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# THE INFLUENCE OF INSTITUTIONAL ISOMORPHISIM IN FREIGHT LOGISTICS

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# THE INFLUENCE OF INSTITUTIONAL ISOMORPHISIM IN FREIGHT LOGISTICS

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

Johannesburg
April, 2005

**ABSTRACT**

It is a paradox that despite efforts by companies to differentiate themselves from one another, they become more alike. This trend is global, evidenced across the spectrum of industry sectors and can be explained by the theory of institutional isomorphism. Institutional isomorphism consists of three mechanisms – normative, coercive and mimetic; each having some influence on organisational behaviour. This research was conducted to better understand the influence of the phenomenon in the South African freight logistics industry.

The methodology employed was initially to contextualise the subject by conducting a comprehensive literature review. The topics covered were; institutional isomorphism, third party logistics, fourth party logistics, the South African road freight industry and strategy. Six propositions were generated based on the learning taken from this literature review.

A questionnaire was subsequently designed in order to establish which facets of the freight logistics value chain were influenced by the individual institutional isomorphism mechanisms. The value chain elements chosen were resource procurement, corporate governance, operational issues, supply chain strategy, supply chain integration and strategic drivers.

A pilot study was first conducted validating the research instrument and the use of correspondence analysis as appropriate methodology for the work. The questionnaire was then completed by a non-probability sample of thirty one respondents consisting of academics, administrators and practitioners involved in the freight logistics sector. The influence of the individual mechanisms within the different value chain elements was quantified through correspondence analysis.

In terms of resource procurement it was found that normative behaviour of an explicit and largely voluntary nature was prevalent. Corporate governance was found to driven by coercive influences and too was explicit in nature.

Operational issues, contrary to expectation were subject to obligation and coercion. The significance of this finding is developed in the interpretation section. Both supply chain strategy and integration fell in the ambit of mimetic and implicit behaviour which was consistent with the literature review (and consequently the propositions). Strategic drivers were found to be influenced almost equally by all the mechanisms perhaps indicating a holistic approach to this value chain element.

This research report is concluded by proposing areas for additional research.

**DECLARATION**

I, Kevin Rock declare that this research report is my own, unaided work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

_____

Kevin Rock

1 April, 2005

**ACKNOWLEDGEMENTS**

I wish to express my thanks to:

- Mandy, my partner in life, for her good natured indulgence and capacity to provide perspective.

- Anthony Stacey, my supervisor, for his wisdom, guidance and patience.

- Fil Morkel, my boss, whose enthusiastic support throughout has made this accomplishment possible.

- My fellow students, both at Wits and Warwick, whose character and humour have enhanced the experience.

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## GLOSSARY

| | |
|---|---|
| **4PL™**[1] | **Fourth Party Logistics™** |
| **3PL** | **Third Party Logistics (this acronym is interchangeable with TPL, see below)** |
| **CLM** | **The Council of Logistics** |
| **DoT** | **Department of Transport** |
| **EE** | **Employment Equity** |
| **GDP** | **Gross Domestic Profit** |
| **IT** | **Information Technology** |
| **JSE** | **Johannesburg Securities Exchange** |
| **LLP** | **Lead Logistics Partner** |
| **MBA** | **Master of Business Administration** |
| **MSA** | **Moving South Africa: A Transport Strategy for 2020** |
| **RFA** | **Road Freight Association** |
| **SARFI** | **South African Road Freight Industry** |
| **SCM** | **Supply Chain Management** |
| **SETA** | **Services Sector Education and Training Authority** |
| **StatsSA** | **Statistics South Africa** |
| **TPL** | **Third Party Logistics (this acronym is interchangeable with 3PL, see above)** |
| **TPLP** | **Third Party Logistics Provider** |
| **UK** | **United Kingdom** |
| **WBS** | **Wits Business School** |

[1] It is hereby acknowledged that in 1996 Andersen Consulting (now Accenture) registered Fourth Party Logistics and 4PL as trademarks.

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# 1. INTRODUCTION

## 1.1. Context of the Study

It is a paradox that despite efforts by companies to differentiate themselves from one another, they become more alike. This trend is global and evidenced across the spectrum of industry sectors. The phenomenon can be explained by the theory of institutional isomorphism; DiMaggio & Powell (1983).

Institutional isomorphism consists of the elements of Coercive, Normative and Mimetic isomorphism. These three mechanisms influence companies to behave in similar fashions as follows:

- **Coercive Isomorphism** – is the pressure that causes organisations to conform emanating from legal, social and cultural demands.
- **Normative Isomorphism** – is the influence that legitimates behaviour resultant from shared educational experience, generally accepted protocols and conventional methodologies.
- **Mimetic Isomorphism** – is the behaviour of imitation which becomes increasingly prevalent in environments of uncertainty.

These mechanisms are not discrete and influence individual functions of an organisation to varying degrees of intensity. By way of example the employment of personnel in the South African context combines the elements of:

- **Coercive Isomorphism** – dictated by employment equity (EE) legislation and society's expectation for transformation.
- **Normative Isomorphism** – in the common recognition of educational qualifications and appropriate experience.
- **Mimetic Isomorphism** – in the imitation of organisational structures and employee profiles of competitors.

This research studies the influence of institutional isomorphism in Third Party Logistics Providers (TPLP's) operating in the South African Road Freight Industry (SARFI).

TPLP's are the independent providers of logistics services to industry. The SARFI is characterised by a (relatively) free market environment virtually devoid of regulation. A cursory analysis of the espoused strategies and service offerings of TPLP's yield remarkable similarities; in particular there is preponderance towards value chain integration, also referred to as Supply Chain Management (SCM) and/or Fourth Party Logistics (4PL).

This research segments this complex industrial sector through an adaptation of the Value Chain, Porter (1985). The study that follows assesses the influence of the three institutional isomorphism mechanisms on six individual functional value chain elements of TPLP's.

## 1.2. Purpose of the Study

It is observed that the strategies and service offerings of South African TPLP's appear to be homogenous. The purpose of the study provides a degree of understanding as to why this is so.

The researcher has achieved this by employing the theory of institutional isomorphism, as defined by DiMaggio & Powell (1983) within the framework of the value chain as described by Porter (1985).

## 1.3. The Problem and Sub Problems

The problem is to understand the relationship between each of the mechanisms of institutional isomorphism and the individual elements of the value chain.

### 1.3.1. Sub Problems

The sub problems are illustrated by means of the matrix below and are stated as follows:

- To understand the relationship between Resource Procurement and the individual institutional isomorphic mechanisms
- To understand the relationship between Corporate Governance and the individual institutional isomorphic mechanisms
- To understand the relationship between Supply Chain Integration and the individual institutional isomorphic mechanisms
- To understand the relationship between Supply Chain Strategy and the individual institutional isomorphic mechanisms
- To understand the relationship between Operational Issues and the individual institutional isomorphic mechanisms
- To understand the relationship between Strategic Drivers and the individual institutional isomorphic mechanisms

**Table 1: Sub Problems**

| | | **Institutional Isomorphism Mechanism** | | |
|---|---|---|---|---|
| | | Normative Isomorphism | Coercive Isomorphism | Mimetic Isomorphism |
| **Value Chain Element** | **Support Activities** | Resource Procurement | | |
| | | Corporate Governance | | |
| | **Primary Activities** | Supply Chain Integration | | |
| | | Supply Chain Strategy | | |
| | | Operational Issues | | |
| | | Strategic Drivers | | |

## 1.4. Significance of the Study

The researcher has established an insight as to why TPLP's have adopted similar strategies and service offerings. Knowing the answer to this question improves understanding to the dynamics of the industry.

The widespread adoption of similar strategies and service offerings is of interest as this convergent behaviour can "lead to industry parity, which leads to commoditization of product and service offerings, and indeed, commoditization of value proposition" Crosswhite (2003:30). The degree to which this homogenisation is resultant from coercive, mimetic and normative isomorphism provides a previously un-researched perspective of the industry.

There is little academic research available on the SARFI despite the pivotal role it plays in the economy. It is noted that Wits Business School (WBS) has produced only two research reports in this industry sector, Magwa (1999) and Stevens (2000) in the past five years. Adding to this meagre body of knowledge in itself is significant.

## 1.5. Delimitations and Limitations

### 1.5.1. Delimitations

- The study does not attempt to establish the difference between the definitions of TPL and 4PL as undertaken by Kittel (2003)
- The study does not attempt to evaluate the appropriateness of the 4PL concept or the strategies employed by TPLP's
- The study does not attempt to evaluate the success of TPLP's execution of supply chain integration
- The study does not assess the benefits and/or motivation for outsourcing

### 1.5.2. Limitations

- The study is limited to the analysis of TPLP's in the South African road freight industry.
- A number of the questions contained within the research instrument pertain to 4PL. The researcher is cognisant that the study undertaken by Cap Gemini Ernst & Young (2003:21) reported that 75% of respondents found 4PL terminology "confusing" or "ambiguous".

## 1.6. Assumptions

The study was conducted on the basis of the following assumptions.

- South African TPLP's provide similar service offerings and adopt analogous strategies. Observation of industry activity, analysis of the annual reports of public companies and various media communications support this assumption; the literature review provides evidence thereof.
- TPLP's are adopting a convergent strategy of supply chain integration which the industry has defined as 4PL and can be explained as augmentation as defined by Levitt (1980). This too is communicated in various forms which have been listed in the literature review.
- The causes of this homogeneity can be explained by the process of institutional isomorphism as defined by DiMaggio & Powell (1983). Institutional isomorphism has been applied extensively to a diverse spectrum of subjects as documented in the literature review. It was therefore anticipated that this theory base would be useful in understanding the SARFI

## 1.7. Definition of Terms

These definitions provide a succinct description of key elements and principles (within the environment) that this research takes place. A detailed discussion of each is covered in the literature review.

### 1.7.1. Supply Chain Management (SCM)

As defined by the Council of Logistics Management (CLM) web page:

"Supply Chain Management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all Logistics Management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, Supply Chain Management integrates supply and demand management within and across companies. Boundaries and Relationships - Supply Chain Management is an integrating function with primary responsibility for linking major business functions and business processes within and across companies into a cohesive and high-performing business model. It includes all of the Logistics Management activities noted above, as well as manufacturing operations, and it drives coordination of processes and activities with and across marketing, sales, product design, finance and information technology."

### 1.7.2. Logistics

The home page of The Council of Logistics (CLM) web site states their definition of logistics as follows:

"Logistics is that part of the supply chain process that plans, implements, and controls the efficient, effective flow and storage of

goods, services, and related information from the point of origin to the point of consumption in order to meet customers' requirements."

### 1.7.3. Third Party Logistics

Third Party Logistics (TPL) is defined by Vitasek (2003) as the outsourcing of all or much of a company's logistics operations to a specialised company.

An alternative definition provided by Berglund (2000:19) reads as an "Organisations use of external providers, in intended continuous relationships bound by formal or informal agreements considered mutually beneficial, which render all or a considerable number of the activities required for the focal logistical need without taking the title".

### 1.7.4. Fourth Party Logistics

Bade & Mueller (1999:79) state the Andersen Consulting definition of 4PL, trademarked in 1996, as "an integrator that assembles the resources, capabilities and technology of its own organisation and other organisations to design, build and run comprehensive supply-chain solutions."

The Council of Logistics Management (CLM) web page defines a 4PL as "An organization that organizes other 3rd party logistics partners for outsourcing of logistics functions".

### 1.7.5. Institutional Isomorphism

Hawley (1968) defines isomorphism as "a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions". It consists of the elements (or more correctly mechanisms) of Coercive, Normative and Mimetic isomorphism. These are defined as follows:

- Coercive Isomorphism – “Formal and informal pressures exerted on organisations by other organisations on which they are dependant and by cultural expectations in the society in which they function” DiMaggio & Powell (1983:150).
- Normative Isomorphism – Acknowledging Larson (1977) and Collins (1979), DiMaggio & Powell (1983:152) define this process as “the collective struggle of members of an occupation to define the conditions and methods of their work”.
- Mimetic Isomorphism – When organisational technologies are poorly understood, when goals are ambiguous, or when the environment creates symbolic uncertainty, organisations may model themselves on other organisations” DiMaggio & Powell (1983) quoting March & Olsen (1976).

## 2. LITERATURE REVIEW

The literature review that follows covers the subjects pertinent to the research.

### 2.1. Logistics – a Perspective

In 1962 Fortune published an article titled The Economy's Dark Continent in which Drucker (1962:135) described logistics as one of the last frontiers and stated that "we know little more today about distribution than Napoleon's contemporaries knew about the continent of Africa. We know it's there, and we know it's big; and that's about all". Piercy, Krampf & Banville (1977) in their article on bridging the gap between industry and academia quote Schwarz (1972) who described transport education programs as chaotic. Twenty years later Fawcett & Vellenga (1995:230) argue that despite substantially increased understanding "many managers and policy makers continue to view logistics as a satisficing support function rather than a strategic weapon". Forty years after Drucker's observation Abramson, Hollingshead & Mader (2002:6) find that "the vast majority of American Colleges of Business offer no transportation/logistics courses or majors".

Having so said there appears to be a substantial body of theoretical work on the subject covering the broad spectrum of transport and logistics issues. Closs (1999), in his work on cross-functional supply chain education, references numerous papers presented at the Annual Transport and Logistics Educators Conference's that reflect a trend consistent with commercial developments. Supporting this observation Stock (2001:136) concludes his analysis of doctoral research in logistics stating "the health of doctoral programs remains generally good".

These conflicting views leave the researcher uncertain as to the status of the topic of logistics relative to other areas of research but convinced that the subject is better understood than when it was referred to as the economy's Dark Continent.

## 2.2. Third Party Logistics

Alfredsson & Hertz (Undated) identify the various “Parties” in the logistics element of the supply chain as follows:

- **First Party** – Shipper performs the logistics function
- **Second Party** – Shipper outsourcers to an existing supply chain party
- **Third Party** – Shipper outsourcers to a middleman

Third Party logistics providers are ‘middlemen’ and an outcome of the phenomena of outsourcing.

### 2.2.1. Service Offerings

Skjoett-Larsen, Halldorsson, Andersson,, Dreyer, Virum, & Ojala, (2003) state the characteristics of Third party Logistics as the outsourcing of transport and/or warehousing including some value-added services, long term contracts and a mutually orientated, tailor made win-win logistics solution.

