Framework for the Study of Governance in the Supply Networks
Wal-Mart: the "Enlightened Despot" Model

By

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Abstract

Extensive research work has been conducted on the topic of collaboration in supply chain management, but the more general topic of governance in supply networks has never truly been addressed. This research proposes to achieve three connected objectives.

The first objective is to define the concepts of governance and supply network in a consistent and non value based way. These concepts have been, to some extent, clouded respectively by an extensive focus on collaboration and an indistinct terminology ("value networks", "supply networks", "value chains", "supply chains" and the less common "netchains").

The second objective is to study the case of Wal-Mart as a generally recognized governance best practice. The main focus will be on (i) the relation between the company's pricing strategy and its supply chain strategy, (ii) the enforcement of investments in supply chain technology throughout the network and (iii) the risks and benefits structure of the governance model.

The third objective is to propose a practical framework for the study of governance in supply networks. This framework will be presented in the form of a roadmap for the study of other best practices in the field. It will then be retroactively applied to the case of Wal-Mart in order to confirm both (i) its validity and usefulness as a research tool and (ii) the intuition that the pricing strategy is, in the particular case, the critical enabler of the governance model for the entire supply network.

Thesis Supervisor: **Gabriel R. Bitran**

Nippon Telephone and Telegraph Professor of Management

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INTRODUCTION

This work is meant as a first step toward a comprehensive study of governance in the supply networks. This will be eventually achieved by conducting case studies of the existing best practices in governance, mapping the different supply networks and characterizing their governance models.

Three related objectives were pursued in this research effort.

- **Define the concepts of governance, supply networks and collaboration**

The topic of governance in supply networks has never truly been addressed. Collaboration has been extensively studied and has even clouded – to a certain extent – the topic of governance. Therefore, the conceptual goals were to:

- Move away from the "hype" of collaboration to clear and non value based definitions of governance and collaboration
- Examine the differences in the terminology employed by the supply chain professionals and the researchers ("supply chain", "value chain", "supply network", "value network", "netchain", etc) and give one clear topological definition of the concept

- **Case study: the governance model in Wal-Mart's supply network**

Wal-Mart model possesses a number of qualities that make it a perfect starting point to design a useful framework.

- The supply network is composed of a wide array of business relationships
- The supplier base comprised of (i) most of the well established large manufacturers and (ii) a large number of small manufacturers
- Wal-Mart's supply chain management is generally recognized as one of the most efficient practices
- Wal-Mart's pricing strategy is almost unique in the retail industry and is intuitively linked to the supply chain strategy

The company and all aspects of its supply network governance will be extensively studied.

- **Propose a framework for the study of governance in supply network**

A practical framework for the study of governance will be presented in the form of a structured roadmap. It will be studied:

- The characteristics of the supply network – both the exogenous and endogenous ones
- The traits of the governance model
- The risks and benefits associated with the governance model
- The general dynamics of the model – and in particular how the risk/benefit structure can affect the long term sustainability of governance

■ Structure of the document

The document will be structured in the following way.

In the first chapter, the very concepts of governance, supply network and collaboration are defined in a consistent and non value based way. The current organizational trends in supply chain management are quickly analyzed and it is shown how case studies should be appreciated so as not to over generalize best practices but rather understand the practical enablers and limitations of each governance model.

In the second chapter, the case of Wal-Mart will be extensively studied as best practice in supply network governance and base case for the development of a general study framework. Will be presented: the company (in particular its logistic operations), its strategy (in particular the link between the pricing and the supply chain strategy) and finally the traits of its supply network governance (in particular the investing policy and the risks/benefits to the suppliers).

In the third chapter, a practical framework will be presented as a "manual" for the study of governance in the supply network.

In the fourth and final chapter, this practical framework will be retroactively applied to the case of Wal-Mart in order to show both (i) its usefulness as a tool for the study of governance and (ii) finalize the first case studies and lay the first stone of a comprehensive research on the topic.

The four chapters are conceptually linked in the following manner.

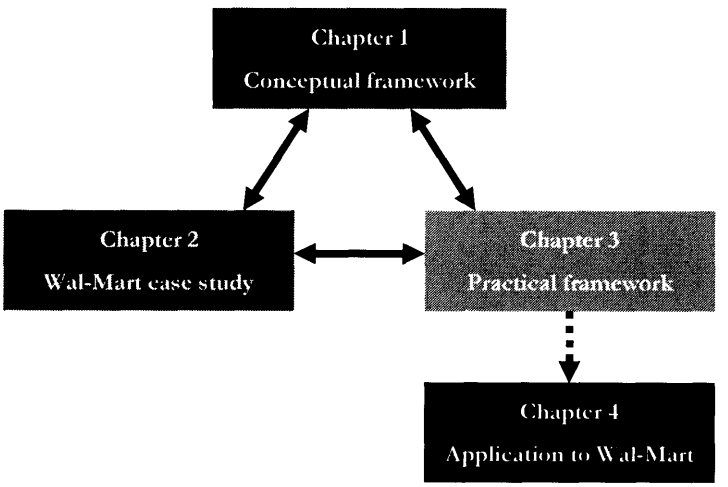


Figure 1 – Structure of the Research

The research efforts conducted on the conceptual framework, the case study and the practical framework were carried out simultaneously. Each topic was studied in the light of the progress made on the other two topics in order to come up with a consistent and above all reasonable and viable work. On the other hand, the practical framework was eventually applied again to Wal-Mart case study as a stand-alone piece of the puzzle in order to demonstrate its validity and usefulness.

CONCEPTUAL FRAMEWORK

The objective of the first part of this document is to define a conceptual framework for the study of governance in supply networks.

To do so, it will first be necessary to (i) review the common definitions that the academic literature and the supply chain professionals use, (ii) identify the implicit assumptions of these sometimes contradicting definitions and finally (iii) come up with consistent and non value based definitions.

These definitions will be followed by a short analysis of the recent trends in the organizations of supply networks and the increasingly popular topics of network coordinator and extended enterprise will be addressed.

1.1. Definition of the main concepts

1.1.1. What is a "supply network"?

- **The classic definition of the supply chain**

In the study of supply chain management – in the "traditional" sense of the term – industry analysts and researchers have introduced a number of new expressions and semantic distinctions in order to acknowledge the dramatic changes that the field has been subject to in the past decade. More than a change of the actual organization of an industry, this new terminology rather reflects the shift of focus from the professionals of supply chain in their attempt to design a supply chain that supports the company's strategy.

- **Moving to "value networks"**

The traditional "supply chain" is now increasingly referred to as a "supply network" to reflect two main paradigm changes and new focus of interest.

The traditional notion of "network" has now replaced that of "chain" in order to account for the intricate links and relationships that exist between the different players of an industry/business.

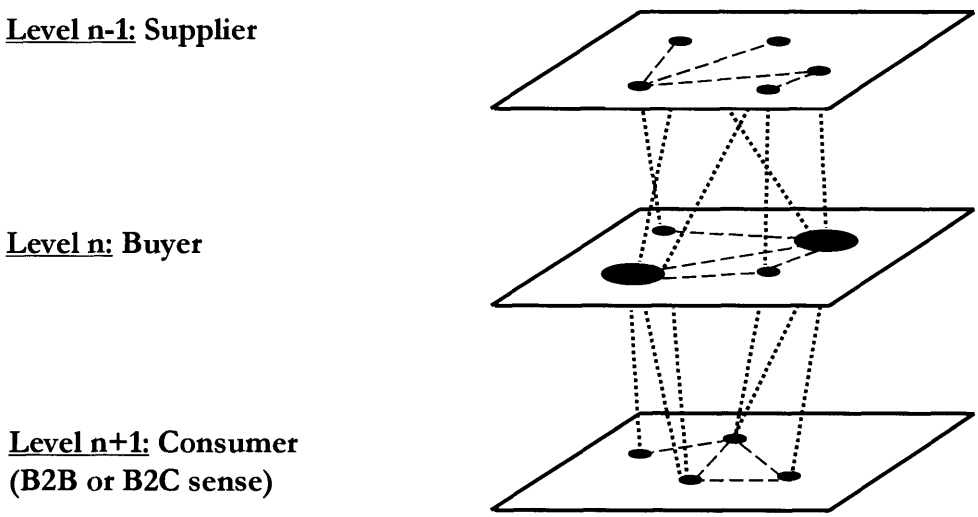
At the same time, the term "value" has begun to replace that of "supply" to acknowledge two recent evolutions. The first one is that the dimensions of logistics that the supply chain experts are dealing with involve far more complex and value-added operations than the mere handling and transportation of the goods. The second one is that the nature of the flows themselves has mutated from three separate flows of goods, funds and information into a bundled channel. In other terms, and a powerful example of this point is the supply chain of a build-to-order business model, the alignment of demand/supply has to be tuned with all the others functions across the supply chain, from the design of the product to returns and customer servicing.

■ The "netchain" topology

Lazzarini et al. [6] argue that more than a change in trend or focus in supply chain management, the distinction between "supply chain" and "supply network" is a topological one. The supply chain would then represent the "flow between firms engaged in sequential stages of production" while the supply networks would be the "inter-organizational relationships" inside a particular industry or group.

In an attempt to come to a rigorous topological definition, they have developed the very compelling – and yet not generalized – concept of "netchain". In their words, a netchain is "a set of networks comprised of horizontal ties between firms within a particular industry or group, such that these networks (or layers) are sequentially arranged based on the vertical ties between firms in different layers. Netchain analysis explicitly differentiates between horizontal (transactions in the same layer) and vertical ties (transactions between layers), mapping how agents in each layer are related to each other and to agents in other layers."

The following figure gives a graphical representation of these netchains.



Source: Lazzarini et al.

Figure 2 – The "Netchain" Vision of the Supply Network

■ A topologic definition of the supply networks

In order to come back to a pure definition of the supply networks, it is necessary to avoid any premature characterization on the nature of the flows/ties that exist between the players of an industry. These flows, increasingly referred to as a "value" flows, are in essence a functional alignment of supply and demand inside the netchain topology described by Lazzarini et al.

Throughout this document, the supply networks will be defined from this objective perspective in the following terms.

Supply networks:
Alignment of supply and demand for a product/service along a set of sequentially arranged industry/group layers.

1.1.2. What is the "governance" of the supply networks?

- **Recent focus on collaboration**

Studies on collaboration inside the supply networks and analyses of the "best practices" in the field have, to some extent, clouded the very nature of governance by blending the concepts of collaboration and governance together. Collaboration should, in fact, be simply defined as the state in which "two or more firms voluntarily agree to integrate human, financial or technical resources in order to create a better business model" [23].

In the specific case of supply networks, i.e. for the function of aligning supply and demand in a supply network, collaboration can be defined in the following terms.

Collaboration in supply networks:
Integration of resources (personnel, information, R&D, industrial assets, etc) between two or more firms – whether inside the same industry/group or across layers – with the aim of enhancing the supply/demand alignment.

- **A "back to basics" definition of the governance in supply networks**

As a result, governance in supply networks must be defined both in terms large enough to encompass more than mere collaborative ties between companies and narrow enough to be specific to the supply networks. The definition should include the most simple governance models that one might naturally think of, in particular:

- Free market: i.e. no collaboration, but simply a procurement relationship regulated by the law of supply and demand in the industry
- Pure integration: the suppliers are vertically integrated inside the company through acquisitions or organic development of the source/make/procurement functions
- Orchestration: a dominant entity coordinates all the players of the supply network
- Coercion: a dominant entity exercises its buying power/leverage/competitive advantage to force all the players of the supply network to work together

In the traditional sense of the term, governance in a structure is defined as the terms according to which the control, responsibilities, benefits and risks are shared among the members. However, there are several more subtle aspects that need to be captured in the definition of governance in supply networks.

- Control, responsibilities, benefits and risks might be distributed without being necessarily shared. In other terms, the definition will recognize a "free market" model as a governance structure.

Furthermore, many business models currently show us that control, responsibilities, benefits and risks might be shared by the members of a business structure in implicit rather than explicit terms. In other terms, as high demand and low supply in an industry will dramatically change the governance model of the supply network, the definition will account for any type of sharing structure, explicit or implicit.

Governance in the supply networks:
Distribution of the control, investments, risks and benefits amongst the players of a supply network.

1.2. Key trends in the governance of supply networks

1.2.1. Towards a higher degree of coordination in the supply network

- **The atomization of the company into an "extended enterprise"**

Robert Porter Lynch, CEO of the Warren Company, notes that "alliance professionals typically find it easier to create alliances with their major competitors than with other divisions in their own companies" [18]. This comment perfectly embodies the current supply chain paradox that companies are currently facing. After an era of vertical consolidation in order to optimize the inter-company functions of a network by internalizing them, the companies went to an outsourcing strategy, recognizing the difficulty to align internally the different divisions.

It is in this complex outsourcing environment that notion of "extended enterprise" has become increasingly popular. The expression illustrates well the necessity for the company to align with their suppliers and their distributors, turning the supply network into this extended enterprise.

- **The "Maestro" of the network**

In this framework also emerged the role of a coordinator of the network, i.e. of a company that can span the different layers of the network to align supply and demand – in the full sense of the term, by managing the flows of goods, information and funds.

This concept of coordinator, of "Maestro" of the network, has been increasingly studied [5] [13] and several degrees of coordination can be envisioned for the supply network. The potential benefits of a full coordination in the supply network are simply gigantic in terms of cost reductions, supply chain efficiencies and minimization of the bullwhip effect. However, the hurdles are at least as great and it seems, at this point, unlikely that the suppliers and distributors will trust a single player enough to let it control an entire network on its own.

Still, a general trend toward a higher degree of coordination in the supply networks must be acknowledged and several lesser degrees of Maestro-like models envisioned, as the two examples presented below. Eventually, coordination in the large sense of the term seems to be a natural evolution of the supply chain governance models.

