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Exploring the Supply Chain Management in Africa: An African Knowledge Perspective

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Abstract:

Despite the many advances in the Supply chain management research and practice, there are still gaps in its knowledge base. Supply chain management is framed in the lenses of Western academy and this limits its holistic appeal in certain contexts hence the birth of this study proposing an empirical Supply chain management framework from an African perspective in an African developing country. The study focused on the Supply chain management theory and practice by mining companies in Africa during the period 2005 to 2014 specifically focusing on the Zimbabwe coal mining sector. The researcher adopted a mixed research approach and used a sample size of 17. The findings showed that indeed different micro environments and cultures play a very significant role in influencing the business activities especially in distressed economies. A lot of short-cuts to standing rules, the way contracts are handled and awarded a cause for concern. The researcher recommended that supply chain management concepts need to be adapted to cater for managers' cultural diversity. Identifying the most ideal Supply chain management improvement destination requires understanding of national, organisational and individual cultural norms. In particular, the pathway to change and the desirable leadership role must be matched to the demands of the local cultural environment. Through further research there is need to test the theory, there are some constructs which can be generalised, with some which needs to be applied to particular settings.

Keywords: Supply chain management, African perspective, mining industry

1. Background to the Study

Globalization has established new dynamics in many well-established industries. Mining was not spared. In the recent past there have been a number of changes in the mining history. Commodity and price fluctuations, global competition, regulatory influences, exchange rates, mergers, takeovers, restructuring, strategic alliances are but some of the changes (Weston, Johnson, and Siu, 1999). For centuries, it is a known factor that the mining industry has been the backbone of the known civilized world evidenced by the early development of resource rich developed countries such as the USA, Canada and Australia (Brummer, Badenhorst, and Neuland, 2006).

In the last decade, the mining industry entered an unprecedented era of uncertainty. Today the mining industry is faced with a business environment which is so dynamic and unpredictable that firms can hardly afford to become complacent (D'aveni, 2010). A new breed of global mining firms is emerging in a World of shrinking opportunity where only a handful of firms are likely to dominate the business landscape over the medium to long term (Brummer, Badenhorst, and Neuland, 2006).

This may have given impetus for the African Union and the UN Economic Commission for Africa (UNECA) to develop the African Mining Vision 2050, which sets out a number of ideas for increasing the resource wealth flowing to the nations that host mining operations (Browne, 2012). Some of these ideas would transfer wealth from mining companies to governments while others focus on the better management of resource income and the active development of the supply and infrastructure sectors with a view to creating a more favourable environment for economic development.

African mining companies are not currently benefiting from resource wealth flowing from international trade because of various supply-side constraints of which a weak logistics infrastructure has been cited as the major handicap (Donnelly, 2006). In a rapidly converging global market, the ability of mining companies to achieve supply-side competitiveness depends on their ability to deliver goods and services in different markets at the right-time, right place and right cost (Browne, 2012). Unfortunately, this is not being the case with most mining companies in Zimbabwe given its geographical location, its rail and road infrastructure, telecommunication network etc, as they are faced with various challenges.

A McKinsey Quarterly report assessing Africa's path to growth, notes that despite the recent global market turbulence, demand for major mined commodities is forecast to grow strongly in the next 10 to 20 years on the back of increased urbanization and infrastructure build-out in China and the emergence of India's middle class. The report posits that Africa, given its share of global resources, will surely play a significant part in meeting that demand. In recent years, most African governments including that of Zimbabwe have expressed frustration about the way the continent's resource endowment has not translated into economic development.

Zimbabwe is a developing country in Africa, South of the Sahara. It is endowed with rich mineral resources but has been grappling with supply chain management issues, for more than two decades. Consistent with findings by the African Business Journal (2010) which concluded that an underdeveloped logistics infrastructure has made Africa the most expensive region in the world in which to move goods. The World Bank Doing Business country reports (2013, 2015) revealed a number of factors in Zimbabwe that are at odds with Supply Chain efficiency. It ranked the country lowly on trading across borders suggesting challenges with the value-chain. The report also provided an overview of trends in the Zimbabwean economy. Key issues which mediate the Zimbabwe business environment include; challenges that companies face when doing business in Zimbabwe, such as protectionism; inadequate infrastructure, including roads and energy; national culture; and Zimbabwe's journey toward a market economy (Nyoni, 2011). All the variables mentioned are key to an efficient SCM.

The Zimbabwe mining sector performance has been declining since the year 2000 buffeted by hyperinflation which resulted in most mines being put under care and maintenance by the year 2008 (Mills, and Herbst, 2014). Significantly, mines closed in large numbers especially those operating at the marginal cost curve. However, the introduction of the multi-currency regime introduced in February 2009 gave hope to the mining sector as it allowed them to access off-shore sources of new investment. This viewpoint was vindicated by the stellar performance recorded in key major sectors of the economy such as mining and tourism during the tenure of the government of national unity which was instrumental in introducing the multi-currency regime in the economy (CZI, 2010). The same sentiments have been echoed by the Minister of Finance in his Monetary Statement captured by the Chamber of Mines (2010). Zimbabwe mining sector has the potential to achieve double digit growth and the liberalised marketing environment has created potential for growth.

However, challenges to full recovery proliferate in the form of uninterrupted electricity supply, transport logistics, dilapidated infrastructure and anxieties caused by the promulgation of the indigenization and economic empowerment law (Sovacool, 2012). As a result, mining houses' plans for project expansions or new projects reviews were put on hold in response to investment risk management. Challenges regarding access to capital evolve around the country's risk profile, compounded by uncertainty related to governance, property rights, protracted court disputes on mining rights. The Business Journal further alludes that many voices in the Zimbabwe Government are advocating the mortgaging of the country's natural resources in order to access borrowed capital, but such a route is fraught with challenges chief of which is that the country does not have sufficient information regarding its mineral resource base (Chamber of Mines, 2014).

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A World Bank Working Paper examined the issue of logistics and supply chain management in land-locked developing countries like Zimbabwe (Mills and Herbst, 2014). It noted that landlocked economies are primarily affected not only by a high cost of freight services, but also by the high degree of unpredictability in transportation time. There is no doubt that current developments in Zimbabwe's burgeoning mining sector will propel the countries' economy and thus, will change people's lives who lost almost a decade from 2000 to 2008, when the gross domestic product contracted by 40% between 2000 and 2008 (Kanyenze, 2011). The economic meltdown, now widely regarded as the "lost decade" was characterised by hyperinflation, which at the last official count in June 2008 stood at 231%, foreign currency shortages, declining farm output, suspension of mining operations and massive de-industrialisation (Kanyenze, 2011).

While a lot has been said about the rich mineral resources of the country, not much attention is being given to the supply chain and logistics considering that Zimbabwe is a landlocked country. While there are current initiatives targeting the exploration, registration, extraction, marketing, and pricing of the mineral products, there remains lack of commitment on strengthening the supply chain issues associated with the rich mineral resource base. This is irregular as it constrains the country's ability to leverage its development on the basis of these minerals.

Peer-reviewed academic search sites such as Ebscohost, Proquest and Emerald Insight have generated hundreds of scholarly articles on supply chain management elsewhere but paucity of knowledge on the discipline in Zimbabwe. While research on SCM in developing countries has tended to focus on describing the evolution and status of supply chain management as well as accounting for the challenges attaching thereto, there is no evidence of country-based supply chain management research (Pillay and Mafini, 2017). Hence this research to particularly look at the Zimbabwean situation with particular interest on the coal mining companies.