Cap Gemini Ernst & Young (2003) publish a comprehensive list of outsourced logistics services that the researcher speculates exceeds “some value-added services” as contemplated by Skjoett-Larsen, Halldorsson, Andersson, Dreyer, Virum, & Ojala, (2003). Table 2 below refers:

**Table 2: Outsourced Logistics Services**

| Outsourced Logistics Services | | | |
|---|---|---|---|
| Logistics Activity | North America | Western Europe | Asia-Pacific |
| Warehousing | 73% | 91% | 46% |
| Outbound Transportation | 71 | 95 | 87 |
| Customs Brokerage | 66 | 57 | N/A |
| Inbound Transportation | 62 | 71 | 62 |
| Customs Clearance | 62 | 67 | 33 |
| Freight Forwarding | 57 | 67 | 41 |
| Freight Bill Auditing/Payment | 54 | 24 | 8 |
| Cross-Docking | 37 | 43 | 33 |
| Shipment Consolidation/Distribution | 37 | 62 | 16 |
| Consulting Services | 29 | 14 | 10 |
| Return/Reverse Logistics | 28 | 38 | N/A |
| Carrier Selection | 24 | 24 | 19 |
| Order Fulfillment | 23 | 24 | 19 |
| Procurement of Logistics | 23 | 29 | N/A |
| Selected Manufacturing Activities | 23 | 19 | N/A |
| Product Marking/Labeling | 20 | 33 | 17 |
| Rate Negotiation | 19 | 10 | 6 |
| Inventory Management | 19 | 14 | 24 |
| Product Returns and Repair | 16 | 43 | 5 |
| Information Technology | 16 | 24 | 13 |
| Fleet Management | 12 | 38 | 21 |
| Order Entry/Processing | 10 | 10 | 6 |
| Product Assembly/Installation | 9 | 14 | 8 |
| Distribution Control | 9 | 5 | 11 |
| Customer Service | 9 | 14 | 14 |
| 4PL Services | 7 | 10 | N/A |
| Inventory Ownership | 6 | 0 | N/A |
| Factoring (Trade Financing) | 2 | 5 | 5 |
| Supply Chain Manager/Integrator | N/A | N/A | 6 |

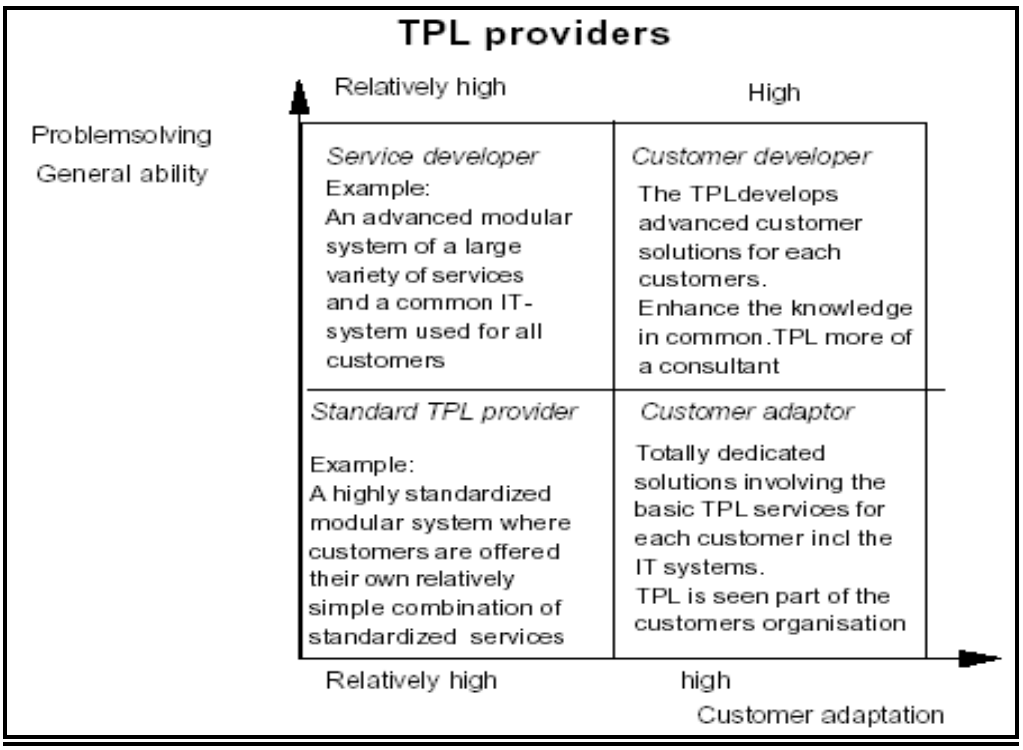
Source: Cap Gemini Ernst & Young, 3PL: Results and Findings of the 2003 Eighth Annual Study (2003:9).

### 2.2.2. Market in Transition

Alfredsson & Hertz (Undated) referencing Berglund, van Laarhoven, Sherman & Wandel (1999) maintain that the TPLP's market has undergone three distinct phases. The first occurred in the 1980's with the transition of traditional transport operators into TPLP's followed by the 1990's with the arrival of companies such as TNT, DHL and Fedex. The third phase has seen the entry of consultancies and IT companies

such as Andersons and Manugistics. This is supported by the use of a model developed by Hammarkvist, Håkansson & Mattson (1982) as illustrated in Figure 1 dating the expanding role of TPLP's to the 1980's.

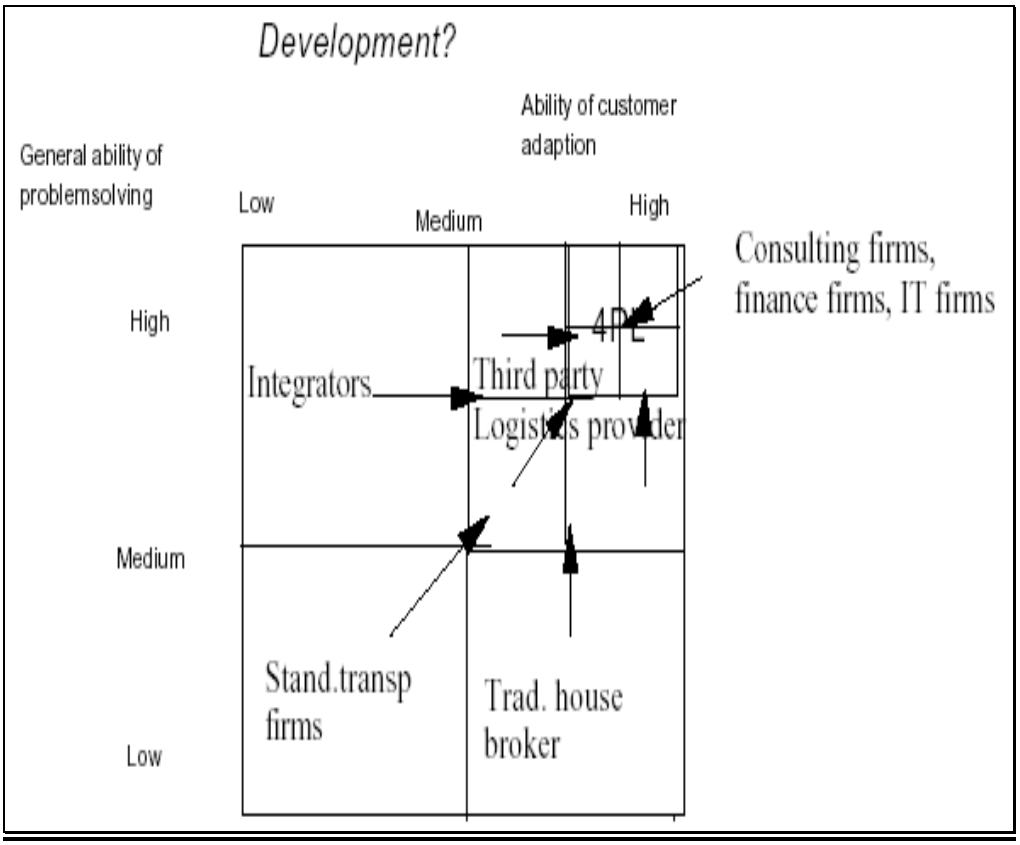
**Figure 1: TPLP Segmented**




Source: Alfredsson & Hertz (undated: 5).

The Alfredsson & Hertz (undated) model shown as Figure 2 continues this theme illustrating the entrance of new competitors attacking the most sophisticated sector of the TPLP market using the 4PL trademark as a basis to do so.

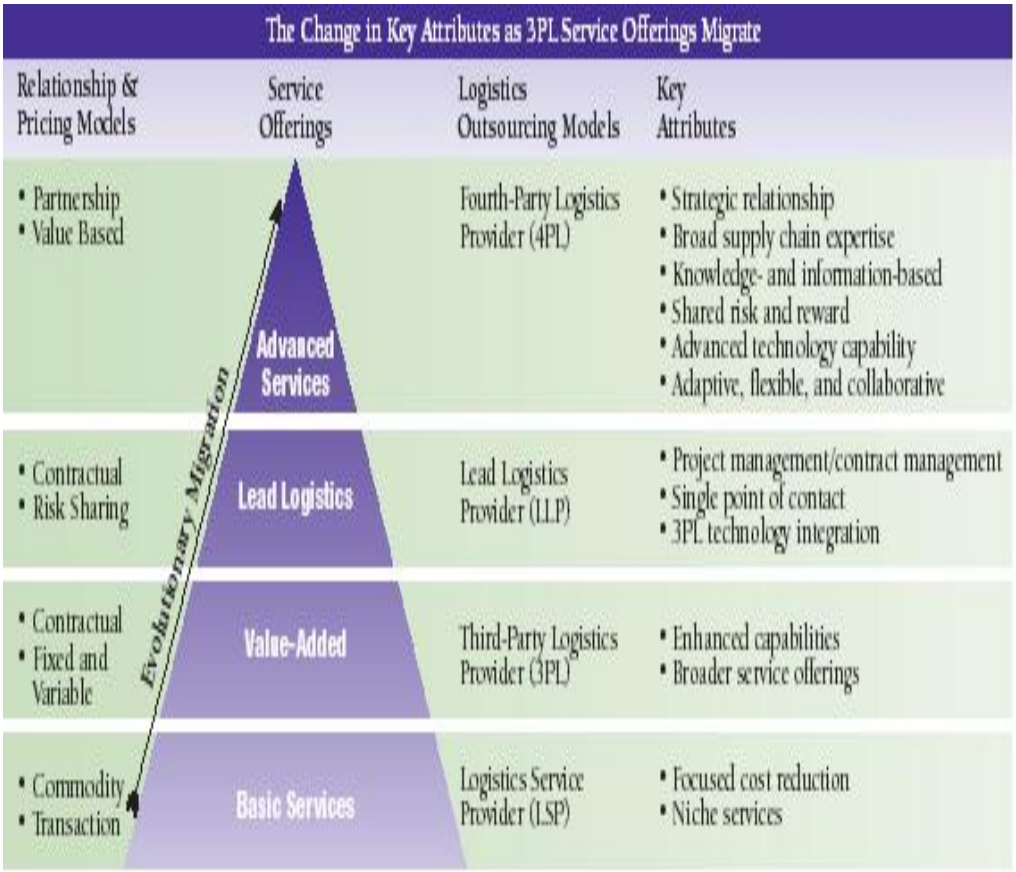
**Figure 2: The Future for TPLP**




Source: Alfredsson & Hertz (undated: 13)

The Cap Gemini Ernst & Young (2003) figure below supports the concept of an evolving market incorporating 4PL into the hierarchy of TPLP service offerings. This is not the view of (Bade, 1999; Foster 1999; Jones 2001; Hennel, 2002.) however who consider TPL's ill suited to play the 4PL role.

**Figure 3: The Evolving 3PL Market**




Source: Cap Gemini Ernst & Young, 3PL: Results and Findings of the 2003 Eighth Annual Study (2003:21).

## 2.3. Fourth Party Logistics

4PL has played an important role in logistics internationally as evidenced by the extensive commentary on the subject (Copacino, 1998; Foster, 1999; Stone, 1999; Armbuster, 2002; Hennel, 2002; Marino, 2002; Serant, 2002; Shulz, 2002; Kittel 2003; Lieb & Kendrick, 2003; Roberts, 2003 and Simon 2003).

4PL is a phenomenon of the 1990's that has its foundation in the growth of Management Consulting and Information Technology (IT). Anderson Consulting trademarked the term 4PL in 1996 (Foster 1999), the concept consisting of three models:

- **Synergy Plus** – 4PL works for a TPL providing technologies and strategic skills
- **Solution Integrator** – 4PL works for the shipper co-ordinating TPLP's
- **Industry Innovator** – 4PL runs supply chains for multiple companies within an industry

Applying the Five Forces Model developed by Porter (1980) in the context of the road freight industry 4PL entered the market as a substitute, and as such, a direct threat to TPLP's. Andersen Consulting saw the 4PL development as outside of the service offerings of TPLP's.

The TPLP's response to the challenge according to Bumstead & Cannons (2002:19) was that they "deftly hijacked the new 4PL term to give them license to move into other higher margin areas of the supply chain" despite that "very few had the depth of financial resources, or people skills, to deliver a true 4PL service".

This is view is supported by Foster (1999:62) who quotes Douglas Bade (an ex Andersen Consulting associate partner); "3PL's lack the strategic expertise and technologies required to operate across the supply chain process". This view is shared by John Love (director business consulting, Global Logistics Technologies, Guildford, UK) quoted by Jones (2001) "Culturally 3PL's do not make good 4PL's – it's like a sex change operation. 3PL's optimize their own assets. 4PL's optimise 3PL's assets. The only ones that have vaguely succeeded have moved people to a different office".

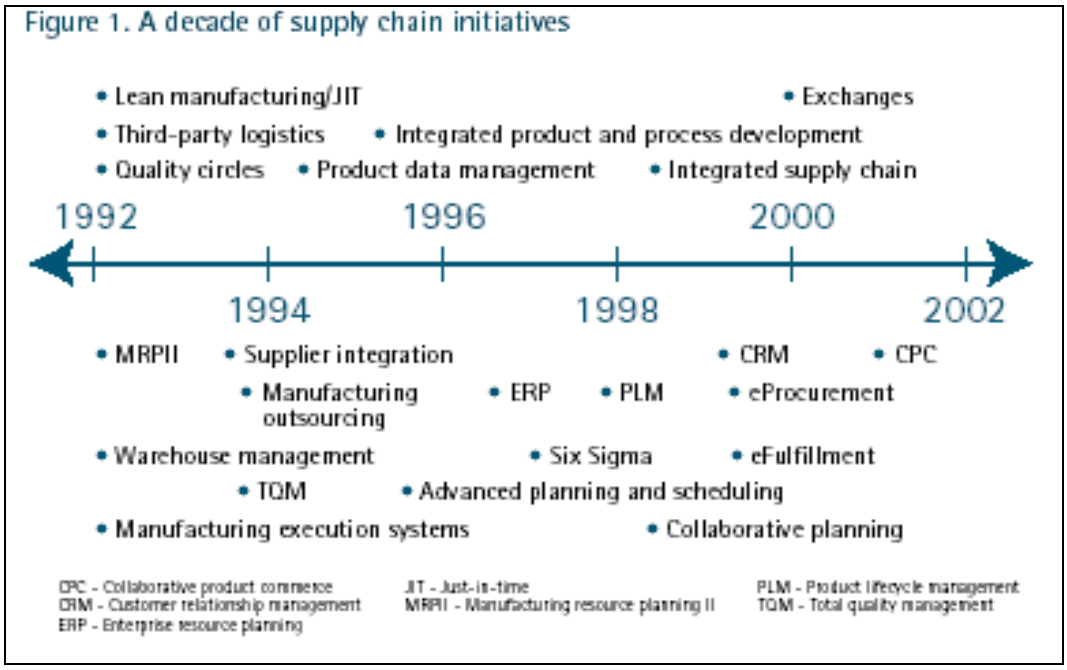
The opinion of Bumstead & Cannons (2002) however, can be challenged on the basis of a model developed by Hammarkvist, Håkansson & Mattson (1982) that predates the 1996 trademark of 4PL. The model appears in the work by Alfredsson & Hertz (undated) which segments TPLP's classifying one group as "Customer Developers" attributing them with high

problem solving abilities, customer adaptation and fulfilling the role of consultant, all of these being attributes and characteristics of 4PL providers.