Listener role in the triangular freight relation

The 3PL listens to the purchase relation between the buyer and the vendor and move from a role of pure delivery to a "listen/check/delivery" function, thus increasing the speed and efficiency of the delivery cycle to the benefits of all players

Mini-maestro optimizing a conduit of small and medium enterprises (SMEs)

The SMEs who are in the most remote positions of the supply network – most often raw material suppliers or part manufacturers – lack visibility on product demand and bear the cost of the bullwhip effects. On the contrary, the 3PL is present along the entire span of the supply network and possess an excellent visibility on the demand over the network. As such, it could position itself as a 'conduit' for these remote players, thus optimizing sub-networks of SMEs to the benefits of the entire network.

1.2.2. Understanding the trends in supply chain management

The current business literature often analyses supply chain management in absolute terms. A vast research has been conducted in the objective of analyzing the relationship performance, detailing roadmap for supply chain collaboration, implementing true value added supplying relationship, etc. However, simple business cases show that the governance model which a supply network adopts cannot be simply viewed as a choice of the members of this supply network. In fact, the endogenous and exogenous factors which characterize the supply network of an industry/group will condition the array of governance models that this industry/group can adopt. Eventually, any given supply network will be able to adopt a limited number of governance models, some of them not being achievable in terms of physical possibility, of economic viability and long-term sustainability.

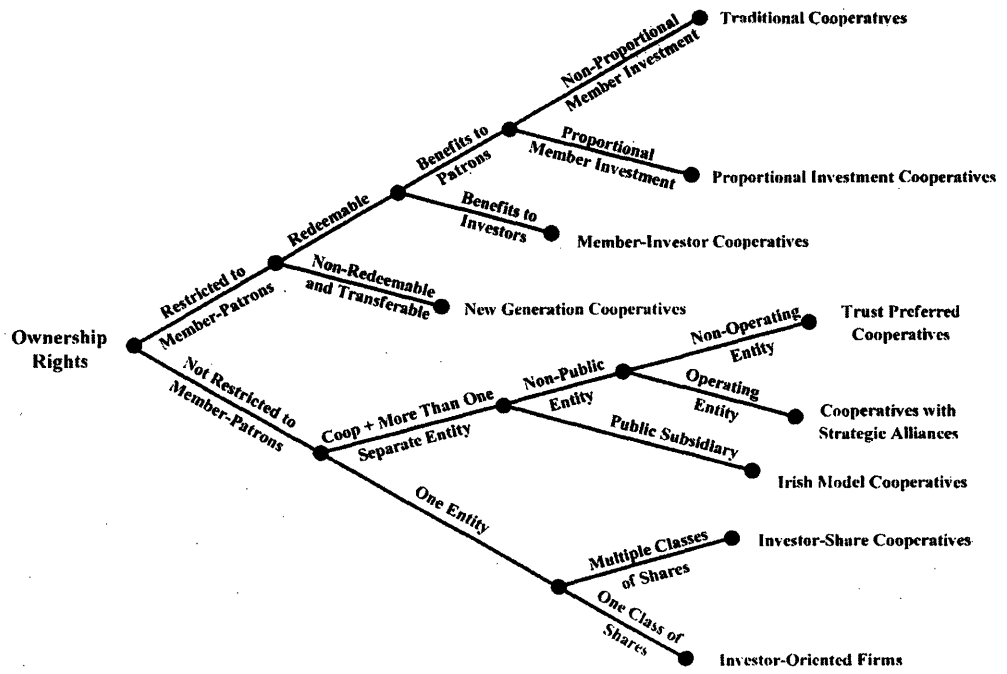
Below are presented three simple examples as an illustration of this last point.

- **Simple examples of governance model enablers/limitations**

Cooperative structure in the food industry [6]

The very open and collaborative mindset of the food industry has made it quite easy to study its governance models. On this topic, Cook has made extensive research and characterized the various forms of governance according to the way the ownership rights are divided among the members/patrons of the cooperative structure. A summary view of this analysis is presented in the diagram below.

In the diagram presented below, Cook defines each governance model by the characteristics according to which ownership rights are shared. These characteristics are often enabled or limited by the statutes of the regulatory framework in each industry/group and each model will bear specific risks and benefits for the different players. There is not one single "best practice" for the food industry, but rather a range of potential governance models depending on the regulatory enablers and limitations of the specific industry/group.



Source: Cook, University of Missouri

Figure 3 – Tree Analysis of the Cooperative-Based Governance Models in the Food Industry

This example clearly demonstrates that the forms of governance can be very subtle inside the same general cooperative model. It is critical to understand the risks and benefits associated to each particular structure – the leaves of the tree – and equally important to identify the enablers of each governance trait – the nodes of the tree.

The needs in 3PL services, conditioned by the product/industry framework

Previous work on the topic of bundles solutions in the 3PL industry was conducted in 2003 by the author [2]. Through interviews with the supply chain managers of several manufacturing companies, it appeared that the focus in inbound logistics, outbound logistics or inbound/outbound logistics was segmented depending on the size of the company and on the complexity of the product – defined both by the manufacturing/production and the technological/design dimensions.

For example, it appeared that due to the high technological and manufacturing complexity of Cisco's products, its supply chain management is naturally more focused on the Inbound side, i.e. on the "supplier side of the equation". On the contrary for Gillette for which the product are far more simple and the raw material procurement less complex, supply chain management is naturally more focused on the Outbound side of the logistics, i.e. on the "customer side of the equation".

Further field research showed that all the expectations of the 3PLs' clients – such as international services, financial solutions, specialized logistics – were strongly conditioned by the industry, the product, the competitive landscape, the regulatory framework, in short the exogenous and endogenous factors of the supply network.

	High Technological Complexity		Low Technological Complexity	
	High Manufacturing Complexity	Low Manufacturing Complexity	High Manufacturing Complexity	Low Manufacturing Complexity
Large Companies	Cisco INBOUND	Dell INBOUND & OUTBOUND	Nokia INBOUND & OUTBOUND	Gillette OUTBOUND
Small and Medium Companies		Qualcomm, Color Kinetics, Precision Combustion INBOUND & OUTBOUND	Bose INBOUND & OUTBOUND	Hardy Design INBOUND & OUTBOUND

Source: Chee Mun Chew and Denis de Graeve

Table 1 – Segmentation of the Inbound/Outbound Focus in the Manufacturing Industry

A not yet accepted lesson in supply chain management – which this simple example demonstrate – is that there is no unique best supply chain practice, but rather a set of supply chain solutions adapted to a particular environment. In order to fully understand the governance model of a supply network, one has to understand the intrinsic characteristics of the industry/group and their impact on the relationships inside the network.

- The case of the supply chain versus supply chain hype

An increasingly popular theory in supply chain management suggests that the very essence of the competition has been evolving. Supposedly, the product vs. product competition evolved into a company vs. company competition and is now reaching a new state commonly referred to as the "supply chain vs. supply chain competition". The underlying idea originates from the examples of supply networks (i) which are coordinated by a couple of dominant players – Maestros as was defined earlier – and (ii) in which these dominant players are forming exclusive alliances with clusters of suppliers. As a result, the competition between these two dominant entities moves from a company vs. company type to a supply chain vs. supply chain one.

James Rice and Richard Hoppe [4] have analyzed this trend and demonstrate in a very insightful paper that "the reality is that instances of head-to-head supply chain competition will be limited" and that "the more likely scenario will find companies competing – and winning – based on the capabilities they can assemble across their supply networks". In their paper, they confront examples of industries where the supply chain vs. supply chain competition works (fashion, wool, and poultry) to examples of industries where it cannot work (automotive, PC manufacturers and Airbus/Boeing).

This "hype", again, illustrates the dangers of over generalizing best supply chain practices into a future defining rule for success.

■ Need for a contrasted approach to the topic of collaboration

Therefore, one of the main objectives of this thesis is to ensure that the framework that is built to study of governance models in supply networks will include a thorough examination of the industry/group's enablers and limitations.

2. THE WAL-MART MODEL

"Wal-Mart has become the 800-pound gorilla in the grocery aisle, and you have to dance with it. The trick is to follow its lead yet think a step ahead, so it doesn't crush your toes. It's not easy."

Senior manufacturing executive, quoted by the Boston Consulting Group

In this chapter, a focus will be put on the case of Wal-Mart. The company has been building a very strong business model over the past decade and ranks among the most appreciated stocks in Wall Street. It is a generally recognized best supply chain practice and the example of the alliance with P&G is one of the most famous case studies in supply chain management.

The purpose of this chapter is to present the company, its strategy – and in particular the relation between its business model and its supply chain management style – and finally the dynamics of its supply network.

2.1. Presentation of the company

2.1.1. History

- **Sam Walton's visionary model**

The first Wal-Mart store, Wal-Mart Store Discount City, was created by Sam Walton in Rogers, Arkansas, not far from Bentonville, in 1962. The founding principles of what we would call now its "business model" was to build return on assets through sales rather than margins. In his own words: "Say I bought an item for 80 cents. I found that by pricing it at $1.00 I could sell three times more of it than by pricing it at $1.20. I might make only half the profit per item, but because I was selling three times as many, the overall profit was much greater." [29]

This quite trivial pricing strategy, mocked by the giants of the discount scene at the time, has now evolved into one of the most solid discount retailers, whose model still revolves – in a far more complex environment and supply network though – around the simple idea that the company should focus its efforts on slashing prices to the final benefit of the customers.

■ Key information on the company

This section provides, for reference, basic information on Wal-Mart's activity and key figures, as published by a comprehensive analysts' report published by Bear Stearns [36].

Company description

Wal-Mart Stores, Inc. is the world's largest retailer, with projected sales of $256 billion in 2003 and an estimated total store base of 4,956 units worldwide at year-end. In the U.S., Wal-Mart will operate approximately 3,548 stores by year-end, consisting of 3,005 Wal-Mart stores that include the discount stores, Supercenters, and Neighborhood Markets formats, as well as 543 Sam's Clubs. The company is pursuing an aggressive store expansion program with 8% total square footage growth, led by the successful rollout of Supercenters. Wal-Mart has been gaining market share by offering a broad assortment of merchandise at the lowest prices with top-notch execution.

Key figures

Again, for reference and to give an objective representation of the size and importance of Wal-Mart in the retail industry and even the US economy, a few key financial figures are presented in the table below.

Financial Summary			
$bn	2002	2003	2004E
Revenues	**246.5**	**257.7**	**286.0**
Gross Income	**54.7**	**59.3**	**66.0**
% Sales	*22.2%*	*23.0%*	*23.1%*
EBIT	**13.6**	**14.8**	**17.0**
% Sales	*5.5%*	*5.8%*	*5.9%*
Net Income	**8.0**	**9.1**	**10.2**
% Sales	*3.3%*	*3.5%*	*3.6%*

Capitalization, in $bn	
Long Term Debt	**21.5**
Equity	**42.2**
Total	**63.7**

Key Ratios	
Debt/Equity	**66.0%**
ROA	**8.8%**
ROE	**21.6%**

Source: Bear Stearns

Table 2 – Key Financial Figures on Wal-Mart

2.2. General trends in the retail industry

2.2.1. Recent mutation of the industry

As argued by Jonathan Byrnes [27], over the past decade and mainly due to the emergence of Wal-Mart, suppliers have had to rethink their position vis-à-vis their buyers. Confronted with the first challenge of learning how to integrate the supply chain with the major and unavoidable customers as Wal-Mart, the question quickly became that of learning how to deal with the other customers at the same time...

- **An historically fragmented industry**

The retail industry used to be a very fragmented business environment, characterized by a strong pressure on price from the buyers and a "one size fits all" approach from the suppliers. The uniformity of service level – in terms of velocity and efficiency of the supply chain – confronted the suppliers with a critical choice between either (i) high level and consistent supply chain integration to the detriment of cost efficiencies or (ii) uneven and unreliable supply chain integration to the benefits of cost reductions.

- **Recent consolidation of the industry**

However, the partnership mandates required by an increasing number of buyers – the alliance between Wal-Mart and P&G being a reference "best practice" of these partnerships – has put such pressure on the suppliers' supply chain that it naturally led to a segmentation of the service level. Through the prioritization of services with respect to the buyers, differentiated pricing strategies and supply chain initiatives (such as CPFR) the suppliers are now trying to service in a consistent AND cost efficient supply chain the specific needs of their largest and smallest customers.

Overall, the history of the retail industry and, no doubt, its intrinsic characteristics (focus on the functions of procurement and distribution) have made it a particularly prolific environment for supply chain management initiatives and a perfect starting point for the study of governance in the supply chains.

	Historical Retail Environment	Recent Evolution of the Retail Industry
Retail industry	Fragmented	Consolidated
Buyer strategy	Price pressure on the suppliers	Margin increase through process innovation Consolidation of the supplier base
Supplier strategy	"One-size-fits-all" approach	Segmentation of customer service level: - Prioritization of services - Price differentiation CPFR
Relationship	Consistent levels of service OR Efficient supply chain processes	Consistent levels of service AND Efficient supply chain processes

Source: Jonathan Byrnes

Table 3 – Evolution of the Supplier/Buyer Dynamics in the Retail Industry

2.3. Logistic strategy

2.3.1. A top priority given to logistics operations and supply chain management

- **Key figures on Wal-Mart's logistics**

The raw data on the distribution network of Wal-Mart is not relevant in its details. However, its gives a good idea of the magnitude of the logistic operations and of the distribution challenge that the company has to face in order to sustain its cost reduction and supply chain efficiency based strategy.

Wal-Mart's store count and the detail of its distribution centers are presented in the tables below.