For over a decade commerce and industry have been severely affected by power shortages country wide caused by load shedding. Voices from all sectors have aired their sentiments on the shortage of coal on the market. Chivaura from Zesa Holdings in his presentation during at the Fontein (2015) alluded to the serious shortage of coal for Power generation in the country which he said was failing to meet the requirement for small thermals let alone Hwange Power Station" The Financial Gazette of April (2008). "...local companies expressed fears that poor coal supplies which have persisted for over a decade might drive them to the brink of closure". All Africa.com "... poor coal supplies undermine local firms' operations". Local press has been inundated by stories of coal supply shortages from local coal mining companies. For over a decade Zimbabwe has been grappling with this problem causing serious shortages in electricity, yet, the country has extensive coal reserves.

The Zimbabwe Electricity Supply Authority (ZESA) depends on an efficient supply of coal for its generation capacity but has been forced to implement power cuts owing to erratic coal supplies. This impinges negatively on economic activities in the country as manufacturing companies are forced to operate sub-optimally. Another significant consumer is the tobacco sector which has been forced to rely on fire-wood as a source of power for curing tobacco causing serious environmental ramifications. The agricultural sector under which coal is important in the resurgent tobacco

farming in 2012 alone, the coal industry contributed 8% to the country's GDP (National Budget, 2013). This may be pointers to structural deficiencies in the performance of the existing Supply Chain Management models which are being imported from the Western developers.

1.1. Statement of the Problem

There is an absence of a theoretical framework for Supply Chain Management (SCM) with an African lens in an African setting. The vast majority of research in SCM has been based on the observation of supply chain practices internationally, followed by cross-comparisons of performance. Pillay and Mafini (2017) identified inadequate supply chain management skills and qualifications, procurement malpractices, ineffective supply chain integration, poor supply chain relationships and industry structure as some of the challenges prevalent in supply chains in developing countries.

1.2. Need of the Study

The purpose of the study was to propose an afro-centric SCM theory developed with an African lens. The researcher focused on SCM as one of the management philosophies to bring organisations to the world play by simply adopting SCM concepts. However, the changing nature of different regions around the world creates numerous ways of bringing about change, which can enhance supply chain performance. Differences of culture, organisational governance, and regulations have close connections to managing supply chains in diverse parts of the world (Cadden, et al., 2010; Cadden, Marshall and Cao, 2013).

1.3. Research Question

How do you develop an Afro-Centric SCM theory that will contribute to the existing gap and bring organizational competitiveness?

1.3.1. Sub Questions

To best understand the key research question, the following secondary questions have been crafted to allow for deeper insights into the topic under investigation.

- What is the historical context of supply chain management and how does it apply to Zimbabwe?
- What are the dominant approaches to SCM and theories and frameworks generally applied to the subject?
- What are the factors that affect the practice of SCM in different settings?
- What are the supply chain management problems being faced by coal mining companies in Zimbabwe?

1.4. Research Objectives

- To propose an Afro-Centric theoretical framework for Supply Chain from an African lens.
- To explore and investigate the practice/performance of SCM concept by coal mining companies in Zimbabwe.
- To contribute to on-going efforts in the academy to build a mainstream theory on SCM with an African perspective since the concept is still in ascendancy.
- To investigate and explore the SCM constraints that Zimbabwean mining companies are facing when using existing theories.

1.5. Significance of the Study

The study was significant in the following ways;

1.5.1. To the Existing Body of Knowledge

The study had theoretical, methodological and empirical contributions to the corpus of knowledge on supply-chain management. From a theoretical perspective, the study was premised on the assumption that supply-chain management is an academic discipline in ascendancy. It is a discipline which is still evolving in terms of theory, concepts, and methods. There is no unifying theory of supply chain management as evidenced by the prolific research output generated annually aiming to just do that. Giménez (2004) concurred with the researcher's findings that one of the barriers to supply chain integration is the lack of a commonly agreed framework. That scenario itself creates an opportunity for this study to make its own contribution to existing knowledge of the phenomenon from the context of African countries.

From an empirical perspective, the study began with the assumption that SCM is critical to the development agenda of the developing countries. Several policy studies by the World Bank have noted that most developing and landlocked countries like Zimbabwe are struggling to participate meaningfully in global trade because they experience barriers to trade in the form of structural constraints relating to logistics and SCM (World Bank Doing Business, 2012, 2014). This has challenged policy-makers in such countries to explore various strategies in which they may enhance national competitiveness in global trade through a robust logistics infrastructure. To be able to do that, they need to be informed through credible empirical studies on SCM and this study fits in well with that thinking.

1.5.2. To the Policy-Makers and Law-Makers

The study sought to explore the challenges faced by mining companies in Zimbabwe, with the hope of bringing change to the business practice and to contribute to public policy discourse that supports international trade to enable companies to equitably compete on the global market. Consistent with this, the justification of this study is assisted within

the context of the value of the research from an economic perspective and its value to the organizations under study as well as to the community again these aspects are discussed in the ensuing paragraphs.

1.5.3. To the Mining Industry in Zimbabwe

The recent past has been a time of introspection and reflection by companies in most Zimbabwe industries. The high quality and high efficiencies, which have become characteristic of production and physical-distribution operations of many foreign competitors and the resultant in-roads into local markets have been cause for concern to many local mining companies. This has challenged some company's basic business view and stimulated a vital self-examination designed to uncover the causes and identify appropriate solutions. A weak supply-chain management architecture has been identified as one of the major causes of this negative situation. Within the context of regionalisation and globalisation, there is an increasing need for landlocked countries like Zimbabwe to have unhindered access to reliable and efficient transport routes to major seaports as well as to any country.

1.5.4. To the Economy

With increased global competition, the logistics function can be further exploited to allow a company to gain a competitive advantage. Due to the intensity of global competition the performance of the supply chain is considered an important strategic weapon to achieve and maintain competitive strength. If SCM challenges are well articulated and there is free and fast movements of goods and services to the right places, on the right time and right form, the mining sector's contribution to the economy occurs on several interrelated layers; that is; or translates into an improved position of the country's balance of payments, contribution to GDP and PDL foreign exchange generation, social infrastructure development and the fiscus. What is often not included in the discourse on mining sector contribution to the economy is the downstream multiplier effects of all economic activities directly or indirectly deriving sustenance from the mining sector.

1.6. Scope of the Study

The focus of the study was on supply chain management philosophy, theory and practice and to a lesser extent constraint, and was limited to the coal mining industry in Zimbabwe. The constraints that mediate against global economic participation and international business practices were explored. The participants were drawn from key role players in the coal business, mainly the three fully operating coal mining companies in Zimbabwe and also Institutions which have direct supply chain relationships being.

1.7. Definition of Special Key Terms

The key term of the study was defined below;

Supply Chain Management - the process of integrating business activities from end-user through original suppliers that provide products, information and services that add value for both the customers and stakeholders (Jacobs and Mafini, 2019).