Kittel (2003) chose to research the definitions of 3PL and 4PL to assess how they are interpreted in theory and practise. His findings were that whilst 4PL was a legitimate description for the holistic management of a customer's logistics chain the term is invalid as the provider of the service remains a Third Party in a buyer-seller relationship. On the subject of 4PL Marino (2002:23) states that "if you ask five different people what it means you'll probably get five slightly different answers". The Cap Gemini Ernst & Young (2003) survey finds that 75% of respondents when asked as to whether they found the 4PL terminology confusing and ambiguous answered 'yes' or 'somewhat'.

It is evident that the term is broadly used in the logistics industry but is not being applied in the context that Andersen Consulting originally intended. What is interesting is that in a recent article in an Accenture publication by Anderson & Delattre (2003) 4PL is not acknowledged as having played a role in the development of logistics during the past decade (see Figure 4). The annual report on CEO perspectives on TPL published by Lieb & Kendrick (2003) covers 4PL each year and the term is incorporated in the Cap Gemini Ernst & Young model displayed as Figure 3 It is unlikely to disappear from the industry in the medium term.

**Figure 4: The Evolution of Supply Chain Management**




Source: Accenture

## 2.4. South African Road Freight Industry (SARFI)

The South African scenario remains (to the best of the researcher's knowledge) largely un-quantified or qualified giving rise to the notion that this may be an area for further research.

The CSIR (2003) concedes that logistics may be an unexplored area for many organisations. Of the 317 logistics doctoral dissertations produced between 1992 and 1998 listed by Stock (2001), only one is attributed to a South African, Woolmarans (1994). The most recent census conducted by the Statistics South Africa (StatsSA) of Transport and Allied Services dates to 1992, StatsSA (2003). This state of affairs is congruent with the observations in the opening paragraph above.

The Department of Transport (DoT) instituted a project called Moving South Africa: a Transport Strategy for 2020 (MSA) the objective of which is to develop a sustainable transport strategy (DoT 1999). This five year old

document remained the most recent comprehensive source of information on the SARFI. In so saying the researcher believes that the MSA report would be much enhanced by the inclusion of an updated StatsSA census of Transport and Allied Services which would facilitate a refinement of the market segmentation.

Subsequent to the MSA publication the Department of Trade and Industry and Spoornet commissioned CSIR Transportek to undertake a Land Freight Market Analysis and Strategy project in 2003. Supporting the researcher's view the CSIR (2004:7) draft report lists amongst the key challenges the "Lack of Other Cross-Referenceable Information". The document states that "although an extensive literature search was undertaken, very few other relevant studies were identified that could serve as a cross-reference , with the possible exception of the Moving South Africa (MSA) study that was undertaken for the National Department of Transport in 1999".

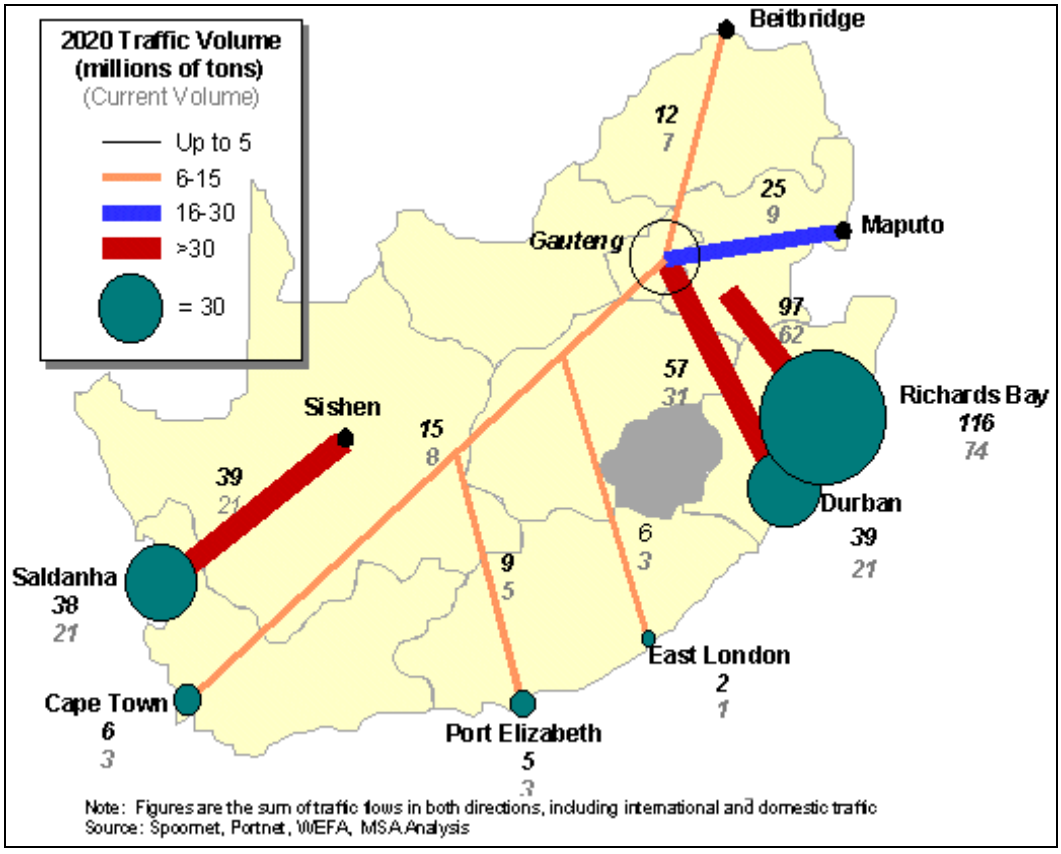
Nevertheless the MSA report segments the freight industry into the relatively coarse groupings of rail and road; this research is confined to the latter. According to StatsSA (2003) the total volume of goods transported in 2002 was 660 million tons (of which the private sector accounted for 489 million tons) generating an income of 13 billion Rand representing approximately 10% of Gross Domestic Profit (GDP).

The publication of the Draft Land Freight Market Analysis by CSIR Transportek (2004) is limited to mapping the flow of freight of Petro-chemical, Automotive, Mining & Metals and Container traffic. This study was conducted on the basis of 30 personal interviews and 57 completed questionnaires. However, due to the study's limited scope (confined to only four freight sectors) the MSA research remains a more comprehensive work on the SARFI.

Figure 5 below includes rail volumes but is representative of the activity of the road freight industry with the exception of the ports of Saldahna and

Richards Bay. In 2001 rail accounted for 56 million tons of iron ore to Saldahna and 90 million tons of coal to Richards Bay (30% of the nation's cargo) this according to Ports and Ships (2003). Rail volumes on the other major routes are unknown.

**Figure 5: Current and 2020 Freight Volumes and Destinations**




Source: DoT, Moving South Africa – Freight Customers.

A Barloworld Logistics funded survey was conducted in the final quarter of 2003 by Dawson Consulting ('logistics consultants') and Terra Nova ('corporate brand builders'). The authors describe the work as "an independent study into the trends and factors influencing logistics and supply chain operations in South Africa", Bowes, Sagat & Sey (2003:2). The document, supporting the CSIR's view with regard to the dearth of literature on the subject, states that a key motivation for undertaking the study is "the shortage of information and knowledge about the practises of local supply chains", Bowes, Sagat & Sey (2003:2). This study involved

238 respondents and unlike much market research of this nature, has been shared and presented at numerous industry forums.

The eight key findings of the report are:

- There is only a partial understanding of the benefits of the potential benefits of supply chain integration
- Ignorance (in as many as 50% of the respondents) as to the actual costs of SCM
- Organisational structures and lack of logistics skills cause obstacles in realising potential SCM efficiencies
- A realisation that current methodologies will not achieve supply chain goals (of reduced costs)
- Improvement is silo focused as opposed to the widely acknowledged preferential integrated approach
- Technology is paying dividends
- Evidence suggests that integrated outsourcing is creating value whilst sub-contracting is not
- Specialist supply chain consultancies and practitioners offer the best route to efficient SCM solutions

These conclusions are of interest as they appear in some respects to be inconsistent and/or may reflect an unsophisticated market. The fact that technology (that facilitates complex supply chain integration) is acknowledged as paying dividends for instance, contradicts the silo approach to improvement. This incongruent methodology between the strategies of procures and providers of supply chain services indicate a conflicting dynamic in the relationship.

This discord is acknowledged by De Proost & D'Incá (2004) who argue that in the European context, it is a myth that sophisticated integrated high-end solutions dominate the 3PL market. De Proost & D'Incá (2004:15) state that "Every 3PL company can point to wonderfully innovative and

tech-savvy projects. But survey after survey confirms that over 80 percent of 3PL projects are straightforward warehousing and distribution contracts". Although outside of the scope of this research, this view generates curiosity with regard the appropriateness of the 4PL strategy given the market.

Sibiya (2004) analysed Cap Gemini's Eighth Annual Study on third party logistics; this report is broadly recognised as the barometer of the logistics industry globally. The Cap Gemini report is particularly useful in that it; analysis the industry comprehensively from the perspective of both user and provider, tracks trends dating back eight years and is conducted in North America, Western Europe and the Asia Pacific Region. For the first time in 2003, South Africa was included in the study, producing eight usable responses from the sixty eight companies contacted.

The analysis states that South Africa contains elements of both first-world capability and emerging economy characteristics "making it challenging to provide one set of recommendations across the board" Sibiya (2004:2). It was found too that two types of users and suppliers existed, defined as 'Sophisticated Advanced' and 'Sophisticated Significantly Advanced'; consequently two sets of recommendations were developed.

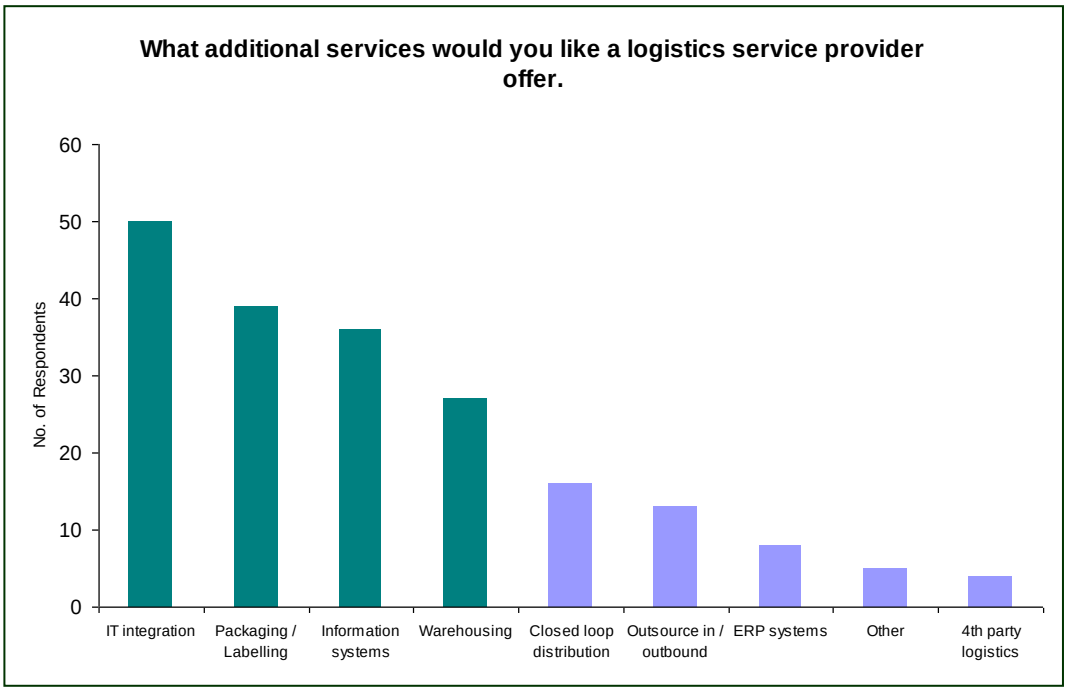
The lower tier 'Sophisticated Advanced' are advised that their services are becoming increasingly commoditised and should therefore focus on operational excellence and cost containment. Simultaneously a strategy of differentiation is recommended through industry specialisation, improved customer relationship management (CRM) and the application of IT solutions.

The 'Sophisticated Significantly Advanced' TPLP's are encouraged to develop global capabilities, consulting skills, innovative pricing models and the use of vertical procurement markets.

In the context of the Treacy & Wiersema (1995) value propositions the strategies of Customer Intimacy and Product Leadership are largely being advocated. The exception is the recommendation to focus on operational excellence and cost containment (which are in fact one in the same in the Treacy & Wiersema (1995) model). This however is does not detract from the underlying assumption that TPLP's should increasingly offer more sophisticated services and employ a strategy of integrated supply chain management.

This view is supported by Figure 6 and Sibiya (2004:15) states that "3PL users also expect 3PL providers to enhance these offerings [core 3PL competencies] by bundling these services offerings and by expanding their capabilities further up the supply chain".

**Figure 6: South African 3PL Capability Improvement Areas**



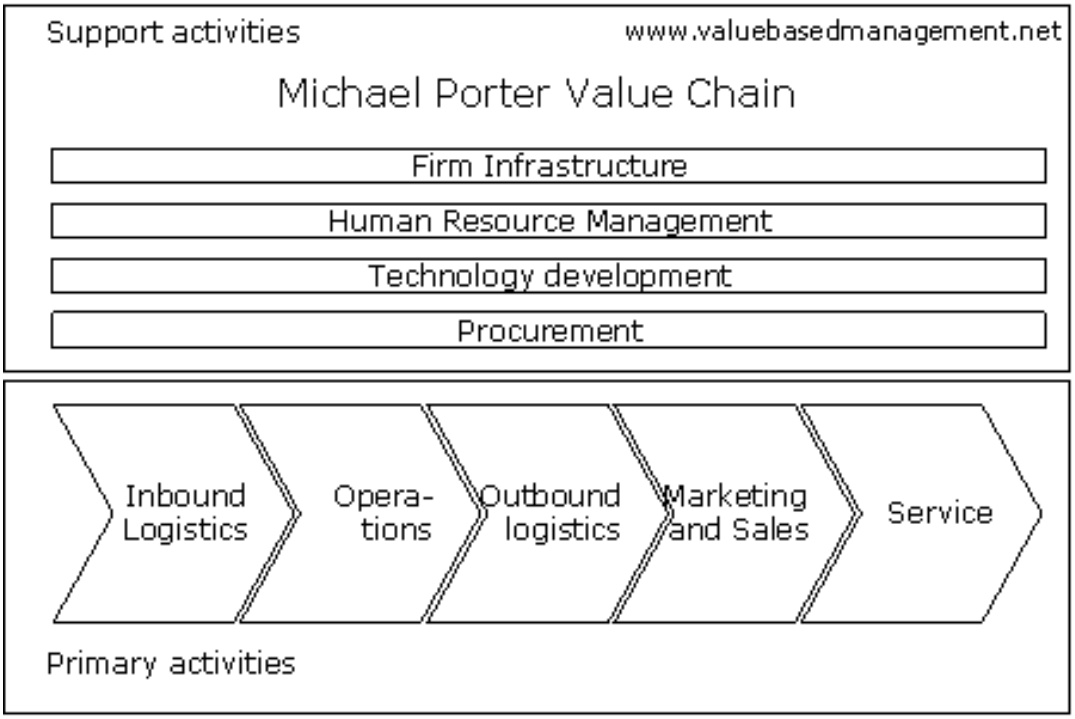

Source: Results and Findings of the 2003 Eighth Annual Study – Extracting Meaning for South African 3PL Users and Providers.