	Discount Store	Super Centers	SAM's CLUBS	Neighbor. Markets
USA	**1,568**	**1,258**	**525**	**49**
Argentina	-	11	-	-
Brazil	-	12	8	2
Canada	213	-	-	-
China	-	20	4	2
Germany	-	94	-	-
Korea	-	15	-	-
Mexico	472	75	50	-
Puerto Rico	9	1	9	33
United Kingdom	248	10	-	-
International	**942**	**238**	**71**	**37**
TOTAL	**2,510**	**1,496**	**596**	**86**

Source: Annual Report 2002

Table 4 – Year 2003 – Store Count

USA	# DCs	Comments
Regional	34	- Average distance between stores of 154 miles
Fashion	7	- January to August 2003: 1.2bn cartons shipped
General merchandise	***41***	
Full grocery	22	- Average distance between stores of 155 miles
Perishable	9	- January to August 2003: 0.8bn cartons shipped
Grocery	***31***	
SAM's	***19***	- 14m pallets and 160m cartons shipped per year
Returns	5	
Import	3	
Tires	2	
Dot.com	1	
Specialty	***11***	
Total USA	**102**	
TOTAL	**102**	**- 6 news distribution centers to open in 2004**

International	# DCs
Canada	3
South America	2
Mexico	2
Germany	2
Total International	**9**

Source: Company reports, Lehman Brothers 10/10/03

Table 5 – Wal-Mart's Distribution Network, 2003

■ A very structured logistics strategy

The figures presented in the previous section demonstrate well the magnitude of Wal-Mart logistics. However, it is far more insightful to see how the company has built its supply chain over its history and the constant attention that supply chain management has become.

To describe its history in logistics, Wal-Mart usually refers to four distinct "eras" with different focus, presented in the table below.

Era	Focus
Warehouse	Supplier stock piling, quantity buying and deal buying
Distribution	Specialty distribution centers, automation and retail linking
ReplenishmentIn	-stock/demand, lead times, CPFR and co-management
Supply Chain	Efficient flows, shelf in-stock, being a store of the community and smart inventory management

Source: Company

Table 6 – Eras and Focus in Wal-Mart's Logistics

■ Current supply chain focus and strategy

Today, the attention of the Supply Chain and Logistics Division has set three major objectives for the short and medium term:

- Maximize store/club efficiency
- Drive higher in-stocks and lower costs
- Adapt leading-edge technology such as RFID to keep the supply chain efficient

In order to achieve these objectives, Wal-Mart has put five initiatives at the top of its supply chain priorities:

- Network remix ("velocity distribution" model)
- Apparel flow
- Import reengineering
- Feature planning
- Dynamic distribution

2.3.2. Recent creation of the Global Procurement Division

Historically, Wal-Mart used a third party to source its products. However, the company decided to take over the procurement function in June 2002 and created the Global Procurement Division to this effect. Although the division is still in its infancy, the fraction of direct sourcing in general merchandise has grown from about 10% to an estimated 15% and should hit above 20% in the few years to come according to a general consensus from the analysts.

The goals of this program are obviously to reduce the cost of goods sold by an estimated 10-20% (management forecast). This will be achieved both (i) by eliminating the third party procurement player and (ii) by leveraging the company's scale and buying power at a global level for all the Wal-Mart stores.

2.4. Pricing strategy

2.4.1. EDLP/EDLC Vs. High/Low pricing strategy in the retail industry

In the retail industry, the pricing policy is one of the key drivers of the overall strategy of the company. In this respect, there are two pricing models depending on the company's focus either on high revenues (through high volume sales) or high profitability (through high gross margins).

- **"High/Low"**

The company slashes the prices of key items in order to attract the customers – sometimes at a negative gross margin items which are then referred to as "lost leaders" – and increases the prices of other key items that the customers are likely to buy once they are inside the stores.

- **EDLP/EDLC "Everyday Low Price, Everyday Low Cost"**

Embodied by Wal-Mart, this strategy simply consists taking the exact same margin on every single item, based on the total cost of the product – including logistics.

2.4.2. The impact of the pricing strategy on the supply chain

Interestingly enough, the pricing strategy of a retail company has a considerable impact on the governance of its supply network.

- **Different pressure on the supply chain**

The EDLP/EDLC is very focused on cost reduction and it appears that Wal-Mart has now gained a considerable edge on its competitors by ever optimizing its supply chain management, which is well demonstrated by the history of the supply chain strategy and its

structure in the fore mentioned "four eras". As a result of its cost reduction based pricing strategy, the supply chain has been submitted to a pressure that has now given a competitive advantage to Wal-Mart.

On the other hand, the High/Low strategy is much more focused on refining the pricing strategy and locking in new customers. As a result, the everyday focus on supply chain management is put aside to the benefit of marketing and customer acquisition.

- **Process sharing with the suppliers**

Wal-Mart's pricing strategy is well know by all the suppliers since it is based on the same fixed margin on every product – although this rule is obviously submitted to occasional flexibility. As a result, Wal-Mart is in a position to share more freely its information on supply chain efficiencies (product costs, supply chain expenses, etc) thus allowing the suppliers to monitor closely their own performance in the Wal-Mart relationship.

This "process sharing" would not be as efficiently carried out in a High/Low model where the retailer must protect its product pricing information and cannot, as a result, share any part of the cost structure with its suppliers.

- **Process sharing across the suppliers**

As a consequence of this process sharing between Wal-Mart and its suppliers, the company has incentives to reward the best suppliers by sharing the supplier base wide information which is obtained through the scan data process. In order to do so, Wal-Mart gives a special status to the "category captains" which have the responsibility to achieve the best supply chain optimization for their products and teach the other suppliers to improve their own supply chains.

	EDLP/EDLC	High/Low
Pressure on the supply chain	**Very high** Cutting the structural costs is critical to implement efficiently this pricing strategy	**Moderate** Higher priority is put on marketing and customer acquisition
Process sharing with each supplier	**Moderate** Benefits of cost cut are given to the customer, supply chain efficiencies benefit both parties	**Very low** Benefits of cost cut are disputed between buyer and seller
Process sharing between suppliers	**Moderate** Category captain are given extra information and teach other suppliers	**Very low** Strategy based on differentiation, costs and margins on each product cannot circulate between suppliers

Table 7 – Impact of the Pricing Strategy on the Supply Network

2.4.3. The pricing strategy: the enabler of a full collaboration with the suppliers

Ultimately, the EDLP/EDLC pricing strategy appears as the true enabler of a full collaboration with the suppliers since it both gives:

- **A strong pressure on the supply chain**

This pricing model puts a strategic focus on logistics and supply chain, the most "natural" areas of cost reduction in the retail industry, and thus gives strong incentives to built an integrated supply chain model with the suppliers.

- **The ability to share processes across the entire supply network**

The pricing model enables a full optimization of the supply chain across the layer of suppliers by enabling a certain degree of process sharing both (i) between the retailer and the suppliers and (ii) between the suppliers themselves.

2.5. Information technology strategy

- **A policy of investment in IT and supply chain technologies**

Since its initiative with P&G, Wal-Mart has been actively building a strong IT infrastructure in its supply chain. The company designed Retail Link in 1991 in a closed exchange network allows the suppliers to access more than three years worth of real time, item level scanned data which is kept at the lowest level of detail. The company extended its use to a Web based interface in 1997 and boosted further its capacity to combine demand forecasts from multiple sources into a single request through Atlas Metaprise software in 2000.

IT compatibility has become one of Wal-Mart's mandates for new suppliers and has allowed them to improve their product mix thus better targeting the customers of all their distribution channels.

- **Benefits of RFID**

The latest mandate in terms of IT investments is the implementation of RFID (Radio Frequency Identification). The potential benefits of this technology are generally considered quite enormous and might very well give further edge to the companies whose supply chain management is already more efficient than that of their competitors. The most significant benefits of this technology are the following.

Improved inventory management

Wal-Mart would know at any time where the inventory is located and thus have a considerable enhanced inventory visibility. As a result, the total inventory would probably be reduced as well as the lead-time from the warehouses to the shelves and thus reduce the working capital requirements.

Optimization and cost reductions in the verification processes

RFID would considerably increase the accuracy of the order checking verification and reduce the processing time and labor costs currently spent on these function. It is expected that RFID tags will, in time, replace completely the current bar code based system and remove the need to scan manually every product at the check-out.

Improvement in the profitability of online sales

The increased accuracy in the shipping and delivering process enabled by the RFID technology will definitely yield a higher profitability in the online business through lower returns and better inventory management.

Shrinkage, i.e. reduction in stolen products

For some small and rather expensive product lines, the amount of goods which are stolen on the shelf each year is quite significant. As a result, more and more retailers keep this type of items in closed cabinets to the detriment of marketing effectiveness. RFID will enable far better security infrastructure in the retail stores and allow keeping every product at hand-reach of the customer while dramatically decreasing the stolen good losses.

Some suppliers have great expectations about this benefit of RFID, for example Gillette who incurs each year significant losses on stolen razor blades and has played a very active role in the development of RFID. For other suppliers, this is not a relevant benefit of the technology and diminishes the expected return on such an important investment.

■ Impact of the RFID technology on the retail industry

A report by Gartner Research recently analyzed the importance of technological innovation in the retail industry [14]. The authors argue that "technology in retail has come to the forefront as a competitive tool – comparable to using a new pricing strategy or introducing a new store format" and that "shareholders, Wall Street and customers are all interested in knowing how technology will improve a retailer's business".

The conclusions of the authors in this respect enlighten Wal-Mart's current strategy and define the future of the retailers in terms of their policy in technological investments, as shown in the table below.

Type	Policy on New Technology	Recommendation
A	Early adopters	Should pilot date synchronization projects and begin experimenting with RFID
B	Mainstream adopters	Shoud pay close attention to these early pilots and be prepared to respond quickly to these and other promising technologies, such as self checkout and kioks
C	Conservative adopters	Must realize that the rate of technology adoption is increasing dramatically Risk being hopelessly left behind if data synchronization or RFID is widely used

Source: Gartner Research

Table 8 – Gartner's Recommendations in the Retail Industry

■ Wal-Mart's expectations

Overall, Wal-Mart already being quite efficient in its logistics processes and having a good edge in its supply chain management, it seems that implementing RFID would be a key strategic next step for the company.

The "RFID mandate" was defined according to the following schedule.

2003	2004	2005
- Continue researching RFID technologies and supporting global EPC (electronic product code) standards	- By January 1st 2005: top 100 Wal-Mart's suppliers will place RFID tags on the shipments to the three North East Texas distribution centers	- Rollout RFID to all suppliers through the end of 2005
- Continue refining implementation strategy	- Expand rollout to wider supplier base through end of 2005	- Continue supporting RFID implementation
- Prepare for January 2005 rollout	- Support infrastructure with RFID implementation	

Source: Company

Table 9 – RFID Rollout Schedule

It is not clear yet whether the suppliers will manage to abide by this schedule. It appears – although no source can be quoted on this point – that a number of suppliers have started questioning the early schedule for adoption of RFID and the potentially long delay for returns on investments.

■ Wal-Mart's answer to the prisoner's dilemma

In a way, the investment policy between the buyer and the seller can be analyzed as an avatar of the "prisoner's dilemma". The overall benefits to all the players (the buyer and all the suppliers) would be enormous as long as they all decide to invest in their own supply chain. However, if only a few make the investment and the others do not, the technology adopters lose their return on investment and the technology conservatives do not benefit from increased supply chain efficiencies.

In Wal-Mart's model, the dominant entity solves the problem by forcing everyone to invest so that the entire supply network will benefit, sometimes against their intuitive will, from a supply network wide optimization.

2.6. Qualitative analysis of the buyer/seller relationship

2.6.1. Risks to suppliers

- **The "Wal-Mart dependence circle"**

As Wal-Mart becomes a more important client of a supplier, the gross margins significantly decrease so that the supplier has to compensate via a increase pressure on sales volume. This pressure on sales gives it incentives to increase its share of product sold to Wal-Mart, which becomes the only viable distribution vector to end-consumers, so that Wal-Mart becomes a more important buyer...

This reinforcing loop, or "dependence circle" vis-à-vis Wal-Mart accounts for a key attribute of Wal-Mart governance model where the long-term collaboration is based on a balance of power in favor of Wal-Mart.

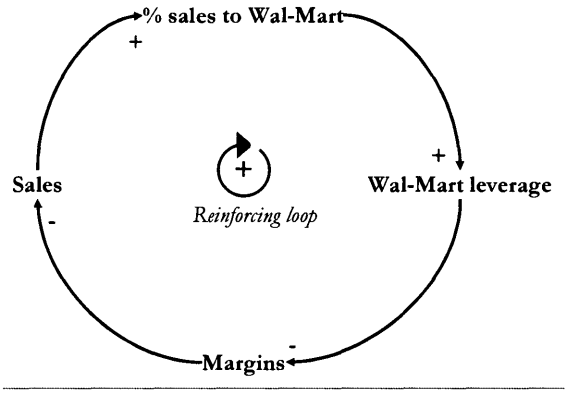


Figure 4 – Wal-Mart Dependence Circle

- **Vulnerability from a narrow product mix**

Wal-Mart has considerably improved its supply chain efficiency by "SKU-ing down" the product offerings, i.e. by limiting the in-store products in terms of small product extensions, packaging, color and size so that the company and its suppliers only deal with a handful – or one – SKU for each product line. For example, Wal-Mart would carry only one size of dippers.

Therefore, the risks for a supplier dealing with Wal-Mart are dramatically leveraged by the breadth of the product mix – defined as the number of product lines which the supplier is pushing through Wal-Mart's distribution channel. If the only product of a supplier that is already "caught" in the Wal-Mart loop is submitted to a sudden pressure on price by Wal-Mart, the company does not have any other choice than to abide to the new price constraint or to risk losing Wal-Mart as a client.

Eventually, the only way for a supplier to hedge this risk will be to design new attractive products lines because small extensions of the existing product lines will not be carried by Wal-Mart for supply chain efficiency reasons.

- **Brand erosion**

Considering the intrinsic pressure on price to which the suppliers are submitted to, the most critical risk that the largest ones will encounter is a significant erosion of the brand name. This point is currently demonstrated in the very debated strategic decision of Levi's to create a "lower quality" line of Jeans – the "signature" Levi's – in order to be able to sell its brand at slashed price through Wal-Mart distribution network.

