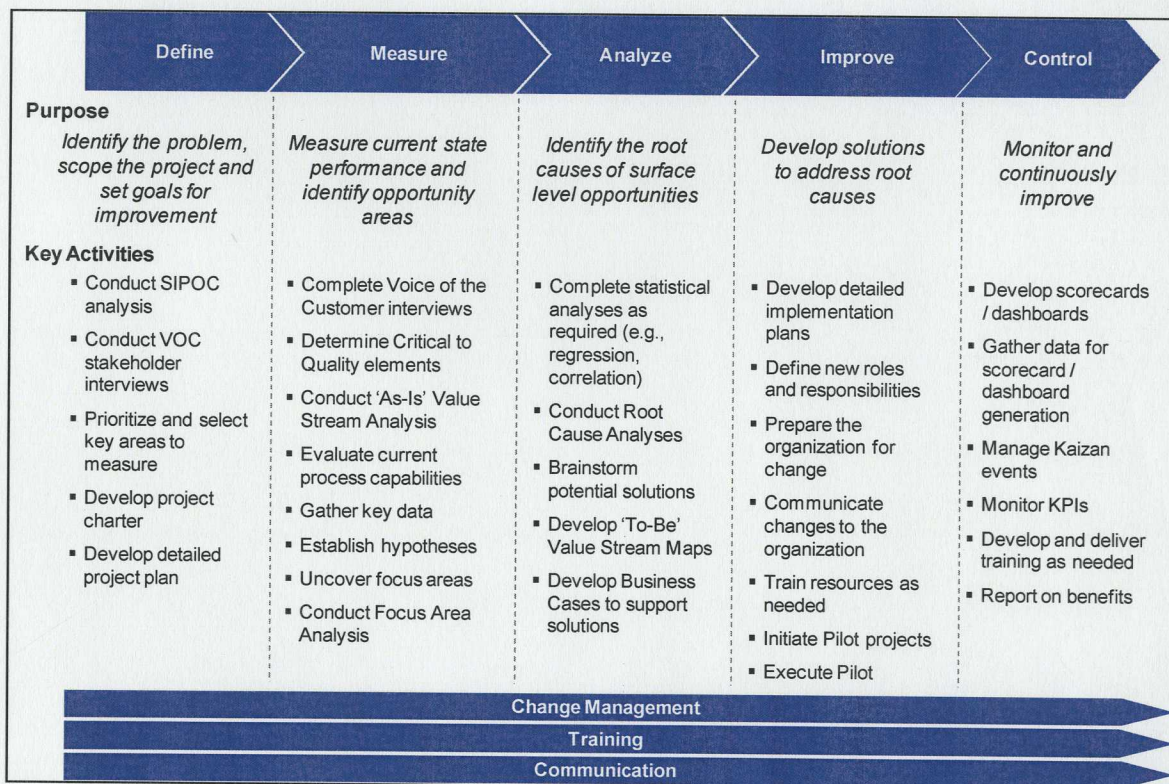


Source: Compiled from Viswanathan (2008)

D10.11: Lean operations

Coleman (2008) stated that lean practice helped in identifying opportunities to deliver shop floor (blue collar) and back office (white collar) process improvement projects to reduce COGS and improve operational efficiencies. Ayers (2006) stated that organisations were interested in expanding improvement efforts beyond the shop floor, and lean practice assisted them in deploying lean, six sigma and constraints management across the supply chain and beyond just manufacturing to new product development, sourcing and procurement.

The figure below represents a generic approach to lean management through design, measure, analyse, improve and control process.