## 2.5. Strategies

According to McGinnis & Kohn (2002), Brewer & Rosenzweig (1961) identified the benefits of a coordinated logistics strategy that embraces the entire value chain as opposed to the approach of optimising individual functions at the expense of the entire organisation.

This theme of interdependence is also found in the holistic perspective of Porter's Value Chain; Porter (1985). The value chain (see Figure 7) "provides a framework for examining interdependencies within logistics; and other areas of the firm; and between the firm, its suppliers, and customers" McGinnis & Kohn (2002:1).

**Figure 7: Michael Porter Value Chain**




Source:http://www.valuebasedmanagement.net/methods_porter_value_chain.html

Bowersox & Daugherty (1987) identified three strategic orientations in logistics:

- **Process Strategy** – focus on process flow efficiencies through consolidation and rationalisation of the value chain
- **Market Strategy** – a customer centric approach which coordinates the logistics function across business units to serve common customers
- **Information or Channel Strategy** – an integrated inter-organisational management system prevalent in dealer distribution networks

The Bowersox & Daugherty typology has subsequently been evaluated by McGinnis & Kohn (1993:20) who found that it was "worthy of further research"; This was followed by Clinton & Close (1997:40) in their article "Logistics Strategy: Does it Exist?" stating that the typology was "promising".

Kohn & McGinnis (1997:6) in revisiting the subject concluded that two orientations described logistics strategy; Process and Integration (a combination of the former Market and Information categories). It was further concluded that both strategies were present in all the organisations [researched] to varying degrees and that "customer service commitment, effective logistics coordination and competitive responsiveness affect logistics strategy". In a later study McGinnis & Kohn (2002:14) stated that at a principles level the Bowersox & Daugherty typology formed a useful framework for understanding logistics. At an intermediate level however one is "faced with the challenges of managing a dynamic blend of process, market and information strategies within the overall strategies of the organisation".

In the literature covered the interrelatedness, interdependence and ubiquitous presence of all strategic elements (to varying degrees) in all

facets of the supply chain is a common characteristic. Given this the researcher posits that the 4PL concept encompasses the spectrum of these strategies, acknowledges the dynamic relationship between them and the need for efficiencies created from value chain integration.

Cursory scrutiny of the major South African TPLP's reveals a remarkably homogeneous approach to strategy and an analogous portfolio of service offerings. In so saying these strategies and service offerings can best be described as 4th Party Logistics. A brief study follows.

The Nedcor (2003:21) Diversified Industrials and Transport Sector Review states that commodity transport is an unattractive business but there are profitable niches for "players who are able to migrate up the value chain". This appears to be the general consensus amongst the established listed companies as related below.

Cargo Carriers (2003) state in their annual report: "Our objective is to add value on a continuous basis – not just to transport goods from A to B. As such the support the trucking division receives from its sister divisions (eCargo, CargoSolutions and CargoWare) is invaluable. These three divisions add value through a holistic and integrated approach to what is typically a fragmented, silo based set of logistics activities".

Barloworld Logistics (2003) state; "In any supply chain there are many parties involved and numerous skills required. The integration of the parties and the processes is the only way to achieve optimum benefits and results". Barloworld identify one of their 'greatest differentiators' saying "We provide comprehensive and integrated logistical solutions for our clients".

Jackson (2003) in the Business Day reports that Imperial Logistics and Transport aim "to become a major force in integrated global supply chain management within five years". In the article chairman Ralph Boëttger is

quoted as saying “our range of services is totally integrated and consists of a full supply chain management service”.

Super Group’s chairman Larry Lipschitz is quoted in the Business Day (2003) “by integrating supply chain management into basic business planning, companies reaped “substantial” cost savings and improved customer service”.

The Unitrans (2003:19) annual report states that “the freight and logistics division is achieving success in its strategy to develop the group’s competency in supply chain re-engineering”. Unitrans further state that the 4PL model has met its demise and they “question the value these operators add”.

It is evident from the espoused strategies that these organisations are seeking to differentiate themselves through Augmentation, Levitt (1996). It is interesting that the quest for differentiation has resulted in homogeneity. An explanation as to why this phenomenon is occurring may lie in the discipline of institutional theory and more specifically, institutional isomorphism. A further observation is that the strategies appear very closely aligned to the definition of 4PL as: “an integrator that assembles the resources, capabilities and technology of its own organisation and other organisations to design, build and run comprehensive supply-chain solutions” Bade & Mueller (1999:79). Establishing the influence of the various mechanisms of institutional isomorphism as a driver of this trend is of interest.

## 2.6. Institutional Isomorphism

Institutional Isomorphism has been widely used as a tool for understanding homogeneous behaviour. This is witnessed by way of example in the work of Davis, Desai & Francis’ (2000) investigation into modes of entry into international markets, Martin de Holan & Phillips’ (2002) study of a Cuban

manufacturing enterprise and Greve's (2000) analysis of Japanese banking in the period 1894 to 1936.

The only evidence of institutional isomorphism being applied as a basis for attempting to understand behaviour in the logistics sector however is a working paper by McFarland, Bloodgood & Payen (2004). The paper explores the behavioural relationship between Suppliers, Dealers and Customers in a supply chain. Evidence is presented that suggests that members of a supply chain imitate one another, a phenomenon which the authors call Chain Reaction Behaviour; this conduct is attributed to institutional isomorphism. A related work is by Johannessen & Solem (2002:31) who applied the framework of ontological and teleological ideologies in order to clarify "the relations between the practises of these [logistics] organisations and the basic thinking that underlies their behaviour". Beyond these two examples no other literature incorporating logistics and institutional isomorphism has been found by the researcher.

Hawley (1968) introduced the concept of isomorphism to explain the cause of homogeneity among organisations. Isomorphism was described as a process which constrained organisations influenced by shared environmental circumstances. Hannan & Freeman (1977), Meyer (1979) and Fennell (1980) contributed to the subject following which - in work described by Mueller & Carter (2002) as seminal - DiMaggio & Powell (1983) published their paper: The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organisational Fields.

The reference to "The Iron Cage' has its origins in the work of Weber (1952) who attributed rationalisation and bureaucratisation (essentially homogenisation) to three causes:

- Competition amongst capitalist firms
- Competition amongst states - resulting in increased control of the citizenry
- Bourgeois demand for equal protection (under the law).

These dynamics, cautioned Weber, had created an “iron cage” for society. DiMaggio & Powell (1983) argued that the bureaucratisation of the state and corporations had been achieved and yet organisations continued to become more homogenous. Two types of isomorphism were identified, competitive and institutional.

Competitive isomorphism, in essence, explains organisational behaviour from the perspective logical rationality; paying little heed to the influences and pressures of the broader operating environment. It occurs in pure free market environments “but it does not present a fully adequate picture of the modern world of organisations” DiMaggio & Powell (1983:150).

Institutional isomorphism offers a more comprehensive explanation “and is a useful tool for understanding the politics and ceremony that pervade much modern organisational life” DiMaggio & Powell (1983:150). Institutional isomorphism has its basis in Institutional Theory.

Institutions as defined by Scott (1995:33) “consist of cognitive, normative, and regulative structures and activities that provide stability and meaning to social behaviour”. According to Björck (2004:1) Institutional Theory is an extension of Open Systems Theory which “focuses on the inputs, outputs and transformations of organisations, insisting on the importance of the environment, emphasising its impact on the organisation”.

Institutional theory compliments this argument in that much of the environment “consists of social and cultural forces – not merely production resources and task-related information” Björck (2004:1). Björck (2004) states that institutional theory is a collection of ideas (as opposed to a consistent system of rules) that assist in understanding social behaviour.

This collection of ideas interacts within institutions as illustrated in Table 3**,** Scott (1995); the comprehensive study of which is outside the scope of this research. It is worth noting however, that Scott’s three pillars translate easily into the three mechanisms of institutional isomorphism as follows:

- Regulative – Coercive
- Normative – Normative
- Cognitive - Mimetic

**Table 3: Three Pillars of Institutions**

| | Regulative | Normative | Cognitive |
|---|---|---|---|
| **Basis of Compliance** | Expedience | Social Obligation | Taken for Granted |
| **Mechanisms** | Coercive | Normative | Mimetic |
| **Logic** | Instrumentality | Appropriateness | Orthodoxy |
| **Indicators** | Rules, Laws & Sanctions | Certification Accreditation | Prevalence Isomorphism |
| **Basis of Legitimacy** | Legally Sanctioned | Morally Governed | Culture, Knowledge |

Source: Scott (1995:35)

## 2.7. Propositions

Given the insights provided by the literature revue the researcher states the following propositions:

- **Resource Procurement** is dominated by normative isomorphism resultant from a free market environment within which institutions have the capacity to "define the conditions and methods of their work", DiMaggio & Powell (1983:152).
- **Corporate Governance** is influenced largely by coercive isomorphism emanating from formal sources (such as Johannesburg Securities Exchange (JSE) regulations and the King II Report) and informal sources including social, environmental and cultural pressures.

- **Supply Chain Integration** is influenced by mimetic isomorphism due to the uncertainty caused by the lack of information on the SARFI and the transformational state of the industry.
- **Supply Chain Strategy** is dominated by mimetic isomorphism on due to the uncertainty that prevails given this relatively new approach to business.
- **Operational Issues** are influenced mainly by normative isomorphism as institutions are able to conduct their business without undue interference.
- **Strategic Drivers** are influenced by mimetic isomorphism due to the uncertainty which prevails in the industry.

Table 4 illustrates the researcher's propositions

**Table 4: Propositions**

| | | **Institutional Isomorphism Mechanism** | | |
|---|---|---|---|---|
| | | Normative Isomorphism | Coercive Isomorphism | Mimetic Isomorphism |
| **Value Chain Element** | **Support Activities** | Resource Procurement | | |
| | | | Corporate Governance | |
| | **Primary Activities** | | | Supply Chain Integration |
| | | | | Supply Chain Strategy |
| | | Operational Issues | | |
| | | | | Strategic Drivers |

## 3. RESEARCH METHODOLOGY

### 3.1. The Research Method

The research method was designed to achieve the core purpose of creating an understanding of the influence of institutional isomorphism in freight logistics. This is achieved by determining the relationships between each of the mechanisms of institutional isomorphism and the individual elements of the value chain.

Consistent with this, a research instrument was designed to answer the research question as to which of the elements of the value chain are influenced by which of the three isomorphism mechanisms. The Michael Porter Value Chain Framework, Porter (1985) was incorporated into the methodology to provide sound structure. In order to focus on SARFI specific issues the generic value chain model was however adapted. Table 5 provides an explanation of the model's amendment.

**Table 5: Michael Porter Value Chain Adaptation**

<table>
<tr><th></th><th>Value Chain Activities</th><th>Areas of Research</th></tr>
<tr><td rowspan="4">Support Activities</td><td>Firm Infrastructure</td><td rowspan="4">Resource Procurement<br>&<br>Corporate Governance Issues</td></tr>
<tr><td>Human Resource Management</td></tr>
<tr><td>Technology Development</td></tr>
<tr><td>Procurement</td></tr>
<tr><td rowspan="5">Primary Activities</td><td>Inbound Logistics</td><td rowspan="2">Supply Chain Integration<br>&<br>Supply Chain Strategy</td></tr>
<tr><td>Outbound Logistics</td></tr>
<tr><td>Operations</td><td>Operational Issues</td></tr>
<tr><td>Marketing and Sales</td><td rowspan="2">Strategic Drivers</td></tr>
<tr><td>Service</td></tr>
</table>

Five statements for each of the six areas of research (resource procurement, corporate governance issues, supply chain integration, supply chain strategy, operational issues and strategic drivers) were developed. For each of the statements three responses were provided - each of these reflecting normative, coercive or mimetic characteristics.

The respondent was requested to apply a constant sum rating scale (of ten points) to each of the statements. The use the constant sum rating scale allows the researcher cognisance of the indiscrete relationship between the isomorphic mechanisms. An explanation of this methodology (by way of example) follows:

**Statement**

- How do you rate the importance of each of these factors in influencing vehicle combination selection?
    - *This falls in the research area of resource procurement and deals with the critical issue of capital expenditure. Selecting the correct vehicle for a given application is paramount to achieving commercial success.*

**Response**

- Most cost effective solution for a given specific task within the legal framework
    - *This response would indicate normative behaviour, the respondent's belief being that fleet selection is conducted rationally and without interference.*
- Market Expectation, operational constraints and legal requirements
    - *This opinion indicates coercion as the purchaser is forced to accede to a number of influences both formal and otherwise.*
- To match leading competitors on an equal footing
    - *This mimetic behaviour is symptomatic of an uncertain environment an a commoditisation of service offering*

In this example the respondents' allocated 49% of the points to the normative response, 31% to coercive and 20% to mimetic isomorphism. Table 6 provides the full set of statements and responses.