- **Possibility of no return on investments in new technology**

As shown in the previous section, Wal-Mart's strong focus on supply chain efficiencies and high technology initiatives in this field are highly dependent on the ability from all its suppliers to comply with the standards and investments that the company sets. It appears that a number of suppliers are starting to suggest both (i) that they will not be financially capable of adopting the RFID mandate in the timeline proposed by Wal-Mart but also (ii) that it could take a decade before they can benefit from their returns on investment and from an alleged competitive edge.

2.6.2. Benefits to suppliers

- **Potentially tremendous returns on investments in new technology**

Another view of the previously stated risks is the potentially enormous competitive advantage that the suppliers will gain by adopting new technology (such as RFID) so early and by leaving all their competitors behind. A number of giant retailers (including Tesco, Target, Albertsons, and the Metro Group) have already mandated RFID implementation from their suppliers and it is possible that the returns on investment will be, as advocated by Wal-Mart, far superior than expected and will arise in a shorter timeframe too.

- **Real-time scan data**

As detailed earlier, an efficient IT infrastructure has provided the entire network with real time data on the supply chain and has allowed the suppliers to improve their product mix and better target their products.

- **No shelf slotting fees[1] and high product return allowances**

Wal-Mart policy on this issue significantly decreases the bills back to the suppliers and is a benefit of major importance for the smaller suppliers.

[1] The shelf slotting fee is the payment a manufacturer has to make in order to place an item on a retailer's shelf.

- **Indirect incentives to innovate**

Paradoxically, it is by "SKU-ing down" its product offering and narrowing its supplier base during the "warehouse era" that Wal-Mart first optimized its supply chain. This aspect of Wal-Mart strategy would intuitively appear to decrease the suppliers' willingness to innovate, knowing that they might not be able to use Wal-Mart distribution channels to push their new lines through to the customers. However, as mentioned before, the risks of too narrow a product mix when dealing with Wal-Mart is so great that several large companies have put significant investments in expanding their product lines and designing attractive products for Wal-Mart to distribute, thus compensating apparent incentives to keep a defensive marketing strategy. The best example of this innovation effort is certainly that of Hershey and its recent diversification from simple chocolate bars into a wide range of new chocolate based products, as suggested by a recent article in an article published by CIO magazine [24].

- **Demand for high volumes**

Wal-Mart demand for very important volumes makes it possible for the largest suppliers to sell in bulk (24 packs vs. 6 packs) and realize benefits on economies of scale. This ability to push through any discount priced products to the customers is certainly one of the key benefits to the suppliers and at the same time the enabler of its ever so strong leverage.

2.6.3. Summary

An overview of the identified risks and benefits to the suppliers is presented in the following table.

Benefits
+ Access to real-time data scan information
+ High volumes
+ No product slotting fees
+ Indirect incentives to innovate
+ Possibility of high returns on forced investments in new technology
Risks
- Possibility of low returns on forced investments in new technology
- Pressure on margins
- Increased vulnerability of a narrow product mix
- Brand erosion
- Reinforcing dependence loop

Table 10 – Impact of the Wal-Mart relationship on suppliers

The greatest risk for the largest[1] suppliers is the erosion of the brand (e.g. the uncertain impact of Levi's signature jeans on customers) and for the smallest ones a conservative strategy focused on a single key product (e.g. Vlasic's pickles).

Wal-Mart policy appears to favor either (i) the large unavoidable suppliers with a broad product mix and a strong brand or (ii) the small and dynamic suppliers with an expanding product mix.

2.7. Quantitative analysis of the impact on suppliers

2.7.1. Key data on large Wal-Mart suppliers

- **Collected data**

The following table [37] compiles a number of key metrics (% sales to Wal-Mart over total sales, overall gross margin, overall operating profit and return on invested capital) for 13 large suppliers for which Wal-Mart is a key customer, from 2001 to 2003.

	Wal-Mart Sales			Gross Margin			Operating Profit			ROIC		
	2001	2002	2003	2001	2002	2003	2001	2002	2003	2001	2002	2003
Campbell Soup	10.4%	13.3%	14.5%	45.8%	44.2%	43.0%	20.9%	16.4%	16.5%	21.1%	18.8%	19.3%
General Mills	12.1%	15.9%	17.0%	45.4%	40.0%	40.1%	15.3%	16.0%	19.0%	32.7%	10.4%	10.3%
Hershey	19.8%	23.2%	25.0%	36.7%	34.4%	39.2%	16.6%	18.2%	19.0%	18.9%	21.0%	24.1%
Kellogg	14.9%	16.5%	18.0%	44.7%	46.3%	43.8%	17.1%	18.2%	17.3%	12.2%	14.8%	16.2%
Kraft	12.7%	15.8%	17.5%	40.2%	40.2%	39.5%	16.9%	21.2%	19.6%	6.0%	7.5%	7.1%
Sara Lee	10.7%	12.8%	14.0%	39.2%	39.3%	39.6%	9.1%	8.9%	9.1%	31.6%	17.0%	17.7%
Proctor & Gamble	15.0%	17.0%	18.0%	46.8%	49.0%	49.8%	17.3%	19.0%	19.8%	17.0%	15.8%	16.9%
Gillette	12.0%	12.0%	12.5%	57.9%	58.5%	59.9%	21.1%	20.9%	21.6%	14.1%	14.6%	17.6%
Kimberly-Clark	11.0%	12.0%	13.0%	36.2%	35.6%	34.2%	19.5%	19.0%	17.6%	16.1%	14.4%	12.8%
Coca-Cola	n.a.	9.0%	10.0%	n.a.	63.7%	63.3%	n.a.	27.9%	27.4%	n.a.	21.9%	23.4%
Pepsi Co	n.a.	9.0%	10.0%	n.a.	54.0%	54.0%	n.a.	17.6%	18.4%	n.a.	18.3%	18.3%
Anheuser-Bush	n.a.	3.0%	3.0%	n.a.	40.1%	40.4%	n.a.	22.1%	22.7%	n.a.	16.9%	17.3%
Coors	n.a.	3.0%	3.0%	n.a.	36.4%	35.6%	n.a.	8.1%	7.1%	n.a.	5.7%	5.1%
Median	**12.1%**	**12.8%**	**14.0%**	**44.7%**	**40.2%**	**40.4%**	**17.1%**	**18.2%**	**19.0%**	**17.0%**	**15.8%**	**17.3%**

Source: Company data, Morgan Stanley estimates as of 02/12/04

Table 11 – Wal-Mart: Key Supply Metrics

- **Weak statistical significance of the data**

It should be noted that the statistical significance of this sample of data is very questionable given that:

Only the suppliers whose financial data are undisclosed were taken (i.e. mainly large publicly traded entities)

The timeframe is a relatively short one (three years)

[1] "Large" and "small" refer here to the size of the company in terms of sales. It is our estimate that the "large" suppliers are the 15 companies accounting for about 20% of Wal-Mart's total COGS.

The financial aggregates are taken for overall sales, and not only for each company's sales to Wal-Mart

Therefore, such analysis should be carried out further in the years to come in order to confirm what can be merely referred to as an "apparent trend". However, it is interesting to note that in spite of the above, the data is clearly not in contradiction with the qualitative analysis of the previous section, namely that as the proportion of sales to Wal-Mart increases, gross margin should decrease – due to Wal-Mart's pressure on prices – but operating profit should increase – thanks to supply chain efficiencies and an improved product mix.

2.7.2. Gross margin

Available data suggest a negative correlation between the ratio of sales to Wal-Mart and the gross margin.

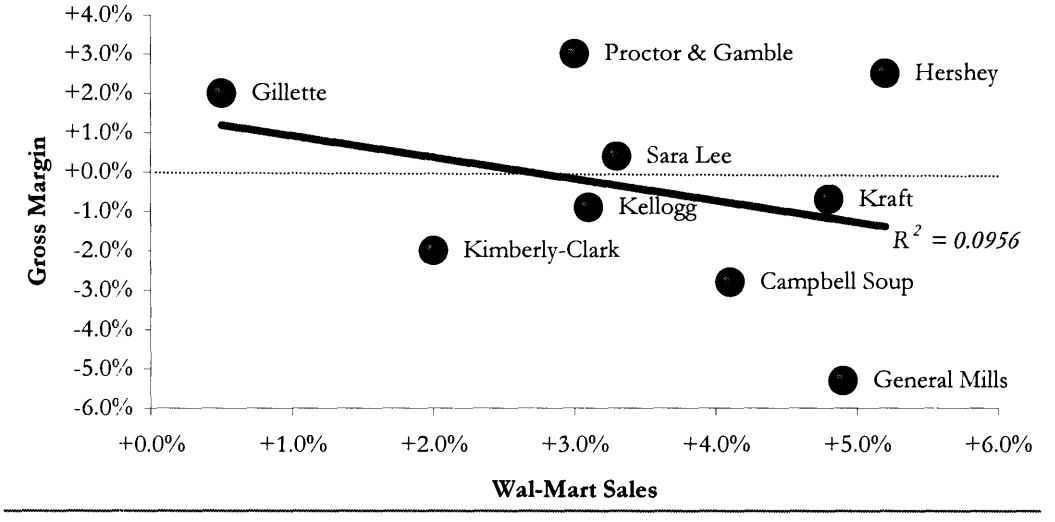


Figure 5 – Correlation between Wal-Mart Sales and Gross Margin – 2001/2003 Variation

Intuitively, as the sale volume to Wal-Mart increases, the operating margins should decrease due to the pressure/emphasis that Wal-Mart puts on the COGS for their customers in an EDLP pricing strategy.

In spite of a low R-square, the data presented in the graph above is consistent with our qualitative analysis: gross margin should decrease due to Wal-Mart's pressure on prices.

2.7.3. Operating profit

Available data suggest a positive correlation between the ratio of sales to Wal-Mart and the operating profit.

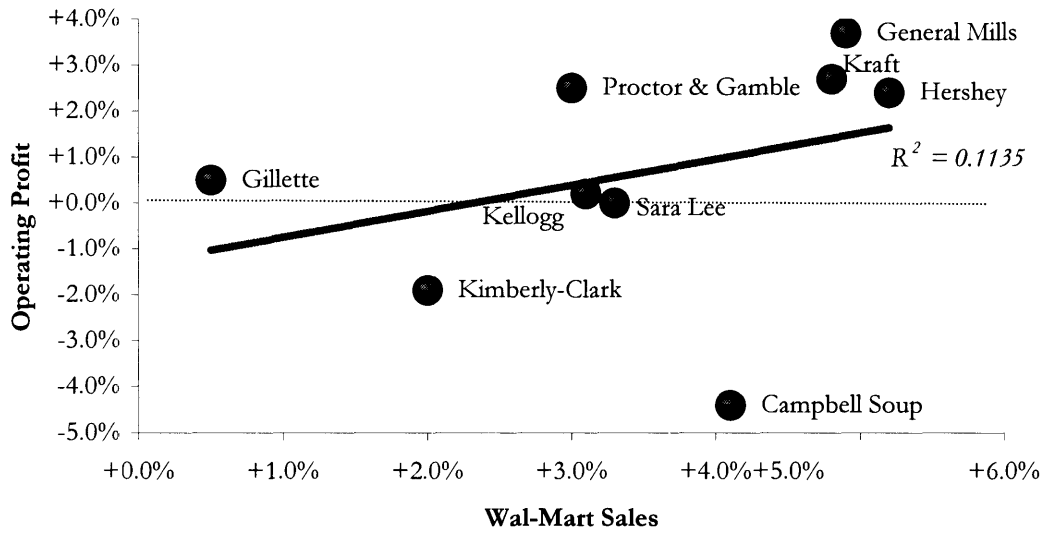


Figure 6 – Correlation between Wal-Mart Sales and Operating Profit – 2001/2003 Variation

In other terms, notwithstanding a decrease in the gross margins – as shown in the previous section – the benefits of the process efficiencies created should contribute to make the relationship profitable for the suppliers.

In spite of a low R-square, the data presented in the graph above is consistent with our qualitative analysis: in spite of a pressure on prices, the operating profit should increase thanks to supply chain efficiencies and an improved product mix.

2.7.4. Mixed data on the return on invested capital (ROIC)

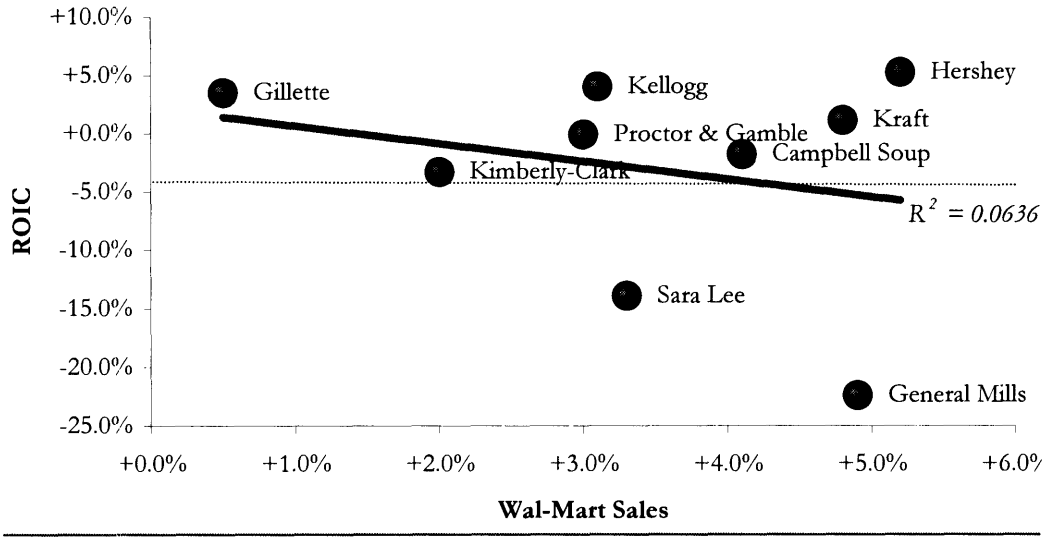


Figure 7 – Correlation between Wal-Mart Sales and ROIC – 2001/2003 Variation

The available data is inconclusive on this topic. However, it would be necessary to monitor closely the ROIC on the years to come to obtain a quantitative sense of the impact of RFID implementation.