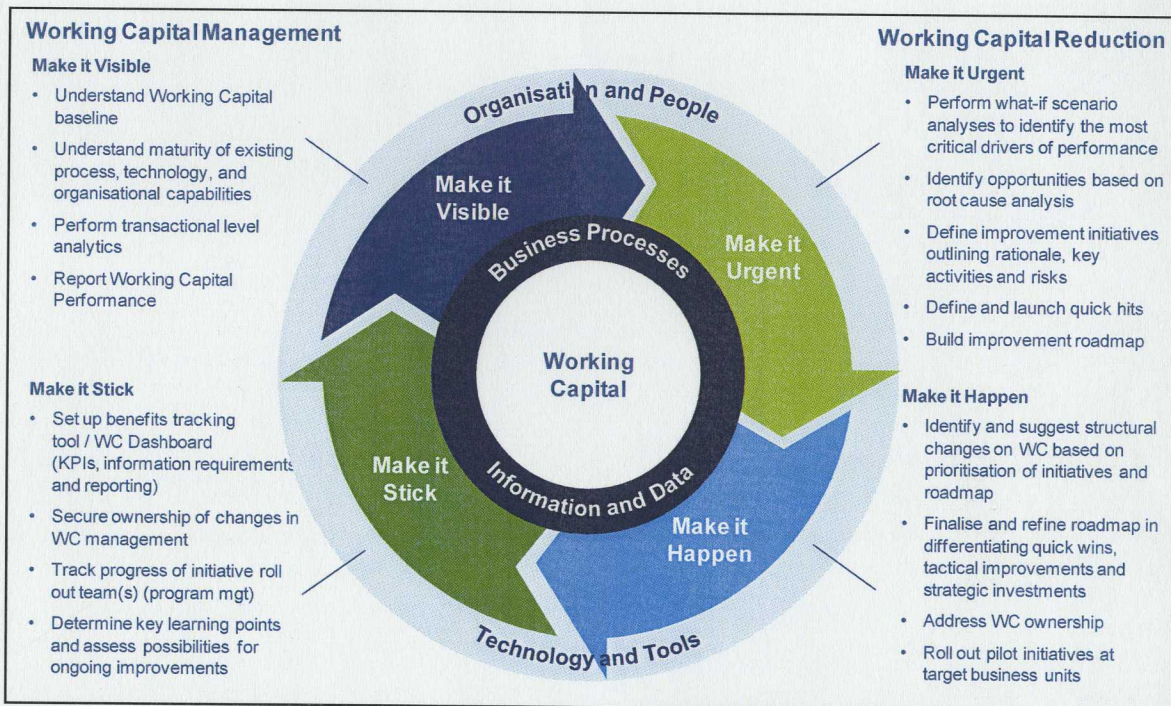


Source: Compiled from Womack, Jones & Roos (2007)

D10.12: Working capital reduction

Watson (2009) suggested that firms should focus on their own operations to identify drivers for cost reductions. By addressing the drivers of working capital, a firm must prioritise improving its operating costs and customer service. A Deloitte report (2009c) indicated that with the unprecedented 2008/2009 credit crunch, firms must do everything they can to free up working capital. Working capital was identified as one of the few remaining areas that could deliver significant cash to the business in a relatively short period of time without a large restructuring programme.

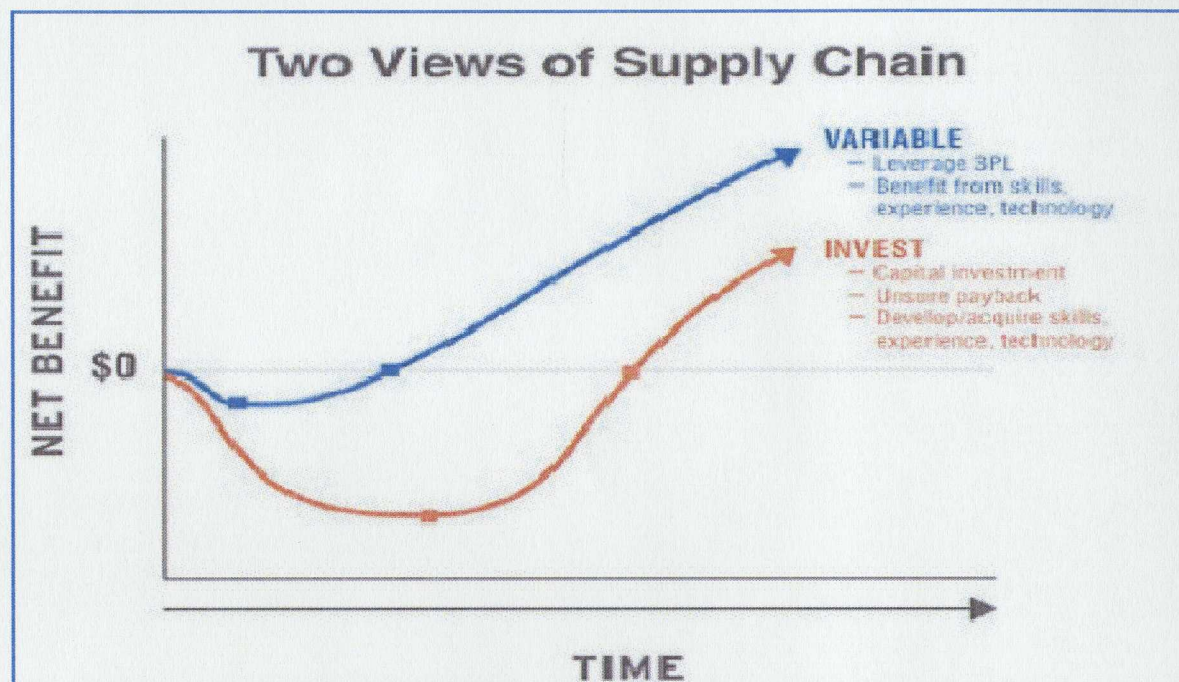
The figure below represents a generic approach.