## Table 6: Value Chain and Institutional Isomorphism Matrix

| Resource Procurement Issues | | Normative | Coercive | Mimetic |
|---|---|---|---|---|
| 1 | How do you rate the importance of each of these factors in influencing vehicle combination selection | Most cost effective solution for a given specific task within the legal framework | Market expectation, operational constraints and legal requirements | To match leading competitors on an equal footing |
| 2 | To what extent do you attribute the selection of a vehicle make to each of these criteria | Own previous experience and technical appropriateness | Availability, price, rationalisation and standardisation policies | Observed proven success and popularity |
| 3 | Rank, by most common source, the areas from which managers are employed | Internal promotion given academic qualification and relevant experience | Recruit from ranks of HDI's/HDSA's (either from within or outside) the organisation | Headhunting from competitor companies based on observed track record |
| 4 | To what extent do each of these factors influence the setting of wage levels for drivers and operators | Competitive industry recruitment dictates rate | Minimum wage as per the NBC | Match industry rates |
| 5 | To what extent do each of these factors influence the decision to outsource | Not considered core to the business | Nuisance factor; management time, labour and cost | Proof of concept implementation in the industry |

| Operational Issues | | Normative | Coercive | Mimetic |
|---|---|---|---|---|
| 6 | To what extent do each of these factors influence payload | Optimised vehicle efficiency | Road traffic regulation | Competitive and operating environment |
| 7 | To what extent do each of these factors influence driver working hours | Fatigue, safety and consideration for the individuals quality of life | Labour legislation and customer expectation | Standard industry & common incentive remuneration practises |
| 8 | To what extent do each of these factors influence vehicle productivity | Maintenance | Customer business | Common shift and |
| 9 | To what extent do each of these factors influence the decision to utilise fleet scheduling & monitoring systems | Aid to operational efficiency | Hijacking and security issues | Enhances service offering |
| 10 | To what extent do each of these factors influence the decision to implement a hub and spoke system | Optimisation of fleet to cater for line haul and local deliveries | Circumstances such that double handling of cargo is required | Benefits of a consolidation and distribution facility |

| Supply Chain Integration | | Normative | Coercive | Mimetic |
|---|---|---|---|---|
| 11 | Rate the accuracy of each of these statements | The sophisticated market demands that suppliers provide integrated SCM solutions | Failure to integrate into the supply chain will result in the commoditisation of our business | In order to compete in the logistics industry we must match the broad service offerings of competitors |
| 12 | To what extent do each of these factors influence the inclusion of warehousing in a company's service offerings | Warehousing is a source of competitive advantage and represents a major market | Warehousing is an integral part of the supply chain and customers require that we include this in our service offerings | There is a need to provide the full spectrum of supply chain services in order to be compete in the logistics market |
| 13 | To what extent do each of these factors influence the adoption of information technology in logistics | Benefits derived from scheduling, forecasting and track & trace efficiencies | Need for security and to meet customer demands | Need to match competitor service offerings |
| 14 | Rate the accuracy of each of these views on freight transport | Freight transport is primary revenue generator, all other service offerings are peripheral and serve only to enhance | There is market expectation that we operate an in-house freight transport fleet | Freight transport is a commodity that is procured to support sophisticated logistics solutions |
| 15 | From a customer perspective rate these factors in terms of expectation from outsourcing logistics | Efficient and cost effective systems that provide competitive advantage | Improving capital structure and financial returns to attract investors | An improved opportunity to focus on core activity |

| Strategic Drivers | | Normative | Coercive | Mimetic |
|---|---|---|---|---|
| 16 | From a customer perspective rate the statements in terms of most likely to win business | "We have an implicit understanding of your articulated needs and have designed the most appropriate logistics solution" | "We will provide the most competitive price and match every term contained in the Request for Quotation (RFQ)" | "We will reengineer your entire supply chain incorporating elements not contained in the RFQ using best of breed philosophies to ensure you have the optimum solution" |
| 17 | Rate the accuracy of each of these statements relating to Fourth Party Logistics (4PL) | Andersen Consulting trademarked the term 4PL providing a name to an existing TPLP strategy | 4PL was introduced by Andersen Consulting thereby forcing existing TPLP's to adopt the model | The articulation and timing of entry of the 4PL concept resulted in TPLP's adopting the model |
| 18 | Rate the growth strategies in terms of prevalence in the logistics sector | A combination of market and product development in new and existing markets | Targeting projects identified as "low hanging fruit" to provide stakeholders with immediate returns | Investment in a broad range of loosely related industries incorporating vertical and horizontal integration |
| 19 | Rate the competitive focus in terms of prevalence in the logistics sector | Developing and educating untapped markets to the benefits of outsourcing | Fierce competition for work released on tender based on price | High activity in markets believed to be attractive |
| 20 | Rate the accuracy of each of these views on transport | Road and rail both have a role to play and in combination can offer the best possible logistics solution | Rail tariff structures and service levels force the option out of contention | Road is the most efficient and flexible mode of transport generating superior revenues hence the preference |

| Supply Chain Strategy | | Normative | Coercive | Mimetic |
|---|---|---|---|---|
| 21 | To what extent do each of these statements describe the role of Fourth Party Logistics (4PL) | 4PL is at the apex of the TPLP's hierarchy of service offerings and as such is the primary driver of strategy | The market is expectant that the 4PL concept will deliver benefit and is therefore incorporated into our strategy | 4PL is a concept employed by competitors and is part of our strategy too |
| 22 | In terms of Fourth Party Logistics (4PL) offerings,rate the statements | All three 4PL models; Synergy Plus, Solution Integrator and Industry Innovator are offered | The market prescribes which 4PL model is to be implemented | The competitive environment determines the model offered |
| 23 | To what extent do these issues inhibit supply chain integration | The market faces a dilemma in that the benefits of a single logistics service provider are offset by barriers to exit | Silo and empowered organisational structures prevent the transparency of benefit being manifested | An unsophisticated and uninformed market requires that we provide that with which they are accustomed |
| 24 | To what extent do these issues expedite supply chain integration | The benefit derived from economies of scale and a single procurement point | Economic pressure resultant from increased competitiveness | The outsource trend |
| 25 | Rate the accuracy of each of these views on service offering diversity | The (manufacturing sector) trend to outsource supply chain functions provides opportunity for TPLP's to diversify their service offering | TPLP's are being forced into diversified service provision by the outsourcing trend | TPLP's have transitioned from providing basic services to providing diversified services in order to remain competitive |

| Coporate Governance | | Normative | Coercive | Mimetic |
|---|---|---|---|---|
| 26 | To what extent do these factors influence policy on disclosure | Belief that transparency enhances share value | Conformance with minimum JSE Regulations and King Report recommendations | Alignment with acceptable levels in the commercial environment |
| 27 | To what extent do these factors influence policy on Black Economic Empowerment (BEE) | To exploit a competitive advantage by offering the market BEE credentials superior to those of competitors | Legislation, employee and customer pressure | To match and/or represent the industry sector demographics |
| 28 | Rate these statements on Black Economic Empowerment (BEE) in terms of accuracy | BEE Policy embraces the concept of transformation and acknowledges the need for demographically representative wealth distribution | Investment in SMME BEE companies has occurred in order to acquire business | Employee trusts and SMME BEE companies have been created in order to compete in the market |
| 29 | Rate these statements on prelevant HIV/Aids policy in terms of accuracy | Comprehensive policy incorporating education, awareness, testing, treatment and counselling | Conforming to legislation relating to HIV/Aids and reporting as advocated by King | Supporting industry and national initiatives |
| 30 | Rate these statements on corporate social investment activities in terms of accuracy | Significant investment and initiatives enthusiastically supported | Skills levy contributions made to SETA | Various "feel good" projects supported and donations made |

## 3.2. The Research Population

The research population extends to the stakeholders within the SARFI which includes practitioners, academics and administrators.

## 3.3. Sample Size

The sample size was thirty one respondents. Referencing Miles & Huberman (1994), Paul (2002:32) states that “research on relatively small samples are well documented in the social science literature when the intention is to generate information about complex social dynamics“.

## 3.4. Sampling Methodology

The Panel Sampling non-probability selection method has been applied. This methodology can be labelled convenience sampling. In both cases it is acknowledged that bias may influence the results of the research as cautioned by Lind, Mason & Marchal (2000).

The respondents were selected on the basis of their prominence, reputation and position in the SARFI. This approach is borrowed from the

Delphi methodology. Moore (1987:51), as quoted by Clayton (1997) states "A nuclear physicist is an appropriate expert if the Delphi concerns atomic energy and a resident of a neighbourhood is an expert on what should be a community's goals". The research sample consequently consists of academics, practitioners and administrators involved in the SARFI. The list of respondents is set out in Appendix A.

There were six academics, four administrators and twenty practitioners. The respondents were required to produce relevant information with regards their qualifications, experience and affiliations in order to insure the quality of their input Moore (1987). The thirty one respondents had an average of eighteen years experience in the logistics sector. A profile of their academic qualifications reveals three Doctorate, eleven Master, seven Honour, four Bachelor Degrees and six Diplomas.

Demographics in terms of age, sex and race have no relevance and these details were not sought.

## 3.5. Reliability and Validity

### 3.5.1. Reliability

Reliability is proven through consistent outcomes using the same research methodology Leedy & Ormond (2001). All thirty one respondents were accordingly required to complete the same questionnaire.

The structure of the questionnaire is such that the six value chain elements were spread randomly throughout as too were the mechanisms of institutional isomorphism. A copy of the research instrument is appended as Appendix B.

### 3.5.2. Validity

Validity is the measure of accuracy achieved by the research instrument Leedy & Ormond (2001). In order to address this issue a pilot study was undertaken.

#### 3.5.2.1. The Pilot Study

The pilot study was conducted using the research instrument with seven respondents drawn from Unitrans Limited; a company listed under the transport sector on the JSE. The average number of years experience of these respondents was fourteen and the sample's academic qualifications included three Bachelor Degrees and four Transport Diplomas.

The results were captured in a contingency table which, following Chi-square testing, produced a probability value of less than 0.0001. Thus having established a significant dependence between the variables, statistical analysis was undertaken using correspondence analysis.

Correspondence analysis is a multivariate statistical technique which graphically depicts the contents of a contingency table. Dawes & Sharp (1996) maintain that it is particularly useful in that it illustrates the relationships between categorical data graphically and simultaneously. This cannot be achieved using either discriminant or principle component analysis, the later being further constrained by the assumption that the data is metric and normally distributed.

Given the relative complexity of the research, the non-metric nature of the variables and the desire to represent the results both graphically and simultaneously correspondence analysis is considered the appropriate technique.

### 3.6. Data Collection

The process involved in eliciting the participation of the respondents was as follows:

- Each of the prospective respondents was contacted by telephone
- It was explained that research was being undertaken in pursuance of an Master of Business Administration (MBA) degree and that the information sought was in regard to the SARFI
- The questionnaires were sent to the prospective respondents (who undertook to participate) either by e-mail or facsimile
- Follow up telephone calls were made as was necessary

In total the researcher engaged with fifty seven individuals; thirty four responses were received of which thirty one were usable.

# 4. RESEARCH RESULTS

## 4.1. Data Analysis

From the responses drawn from the questionnaire a contingency table was prepared which referencing Hoffman & Franke (1986), Bendixen (1996:17) describes as “perhaps the most commonly encountered and simple form of analysis in research”. Table 7 below refers:

**Table 7: Contingency Table**

| Value Chain Element | Isomorphic Element | | | TOTAL |
|---|---|---|---|---|
| | Normative | Coercive | Mimetic | |
| **Resource Procurement** | 582 | 513 | 455 | **1,550** |
| **Supply Chain Integration** | 521 | 467 | 563 | **1,550** |
| **Strategic Drivers** | 511 | 537 | 501 | **1,550** |
| **Corporate Governance Issues** | 507 | 597 | 445 | **1,550** |
| **Supply Chain Strategy** | 466 | 552 | 533 | **1,550** |
| **Operational Issues** | 450 | 612 | 488 | **1,550** |
| **TOTAL** | **3,037** | **3,278** | **2,985** | **9,300** |

Chi-square testing produced a probability value of less than 0.0001 indicating highly significant association between the value chain elements and institutional isomorphism mechanisms. This result is consistent with the pilot study previously undertaken. In order to improve understanding of the dependant relationship between each of the variables, individual Chi-square results are calculated in Table 9.

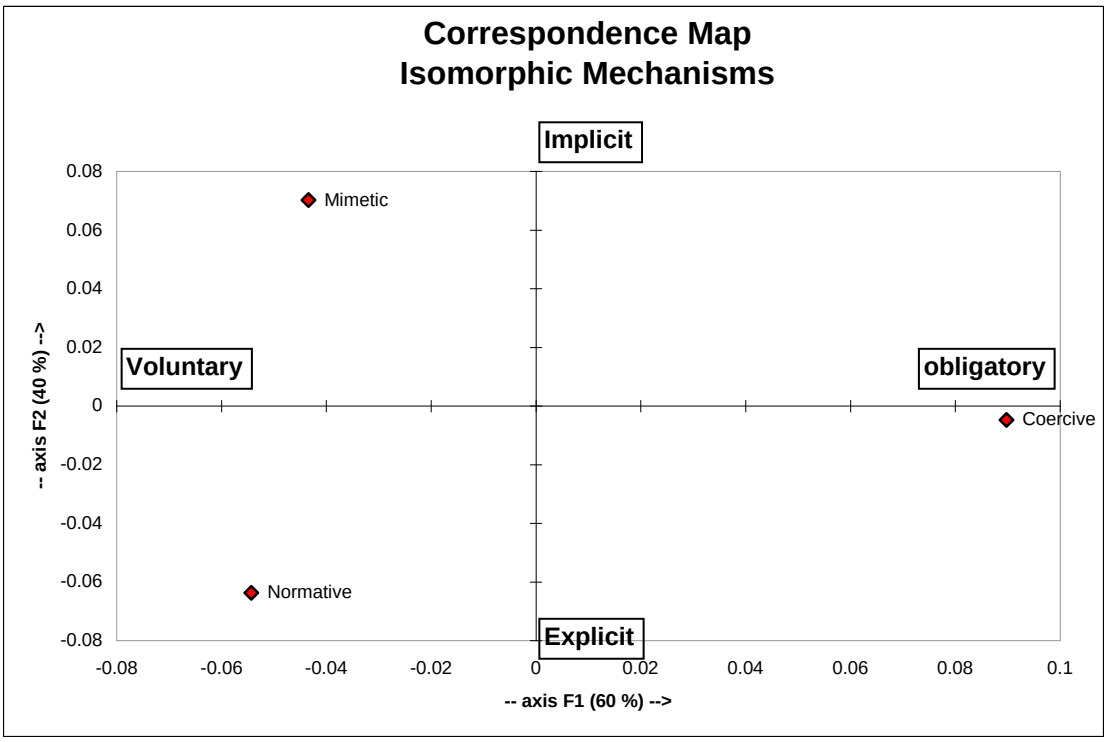
Values over 3.84 are significant at the 5% level.