2.8. The dimensions of the buyer/seller relationship

An important step of the case study consists in characterizing the terms of the agreement that exist between Wal-Mart and its suppliers.

As it will be further developed in the next chapter, the governance model of a supply network will be defined by the terms existing on the different stages of the product lifecycle. In the most general cases, a dimension of the product lifecycle can be (i) excluded from the seller/buyer agreement, (ii) included in explicit terms or (iii) influenced by the dynamics of the governance models through indirect incentives.

In the case of Wal-Mart, a stage by stage analysis shows how the buyer/seller relationship has evolved from pure procurement to design, sourcing, manufacturing, delivering and returns.

- **Design**

  Indirectly influenced.

  Through an increased vulnerability to a narrow product mix, the suppliers have strong incentives to innovate and expand their product offering with attractive new lines.

- **Sourcing and manufacturing**

  Indirectly influenced.

  The price pressure exercised by Wal-Mart EDLC/EDLP model has forced a number of large suppliers to outsource their production in countries where they benefit from favorable tax treatments, cheaper labor force and cost reduction in logistics when sourcing from these same countries.

- **Sell**

  Contractual relationship.

  Procurement – in any industry and in particular in retail – is the key explicit relationship between Wal-Mart and its sellers.

- **Deliver**

  Indirectly influenced.

  The very high volumes of sales enable favorable packaging and delivering options for the suppliers.

- **Return**

  Contractual relationship.

  In order to lock in small suppliers in their network, Wal-Mart has established a policy of high allowance for product returns and thus has contributed to free some of their suppliers' working capital up.

- **Service, Recycling**

  Not influenced.

2.9. Wal-Mart's governance model

2.9.1. Three key examples of different collaborative models

- **The original "collaborative best practice": Wal-Mart and P&G**

Extensively studied and referred to by numbers of commentators as the historical best practice in supply chain management, the alliance between Wal-Mart and Proctor & Gamble contains a number of key lessons for the efficient implementation of a seller/buyer alliance.

Although it is not relevant in the analysis of governance in the supply network to study once again the entire case, it is important to present how the IT investments have fostered a truly efficient supply chain relationship. On this topic, Michael Grean and Michael Shaw have written a very clear analysis [28], of which the two key points are the following.

Joint development of a "data highway": improving the supply chain

Wal-Mart and P&G jointly developed a straight information data highway by installing scanners in the stores, tracking product data and analyzing the results. This data highway allowed both companies to improve category analysis, shelf management, marketing, profitability, data sharing, replenishment, activity based costing and marketing analysis.

Joint scorecard: measuring the improvement

One of the initial discrepancies in the relationship was the performance measurement of the supply chain efficiency. Carried out through several connection points in each company and with several different scorecards, it was impossible to make a system-wide and consistent measure of the efficiency in the supply chain relationship. The adoption of a single scorecard and of a single relationship management link between the two companies allowed Wal-Mart and P&G to solve that problem and to objectively quantity the improvements of the supply chain relationship.

- **The semi-collaborative relationship: Levi's**

The recent alliance between Wal-Mart and Levi's is a perfect illustration of the current supply chain dynamics that exist between the giant retailer and such an unavoidable manufacturer. A recent article published in CIO Magazine [24] summarized well the terms and consequences of this partnership.

After an era of domination in the jeans industry, Levi's has been suffering from a very competitive environment and considerable market share loss – from 18.7% in 1997 to about 12% in 2003. At that point, Levi's decided to create a new product line for the cost conscious consumers and use Wal-Mart's distribution channel to sell it.

The required supply chain and IT investments for Levi's were considerable. The company had to nearly double its out-bound delivery centers to match Wal-Mart's lead times, develop

the scanning tools to comply with Retail Link exchange standards and overall modify its entire supply chain management approach in the objective of dealing with Wal-Mart.

A new line of cheaper products – Levi's "signature" jeans – was designed to compete with the other brands offered by Wal-Mart. Eventually, Wal-Mart added to its product offering a strong brand at a discount price for its cost-conscious customers at no additional investment. On the other hand, a number of analysts strongly questioned Levi's strategic decision on the account of a strong brand dilution. At the end of the day, Levi's used Wal-Mart to trade brand against volume and modified its entire business model to enter into the governance structure of the giant retailer.

This example, which can be qualified of semi-collaborative relationship, shows the risks and benefits associated with the entry into Wal-Mart's supply network, even for a large and unavoidable brand as Levi's.

- **The oppressive relationship : Vlasic**

Vlasic is the one business example used by the opponents to Wal-Mart as a symbol of its uncontrollable leverage over its suppliers and compelling reason for which the antitrust regulatory bodies might intervene.

The circumstances of the agreement between Wal-Mart and Vlasic are still debated as well as the reasons for Vlasic's downfall. However, the facts of this intriguing business case are the following. In the late 1990s, Vlasic and Wal-Mart entered into an agreement under which Vlasic's gallon jars of pickle would be sold at a considerable discount for $2.97 in 3,000 stores over the country. At the same time, Vlasic's competitors would sell quarts of the same pickle quantity at the same price through rival distributors. In 2001, after a consistent period of shrinking margins, decreasing profitability and net losses, Vlasic filed for bankruptcy.

It is not our purpose here to extrapolate on Vlasic's downfall and the supposedly unbearable terms that Wal-Mart may or may not have put on the company. The lesson of this example is certainly that Wal-Mart's greatest benefit for a supplier is increasing revenues while the corresponding greatest risk is an unstoppable decrease in profitability. At the end of the day, Vlasic made a strategic decision of trading revenues for margin, and this decision was probably not adapted to its economic environment (limited supply, high brand premium on pickles, small but aggressive competitive landscape).

Ultimately, as a report from the Boston Consulting Group states it, one of the options for a supplier to deal effectively with Wal-Mart is to decide not to enter in a business relationship with the retail giant if a high revenue growth strategy is not consistent with its business model.

2.10. Conclusion: the "enlightened despot" model

The dynamics and precise characteristics of the Wal-Mart governance model are not clear at this stage of the analysis and will be fully developed once the conceptual framework for the study of governance in the supply networks has been built, in the next chapter. However, the main drivers and aspects of the relationship between Wal-Mart and its suppliers are quite obvious now.

- **A straightforward strategy**

Wal-Mart has built one of the most powerful companies in the world around three key articulated strategic decisions.

An almost systematic EDLC/EDLP pricing strategy and a revenue based – rather than a margin based – return on assets

A constant focus on supply chain management in the objective to support the pricing strategy

Development of new supply chain technologies and mandates across the supply network for a large scale implementation of these technologies

- **Wal-Mart as a counter example to the classic collaborative model**

Wal-Mart is the illustration that it is possible to sustain a solid business model and an apparently sustainable governance structure without a typical collaborative relationship – i.e. shared decisions and investments to the mutual benefits of the partners in a contractual relationship.

From a governance perspective, Wal-Mart's supplier base consists of three types of suppliers.

The "unavoidable" suppliers

A decreasing number of suppliers possess such a brand premium and influence on the customers that Wal-Mart cannot afford to fully exercise its leverage over them. It is our estimates that there are less than 20 of such suppliers for roughly 15-20% of Wal-Mart total costs of goods sold.

For these suppliers (P&G for example), the relationship with Wal-Mart is a fully collaborative one, in the very classical sense of the term. As a result, coercion is neither possible nor really required since the cost efficiencies that they will gain from supply chain initiatives will be easily scaled up to the amount of the investments.

In this sense, Wal-Mart's role is very similar, in its spirit, to that of a coordinating Maestro, as described in the first chapter.

The rest of the supplier base

These suppliers are far smaller, in most cases do not possess significant brand premium and influence over the customers and above all do not have any selling leverage over Wal-Mart in terms of sale volumes. These suppliers account for approximately 80-85% of Wal-Mart total costs of goods sold.

For them, the investments in new supply chain technologies are more forced than coordinated. The risks are great because they are not scaled up by the sales volumes and because the fixed investment will greatly strain their financial structure.

In this sense, Wal-Mart's role becomes that of an "enlightened despot" that forces promising, but risky investments, to the suppliers' benefit but in Wal-Mart's personal beliefs.

The suppliers that do not deal with Wal-Mart

Again, it is not necessary for a small supplier to enter into business with Wal-Mart... It is a strategic choice which privileges sales over profitability and gives a different thrust for improving a company's return on assets. It is neither required for every supplier nor recommended for every supplier and highly depends of the strategy, product and business environment.

- **The "enlightened despot"**

Wal-Mart particularity in its governance structure is that the pressure is exercised on the supply chain investments rather than merely on the margins of the suppliers. It's the company's solution to the prisoners' dilemma: using its unique leverage to rule the supply network and force it to grow as one.

Eventually, Wal-Mart has designed a governance structure where all the players of the supply network bear both the potential risks and benefits that will arise from the investments in the information systems. As long as the mandates fulfill their promises, the investments will give a supply chain edge to the network, sustain the discount pricing model and generate revenues and cost efficiencies to the benefit of the entire network. When a mandate does not, we might assist to the enlightened despot's disgrace...

3. FRAMEWORK FOR THE STUDY OF GOVERNANCE

This chapter is probably the core of this thesis work. Built from the case study of Wal-Mart and considering a number of other well know supply chain examples, it proposes a structured framework for the study of governance in the supply network. Hopefully, after applying this framework to a number of supply chain successful models, it will be possible to fully explore the topic of governance in supply networks.

3.1. Overview of the conceptual architecture

The following diagram presents the proposed practical framework for the study of governance in supply networks.

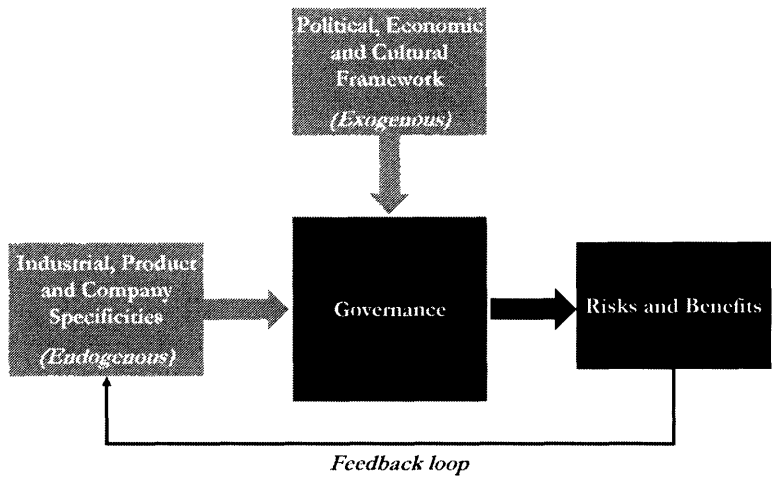


Figure 8 – Overview of the Framework for the Study of Governance in the Supply Networks

Building on the ideas developed in the first chapter (concept definitions) and in the second chapter (case study of the Wal-Mart model), the proposed framework acknowledges a number of key lessons about governance in supply network.

- **A necessity to segment the supply network's characteristics**

It is necessary to understand the endogenous framework (the industry, the product, the companies of the supply network) and the exogenous framework (political, culture, economic and cultural constraints) of the governance structure that one wishes to study. Ultimately, these factors will enable or limit the choice of governance models that the supply network can adopt.

- **Defining the governance model in a non-value based way**

It will be equally important to give an objective and non-value based description of the governance model of the supply network to study. This will include studying the topology of the governance model, its dimensions and the sharing structure for responsibility, investments, benefits and risks.

- **Assessing the risks and benefits, but also their impact on the supply network**

The risks and benefits of a specific governance model can internally change the industry or the companies in such a significant way that the very sustainability of the governance model will be affected. Therefore it is necessary not only to identify – and possibly quantify – these risks and benefits, but also understand how they reinforce or weaken the governance structure.

3.2. The characteristics of the industry and the general framework

Practical examples of "trendy" successes in supply chain management show that a particular governance model is often enabled by the very characteristics of the industry. There is no perfect model in the absolute sense of the term and it is very theoretical to assume that any company can adopt Dell's build-to-order (BTO) model...

The first step of the analysis of any supply network governance model should consist in describing in a systematic way the characteristics of the industry and their implications on the availability of the supply network governance models.

3.2.1. Endogenous factors

- **Characteristics of the product**

The technological complexity of a product will increase the damages of losing R&D information through unsecured relationship with suppliers, significantly decrease the willingness to share information across the network of suppliers and/or require a very high level of trust in the relation.

In a similar way, the manufacturing complexity of a product will increase the complexity of the specification approval process and increase the costs of breaking the seller-buyer collaboration.

- **Strategy of the different players**

The strategy on which a company – in this case the dominant player of the chain – bases its business model can enable a certain type of governance model otherwise unavailable to the industry.

The case study of Wal-Mart suggested how the pricing strategy was a key enabler of the overall governance model of the supply network. In the case of Dell, the Build-to-Order

business model puts a strong pressure on the supply chain enabling only governance models which minimize delivery lead time.

- **Current focus on supply chain management**

It is necessary to derive the work that has been carried out on collaboration in general to answer the question of the maturity of the supply chain model of the industry. In other terms, to which degree is supply chain management a focus of the company/group's strategy?

3.2.2. Exogenous factors

The exogenous factors are defined as those that, a priori, cannot be controlled by the players of the supply network and more generally of the industry. It is critical to identify these factors in order to be able to predict what changes in the geopolitical, economic, regulatory, cultural or technological environment can affect a supply network's governance model and in what ways they would do so.

- **Technological**

The emergence of the Internet and sophisticated IT infrastructure changed the face of the retail industry. For example, the ability to connect Mom-and-Pop stores via a fax machine or a modem enabled the global success of Zara in Spain.

- **Economic**

The economic framework can affect more or less significantly the governance structure that a supply network will or will not adopt.

Volatility of prices in commodities, for example, can dramatically affect the supply network's organization of the corresponding industry. In the steel industry for example, this factor greatly accounts for the "free-market" structure which exists between the suppliers and the manufacturers since the latter will not accept to share the corresponding risks with the former.