1.8. Limitations of the Study

- The study recognizes that the mining is not homogeneous and consists of several sectors. The study population consisted of only the coal mining companies in Zimbabwe's coal sector and a few role players in the coal supply chain business. Only those associated with the coal sector constituted the key informants for the study.
- The study only focused on the only three producing coal mines. Bennett (2004) highlighted that bias can occur when the number of cases that represent a sample is not large enough to claim that the findings are applicable to the population from which the sample was taken. The limited sample of cases studied may lack generalizability of the present findings to other contexts in terms of statistical sense, yet the results are generalizable into theory (Lee and Baskerville (2003). Conducting a similar study using a broad and diverse sample to further extend and enhance the thesis findings would not only provide a new perspective on the areas of study but it might also help to promote better understanding of SCM from a different lens, their impact in different economies and environments.
- The study was self-sponsored hence the limitation to take the study out of the case country in terms of data gathering and observation from other African Countries other than those within the SADC Region. However, the researcher sought financial assistance in the form of loans to meet any expenses associated with the study and for comparison purposes the researcher used desk research and literature review.

2. Related Literature Review

This study explored literature on Supply Chain Management in Africa. The researcher reviewed books, organisational journals, published journals, newspaper articles, organisational annual reports, and government legislation publications. The researcher explored and explained the Supply Chain Management, its practices and constraints in various contexts. Prior to all this the researcher first presented literature on the mining industry in Zimbabwe to give a better understanding of the SCM practices in the country.

2.1. Legal Framework on Coal Mining

The Mines and Minerals Act Chapter 21:05 is the principal legislative tool guiding mining operations in Zimbabwe. The Government is in the process of drafting a new Mineral Policy which intends to:

- Provide for an improved and competitive mining legislative framework, which offers a user-friendly operating mining environment,
- Guarantee increased capacity in mineral production, continuous exploration, beneficiation and value addition,
- Enforce the “use-it-or-lose-it” principle,
- Make it more investment-focused, based on a win-win principle that also addresses issues of levies and taxes to reflect prudence in the application of mineral rents.

These will address concerns raised in the World Bank doing business 2013.

2.2. Supply Chain Management

Supply Chain Management is said to have played a significant role in Corporate efficiency, Assy Mbang Janvir - James (2012), and has attracted a lot of academicians over the last few years. Extant academic literature reviewed discloses a stream in research in practice and theory of SC and SCM.

2.2.1. SCOR Model

Gunasekaran et al. (2004) developed a framework for performance measurement in SCs. The aim of their framework is to encourage a better understanding of the importance of SC metrics. It demonstrates the key SC performance metrics, and is presented in the form of a matrix. The y-axis indicates the SC process (plan, source, make, and deliver), and the x-axis indicates the level of management (strategic, tactical, and operational). At a strategic level, SCM is about transforming the way that operations meet the needs of their customers. At an operational level, SCM integrates traditional functions such as sourcing, buying, storing, making, and distributing. Their model is almost the same with one development by the Supply Chain Council. Figure 1.

Figure 1: SCOR Model
Adapted from Supply Chain Council (2008)

The supply chain operations reference model (SCOR) is a management tool used to address, improve, and communicate supply chain management decisions within a company and with suppliers and customers of a company. The model describes the business processes required to satisfy a customer's demands. It also helps to explain the processes along the entire supply chain and provides a basis for how to improve those processes.

Physical and Technical	Managerial and Behavioural
Planning and control methods Work flow/activity structure Organisation structure Communication and information flow facility structure Product flow facility structure	Management methods Power and leadership structure Risk and reward structure Culture and attitude

Table 1: Management Components of SCM Framework
Adopted from Lambert and Cooper (2000)

The management components in Lambert and Cooper's (2000) SCM framework entail some technical and behavioural aspects that can drive the ways that business processes are managed, and thus networks are structured, within supply chains. As shown in Table 4, both the physical and technical, and managerial and behavioural classes of management components are cornerstones to planning and controlling the supply chain operations.

2.2.2. Theories of Management

This section provides a brief explanation of the theories of management that the researcher made use of in the research.

2.2.2.1. Transaction Cost Economics

Transaction cost economics (TCE) argues that, during any economic exchange, the cost of the product or service should include all hidden costs (Williamson, 1981, 2002). For example, when establishing a relationship between a buyer and supplier, hidden costs might include the time spent developing the relationship, the creation of contracts by a lawyer,

or travel between various locations. The explicit focus for TCE is the reduction of transaction exposure by accounting for all organisational costs (that is, transaction and production costs) (Williamson, 2002). In its analytical structure, TCE often uses constructs such as asset specificity and uncertainty (Grover and Malhotra, 2003) and exclusively translates the many trade-offs in a make or buy decision into cost, which mainly implies tangibility.

2.2.2.2. Agency Theory

In agency relationships, one party (the principal) delegates work to another party (the agent) (Eisenhardt, 1989a; Jensen and Meckling, 1976; Ross, 1973) to compensate for the lack of expertise or to focus on core competencies. When the agent is acting for the principal, it resembles behaviours such as performing for the benefit of the principal or acting as the principal's representative or employee (Mitnick, 1973). As Eisenhardt (1989a) stated, while the profit maximisation approach and self-interest persist, "... the focus of agency theory [centres] on determining the most efficient contract governing the principal-agent relationship" (p. 58). The notion of the contract is used here as a metaphor to describe the agency relationship (Jensen and Meckling, 1976) and is designed based on the outcome (such as commissions) or behaviour (such as salaries) of the agent (Eisenhardt, 1989a).

Two streams of agency theory (AT) can be found in the literature: principal-agent research and positivist agency theory (Eisenhardt, 1989a). In agency relationships, the principal will typically seek to minimise agency costs, such as specifying, rewarding, monitoring and policing the agent's behaviour, while the agent works towards maximising rewards and reducing principal control (Fleisher, 1991). Efficient management of agency problems, such as information acquisition (or communication), preference mismatch (or conflict of interest), effort (or moral hazard) and capability (or adverse selection)—mainly associated with the agent (Fleisher, 1991)—is also imperative in any principal-agent relationship. AT provides a useful framework to analyse relationships and behaviours in supply chains because these chains are replete with the principal-agent dyads.

2.2.2.3. Resource-Based View

The resource-based view (RBV) explains how the unique deployment and combination (referred to as 'capabilities') of tangible and intangible resources might assist companies to achieve a sustainable competitive advantage (Grant, Review and Berkeley, 1991; Penrose, 1959; Prahalad and Hamel, 1990; Priem and Swink, 2012). While the early work of Penrose (1959) viewed firms as a bundle of idiosyncratic resources, developments on the RBV have directed attention towards the nature of resources and their positioning (Rumelt, 1984; Wernerfelt, 1984) that might create barriers and economic rents for competitors (Lavie, 2006). In this regard, Barney (1991) identified value, rarity, imperfect imitability and imperfect substitutability as essential characteristics of resources to generate barriers and advance competitive advantage.

As highlighted by Lavie (2006), traditional RBV assumed that ownership and control of resources are the sole domain of the organisation. This contrasts with the premises of outsourcing, purchasing or supply management, in which taking advantage of partners' capabilities to compensate for internal competency impairment or to focus on core competencies is crucial. Hence, the 'proprietary resource' assumption of traditional RBV might hinder its application to collaborative arrangements in which shared and non-shared resources are managed to build competitive advantage (Lavie, 2006). However, in its reformulated rendition (for example, Lavie, 2006), RBV considers a network resource notion to use its explanatory power in supply chain environments.