Source: Deloitte (2009c:2)

D10.13: Outsourcing

Francis & Grossman (2009) presented two factors affecting supply chains: variable costs and fixed costs. The objective of obtaining a balance between these costs highlighted the fact that outsourcing (which focused on variable costs) normally generated quicker value than initiatives focused on reducing fixed costs.



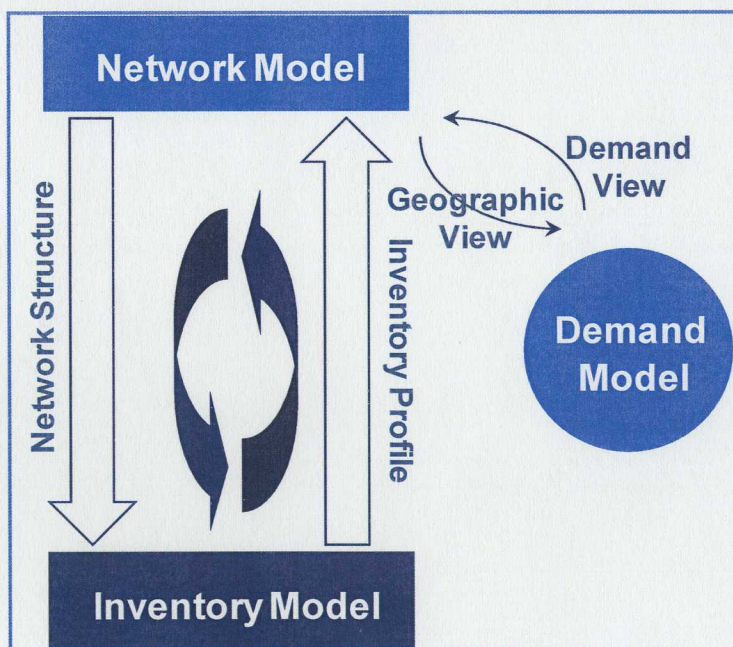
Source: Francis & Grossman (2009:20)

The above picture showed the two profiles of the investment costs (variable and fixed costs). The variable costs returned quicker benefits compared to fixed costs.

D10.14: Integrated planning model

According to Kumar (2009a), a balance between the models at the strategic and the tactical levels was important to achieve holistic optimisation benefits. Also linked to integrated planning was the concept of supply chain synchronisation. In the retail distribution of FMCG products, logistics cost savings of 30–60 percent could be achieved through the synchronisation of distribution with production, by pushing products from manufacturers to retailers.

Pourakbar, Sleptchenkoa & Dekkera (2009) discussed the floating stock policy in FMCG supply chains. These supply chains exploited intermodal transport to deploy inventories in advance of retailer demand. In that way, response times were reduced and storage costs could also be reduced by having products in the pipeline. The figure below depicts the approach between the integration between the three planning models: demand, network and inventory.



Source: Kumar (2009a:31)