- **Political**

This is a critical exogenous factor, because it is probably one of the least predictable one and can be submitted to rapid and profound changes both at a local and at a global level. These factors include any policy making in the more general sense of the term: return to a protectionist economy, strengthening or weakening of the antitrust regulations, changes in the patents & copyright regulations, or even dramatic changes in Generally Accepted Accounting Principles.

3.2.3. Endogenous vs. exogenous factors

The conceptual difference between endogenous and exogenous factors is actually more subtle than whether these factors are internal to the supply network, or decided externally by unalterable forces (government, history and politics). The true difference in this case will lie in these factors' reactivity to the risks and benefits of the supply network's governance model. In other terms, the question is whether the risks/benefits that the players eventually incur/receive will affect the characteristics of the business environment through a feedback loop.

For example, in the case of Dell, the strategy and the supply chain priority which are adopted by all the player of the supply network have been dramatically affected by the governance model that Dell has forced upon its network of suppliers. In this sense, those factors are endogenous ones.

On the other hand, the geopolitical environment or the regulatory framework can only be remotely and indirectly – if at all! – influenced by the benefits of the relationships which exist in a supply network. In this sense, those factors are exogenous ones.

This is certainly one of the most important aspects of an accurate description of a supply network governance model since it will determine whether a model is sustainable in time and permit to analyze precisely under which conditions.

3.2.4. Integrating consumer demand

The particular case of Wal-Mart is not adapted to a refined analysis of the position of demand from the customers. The retail industry is characterized by the near absence of an outbound supply chain since the customers come directly inside the stores to the contact of the products they will eventually bring home themselves. However, it is still interesting to think about the position that demand will take in the proposed framework even though this particular concept should be studied more carefully when adapted case studies are conducted in the future.

Demand can be viewed as comprised of an exogenous part and of an endogenous one. The exogenous demand would be, in fact, the "economic demand" as it is understood in the economic exogenous factor which was described earlier. For example, it translates the decreases in sales in restaurants in period of economic recession. This component of demand is not affected by the overall dynamics of the governance structure.

On the other hand, the endogenous aspect of demand is linked to the other endogenous factors and can be affected by the dynamics of the governance structure. For example, in the case of Dell, the drivers of customer demand are (i) highly customized products, (ii) global servicing and (iii) high customer service, to the detriment of delivery time – higher in retail where the customer can walk away with the computer. Interestingly, in Dell's model, the demand has been shaped by the supply network governance model: Dell has designed its business model to target this particular type of demand, its supply network has adapted to support this strategy and customer demand in the entire computer industry has now been entirely modified by Dell's model. This is this endogenous component of demand which will need to be studied carefully in the governance model of other case studies than Wal-Mart.

3.3. The attributes of the governance models

The aim is to define the relevant attributes of a governance model in order to assess the corresponding enablers/limitations (as seen in the previous section) as well as the risks and the benefits to the different players of the model.

3.3.1. Topology of the supply network

The first step in the description of the attributes of the governance model is to determine the general topology of the supply network. This topology will greatly influence the relationship between the players and examples in the literature and practical cases often show that it is the main defining attribute of a governance structure.

- **Examples of governance topologies**

One should note that a vast range of different topological models can be envisioned and below are presented two simple examples of supply network topology.

Existence of a dominant player

Whether through coercion (despot based models) or orchestration (maestro based models), the different actors of the supply network can be coordinated by a dominant player.

As argued by Ulrich [11], it is virtually impossible to sustain a holistic governance structure – i.e. "around the participants can evolve organically" – when a single entity dominates the supply network. By virtue of its unique position in the supply network and its leverage over the supplier, the dominant player will tend to define unilaterally the terms of the relationships (as defined in the next section). As a result, the smaller players of the network will have incentives to either leave the network or bend its rules to the detriment of collaboration, thus impairing the overall benefits of the governance structure.

In this respect, Wal-Mart appears as an exception at a first glance. The coercion structure, reinforced by the "dependence loop", is fueled by the benefits of supply chain optimization which Wal-Mart triggers in the network by forcing information and supply chain technology investments throughout the layer of its suppliers. However, this does not make the model more resilient or more sustainable, it merely shifts the burden in the sense that any ill-advised investment decision – or a well thought decision in unfavorable exogenous conditions – can overthrow the entire structure.

Intermediation of a third party

In an increasing number of models and under very specific circumstances, a third party takes some, if not all, the responsibilities of coordination in the supply network. This can be achieved through a mandate on which all the players in a group/industry agree or it can be realized by a dominant third.

A powerful illustration of this supply network topology is the case of Li & Fung in China. The company uses a rudimentary IT infrastructure to allocate raw material to a large number

of extremely small clothing manufactures. Without owning any manufacturing or sourcing assets, the company creates value for its entire network by managing the overall procurement as a third party intermediate.

- **Designing manageable governance model**

The risks and benefits of the supply network topology can be difficult to understand. We have noted in the first chapter how the current hypes around the concepts of extended enterprise, coordinator of the network and supply chain vs. supply chain competition had to be analyzed carefully. Eventually, too sophisticated a topology might have tremendous benefits associated, but might make it very difficult to implement practically.

The current trend in outsourcing comes from the atomization of the companies after a period of consolidation that did not fulfill the managers' expectations. Practically, it appeared that internalizing the supply chain to a higher degree did not make it easier to optimize and quoting again Robert Porter Lynch, CEO of the Warren Company, "alliance professionals typically find it easier to create alliances with their major competitors than with other divisions in their own companies". As a result, it is fair to assume that the topological simplicity of the supply network will condition its sustainability on the long run and that this is a critical trait of any governance structure.

In order to obtain an efficient supply network governance model, a network – or its dominant player – will have to adopt a subtle balance between too simple and too sophisticated a network. In a word, the network has to be careful and be sure to design a "manageable" model.

3.3.2. Control/responsibility/benefits/risks sharing structure

As presented in the first chapter, the governance model of a supply network will be in great parts defined by the sharing structure for the control, responsibility, benefits and risks. Furthermore, the most important trait of this sharing structure will be whether it is a "direct" or an "indirect" one, as explained by the following definitions and examples.

- **Direct structures**

In this case, a physically and/or legally separate structure is built and all the players agree on the distribution of:

- The responsibilities: investments, executive control, etc
- The benefits sharing: pro-rata distribution, different classes of shares, etc

The example of Visa International

In 1958, Bank of America first issued regionally its payment card – the BankAmericard. In 1976, a "for profit" corporate entity, jointly-owned by the licensee member institutions, was created under the name Visa to provide its members with a processing, global branding and marketing infrastructure.

Today, Visa International is jointly owned by more than 21,000 financial institutions in a global partnership. These institutions offer financial services and products such as credit, debit and prepaid, corporate, purchasing and business products, and benefit from the infrastructure of Visa International to support their sales.

Based on its level of commitment and its contribution, each member of the partnership is given (i) voting rights to indirectly elect the administration and executive boards and (ii) an equitably defined share of the profits of the company.

Agricultural cooperative

Direct structures are widely present in the food industry, under the form of agricultural cooperatives whose federated governance model has been studied in depth by Lazarini et al. [6].

These structures consist of sequential layers of ownership: farmer patrons are members of a local cooperative, which in turn is member of a regional cooperative, which in turn might be member of an inter-regional cooperative. These cooperatives can be used as trade platform for the farmer (either to sell production output or to buy production input). In a more sophisticated way, they can also be used to pool assets and financial resources whose benefits are shared among the patrons with respect to their level of participation and relative investments in the separate structure.

- **Indirect structures**

In this type of structures, the benefits arise indirectly from the classic business relationship between the players. This relationship can be very basic (mere procurement contract between a seller and a buyer at a determined price and conditions) or more sophisticated (agreement on R&D, recycling and other stages of the product lifecycle).

The difference with the "direct structures" above is that:

- No player directly owns a control stake in another entity or bears direct responsibility for the fate of another player
- Every player works to maximize its own profits inside the contractual framework defined in the business relationship. The benefits are distributed indirectly, through the increased efficiencies.

The dictator ("enlightened despot") model

In this indirect structure, a dominant player – typically Wal-Mart – uses its leverage over the network of suppliers to improve the business relationship (through compulsory investments from the suppliers, forced information sharing, and high performance standards).

The structure is sustained as long as the dominant player keeps its leverage over the suppliers and the benefits arise from the improvement of the business relationship that would not have occurred if the players had interacted with each other in a pure market structure.

The coordinator ("Maestro") model

This structure is very similar to the dictator's. However, in this case, the players let the dominant player freely coordinate the network, to the benefit of all players ultimately. This type of structure is common in the industries with high manufacturing complexity and/or technological complexity where the cost of breaking the buyer/seller collaboration is so high (loss of strategic information, product requirements to be tested again, etc) that it gives incentives to all players to collaborate. Typical examples of this model would be Boeing and EADS in the aeronautics industry, where the long-term collaboration in the supply network has led to a "supply chain vs. supply chain" competition.

This model obviously requires that trust be established from the different players vis-à-vis the dominant player. This model appears very progressively, on a rather extended timeframe that allows this trust to be built and is sustainable as long as each player enjoys the benefits of the collaboration. Often, the model will not be sustainable not because these additional benefits are not present, but rather because there is no performance measurable for them.

- **Comparative analysis**

Enablers and limitations

Direct structures can only be established in specific environments. In the case of Visa, it is the necessity of establishing a world standard in credit card. In the case of the food industry, Cook refers to it as the traditional "esprit de corps" that exists between the different patrons. Obviously, the subsequent limit of such a model is the technological or manufacturing complexity of the industry which makes it very risky to freely share strategic R&D information throughout the network.

The indirect structures on the other hand need a dominant player and will stay sustainable as long as the trust or the leverage that binds the players to the dominant actors is not significantly altered.

Strengths and weaknesses

The direct structures are built on binding contractual terms (the legal statements of the separate entity). In this sense, they are less flexible and likely to lead to a sub-optimal supply network, but they are sustainable on the long-term.

The indirect structures are, by definition, far more flexible and thus volatile. The sustainability of the model is based on a relationship of:

- Either trust, difficult to maintain since the performance measures are very difficult to defined
- Or leverage, difficult to maintain if the smaller players constantly question and fight against it

	Direct structures	Indirect structures
Enablers	- Social or cultural mindset	- Presence of a dominant player - Trust or leverage over the other players
Limitations	- Product and information must be non strategic	- Trust must not be broken (Maestro) or - Leverage (Despot) must not be altered
Strengths	- Easy to establish performance measures - Easily sustainable	- Flexible, likely to lead to an optimal order
Weaknesses	- Rigid, likely to lead to a sub-optimal order	- Difficult to establish performance measures - Not necessarily sustainable

Table 12 –Analysis of Direct and Indirect Governance Structures

3.3.3. Dimensions of the relationship

- **First approach: by type of player/product**

In studying certain types of governance structures, William Ulrich argues that an important step in building a coordinating governance structure starts with a good understanding of the function of the players in the supply network [11]. To this effect, he defines eight categories to classify them, as presented in the table below.

Category	Definition
Raw Materials	Include steel, lumber, fuel, and other materials needed to build a product or maintain a work envrionment
Components	Include preprocessed items needed to produce products that are then sold to your customers. These can range from springs to computer chips
Products	Differ from components in that they are procured for use by a company or consumer and not resold
Services	Include maintenance, banking, insurance, healthcare, legal, association, and many other service categories needed to run a business
Infrastructure	Includes emergency and other government services, electricity, water, natural gas, and communications capabilities
Data or Information	Includes any data or information, obtained in paper, electronic data interchange (EDI), or other format, from a third party
Distributors	Includes agents, resellers, franchises, wholesalers, retailers, or other distributors of your products or services
Customers	Include buyers or users of your products and services. Some institutions call their customers subscribers, constituents, clients, or patients

Source: William Ulrich

Figure 9 – Supply Chain Categories

- **The product lifecycle in the supply chain**

However, it seems also possible to segment the product lifecycle in different sequential stages of its evolution in the supply chain. These segments, from upstream to downstream, are: design, sourcing, procurement, delivering, return, service and recycling.

The governance, i.e. the dimension of the relationship between the players of a particular supply network, will only have an impact (direct or indirect) over some of these segments. The most basic relationship between a buyer and a seller will obviously be the procurement segment of the product lifecycle. However, the case of Wal-Mart shows how the governance of the supply network can encompass, in explicit or indirect business terms, conditions on other segments.

3.4. Risks and benefits of a governance model

- **Qualitative analysis**

The risks and benefits of the governance model are very specific for each supply network. It is not possible to detail here the steps of their analysis. However, the behavior of the suppliers and of the buyer with respect to each other will always give clear indications of the built-in incentives and risks.

- **Quantitative analysis**

An unavoidable step in a long-term research work should include an analysis of the relevant financial data of the players' financial data and the development of a comprehensive database. This work would allow both to quantify the relative importance of each benefit and each risk, but furthermore to draw unequivocal correlation to support a more intuitive and business case analysis.

- **Analysis of the feedback loops to the endogenous characteristics of the industry**

The last step of the risk/benefit analysis will consist in assessing the feedback loops to the endogenous factors of the supply network. As suggested earlier, these feedback loops will condition the sustainability of the model and might either reinforce or weaken the governance structure.

3.5. Overview of the framework

An overview of the entire framework is presented on next page and summarized all the points which have been discussed in this section. We believe that by applying this framework to a number of best practices in supply chain governance, it will be possible to better understand the dynamics of the existing models and be eventually able to envision the future evolution of supply chain management.

In next chapter, the framework will be retroactively applied to Wal-Mart in order to demonstrate its usefulness as a tool for analysis of governance and to confirm the analysis conducted in a non structured way in the second chapter.