Applications of RBV in SCM are mainly focused on structural analysis (de Oliveira Wilk and Fensterseifer, 2003; Miller and Ross, 2003) and identification of the antecedents for competitive advantage in the supply chain (Barratt and Oke, 2007; Lewis, 2000; Pandza, Horsburgh, Gorton and Polajnar, 2003; Pandza, Polajnar, Buchmeister and Thorpe, 2003; Pearson, Masson and Swain, 2010). Halldórsson et al. (2007) maintained that the majority of SCM decisions are underpinned by RBV, at least implicitly. In order to respond to uncertainties and changes, companies form inter-organisational arrangements to enjoy resource-position barriers built through collaborative efforts. This is particularly true in situations where scarce resources or intense competition make organisations realise that relying only on internal resources is insufficient to secure competitive advantage (Jap, 2001).

2.2.2.4. Resource-Dependence Theory

The resource-dependence theory (RDT) focuses on a set of power relationships based on exchange of resources (Pfeffer and Alison, 1987). It recognises that companies do not possess all the resources they might require in the process of value-creation, hence will often become dependent on each other (Emerson, 1962; Hunt and Morgan, 1996). The key issue then becomes how organisations manage their power-dependence relationships to maintain their functional and operational requirements (Pfeffer and Salancik, 1978). In this regard, RDT assumes that organisations often form coalitions to increase their power and make other organisations dependent on themselves (Heide, 1994). Resource manipulation and control exertion are the strategies offered by RDT to manage uncertainty and dependence in business transactions.

In their argument on the issue of resource dependence in supply chains, Ketchen and Hult (2007a) highlighted the dissimilar nature of dependence in the traditional and best value supply chains. While traditional supply chains have a tendency to behave opportunistically in relation to their power-dependence advantage along the chain, best value supply chains exploit dependency as a means of fostering trust and commitment to fulfil supply chain requirements (Crook and Combs, 2007; Ireland and Webb, 2007). This indicates a dramatic change in the resource-dependence prediction caused by the realities of contemporary business, such as the need for collaboration.

2.2.2.5. Network Theory

The network theory (NT) provides a broader view of the inter-organisational interactions in a network environment. It highlights the dynamics of network environments and recognises the influence of partner-partner relationships on an organisation's operations (Halldórsson et al., 2007). By emphasising the notion of strong and weak ties, the NT states that a network resource view assists manager to develop a more realistic assessment of individual node resources and their implications for business. Resource accession and coordination are considered key triggers for inter-organisational connectedness, and are advocated to be embraced in today's turbulent business environment (Fawcett, Allred, Magnan and Ogden, 2009; Fayezi, Zutshi and O'Loughlin, 2010; Knoppen and Christiaanse, 2007).

It is important to note that NT pays significant attention to the fit between organisations that are planning to form cooperative relations (Halldórsson et al., 2007). This necessitates the alignment between the actors, activities and resources that constitute key network components (Håkansson, 1987; Harland, 1996). Moreover, the theory is useful for investigating trust and longevity in bilateral relationships (Gadde and Håkansson, 2001). By taking a network approach, organisations can design their supply chains so they can benefit from things such as the advantages of strong ties to build reliability, and weak ties to create flexibility to manage their responsiveness. A further implication of the NT is its usefulness for supply chain innovation by demonstrating network-wide knowledge-sharing mechanisms and management (Miles and Snow, 2007).

2.2.2.6. Relational Exchange Theory

The relational exchange theory (RET) centres on the idea of embeddedness, which suggests that cooperative parties act based on certain norms, as opposed to contractual obligations (Granovetter, 1985; Joshi and Stump, 1999). It emphasises soft control mechanisms to attenuate opportunism (Larson, 1992). That is, RET predicts that trust-based relationships are less prone to partners' opportunism (Granovetter, 1985). In addition, trusting relationships assist in dedicating resources to developing and maintaining relationships, rather than managing transactional tensions or abnormal behaviours in the supply chain (Joshi and Stump, 1999).

By extending the RBV of the firm, Dyer and Singh (1998) emphasised the importance of relational rents resulting from relation-specific assets, knowledge-sharing routines, complementary resources and capabilities and effective governance in cooperative arrangements. These are essential for building a sustainable competitive advantage for supply chain organisations. Overall, RET is significant to SCM because it provides a framework to manage relationship flows, which is important to facilitate resource exchange within and between supply chain organisations.

3. Research Methodology

This study presented and justified the research methodology that was adopted. The main objective of this study was to explore the Supply Chain Management in Africa, specifically the mining industry in Zimbabwe. The research philosophy that the study adopted was presented followed by a brief explanation of the research design and research strategy that the researcher made use of. The research population was then defined thereof which led to the sampling procedure that the study adopted. Consequently, the data collection methods for the study were outlined.

3.1. Philosophical Underpinnings of the Study

The study adapted a soft-positivism research philosophy and a phenomenological research philosophy. A phenomenology approach philosophy was adopted for this study because of its ability to deal with peoples' perceptions or meanings, attitudes, beliefs, feelings and emotions (Denscombe (2004). It focuses on how life is experienced not primarily concerned with explaining the causes of this but instead provides a description of how things are experienced and it allows use of past experience. It then allows the researcher to use frameworks such as the relational framework by Syed Ozbilgin (2009). The relational framework bridges the micro-individual, meso-organisational and macro-national levels of analysis, helping to place and understand phenomena in their peculiar macro national and historical contexts (Jamali, 2009). The relational framework helped contextualise the study of supply chain management according to local multilevel factors. It turns attention to the need to anchor supply chain management research in a specific socio-economic context, integrating insights into aspects of social and economic change, including institutional and legal developments (Syed and Ozbilgin, 2009). Moreover, it tackles the relational interplay of structural and agency level concerns helping to reconcile objective structures/ measurable attributes and processes with subjective experiences and interpretations (Syed and Ozbilgin, 2009). Soft-positivism provides a structured and flexible approach to qualitative research as it assists in conducting the data analysis with certain expectations based on a priori theory (Kirsch, 2004; Ravishankar, Pan and Leidner, 2011). The soft-positivist approach was chosen because of its ability to bring some prior expectations to the data analysis (Kirsch, 2004).

It must be noted that quantitative research methods enhance the objectivity of the study and they are also cheap, flexible and less time-consuming to conduct (Cooper and Schindler, 2011). Quantitative methods were used to collect data because they provide precise, quantitative, numerical data and are relatively less time consuming. Golobic and Davis (2012) argue that research in supply chain management has been criticized for its lack of methodological diversity and unwillingness to employ additional methods that may be more appropriate for theory generation and investigation of dynamic, complex phenomena. They noted that supply chain management research has relied heavily on designs using quantitative methods, such as surveys, experiments, and mathematical models. They further observed that the combination of qualitative and quantitative methods within a single supply chain study (mixed methods research) is rare, justifying the use of this research philosophy in this study.

This study is anchored on both quantitative and qualitative research data will be gathered from managers and policy makers associated with the Coal Industry perceive Supply Chain Management. This method of data collection will be complemented by thirteen in-depth interviews with Policy Makers which will collect qualitative data on their perceptions of Supply Chain Management theory its practice and its impact in Zimbabwe's coal sector.