**Table 9: Calculation of Chi-square Statistic**

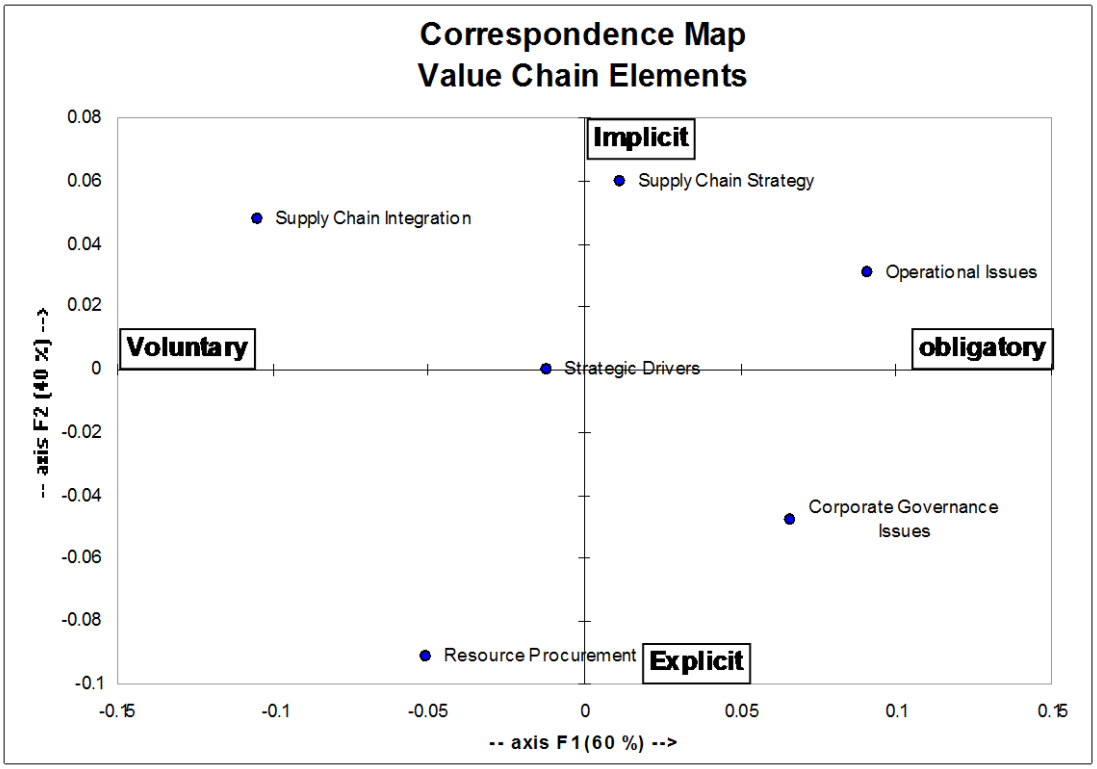
| Value Chain Element | Isomorphic Element | | | TOTAL |
|---|---|---|---|---|
| | Normative | Coercive | Mimetic | |
| Resource Procurement | 11.36 | 2.03 | 3.63 | **17.03** |
| Supply Chain Integration | 0.42 | 11.62 | 8.54 | **20.57** |
| Strategic Drivers | 0.05 | 0.15 | 0.03 | **0.23** |
| Corporate Governance Issues | 0.00 | 4.76 | 5.47 | **10.23** |
| Supply Chain Strategy | 3.24 | 0.05 | 2.49 | **5.78** |
| Operational Issues | 6.23 | 7.89 | 0.18 | **14.31** |
| **TOTAL** | **21.31** | **26.51** | **20.33** | **68.15** |

Whilst the Chi-square calculation confirms the association between variables and aids the interpretation of the contingency table it provides no insight to individual associations. This is achieved through correspondence analysis and its graphical representation in the form of a correspondence plots (the detailed NCSS output forms Appendix C). Three correspondence plots generated by XLSTAT Version 6.1 follow – analysis and interpretation of these results is covered in Section 4.

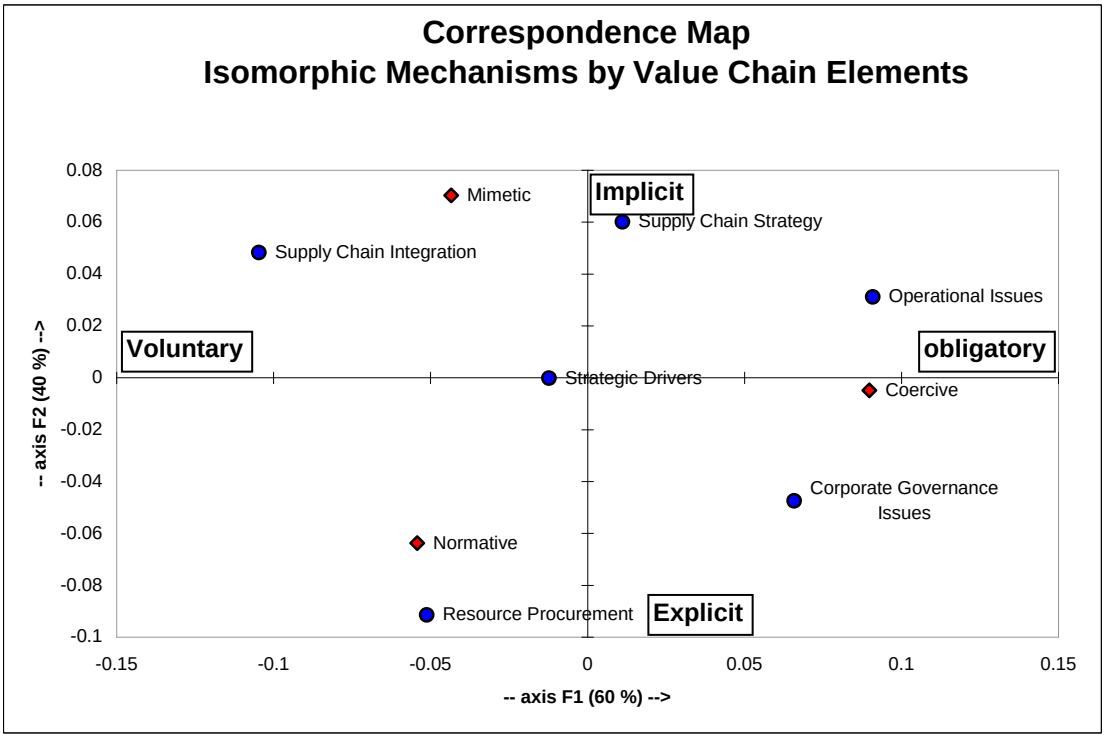
**Figure 8: Correspondence Plot – Institutional Mechanisms**



## Figure 9: Correspondence Plot – Value Chain Elements




## Figure 10: Correspondence Plot – Combined



## 5. INTERPRETATION

The horizontal axis of the correspondence plot has been labelled Voluntary/Obligatory and the vertical axis Implicit/Explicit. Using these descriptions the researcher is able to interpret the results as follows:

### 5.1. Institutional Isomorphism Mechanisms

Referencing Figure 8 the power of the correspondence analysis technique is immediately apparent when interpreting the relationship between the three institutional isomorphism mechanisms. Whilst the contingency table records differences between variables on a linear basis, the correspondence plot illustrates their widespread location indicative of their individual disparate characteristics.

#### 5.1.1. Normative Mechanism

The normative mechanism is closely associated with explicit behaviour and can be explained by “the collective struggle of members of an occupation to define the conditions and methods of their work”, DiMaggio & Powell (1983:152). The relatively central location of the normative mechanism on the voluntary/obligatory axis indicates the presence of both these influences. This reflects the real world business environment of the SARFI where there is both legislated and non-legislated activity.

#### 5.1.2. Coercive Mechanism

The location of the coercive driver lies (logically) in the ambit of obligatory behaviour. It is plotted virtually midway on the explicit/implicit axis which is consistent with the characteristics of the coercive mechanism; coercive behaviour being resultant from both legal (explicit) and social (implicit) pressures.

### 5.1.3. Mimetic Mechanism

The mimetic mechanism is closely associated with implicit behaviour. This too appears logical in as much as imitation is seldom conducted in a clearly defined and documented manner. The position on the voluntary/obligatory axis may suggest that whilst this mechanism is largely voluntary, there is an element of coercive influence. This influence could be resultant from organisations being forced to imitate as no other course of action is clear. This can occur where a continuation of historic/current modus operandi is not an option due to the dynamic nature of the business environment. The transformational nature of the logistics industry (as documented in the literature review) could contribute to this behaviour.

## 5.2. Value Chain Elements

The analysis of the value chain elements incorporates:

- Interpretation of Figures 9 (analysis of the elements relative to their position to the axis's)
- Interpretation of Figure 10 (analysis of the elements relative to the isomorphic mechanisms)
- A comparison of the results with the research propositions

The value chain elements, like the isomorphic drivers, are relatively widespread supporting the validity of Porter's model as a framework for segmenting the supply chain, McGinnis & Kohn (2002). It is also interesting to note that the two Support Activity value chain elements (Resource Procurement and Corporate Governance Issues) are both plotted in the lower quadrants – the reverse being true for the four Primary Activities.

### 5.2.1. Resource Procurement

**Proposition -** Resource procurement is dominated by normative isomorphism resultant from a free market environment within which institutions have the capacity to "define the conditions and methods of their work", DiMaggio & Powell (1983:152).

This proposition is considered correct as resource procurement has a strong association with normative behaviour (see Figure 10).

Referencing Figure 9 on the horizontal axis, resource procurement is associated with explicit behaviour. This can be explained by the application of clearly defined protocols and approvals frameworks for the expenditure of capital that prevail in organisations. In terms of the voluntary/obligatory axis there is a stronger association with voluntary behaviour, but there is an element of coercion. This can be attributed to National Bargaining Council wage legislation compliance and the economic realities around vehicle pricing and fleet rationalisation.

This value chain element has the least association with mimetic behaviour probably due to the rational approach to this aspect of commerce in a relatively free market economy.

### 5.2.2. Corporate Governance Issues

**Proposition -** Corporate governance is influenced largely by coercive isomorphism emanating from formal sources (such as Johannesburg Securities Exchange (JSE) regulations and the King II Report) and informal sources including social, environmental and cultural pressures.

The results of the research prove this proposition to be largely accurate as corporate governance has a strong association with coercive behaviour (see Figure 10).

This isomorphic mechanism is plotted in the obligatory/explicit quadrant which is consistent with the underlying (anticipated) causes - JSE regulations and the King II Report. The activities of the Services Sector Education and Training Authority (SETA) also appear to play a role (specifically in terms of corporate social investment).

The influence of normative behaviour on this mechanism appears to be driven by the competitive advantage to be gained through compliance; although there is evidence of a legitimate desire to embrace broader social issues.

### 5.2.3. Operational Issues

**Proposition -** Operational issues are influenced mainly by normative isomorphism as institutions are able to conduct their business without undue interference.

This proposition does not hold true as operational issues are in the implicit/obligatory quadrant and have a greater association with coercive and mimetic isomorphism than normative.

Whilst road traffic legislation plays an important role in this, prescriptive customer demands and restrictive operational constraints dominate the phenomenon. It would appear from the research that whilst TPLP's believe they are able to provide more cost effective logistics solutions; the market is not being receptive. This is an interesting dynamic as it would suggest that the industry is out of step with its customers which is consistent with the research conducted on the SARFI by Bowes, Sagat & Sey (2003).

This finding is of interest as it would also suggest that the TPLP's are unable to convince the market of the benefits of their proposed offerings. This would support the need for intervention by a party (of credibility) outside of the commercial sector to influence the SARFI.

### 5.2.4. Supply Chain Strategy

**Proposition -** Supply chain strategy is dominated by mimetic isomorphism on due to the uncertainty that prevails given this relatively new approach to business.

This proposition is found to be true as it has a strong association with mimetic isomorphism and implicit behaviour.

As anticipated supply chain strategy is influenced by mimetic, and to a slightly lesser degree, coercive behaviours. In terms of the latter, market expectation and customer organisational structures are the primary contributors. This supports the observations made in regard to the coercive influence found in operational issues and the associated disconnect between suppliers and users.

The mimetic influence is pervasive throughout and is supported by the literature review which records the homogeneity of strategies comprehensively (Nedcor, 2003; Cargo Carriers, 2003; Barloworld Logistics, 2003; Jackson, 2003; Business Day, 2003 and Unitrans 2003).

### 5.2.5. Supply Chain Integration

**Proposition -** Supply chain integration is influenced by mimetic isomorphism due to the uncertainty caused by the lack of information on the SARFI and the transformational state of the industry.

This proposition is found to be true in as much as there is a strong association with mimetic isomorphism and is the value chain element is plotted in the implicit/voluntary quadrant.

Supply chain integration was the most significantly dependant of the six value chain elements and is the most closely related to mimetic

behaviour. The strong relationship with the mimetic influence can be explained through uncertainty, the core driver of this mechanism. Fawcett & Magnan (2002:359) may lend some support to the researcher's observation stating that "SCM is a relatively new approach to business and that the boundaries of practise are still evolving".

It is not clearly understood why this element has the closest association with voluntary behaviour. It is however speculated that the broadening range of service offerings falling into the ambit of TPLP's is creating opportunity for choice.

### 5.2.6. Strategic Drivers

**Proposition -** Strategic drivers are influenced by mimetic isomorphism due to the uncertainty which prevails in the industry.

This proposition is incorrect. This value chain element has the lowest Chi-square value as its location closest to the centre of the correspondence plot indicates.

The strategic drivers' value chain element is virtually equidistant on both the voluntary/obligatory and explicit/implicit axis's. It is also centrally located in relation to the three institutional isomorphism mechanisms, not being influenced overwhelmingly by any single factor.

It is speculated that the generic nature of the subject may contribute to the [nearly] equivalent influence of each of the three mechanisms. If this is so it would speak to a balanced holistic approach to strategy and perhaps the industry itself.

# 6. CONCLUSIONS

## 6.1. Summary

Conventional wisdom suggests that in order that enterprises succeed, they should differentiate themselves from their peers. A great deal of resource is employed to achieve this despite which, there appear to be remarkable similarities in strategy and service offering. This phenomenon has, through this research also been found to be true for the SARFI.

The theory of institutional isomorphism explains the reasons as to why this should be so. This research provides some insight as to which of the constraining mechanisms of institutional isomorphism influence individual elements of the value chain.

The results are a mixture of the counter intuitive and anticipated. The findings in regard to supply chain strategy and supply chain integration were consistent with the propositions. The industry is in transition, uncertainty prevails and the behaviour is largely mimetic in nature. The source of the coercive influence on supply chain integration and operational issues – stemming as it did largely from customers; although alluded to in some of the literature, was surprising in its extent.

The normative nature of resource procurement and the coercive influence on corporate governance issues was as anticipated and stated in the propositions. The presence of all the mechanisms in strategic drivers was in itself of interest perhaps suggesting a balanced approach to that subject.

Having thus said the researcher submits that the underlying SARFI business environment generates the mix of normative, coercive and mimetic behaviour that is to be found. The nature of this mix will influence the competitiveness of the industry - developing an optimum blend will ultimately create maximum value.

## 6.2. Suggestions for Further Research

Through this research elements of the value chain have been identified as being influenced to a greater or lesser extent by the three institutional isomorphism mechanisms.

It is noted in particular that operational issues are influenced by obligatory behaviour and coercive isomorphism. This phenomenon is such that TPLP's believe that they are unable to provide optimal logistics solutions to the unreceptive market. This state of affairs (assuming the TPLP's are correct) will have a negative affect on the greater South African economy. Given this, an area of research could be to establish the correctness of the following propositions:

- TPLP's are coerced into providing sub-optimal logistics solutions by a market that is unreceptive to world class global supply chain trends.
- The introduction of government legislation to coerce freight logistics consumer behaviour will create value for the South African economy.

In closing the researcher believes that this hereunto relatively unexplored research focus (from a South African perspective) is well worth pursuing; offering valuable insights into the dynamics of business.