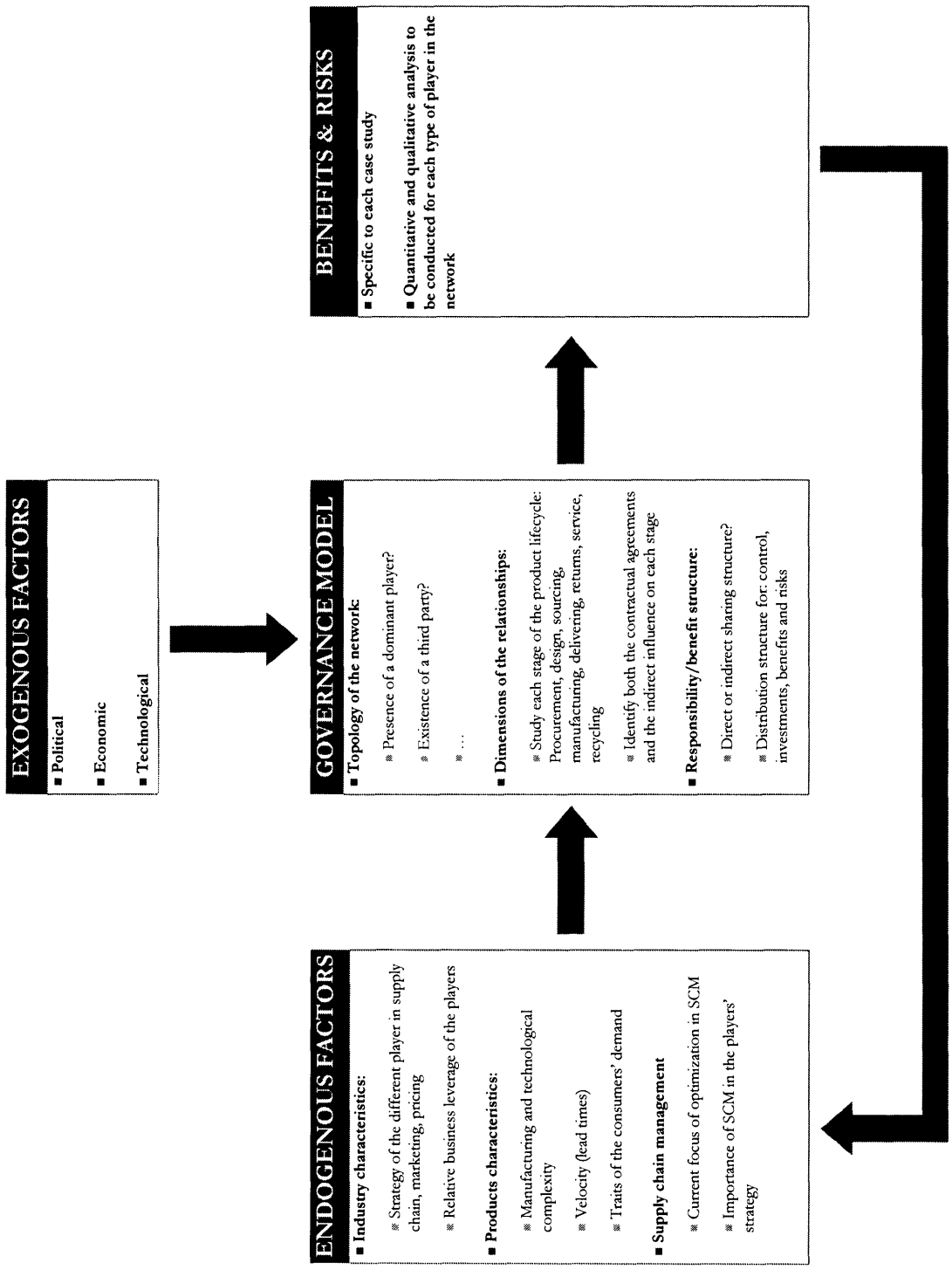


Figure 10 –Framework for the Study of Governance in the Supply Networks

4. APPLICATION TO WAL-MART'S MODEL

The analysis conducted in the second chapter (Wal-Mart model) was used in several occasions in the previous chapter to illustrate certain aspects of the proposed framework. However, it seems important at this point to apply in a systematic way the proposed for the study of governance in the supply network to the specificities of Wal-Mart's case.

This finalizes the analysis of Wal-Mart's "enlightened despot" governance model and sets the first stone for a comprehensive study of governance in the most successful supply chains.

4.1. Application of the framework

In the first section of this chapter, the analysis conducted in the second chapter will be summarized inside the different pieces of the proposed framework for the study of governance. The details of Wal-Mart's model have already been described and for most of them they will only be referred to.

4.1.1. Endogenous factors

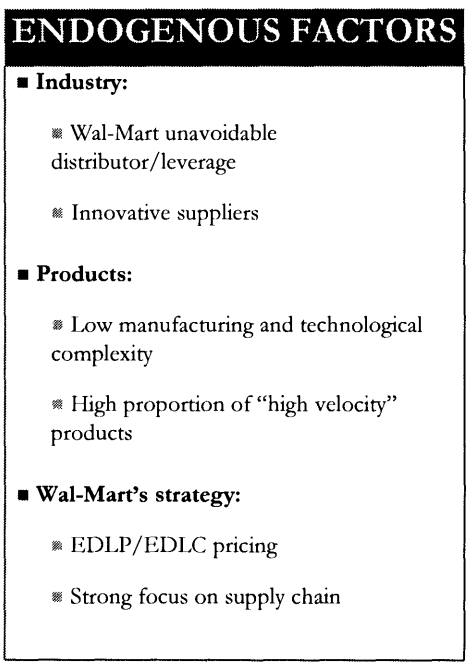


Figure 11 – Wal-Mart Model, Endogenous Factors

The industry is characterized by the unavoidability of Wal-Mart as a distribution channel and growing efforts of innovation from its suppliers.

The products are mainly low "tech" – both in terms of technological and manufacturing complexity – and include a significant proportion of "high velocity" product (sodas, dog food, etc).

Last but not least, as shown in the second chapter, the strategy of Wal-Mart is characterized by (i) the EDLC/EDLP pricing strategy and (ii) a strong focus on supply chain management.

4.1.2. Exogenous factors

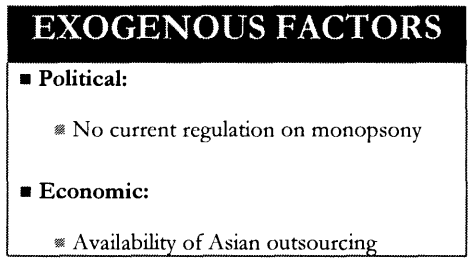


Figure 12 – Wal-Mart Model, Exogenous Factors

The most significant exogenous threat to the Wal-Mart model at this stage is probably the increasing pressure from lobbying groups against the apparent size and power of the "beast of Bentonville". A growing number of economists are currently studying the potential dangers of monopsony, i.e. the situation where a company holds so much buying power in an industry and controls such a large share of a market that it is in a position to drive the suppliers' prices down in an uncompetitive way, to the ultimately detriment of the customers. This issue is becoming more and more of a concern as a growing number of industries has seen the emergence of a dominant buyer.

The question is then whether the antitrust statutes could be changed in order to slow down Wal-Mart, as has been advocated by a few political parties. However, as noted in a recent article of Business Week [26], it is very unlikely that Wal-Mart will soon run into an adverse antitrust regulation. The journalists note that "the Robinson-Patman Act of 1936 was passed in large part to protect mom-and-pop grocers from the Great Atlantic & Pacific Tea Co., the Wal-Mart of its day" but that the regulatory authorities will not further legislate in the case of Wal-Mart as long as the company delivers low priced products to its customers.

As mentioned before, the availability of Asian cheap labor force has allowed Wal-Mart to put pressure on its suppliers' margins, thus driving the outsourcing of their manufacturing force outside the US. This economic factor has had a significant impact on the procurement relationships of Wal-Mart's supply network.

4.1.3. Attributes of the governance model

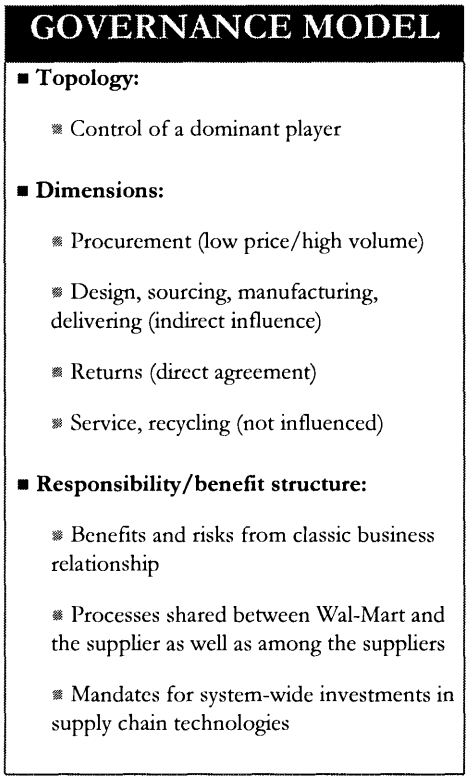


Figure 13 – Wal-Mart Model, Attributes of the Governance Model

The attributes of the governance model were described in great details in the second chapter. The topology of the supply network is obviously clusters of suppliers – large and small ones – organized around a dominant buyer.

The dimensions of the relationship have spanned from a simple procurement – characterized by low prices and high volumes – to an indirect influence of several other stages of the product lifecycle, such as design, sourcing, manufacturing and delivering.

The sharing structure is based on the classic seller/buyer relationship although in this case incentives for process sharing across the supplier network have been put in place and investment in supply chain technologies are mandated by Wal-Mart.

4.1.4. Risks and benefits

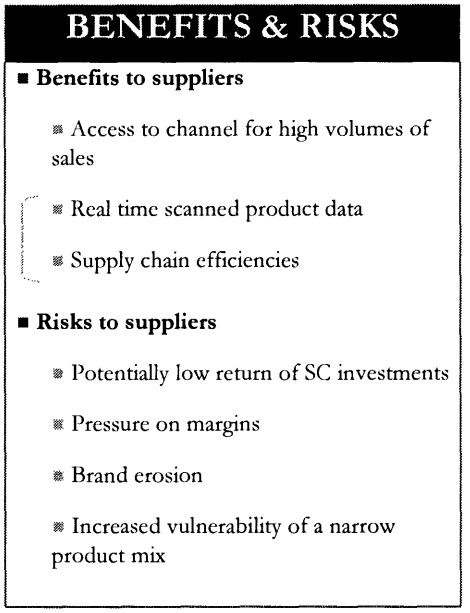


Figure 14 – Wal-Mart Model, Risks and Benefits

To make the final overview as readable as possible, the benefits and risks to Wal-Mart were not added to this table. Still it is worth reminding that the benefit to Wal-Mart is to build a cost efficient supply chain in order to support its pricing strategy and push sales on the customers whereas the caveats of the governance model is obviously the risk of forcing a no return investment in supply chain technology and lose the trust of all the suppliers, including the large unavoidable ones which the customers are seeking when they go shopping.

As for the benefits and risks to the suppliers, they were also extensively analyzed in the second chapter and were summarized in the table above.

4.2. Dynamics of Wal-Mart's governance model

4.2.1. Overall dynamics

Inspired by Sterman's "system dynamics" methodology, the diagram below summarizes all the dynamics which have been identified in the case study of Wal-Mart's governance model.

The arrows between two concepts should be seen as always "positive reinforcement". For instance, the arrow linking "strong focus on supply chain" (A) to "mandates for system-wide investments in supply chain technologies" (B) simply translates that any action that strengthens A (respectively weaken) will strengthen (respectively weaken) B.

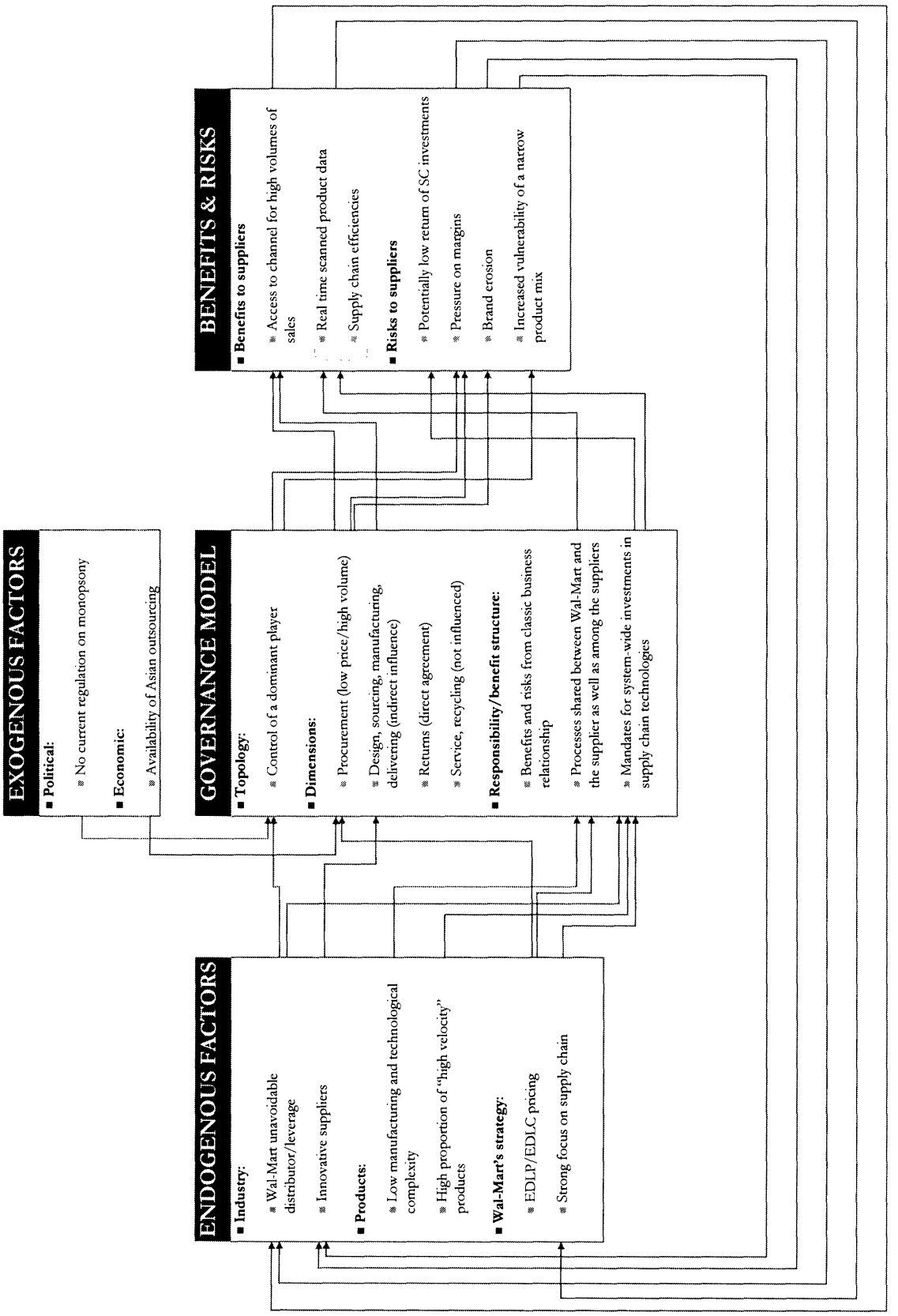


Figure 15 – Wal-Mart Model, Overview of the Governance Model and its Dynamics

4.2.2. Wal-Mart's pricing strategy: the driver of the supply network's governance

The diagram presented in the previous section is very detailed in the sense that it accounts for all the dynamics of the governance model which were detailed in the second chapter. However, it is also slightly obscure and does not account for the main drivers of this model.