3.1.1. Design Framework

A design framework was formed through contextualising the study in a natural setting through social constructivism paradigm. A design framework may be a research paradigm, a theory, a discussion of concepts or an analytical structure (Badenhorst, 2008). This research is a combination of these and is located in a design framework based on the social constructivism paradigm. Within this paradigm, the key concepts that informed the design framework are the implementation or practice of supply chain management theory in African settings; that is, the salient interplay of the micro, meso and macro level variables of supply chain management as they are practiced in coal mines in African settings having been originated mostly with western lens.

Figure 2: Design Framework
Source: Researcher's own work (2019)

3.1.1.1. Social Constructivism

Social constructivism is often described as interpretivism (Myers, 2010). Social constructivism is a meta-theoretical stance which posits that the construction of reality is significantly informed by influences received from social conventions, history and interaction with significant others (Robson, 2011).

Variable	Items Under Variable
Attitudinal Factors - culture - socialization and - institutionalisation	Attitudes towards the following aspects of SCM: - Planning strategically for SCM - Integration - Co-operation with 3PL partners - Operational Efficiency - Resource Planning - Cost Control - Forecasting - Production Planning - Inventory Management and Replenishment - Transportation Planning
Constraints Infrastructure Information systems HRM	Attitudes of respondents towards the following perceived constraints will be measured: - Resistance to change - Resource shortages - Skills shortages - Training - Inadequate infrastructure - Technology-related problems - Logistics Incompetence
SCM CONSTRUCTS - Collaboration - Intergration - Coordination	Attitudes of respondents towards the following the SCM constructs will be analysed. - Planning - Logistics - Shared vision - Infrastructure - Shared resources - Production Planning - Forecasting

Table 2: Design Framework Components
Source: Researcher's Own work (2019)

3.1.2. Paradigm

A paradigm is a basic belief system and theoretical framework with assumptions about, ontology, epistemology, methodology and methods. In other words, it is a way of understanding the reality of the world and studying it.

Figure 3: Dominant Paradigms

Table 3 shows the common paradigms in the field of research.

Paradigm	Positivism	Interpretivism	Critical Realism	Constructivism
Ontology	Reality is real and apprehensible	Multiple local and 'constructed' realities	Reality is 'real' but only imperfectly and probabilistically apprehensible	Objective reality exists beyond the human mind, but how it is perceived depends on culture and life experiences
Epistemology	Objectivist: Findings are true	Subjectivist: Created findings	Modified Objectivist: Findings are probably true	Epistemologically, reality can be captured empirically; however, acquired knowledge is context-bound by culture, time, and circumstances
Common Methodologies	Experiments/ surveys: Mostly concerned with testing of theory and verification of hypotheses	Hermeneutical or dialectical: Researcher is 'passionate participant' in the investigated world	Case studies and convergent interviews; Triangulation, interpretation is mainly qualitative but also quantitative methods	Positivist case studies design with important contributions from an Interpretivist analysis and also quantitative methods

Table 3: Dominant Research Paradigms

Adapted From Guba and Lincoln (1994) And Seddon And Scheepers (2006)

3.1.3. Methodology

Methodology refers to a system of methods used in a particular study area. According to Kothari (2004) research methodology is the systematic, theoretical analysis of the procedures applied to a field of study. Methodology involves procedures of describing, explaining and predicting phenomena so as to solve a problem. In other words, it is the "how" the process or techniques of conducting research. It encompasses concepts such as research designs, target population, sample size and sampling procedure, data collection instruments and data analysis procedure. Mixed method is a research strategy where the researcher combines quantitative and qualitative research methods, approaches, techniques and even language into a single study (Onwuegbuzie, 2004). Creswell (2003) has outlined the key elements of mixed method research strategy as follows:

- The sequence of implementation in data collection
- The weighting given to how data is collected and
- The way the data that has been collected is integrated, and
- The theoretical perspective guiding the overall research framework

This approach allows for a description of variables, an examination of the relationships among variables and the factor importance of each variable by the Case companies, and a determination of the cause-and-effect interactions between the variables.

A population is a group of all the subjects under study from which samples are drawn from (Sekeram and Bougie, 2013). Commenting on population, Creswell and Clark (2017) point that this is the researcher's 'universe.' The population of the study comprised of all coal mining companies in Zimbabwe.

Creswell and Clark (2017) observed that sampling involves the selection of a small number of subjects from a larger, more defined target group of subjects. They further noted that the information that is gathered from the small group allows for generalizations to be made about the larger group. The two major sampling techniques in research are probability sampling and non-probability sampling techniques. This study adopted non-probability sampling techniques. In non-probability sampling, the probability of each subject being selected from the total population is unknown and it also provides a range of alternative techniques to select samples from a point of subjectivity (Saunders, et al, 2016).

Purposive sampling is the non-probability sampling techniques that were adopted for the study. Purposive also known as judgmental sampling involves the selection of cases that are judged to represent similar characteristics (Creswell and Clark, 2017). Purposive sampling enabled the researcher to select cases that best assisted the researcher to answer the research objectives (Kumar, 2011). This technique was also adopted as it allowed the researcher to use her own discretion to select the subjects that she regarded as being typical to the population.

Most of the participants in this research were high profile managers and policy makers who are all professionals in the coal industry supply chain. There were 17 participants in the study who were drawn from different organisations. The participants were selected from the executive management professionals and other from those organisations/institutions.

Research population	Number sampled
Other Key Informants in Coal Industry	3
Managers of in Coal Industry Firms	9
Policy Makers in Government and Support Agencies	3
Transporters (Both Road and Rail)	2
Total	17

Table 4: Sampling Frame

Results obtained were generalised from the sample to the population of interest. This approach allowed for a description of variables, an examination of the relationships among variables and the factor importance of each variable by the Case companies, and a determination of the cause-and-effect interactions between the variables.

3.2. Research Design

There are myriad definitions of research design according to Cooper and Schindler (2011) who themselves defined it as a 'plan and structure of an enquiry with a sole purpose of obtaining answers to research questions'. Such a plan includes the entire value-chain of the research process from research question formulation to data analysis and interpretation. The study is premised in the onion approach by Saunders et al (2008). Kothari (2004) in concordant with Saunders (2008) stated that a research design is a plan, a roadmap and blueprint strategy of investigation conceived so as to obtain answers to research questions. The descriptive fitted well with this research because the researcher needed to delve deep to gain an understanding of SCM theory and practices in Zimbabwe.

This thesis employed the multiple case studies approach to allow for the three (3) coal producers within Zimbabwe (Eisenhardt 1989) guided by the soft-positivism paradigm (Kirsch 2004; Leidner, Pan and Pan 2009).

Figure 4: Research Onion

Adopted from Saunders, Lewis and Thornhill (2008)

In designing the case study, the following guidelines were followed: -

- The boundary of the theory used in the case study is carefully defined (Shanks 2002). With reference to this point, the researcher provided the boundary of the case study based on the design framework constructs.
- Phenomena are examined in a natural setting (Benbasat, Goldstein and Mead 1987). The phenomena are observed and investigated in their natural settings in the three producing coal mining Zimbabwe.
- Research questions were generated, cited by Yin (1994). For this thesis, the main research questions along with four (4) sub-questions were formulated.

3.3. Research Instruments

The researcher used a questionnaire, interview guide, document analysis, memoing and observations as data collection instruments for the purposes of this study.