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# APPENDIX A

## List of Respondents

| Academics | Position |
|---|---|
| Gerard De Villiers | CSIR – Logistics Specialist: Centre for Logistics and Decision Support |
| Hans Ittmann | CSIR - Centre Manager: Centre for Logistics and Decision Support |
| Peter Kilbourn | University of Johannesburg - Senior Lecturer |
| Dr WJ Pienaar | Stellenbosch University – Dept of Logistics |
| Dr Esbeth van Dyk | CSIR – Logistics Specialist: Centre for Logistics and Decision Support |
| Dr Craig Voortman | University of Johannesburg - Co-HOD and Author of *Global Logistics Management* |
| **Practitioners** | **Position** |
| Terry Bantock | Imperial Logistics – Chief Executive Officer |
| Mark Butler | Strang – Operations Manager |
| Charles Dey | Global Trade Training - Joint Managing Director |
| Steve Ford | Unitrans Supply Chain - Managing Director |
| Morne Fourie | Van Wettens – Lowbed Manger |
| Paula Hall | Cargo Africa - Managing Director |
| Dawid Janse van Rensburg | Cargo Carriers - IT & Logistics Director |
| Herman Lemmer | Chief Executive Road Freight Association (former) & General Manager Maxiprest Tyres |
| Thandeka Mgodsu | Imperial Logistics – Director Strategic Transformation |
| Fil Morkel | Unitrans Freight – Managing Director |
| Derek Moe | Moe & Associates - Chairman |
| Roger Naisby | Unitrans Limited - Director |
| Mike Johnston | Logistics Management - Director |
| Daan Joubert | Road Transport Operator – Managing Director |

| | |
|---|---|
| Danie Roodt | Cargo Carriers – Strategic Marketing Manager |
| Moses Scott | Road Freight Association - Director |
| Dave Scott | Fleet Watch – Technical Editor |
| Theo Sibiya | Gemini Consulting - Managing Consultant |
| Nick Tselentis | Consumer Goods Council of South Africa – Legal and Regulatory Affairs Manager |
| Tom Turnbull | Imperial Logistics Specialised Freight – Chief Executive Officer |
| Ian Toomey | Van Wettens – Operations Manager |
| **Administrators** | **Position** |
| Elvin Harris | Department of Trade and Industry – Director: Infrastructure and Logistics |
| Thoral Naik | City of Johannesburg – Project Consultant: Economic Development Unit |
| Odie Strydom | Competition Commission - Analyst |
| Richard Wade | Department of Trade and Industry – Assistant Director: Infrastructure and Logistics |

# APPENDIX B

**Drivers of Service Offerings and Strategies in the South African Road Freight Logistics Industry.**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Name | | | | | | | |
| Organisation of Employment | | | | | | | |
| Position | | | | | | | |
| Years experience in Logistics Industry | | | | | | | |
| Industry related memberships | 1. | | | | | | |
| | 2. | | | | | | |
| | 3. | | | | | | |
| Academic Achievement | Matriculation | Diploma | Bachelors | Honours | Masters | Doctorate | QBE |

**Explanation to Questionnaire Format -** Your valued response to the 30 questions set out below is much appreciated.

- To each of the questions you will find three (3) model answers (there are no "right" or "wrong" answers)
- For each question - please allocate a total of 10 points (between each of the 3 model answers)
- The model answers with which you agree the most; should be allocated the higher number of points
- Your response should reflect *<u>your</u>* opinion as to the most prevalent behaviour, practice and/or understanding, of the issues, in the industry

**Example Below:**

| | | | |
|---|---|---|---|
| In your experience to what extent do each of these elements contribute to variable operating cost? | Wages **5** | Fuel **2** | Maintenance **3** |

| | | | | |
|---|---|---|---|---|
| Q1 | **To what extent do each of these factors influence the inclusion of warehousing in a company's service offerings** | There is a need to provide the full spectrum of supply chain services in order to be compete in the logistics market | Warehousing is a source of competitive advantage and represents a major market | Warehousing is an integral part of the supply chain and customers require that we include this in our service offerings |
| | | | | |
| Q2 | **How do you rate the importance of each of these factors in influencing vehicle combination selection** | Most cost effective solution for a given specific task within the legal framework | Market expectation, operational constraints and legal requirements | To match leading competitors on an equal footing |
| | | | | |
| Q3 | **To what extent do these issues inhibit supply chain integration** | Silo and empowered organisational structures prevent the transparency of benefit being manifested | An unsophisticated and uninformed market requires that we provide that with which they are accustomed | The market faces a dilemma in that the benefits of a single logistics service provider are offset by barriers to exit |
| | | | | |
| Q4 | **Rate the growth strategies in terms of prevalence in the logistics sector** | Investment in a broad range of loosely related industries incorporating vertical and horizontal integration | A combination of market and product development in new and existing markets | Targeting projects identified as "low hanging fruit" to provide stakeholders with Immediate returns |
| | | | | |
| Q5 | **To what extent do each of these factors influence driver working hours** | Fatigue, safety and consideration for the individuals quality of life | Labour legislation and customer expectation | Standard industry & common incentive remuneration practises |
| | | | | |
| Q6 | **To what extent do these factors influence policy on Black Economic Empowerment (BEE)** | To match and/or represent the industry sector demographics | To exploit a competitive advantage by offering the market BEE credentials superior to those of competitors | Legislation, employee and customer pressure |
| | | | | |

| | | | | |
|---|---|---|---|---|
| Q7 | **To what extent do each of these factors influence the adoption of information technology in logistics** | Benefits derived from scheduling, forecasting and track & trace efficiencies | Need for security and to meet customer demands | Need to match competitor service offerings |
| | | | | |
| Q8 | **To what extent do you attribute the selection of a vehicle make to each of these criteria** | Availability, price, rationalisation and standardisation policies | Observed proven success and popularity | Own previous experience and technical appropriateness |
| | | | | |
| Q9 | **To what extent do these issues expedite supply chain integration** | The outsource trend | The benefit derived from economies of scale and a single procurement point | Economic pressure resultant from increased competitiveness |
| | | | | |
| Q10 | **Rate the competitive focus in terms of prevalence in the logistics sector** | Developing and educating untapped markets to the benefits of outsourcing | Fierce competition for work released on tender based on price | High activity in markets believed to be attractive |
| | | | | |
| Q11 | **To what extent do each of these factors influence vehicle productivity** | Customer business hours | Common shift and crewing rosters | Maintenance requirements |
| | | | | |
| Q12 | **Rate these statements on Black Economic Empowerment (BEE) in terms of accuracy** | BEE Policy embraces the concept of transformation and acknowledges the need for demographically representative wealth distribution | Investment in SMME BEE companies has occurred in order to acquire business | Employee trusts and SMME BEE companies have been created in order to compete in the market |
| | | | | |

| | | | | |
|---|---|---|---|---|
| Q13 | **Rate the accuracy of each of these views on freight transport** | There is market expectation that we operate an in-house freight transport fleet | Freight transport is a commodity that is procured to support sophisticated logistics solutions | Freight transport is primary revenue generator, all other service offerings are peripheral and serve only to enhance |
| | | | | |
| Q14 | **Rank, by most common source, the areas from which managers are employed** | Headhunting from competitor companies based on observed track record | Internal promotion given academic qualification and relevant experience | Recruit from ranks of HDI's/HDSA's (either from within or outside) the organisation |
| | | | | |
| Q15 | **Rate the accuracy of each of these views on service offering diversity** | The (manufacturing sector) trend to outsource supply chain functions provides opportunity for TPLP's to diversify their service offering | TPLP's are being forced into diversified service provision by the outsourcing trend | TPLP's have transitioned from providing basic services to providing diversified services in order to remain competitive |
| | | | | |
| Q16 | **Rate the accuracy of each of these views on transport** | Rail tariff structures and service levels force the option out of contention | Road is the most efficient and flexible mode of transport generating superior revenues hence the preference | Road and rail both have a role to play and in combination can offer the best possible logistics solution |
| | | | | |
| Q17 | **To what extent do each of these factors influence the decision to utilise fleet scheduling & monitoring systems** | Enhances service offering | Aid to operational efficiency | Hijacking and security issues |
| | | | | |
| Q18 | **Rate these statements on prelevant HIV/Aids policy in terms of accuracy** | Conforming to legislation relating to HIV/Aids and reporting as advocated by King | Supporting industry and national initiatives | Comprehensive policy incorporating education, awareness, testing, treatment and counselling |
| | | | | |

| | | | | |
|---|---|---|---|---|
| Q19 | **From a customer perspective rate these factors in terms of expectation from outsourcing logistics** | An improved opportunity to focus on core activity | Efficient and cost effective systems that provide competitive advantage | Improving capital structure and financial returns to attract investors |
| | | | | |
| Q20 | **To what extent do each of these factors influence the setting of wage levels for drivers and operators** | Competitive industry recruitment dictates rate | Minimum wage as per the NBC | Match industry rates |
| | | | | |
| Q21 | **To what extent do these factors influence policy on disclosure** | Conformance with minimum JSE Regulations and King Report recommendations | Alignment with acceptable levels in the commercial environment | Belief that transparency enhances share value |
| | | | | |
| Q22 | **To what extent do each of these statements describe the role of Fourth Party Logistics (4PL)** | 4PL is a concept employed by competitors and is part of our strategy too | 4PL is at the apex of the TPLP's hierarchy of service offerings and as such is the primary driver of strategy | The market is expectant that the 4PL concept will deliver benefit and is therefore incorporated into our strategy |
| | | | | |
| Q23 | **To what extent do each of these factors influence the decision to implement a hub and spoke system** | Optimisation of fleet to cater for line haul and local deliveries | Circumstances such that double handling of cargo is required | Benefits of a consolidation and distribution facility |
| | | | | |
| Q24 | **Rate these statements on corporate social investment activities in terms of accuracy** | Various "feel good" projects supported and donations made | Significant investment and initiatives enthusiastically supported | Skills levy contributions made to SETA |
| | | | | |

| | | | | |
|---|---|---|---|---|
| Q25 | **From a customer perspective rate the statements in terms of most likely to win business** | "We have an implicit understanding of your articulated needs and have designed the most appropriate logistics solution" | "We will provide the most competitive price and match every term contained in the Request for Quotation (RFQ)" | "We will reengineer your entire supply chain incorporating elements not contained in the RFQ using best of breed philosophies to ensure you have the optimum solution" |
| | | | | |
| Q26 | **To what extent do each of these factors influence the decision to outsource** | Nuisance factor; management time, labour and cost | Proof of concept implementation in the industry | Not considered core to the business |
| | | | | |
| Q27 | **In terms of Fourth Party Logistics (4PL) offerings ,rate the statements** | All three 4PL models; Synergy Plus, Solution Integrator and Industry Innovator are offered | The market prescribes which 4PL model is to be implemented | The competitive environment determines the model offered |
| | | | | |
| Q28 | **Rate the accuracy of each of these statements** | Failure to integrate into the supply chain will result in the commoditisation of our business | In order to compete in the logistics industry we must match the broad service offerings of competitors | The sophisticated market demands that suppliers provide integrated SCM solutions |
| | | | | |
| Q29 | **Rate the accuracy of each of these statements relating to Fourth Party Logistics (4PL)** | 4PL was introduced by Andersen Consulting thereby forcing existing TPLP's to adopt the model | The articulation and timing of entry of the 4PL concept resulted in TPLP's adopting the model | Andersen Consulting trademarked the term 4PL providing a name to an existing TPLP strategy |
| | | | | |
| Q30 | **To what extent do each of these factors influence payload** | Competitive and operating environment | Optimised vehicle efficiency | Road traffic regulation |
| | | | | |

# APPENDIX C
## NCSS Correspondence Analysis Report

**Correspondence Analysis Report**

| | |
|---|---|
| Page/Date/Time | 1 2005/03/21 11:26:51 PM |
| Database | C:\Documents and Settings\Ow ... S CA Value Chain Elements.S0 |
| Variables | Normative to Mimetic |

**Raw Data Section**

| Value Chain Elements | Normative | Coercive | Mimetic | Total |
|---|---|---|---|---|
| Resource Procurement | 582 | 513 | 455 | 1550 |
| Supply Chain Integration | 521 | 467 | 563 | 1550 |
| Strategic Drivers | 511 | 537 | 501 | 1550 |
| Corporate Governance Issues | 507 | 597 | 445 | 1550 |
| Supply Chain Strategy | 466 | 552 | 533 | 1550 |
| Operational Issues | 450 | 612 | 488 | 1550 |
| Total | 3037 | 3278 | 2985 | 9299 |

**Row Profiles Section**

| Value Chain Elements | Normative | Coercive | Mimetic | Total |
|---|---|---|---|---|
| Resource Procurement | 37.55 | 33.10 | 29.35 | 100.00 |
| Supply Chain Integration | 33.59 | 30.11 | 36.30 | 100.00 |
| Strategic Drivers | 32.99 | 34.67 | 32.34 | 100.00 |
| Corporate Governance Issues | 32.73 | 38.54 | 28.73 | 100.00 |
| Supply Chain Strategy | 30.04 | 35.59 | 34.37 | 100.00 |
| Operational Issues | 29.03 | 39.48 | 31.48 | 100.00 |
| Total | 32.66 | 35.25 | 32.10 | 100.00 |

**Column Profiles Section**

| Value Chain Elements | Normative | Coercive | Mimetic | Total |
|---|---|---|---|---|
| Resource Procurement | 19.16 | 15.65 | 15.24 | 16.67 |
| Supply Chain Integration | 17.14 | 14.24 | 18.85 | 16.67 |
| Strategic Drivers | 16.84 | 16.39 | 16.80 | 16.67 |
| Corporate Governance Issues | 16.71 | 18.22 | 14.92 | 16.67 |
| Supply Chain Strategy | 15.33 | 16.83 | 17.84 | 16.67 |
| Operational Issues | 14.82 | 18.67 | 16.35 | 16.67 |
| Total | 100.00 | 100.00 | 100.00 | 100.00 |

**Correspondence Analysis Report**

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| Database | C:\Documents and Settings\Ow ... S CA Value Chain Elements.S0 |
| Variables | Normative to Mimetic |

**Eigenvalue Section**

| Factor No. | Eigenvalue | Individual Percent | Cumulative Percent | Bar Chart |
|---|---|---|---|---|
| 1 | 0.004408 | 60.16 | 60.16 | \|\|\|\

**Plot Detail Section for Isomorphic**

| Name | Quality | Mass | Inertia | Axis1 Factor | Axis1 COR | Axis1 CTR | Axis2 Factor | Axis2 COR | Axis2 CTR |
|---|---|---|---|---|---|---|---|---|---|
| 1 Normative | 1.000 | 0.327 | 0.313 | -0.054 | 0.420 | 0.218 | -0.064 | 0.580 | 0.455 |
| 2 Coercive | 1.000 | 0.352 | 0.389 | 0.090 | 0.997 | 0.645 | -0.005 | 0.003 | 0.003 |
| 3 Mimetic | 1.000 | 0.321 | 0.298 | -0.043 | 0.276 | 0.137 | 0.070 | 0.724 | 0.542 |