This is why a closer focus was put on the impact of the pricing strategy (endogenous factor) on the system-wide dynamics of the governance and of the supply network. The case study suggested that the pricing strategy was in fact the main driver for the effectiveness of Wal-Mart's model. The question is now whether this intuition is correct.

To this effect, Figure 15 was used to derive the influence of the pricing strategy over the different aspects of the supply network's governance model. This analysis was carried out in two steps:

- **First order**

The first step of the analysis consists in determining the direct influence – i.e. the first order influence – of the pricing strategy over the governance structure of the supply network. The corresponding links were highlighted as continuous bold red lines on Figure 16.

First order influence on the governance structure

The overview figure shows that the pricing strategy is a direct enabler/driver of certain governance traits: it drives the procurement relationship (low prices and high volumes) and enables a process sharing across the supply network.

First order influence on risks and benefits

These governance traits themselves have associates risks and benefits. The low price/high volumes procurement relationship will increase the effectiveness of the network as a distribution channel for high volumes and, as a counterpart, will put pressure on the suppliers' margins and possibly erode their brand.

The process sharing will enable supply chain efficiencies.

First order feedback loop to the endogenous factors

These benefits and risks will change the endogenous factors of the supply network. The pressure on margins combined with the increased effectiveness of the network to push high volumes to the customers will reinforce Wal-Mart's leverage as an unavoidable retailer.

Furthermore, brand erosion will give incentives to the suppliers to innovate and come up with new product lines to renew the brand and lock-in the customers.

Finally, the newly gained efficiencies in supply chain will put a stronger focus on supply chain management throughout the entire supply network.

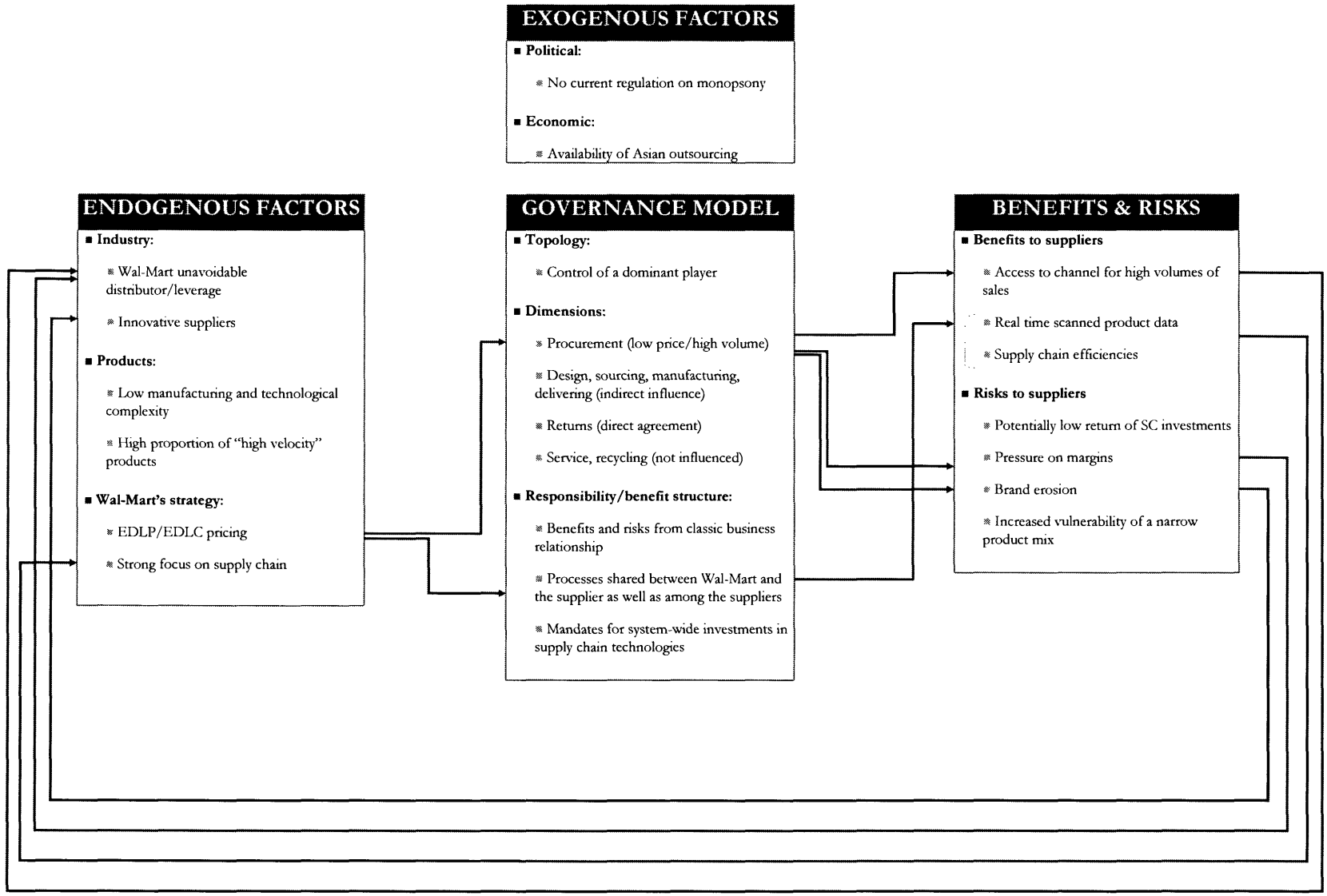


Figure 16 – Impact of the Pricing Strategy, First Order

- **Second order**

To conduct this analysis further, it is now necessary to analyze the direct impact of the endogenous factors previously mentioned on the model. In other terms, iterating the previous analysis to the influenced endogenous factors will allow determining the second order influence of the pricing strategy on the system. The corresponding links were highlighted as discontinuous bold red lines on Figure 17.

Second order influence on the governance structure

The increased leverage given to Wal-Mart comforts the buyer centric topology of the supply network and allows Wal-Mart to mandate investments in supply chain technologies from its suppliers. The reinforced focus on supply chain of the entire network also reinforces Wal-Mart's potential gains to issue the mandates and the suppliers' willingness to carry them out.

Furthermore, the innovation efforts from the suppliers allow the supply network to extend the dimensions of the seller/buyer relationship from simple procurement to other stages of the product lifecycle.

Second order influence on the risks and benefits

Investments in supply chain technologies increase further the supply chain efficiencies and allow collection of real time product data. Suppliers also incur the risks of low or no return from these investments.

The reinforced dominant position of Wal-Mart's position in the network increases the vulnerability of a narrow product mix and puts more pressure on the margins of the suppliers.

Finally, the extension of the relationship agreement to other dimensions of the product allows the network to make it more attractive to the customer and thus push the sales up.

Second order feedback loop to the endogenous factors

Next to the already discussed feedback loops, the increased vulnerability of a narrow product mix gives further incentives to innovate to all the suppliers.

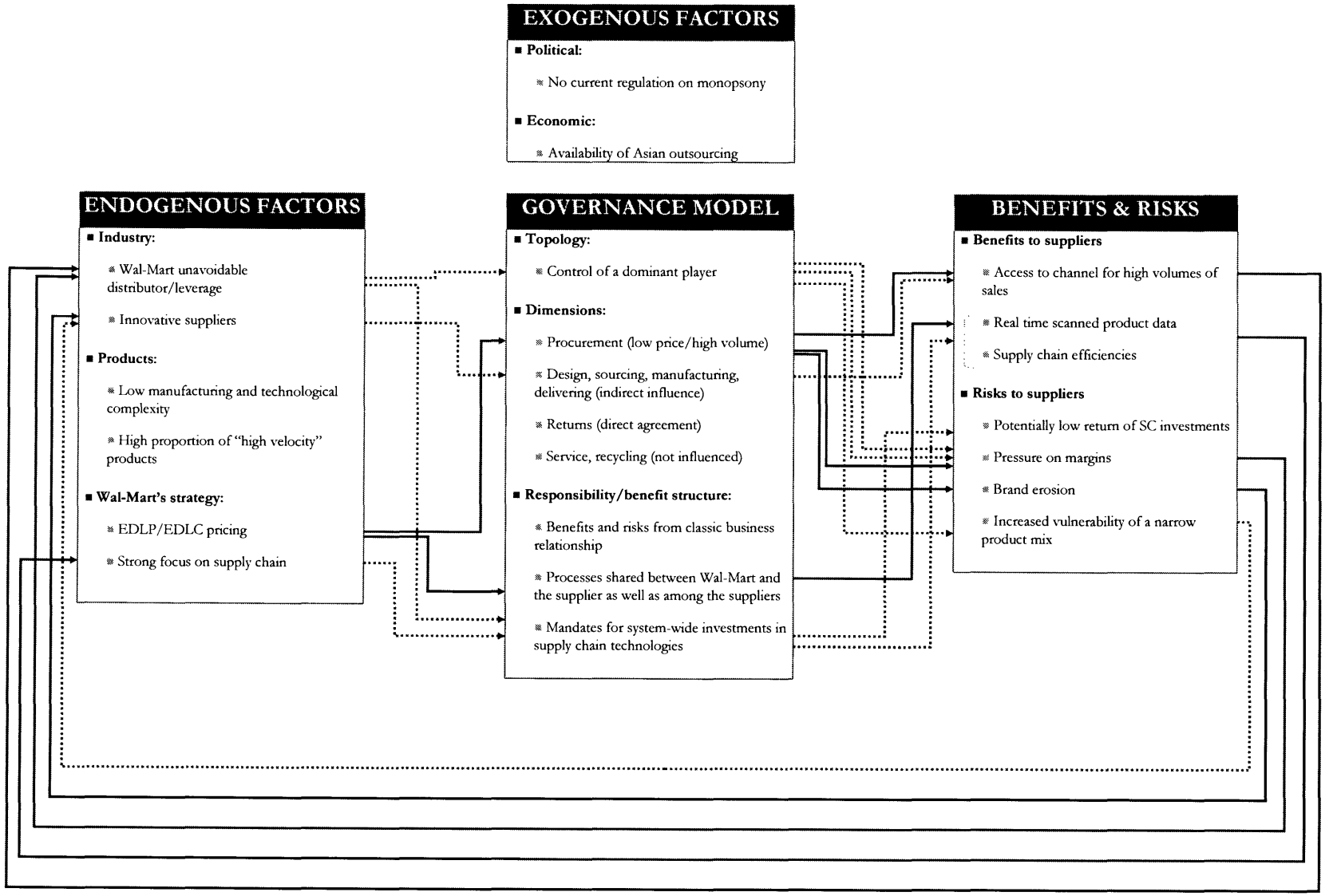


Figure 17 – Impact of the Pricing Strategy, Second Order

- **Confirmation of the importance of the pricing strategy**

The previous analysis confirms the initial intuition. Wal-Mart's pricing strategy is the critical trigger of reinforcing loops in the governance model of its supply network. It fuels the supply chain management initiatives and investments, thus reducing the product costs through supply chain efficiencies and eventually supports the low price business model in a reinforcing feedback loop.

Furthermore, this rapid analysis demonstrates – hopefully – the relevance and usefulness of the proposed framework. Its application to more supply chain successes should lead to a full understanding of the supply networks' governance models, their benefits/risks and above all their enablers/limitations.

CONCLUSIONS

This work has, hopefully, clarified the topic of governance in the supply networks on a conceptual level and proposed a practical and viable framework for its study on the existing best practices.

There have been many recent changes in the organization in the supply networks and many new trends in supply chain management. It is not yet clear which governance models will survive, which ones will flourish and which ones will disappear. What is clear at this point is that the choice of governance can give an invaluable competitive advantage to a single company as well as to its entire supply network. This choice is a critical strategic decision and is often closely tied to the very essence of a company's business model. Furthermore, this choice is conditioned by certain endogenous and exogenous factors and the risk/benefit structure is the key enabler of long term sustainability.

The short term next steps to follow this work should obviously consist in applying and refining this practical framework to the many best practices of supply chain management, such as Dell, Boeing, Cisco before its downfall, GM and others.

On the longer term, having "mapped" a number of these successful supply networks and identified the different aspects of their governance models, it will be possible to get a full understanding of the topic of governance. It will then be possible not only to understand why the existing governance models are successful and sustainable on today's supply networks, but also to envision the successful governance models of tomorrow's supply networks.

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