3.3.1. Questionnaire

Acharya (2010) maintains that a questionnaire is a document that contains questions and other types of items designed to solicit information appropriate to analyze data. Questionnaires can either be open-ended or close ended. An open-ended questionnaire is one which permits a free response from the research participant while close ended questionnaires also referred to as fixed alternatives, provide a list of items that the respondent has to select from (Creswell and Clark, 2017). The questionnaire model that was used in this study included both open-ended and closed ended questions. The questions in the questionnaire required the respondents to rate both the importance of each supply chain factor and the perceived construct performance. The rating was done via a 5-point Likert scale. The average or mean value of the Likert rating scale was the popular usage indicator for measuring a construct's importance. The higher the mean value, the more important the construct. By arranging the variables in descending order with respect to the mean value of their importance, was is then possible to identify the critical supply chain management construct at each company

3.3.2. Interview Guide

An interview guide was used to solicit information from the key informants. Unstructured questions (open-ended) were asked in order to elicit more information from the participants. The reasons were mainly to provide depth to the research questions. Unstructured interviews enable the researcher to follow the unfolding events coming out of the interview and the participants were able to narrate supposedly giving the true picture of the situation being studied (Greef, 2005: 296). In collecting data by means of interviews, the researcher did not direct or influence the respondent's answers through the tone of voice or the rephrasing of the research question (Goddard and Melville 2005: 49). The interviews were recorded using an S7 smartphone gadget which has a recording application and later transcribed. During the interviews, the researcher jotted down the important points in order not to interrupt the interview process. Immediately after the interview, the researcher drafted the field notes from the points noted. Each interview was scheduled to last between 40-50 minutes, but some lasted much longer.

3.3.2.1. Interview Schedule

The interview schedule is shown below in Table 5.

Company	Respondent	Position	Date	Time	Member Check	Date
Co - A Coal Producer	Top Official	Chairman	August 2013	0900 hrs		1
Co - B Coal Producer	Top Official	MD	2013 August	1545 hrs		2
Co - C Coal Producer	Top Official	Chairman	2013 Sept	1300 hrs		3
Co - D Coal Producer	Top Official	MD	2013 Sept	1600 hrs		4
Ministry	Top Official	Minister				5
Ministry	Top Official	Perm Sec				6
Ministry	Top Official	D/Minister				7
Regulator	Top Official	Marketing				8
Chamber of Mines	Top Official	-				9
Co E	Official	User – MD/Buyer				10
Co F	Official	Driver				11
Company G	Employee	SC Mgr				12
Company. A						13
Company. B						14
Company. C						15
Company. D						16
3PL						17
Traditionalist	Chief					20

Table 5: Interview Schedule

3.3.3. Memoing

Memoing, according to Miles and Huberman (1984, p. 69), is another important data source in qualitative research that the researcher used in this study. As a cautionary measure against easy absorption in the data-collection process and failure to reflect on what is happening, the researcher used this method by recording what she heard, saw, experienced and thought in the course of collecting and reflecting on the process. The researcher maintained a balance between descriptive notes and reflective notes, such as hunches, impressions, feelings, and so on. As advised by Miles and

Huberman (1984) the memos (or field notes) were dated and later correlated them with the data. It may be important at this juncture, to mention that it is important to note that field notes are already “a step toward data analysis.” And the researcher used some of the memoing notes in the analysis of this study.

3.3.4. Document Analysis

Document analysis is where an investigator/researcher interprets gathered data by giving voice and meaning around an assessment topic (Bowen, 2009). Analysing documents incorporates coding content into themes similar to how focus group or interview transcripts are analysed (Bowen, 2009). A heading can also be used to grade or score document. Bowen sums up the overall concept of document analysis as a process of “evaluating documents in such a way that empirical knowledge is produced and understanding is developed” (2009). He was quick to mention that; “it is not just a process of lining up a collection of excerpts that convey whatever the researcher desires”. The researcher must maintain a high level of objectivity and sensitivity in order for the document analysis results to be credible and valid (Bowen, 2009).

There are many reasons why researchers choose to use document analysis. Firstly, document analysis is an efficient and effective way of gathering data because documents are manageable and practical resources. Documents are commonplace and come in a variety of forms, making documents a very accessible and reliable source of data. Obtaining and analysing documents is often far more cost efficient and time efficient than conducting your own research or experiments (Bowen, 2009). Also, documents are stable, “non-reactive” data sources, meaning that they can be read and reviewed multiple times and remain unchanged by the researcher’s influence or research process (Bowen, 2009, p. 31)

The researcher found un-observable data from document analysis. The researcher reviewed documents that were published and to a lesser extend unpublished. Monthly and Annual Reports for published accounts and documents were reviewed. data on Ministry returns on productions levels, export documents, CD1s, monthly and annual reports for coal mining companies and contracts were also analysed.

3.3.5. Observations

Driscoll (2011) argues that the logical seeing of visible occurrences or behavior in a standard set is what observations are. There are different types of observation and these include participant observation and unobstructive observation. The study made use of participant observation. The researcher interacted with the the participants and was part and parcel of the participants’ community. The researcher adopted participant observation because observations minimize artificial behaviour from the subjects.

3.4. Pilot Study

Following review of extant literature a number of gaps in SCM theory and practices were picked up from Pillay and Mafini (2017) and Jacobs and Mafini (2019) The fact that literature holds it that there is no unifying theory of supply chain management as evidenced by the prolific research output generated annually aiming to just do that; compelled the researcher to start with a pilot study to give direction to the research. The researcher saw it fit to conduct an exploratory study to get a better understanding of supply chain role players’ experiences with existing SCM theories and the extend of its applicability and practice by coal mining companies in Zimbabwe to inform the initial design framework development. The process is consistent with the soft-positivist position adapted by the researcher informed by literature as recommended by Yin (1994), the study used an exploratory method to obtain some insights into the basic issues being investigated.

The pilot study was then carried out using a case study approach. As postulated by Yin (1994), being ‘a suitable method for an early stage research study based on interviews with key informants is commonly an acceptable method’. A view supported by Stuart et al. (2002), ‘in the discovery stage when design development is in its formative stage, the case researcher explores concepts in the real world by looking for patterns that are insightful and interesting, and offer the possibility of providing predictive, explanatory power and understanding’.

The case selected for the exploratory study was on one of the longest established coal mining companies identified henceforth as Case A. The exploration criterion for the case were; - the company has been in existence for more than 100 years. Its performance and history should give sufficient maturity to explore the practice of supply chain management. The company’s Managing Director of Case A was approached and agreed to participate in the study. Since accessibility is a critical issue in a case study research design, written authority was sort and granted. Permission to access the company for data collection purposes was first obtained from the Managing Director, who became the gatekeeper for liaising with the managers of various departments. Although the Managing Director provided initial access to the exploratory study, he was not involved in the interview sessions.

The purpose of the pilot study was to gain insights into the extent of organisation’s experiences with SCM theories to ensure that the research design was informed by both prevailing theories and a fresh set of empirical evidence, Yin (1994). The other intention was to gather data about SCM concept practice and theory by participating coal mines and Role Players in the Industry. Have insight of the participants attitude towards the broad phenomena before the writer could delve deeper into issues of SCM and the constraints that they were facing in implementing of the philosophy. More importantly, the lessons learnt from the exploratory study were indispensable for informing the development of the initial design framework. The objectives of the exploratory study were two-fold:

- To explore users’ experiences in SCM and difficulties they encounter while using existing SCM theories and to identify factors that inhibit SCM practice.
- To explore organisations’ experiences in coping with SCM developed outside their settings without an African lens.