**Principal Coordinate Section for Value Chain - Axis 1**

| Name | Mass | Inertia | Distance | Factor | COR | CTR | Angle | Eigenvalue |
|---|---|---|---|---|---|---|---|---|
| 1 Resource Procurement | 0.167 | 0.250 | 0.011 | -0.051 | 0.238 | 0.099 | 60.8 | 0.000436 |
| 2 Supply Chain Integration | 0.167 | 0.302 | 0.013 | -0.105 | 0.825 | 0.414 | 24.7 | 0.001825 |
| 3 Strategic Drivers | 0.167 | 0.003 | 0.000 | -0.012 | 1.000 | 0.006 | 1.0 | 0.000025 |
| 4 Corporate Governance Issues | 0.167 | 0.150 | 0.007 | 0.066 | 0.657 | 0.164 | 35.8 | 0.000723 |
| 5 Supply Chain Strategy | 0.167 | 0.085 | 0.004 | 0.011 | 0.034 | 0.005 | 79.4 | 0.000021 |
| 6 Operational Issues | 0.167 | 0.210 | 0.009 | 0.091 | 0.896 | 0.313 | 18.8 | 0.001378 |

**Correspondence Analysis Report**

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| Database | C:\Documents and Settings\Ow ... S CA Value Chain Elements.S0 |
| Variables | Normative to Mimetic |

**Principal Coordinate Section for Value Chain - Axis 2**

| Name | Mass | Inertia | Distance | Factor | COR | CTR | Angle | Eigenvalue |
|---|---|---|---|---|---|---|---|---|
| 1 Resource Procurement | 0.167 | 0.250 | 0.011 | -0.091 | 0.762 | 0.478 | 29.2 | 0.001395 |
| 2 Supply Chain Integration | 0.167 | 0.302 | 0.013 | 0.048 | 0.175 | 0.133 | 65.3 | 0.000387 |
| 3 Strategic Drivers | 0.167 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 89.0 | 0.000000 |
| 4 Corporate Governance Issues | 0.167 | 0.150 | 0.007 | -0.048 | 0.343 | 0.129 | 54.2 | 0.000377 |
| 5 Supply Chain Strategy | 0.167 | 0.085 | 0.004 | 0.060 | 0.966 | 0.206 | 10.6 | 0.000601 |
| 6 Operational Issues | 0.167 | 0.210 | 0.009 | 0.031 | 0.104 | 0.055 | 71.2 | 0.000161 |

**Principal Coordinate Section for Isomorphic - Axis 1**

| Name | Mass | Inertia | Distance | Factor | COR | CTR | Angle | Eigenvalue |
|---|---|---|---|---|---|---|---|---|
| 1 Normative | 0.327 | 0.313 | 0.007 | -0.054 | 0.420 | 0.218 | 49.6 | 0.000962 |
| 2 Coercive | 0.352 | 0.389 | 0.008 | 0.090 | 0.997 | 0.645 | 3.1 | 0.002842 |
| 3 Mimetic | 0.321 | 0.298 | 0.007 | -0.043 | 0.276 | 0.137 | 58.3 | 0.000604 |

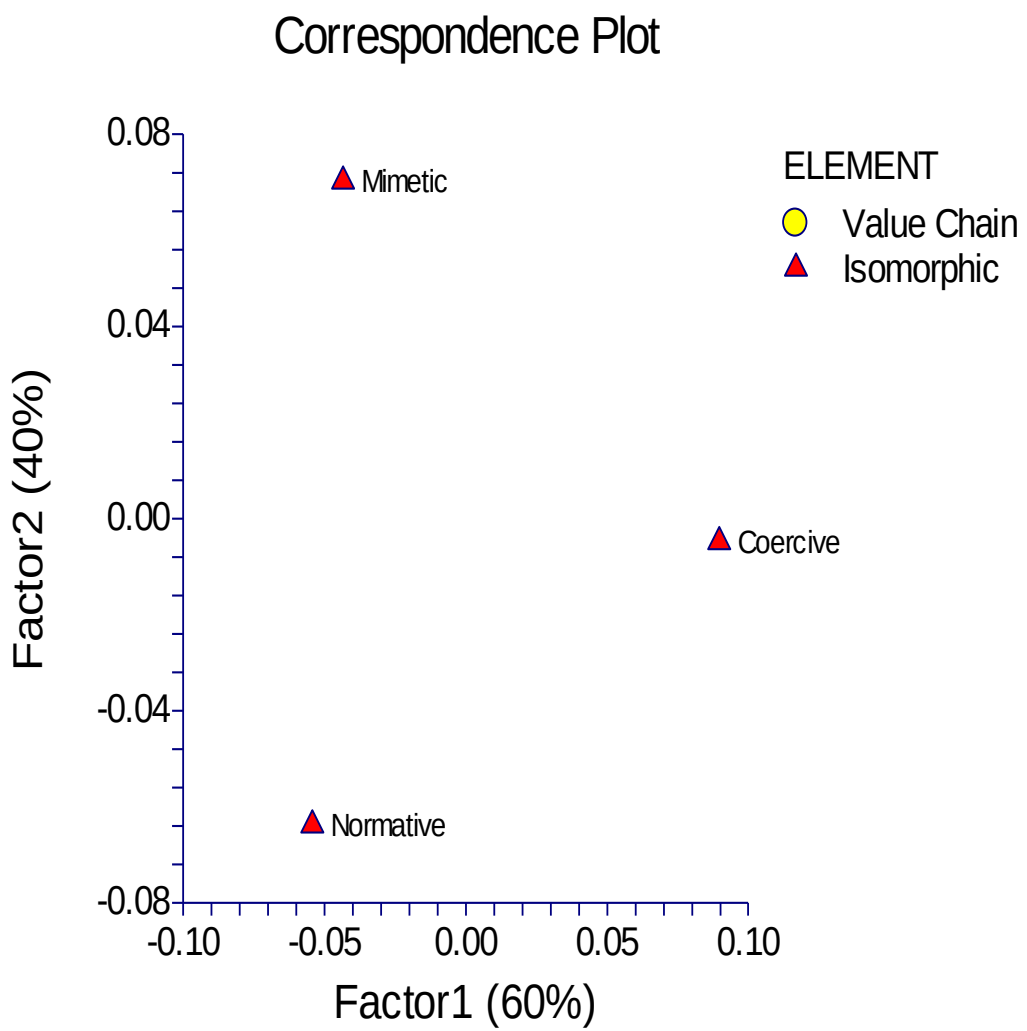
**Principal Coordinate Section for Isomorphic - Axis 2**

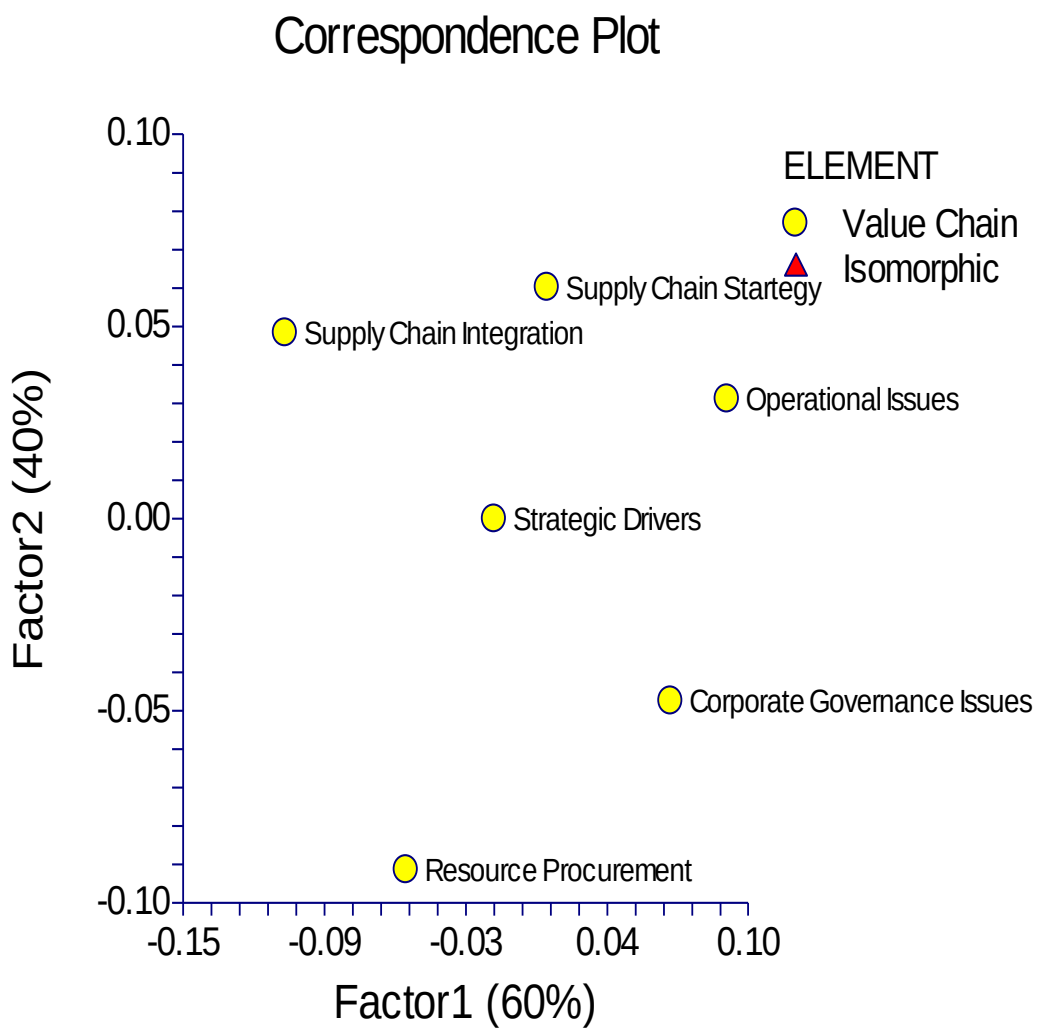
| Name | Mass | Inertia | Distance | Factor | COR | CTR | Angle | Eigenvalue |
|---|---|---|---|---|---|---|---|---|
| 1 Normative | 0.327 | 0.313 | 0.007 | -0.064 | 0.580 | 0.455 | 40.4 | 0.001329 |
| 2 Coercive | 0.352 | 0.389 | 0.008 | -0.005 | 0.003 | 0.003 | 86.9 | 0.000008 |
| 3 Mimetic | 0.321 | 0.298 | 0.007 | 0.070 | 0.724 | 0.542 | 31.7 | 0.001582 |

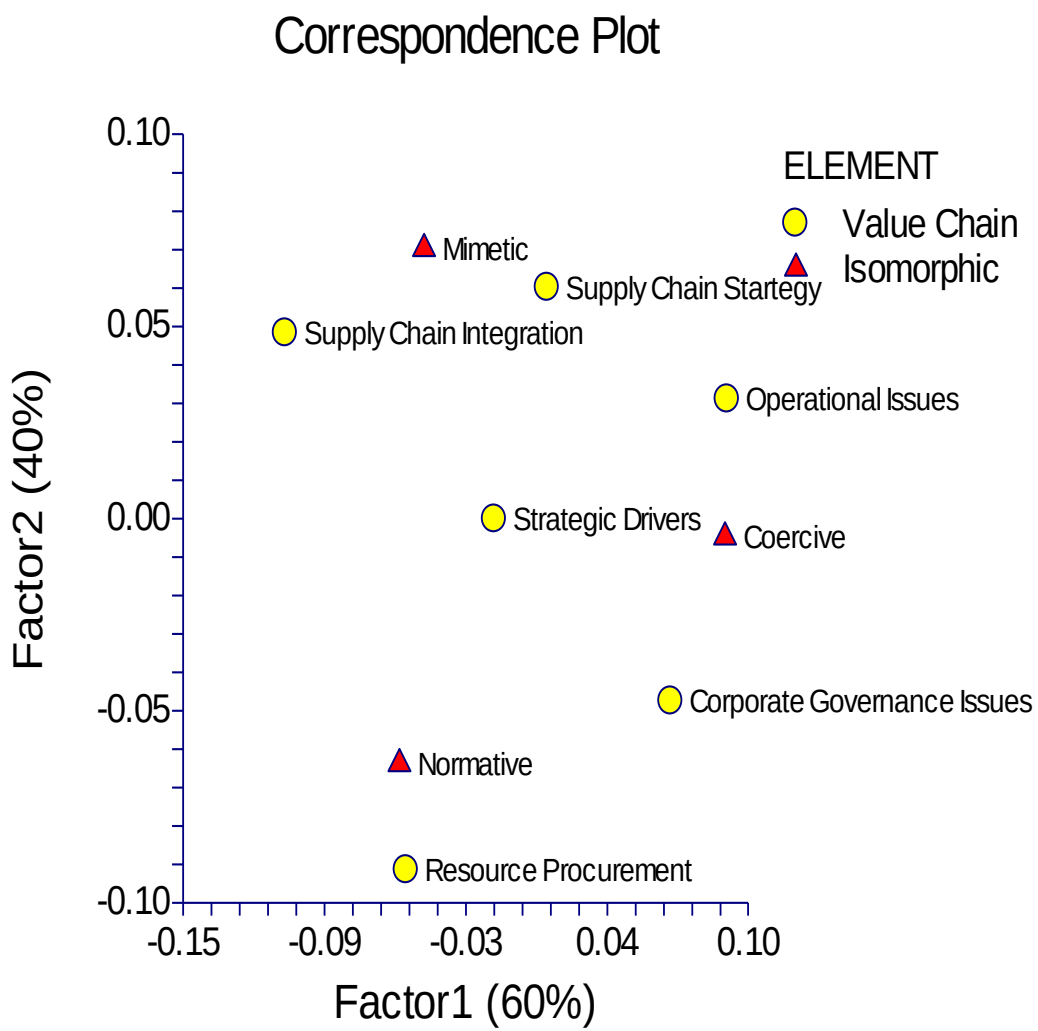
**Correspondence Analysis Report**

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|---|---|
| Page/Date/Time | 4/5/6 2005/03/21 11:26:51 PM |
| Database | C:\Documents and Settings\Ow ... S CA Value Chain Elements.S0 |
| Variables | Normative to Mimetic |

**Plots**


Correspondence Plot
ELEMENT
Value Chain
Isomorphic
Mimetic
Coercive
Normative
0.08
0.04
0.00
-0.04
-0.08
-0.10
-0.05
0.00
0.05
0.10
Factor2 (40%)
Factor1 (60%)


Correspondence Plot
ELEMENT
Value Chain
Isomorphic
Supply Chain Startegy
Supply Chain Integration
Operational Issues
Strategic Drivers
Corporate Governance Issues
Resource Procurement
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.09
-0.03
0.04
0.10
Factor2 (40%)
Factor1 (60%)


Correspondence Plot
ELEMENT
Value Chain
Isomorphic
Mimetic
Supply Chain Startegy
Supply Chain Integration
Operational Issues
Strategic Drivers
Coercive
Corporate Governance Issues
Normative
Resource Procurement
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.09
-0.03
0.04
0.10
Factor2 (40%)
Factor1 (60%)