- Explore constraints which coal mining companies were facing in executing their duties and find out if these were in any way related to SCM issues.

The primary data collection methods used in the pilot study were semi-structured interviews, observation and an exploratory survey. Data were collected in four (4) weeks from (8 July to 09 September 2013). The interviews varied in length from 30 minutes to an hour and were conducted by using interview guides. All interviews were recorded and transcribed.

For purposes of making sure that the respondents and the researcher were on the same page in as far as understanding and interpreting the contents on the structured questions. The questions were tested with four (4) senior managers from the coal producers and transporters: - one from road and one rail. Two (2) participants from consumers' (end-users) side as beneficiaries of the coal commodities as they were part to the supply chain. Results showed that some participants understood the questions and some did not. The researcher also carried out some verbal interviews with a different group of participants from supply chain role players and results showed that some were very ignorant of the SCM concept and therefore, showed dis-interest in the conversation. The others were very conversant and even proffered suggestions for improvement to the existing theories which were an indicator of how the phenomena was or is perceived to achieve and how it should be tailor made to suit different situations. As such, this helped to adjust the approach and made sure that; appointments were made, and respondents were given ample time to make the participants understand the motive of the interviews and the value their participation were going to give to the whole exercise thereon.

Results from the pilot study helped the researcher to redesign the questions and to improve on the approach to interviews. Finally, three (3) Senior Managers from different coal mining organisations. Two Executive Managers from the transporters side and End Users were also given the final script (interview questions) and they commented positively. Second round of interviews were carried out with different set of participants and the initial two groups who had shown dis-interest in participation and response were overwhelmingly positive and progressive.

3.5. Data Collection Procedures

According to Owen and Jones (2008), data can be classified into two groups and these are primary data and secondary data. Bryman and Bell (2007) explain that primary data is the data that is gathered first hand by the researcher and secondary data entails data that was collected by other researchers and is now in the form of literature, documents and articles. The researcher made use of both sets of data. For primary data the researcher used questionnaires, interviews, observation, content analysis, memoing. Secondary data was drawn from Institutional documents from producers eg, reports, published accounts, internal journals publications and journals from chamber of mines and government gazettes.

4. Introduction

The purpose of this chapter was to present the findings of each of the three-case studies A, B and C. The chapter presented how data were transcribed coded and analysed. Findings from data collected from the three selected companies was then interpreted in relation to the research problem. Data presentation for this study started with an overview of the case study companies followed by cross-case analysis. Finally, the chapter concluded with an analysis of the research findings.

4.1. Summary of Profile Companies as Depicted by Case A, B, and C

	Company A	Company B	Company C
Background			
Industry Sector	Coal Mining	Coal Mining	Coal Mining
Business Segments	Coal and Coke	Coal	Coal
Incorporation	1902	2010	2012 to confirm
Number of Employees	2300	500 Permanent	15 to confirm
Core Products	Coal- peas, nuts, cobbles, NPD, Fines, Coke – Met Coke, Foundry, Breeze, Coke Nuts, Coke Peas and Coking Coal	HPS, Peas, Nuts, Cobbles, Fines	HPS, Peas and Fines
Additional Products	Crude Tar, Crude Benzil, and Gas	-	-
Shareholdership			
Number of employees SC dept	7	None outsourced to a third-party vendor	None outsourced to a third-party vendor

Table 6

Figure 5: Organogram Profile Case A

4.2. Contribution to Theory

This thesis contributes to an empirical analysis of supply chain management in Zimbabwe. There was a Gap in literature. This study fills that gap by exploring SCM in an African setting using an African lens. Thus, this contribution sets the foundation for further research on SCM in specific sectors in Zimbabwe. And constraints using similar method in different contexts or applying different methods such as quantitative studies to confirm findings in the context of this study.

There were constraints identified and categorised in this study. For example, one of the themes 'logistics barriers', which has sub-themes and issues listed under its category. The different aspects of the sub-level issues allow for multidimensional theoretical analysis. Considering the Case under study is a land locked and developing country. This prepares the foundations for academicians to use these constraints for further research on barriers to supply chain management, in different regions or via different methods.

Additionally, included issues in this research have been Adapted from discussions and arguments of previous research. All of the issues in this study have been reviewed and discussed in fragmented pieces of work and not in the context of such a culturally different market. Most studies on barriers tend to primarily focus on Western countries. However, there is limited evidence about supply chain barriers in a Zimbabwean context. This research brings barriers together in a collective work in an African context. Findings clearly show that the theoretical underpinnings do not apply uniformly all over the world.

Extant Literature reviewed on supply chain theory and practice emphasises other factors such as integration, coordination and information sharing. However, this study has shown that the economic situation and culture are prominent factors, especially when it comes to developing countries and especially the case study country. Therefore, this also adds to the understanding in supply chain practice and constraints, which have to be taken into consideration in the study of supply chains in this specific context. The study also presents the interrelationships of all included factors on effective supply chain, with a consideration of the cultural influence.

Another factor which came out of this study is that; in addition to the normal barriers to SCM, a country like Zimbabwe has a number of other constraints which were not picked up in reviewed literature, additional barriers not normally presented. These are the cultural influence over purchasing and supply, Gvt Policies and 'disregard of ethics e.g 'corridor contract' which may be related to economic situation prevailing in the country. Hence people tend to be selfish and think of their pockets over work ethic, and organisational structure. The absence of these can be an indication that these variables are not as pronounced or rampant in other settings. However so, the identification of this gap provides a fertile ground for future research.

4.3. Contribution to Practice

This study will inform organisations in and out of Zimbabwe with a comprehensive analysis of challenges facing supply chain management in Zimbabwe. The findings of this research present the foundations of risk assessment to supply chain managers, to help them make well informed decisions. Organisations that intend to enter the Zimbabwean market need to consider the constraints in making that decision. This research provides details on constraints to effective SCM operating in the country. Usually, investors are presented with the advantages which are important; however, informed decision making requires a clear analysis of the challenges as well. This is because knowing expected challenges helps with setting plans, alternative plans, and risk assessment. Additionally, not all existing organisations in the Zimbabwean market face identical challenges all the time. Different businesses have different concerns with their supply chains. Therefore, this study can help organisations in setting future plans, with information on expected challenges arising from business improvement or expansion.

Practitioners can also benefit from the identification of barriers, as they can serve in training employees. The identified barriers can work as a useful guide to supply chain managers during the training activities that aim at improving supply chain effectiveness. The barriers provide a reference for supply chain trainers and help them focus their attention and resource allocation for training plans. This also helps organisations to focus on the most important challenges that can help them maximise benefits, with less effort.

This study identified culture as one variable which needs to be considered when doing business in Zimbabwe. Foreign investors need to be aware of several cultural requirements not normally present in Western countries, in relation to social relationships. Businesses need to consider training their staff with respect to the cultural specifications of the country such as business operating times and holidays observed in the Country. In addition, interpersonal relationships and connections play important roles in running mining businesses in the country. Common in Mines are the

relationships with the Chiefs and their cultural traditions and rituals. Majority of mines have set up public relations units in their structures to take care of this aspect.

5. Summary of the Research Findings

The findings from the case studies revealed that the uptake for SCM in the coal mining companies is slow and rather disappointing particularly given some twenty plus years of academic research in this field. Although SCM concepts seem to be geographically generic in application evidence from the study indicates that; the setting directly affects the approach's undertaking in theory and practice. The issue of national culture plays a role in shaping and practice of SCM. Few women in Managerial and technical jobs are employed in mines in Zimbabwe. Women are found in services departments only with no representation on the managerial level and technical jobs.

Maintaining a good working relationship with suppliers was described as an important lever in strengthening the procurement function, by means of information sharing and shared values to support negotiation and contracting. Abiding by contracts and honouring financial obligations came out as very important aspect in all the cases studied. These findings are in line with literature regarding SCM information sharing and supply chain performance. Intra-team collaboration and the engagement of practitioners was seen as an enabler of SCM performance in the studies considered in the researcher's review. The results from the study showed that in actual fact situation on the ground point to a low SC performance and ineffective purchasing and supply policies. Challenges like lack of funding and flexibility in purchasing processes were seen to be common in the three companies. Main external challenges are poor infrastructure, prevalence of road transportation, economic and political instability. Key among the internal issues was that of culture, which stood out to be the main challenge. Internal challenges that companies have are related to organization culture that leads to poor communication, trust, need for technology enhancement, and skilled labor.

The economy also has been seen to have an effect on SCM practices. The political instability has resulted in the loss of investor confidence and has caused many investors to pull out of the country. The informal sector in Zimbabwe runs the Zimbabwean economy currently and consequently the formal sector has been suffering as numerous companies have since closed shop or are incapacitated.

6. Conclusions of the Research

It is clear from the study that in order to get the implementation of supply chain practice right, it is important to understand the difference between this region of the world and those who are more advanced in the practice of modern supply chain practice. Again, it is also important to understand the potential differences between the theoretical constructs that have been well studied in more advanced supply chain regions and those that might exist in Zimbabwe. To support these positions this study has explored the links between supply chain barriers and supply chain practice in Zimbabwe. In completing this study barriers already identified in the literature have been found to also apply in Zimbabwe.

This research reinforces the significance of culture in managing supply chains that are operating in Zimbabwe. This can explain how cultural traits can play a significant role in obstructing or slowing down supply chains. This notion is further explained by the qualitative data analysis, where interviewees identified culturally specific causes to supply chain management obstruction for instance, low levels of acceptance to supply chain practices, can be regarded as barriers to effective supply chain management practices in Zimbabwe. Furthermore, low levels of supply chain management education, knowledge, and training were directly linked to culture and it was found that supply chain performance was negatively influenced by them.

The study reinforces the significant influence of organisational structure on supply chain performance in Zimbabwe. It explained how organisational structure can play an important role in obstructing or slowing down effective and efficient supply chains. This notion is evident where respondents identified challenges in relation to the structure of the organisation. In one organisation Case A where the organisational structure issue is one that placed different divisions of the supply chain under dissimilar departments, which slows the flow of the supply chain. In another case B supply chain is under a contractor and not on the main structure.

The research also shows the significance of sharing information in supply chain management, in organisations operating in Zimbabwe. This notion is supported by interviewing supply chain management experts in Zimbabwe, where collected data revealed that information sharing issues can slow or obstruct the flow of supply chains. For example, not using information systems at one end of the supply chain, forces dealing via the ordinary means, which can cause delays in lead times. In addition, safeguarding confidentiality is another issue facing information sharing.

Even though candidates considered information sharing important to the supply chain they were very sceptical about what information to share and to what extent they can go in sharing data with supply chain partners. Moreover, supply chains face difficulties with incompatible information systems and lack of unified and shared item description which make the connection between supply chains reasonably uneasy.

7. Recommendations

It has been noted from literature that companies can no longer afford to operate in isolation (Salem (2011)). The complexity of the modern globalized business environment has made SCM an important aspect of success for modern firms and organizations. It emerged that there is need to work together to achieve the SCM excellence and achieve efficiency and effectiveness of one's organisation. It is recommended that: -

- The Government should come up with Policies that attract investments in the country. The country's ZIMASSET Economic Policy can be leveraged because it seeks to establish the rich mining resources of the country as the

backbone. Current Policy Framework attempted to do same but left out specific legislation for specific mining activities e.g natural gas. Need to leverage the current's free economic zone concept as this has been approved. This will allow the companies to quote local and international investors.

- In line with one of the themes which emerged in the study which one of them is Shared vision, the researcher would recommend that: -
- There be integration of plans among the participating companies, the key role players in the same chain. Hold joint meetings where they discuss their projected production and movement to various customers as the main transporter is NRZ. The extent of joint planning is expected to bear heavily on the success of the supply chain. Different components may be emphasized at different times during the life of the supply chain. Owing to a very wide spectrum of coal usage, ranging from power generation to steel production to infrastructure and commercial usage, there is need to improve the quality of coal by washing, etc to reduce the environmental impact, enhance coal quality and increase process efficiency.
- In the backdrop of increasing coal demand reliance on coal for power generation, steel production and cement manufacturing, collective effort by the government, power producers, coal miners and service providers are necessary to ensure modern and sufficient infrastructure.
- National Railways of Zimbabwe and industry need to work in close collaboration to plan development of infrastructural facilities as per requirements with government taking a central role to bring these organisations together.
- There is need to establish a single window clearance process for customers instead of the current scenario where there are five different entities clearing one same customer. The process is very long and sometimes taking upto minimum 5 days.
- Organisations should jointly carry out quarterly reviews to enable timely adjustments to projected plans. This has an element of flexibility considering the market dynamics that may come into play. All the supply chain companies can align their plans for the benefit of all. This will develop a culture of working together and each organisation will gain confidence and may improve the performance of one another.
- There is need to re-look at current policies and align them to global trends. As firms interact along the supply chain to achieve competitive advantage and win the orders at the bottom line, all members of the chain need to synchronize their strategies toward the end customers' direction. This means supply chain strategy and competitive advantage must fit together and the consistency between customer priorities and supply chain capabilities must exist.
- In order to achieve the strategic fit, firms should be able to understand and wisely exercise their customer needs to match their service requirements.
- Information exchanges and upward and forward linkage among the supply chain members would result in effectiveness and are manifested in lowered costs, reduced lead times, bullwhip effects and shortened delivery time. Costs would be lowered as the reliability in the delivery system improves. This could be improved by implementing e-ordering systems both for product and wagons from NRZ as the main bulk carrier which facilitates access to information and connectivity. Fast and easy ordering as well as the user-friendly inventory systems would determine the level of the reliability of the supply chain management performance level.

8. Further Research

The research revealed challenges of SCM in the coal mining companies in Zimbabwe as evidenced by findings from Case A, B, and C. Furthermore, it was found out from the study that cultural aspects influence the way business is done and create additional challenges to the supply chain management in coal industries organisations. Future research may aim to explain the ways that culture constructs are constructed by the behaviours and experiences of its members. Future research may be directed to other industries within the country as some of them may have specific characteristics and differences in supply chains. As mentioned in chapter one (1), the country was under serious economic and political upheaval for the past two decades. It is recommended that further research be undertaken in the long run to analyze and evaluate SCM for further details. Cross cultural comparison would provide insights from different perspective into supply chain management practices. More-so the research could be extended to countries outside Zimbabwe or even outside Africa taking into consideration the cultural contexts. The comparison may contribute to the research findings and support the research strength.

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