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Managing and Controlling Public Sector Supply Chains

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1. Introduction

Supply chain management (SCM) represents a significant change in the way that organisations view themselves and has witnessed values created through the integration and coordination of supply, demand and relationships in order to satisfy customers in an effective and profitable manner both in the private and public sectors. The concept has seen interest among organisations (Burgess & Singh, 2006) including the public sector (Hendricks & Singhal, 2003; Gansler et al., 2004; OCG, 2005; 2006; Ambe, 2006; Matthee, 2006; Essig & Dorobek, 2006; Migiro & Ambe, 2008; Ambe, 2009). As a result, a number of studies on SCM have been undertaken in many different industries and sectors. However, majority of these related studies recognize that an effective SCM is a powerful tool to achieve cost advantage and a more profitable outcome for all parties within and beyond any organization (Zsidisin et al., 2000; Davis, 2008). It is for this reason that the concept has gained interest in the public sector in recent years (South Africa, 2005; Blanchard et al., 2008; Kumar, S. et al., 2008; Pan & Pokharel, 2007; Migiro & Ambe, 2008; Ambe, 2009). For example, countries such as the UK, US and Canada have for long employed SCM in the management of their procurement and logistics (OCG, 2005) as well as South Africa (Ambe, 2009) among others.

Despite the interest and employment of SCM in public institutions, Humphries and Wilding (2004) assert that much has not been done compared to the private sector. According to Korosec (2003), majority of SCM literature that does exist focuses primarily on private sector transactions or on international governments owing to the fact that SCM has been used in both of these arenas for almost two decades. Notwithstanding this, many professional government organizations have indicated that SCM could hold great promise in enhancing public procurement systems. However, Essig & Dorobek (2006:1) argue that the management of public supply chain raises various research questions that need to be answered. The chapter explore the concept of supply chain management in the public sector. The chapter utilises a case study of the SCM in the South African public sector to differentiate between public versus private sectors supply chains. It presents the critical components, features and importance of public sector supply chains. Furthermore, the chapter portray the need for supply chain improvement and the employment of performance measures in the public sector. A balanced scorecard as a supply chain performance indicator is suggested for application to the public sector supply chain. The chapter contributes to literature on the application of public sector supply chains.

2. Supply chain management in the public sector

Supply chain management (SCM) is a term used in business literature to refer to the control of materials, information, and finances as they move in a process from supplier to manufacturer to wholesaler to retailer to consumer. The term supply chain is inspired by the product flow that should be delivered to citizens or businesses by passes through several organizations. According to the Council of Supply Chain Management Professionals (CSCMP, 2007), "Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. It also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers." In a functional sense, this focus on activities and relationships implies logistics, marketing, purchasing/supply, and production/operations are involved in SCM.

In essence, SCM integrates supply and demand management within and across organizations. A supply chain consists of all parties involved directly or indirectly in fulfilling a customer request. It includes all functions involved in receiving and filling a customer request. These functions include but are not limited to new product selection, procurement, marketing, operations, distribution, finance, and customer service. A supply chain, as opposed to supply chain management, is a set of organizations directly linked by one or more of the upstream and downstream flows of products, services, finances, and information from a source to a customer. Managing a supply chain is 'supply chain management' (Mentzer et al., 2001). Each stage in a supply chain is connected through the flow of products, information, and funds.

In the public sector, SCM is concerned with the "co-ordination of all parties involved in delivering the combination of inputs, outputs or outcomes that will meet a specified public sector requirement." These parties include external suppliers, partner organisations, and internal corporate service units both inside and outside the organisation. The supply chain may be inbound into the public sector. That is an operational requirement for internal customers for example, or it may be outbound from the public sector. That is in place to deliver wider organisational objectives to provide services for delivery to citizens, or a combination of both. Supply chains in the public sector addresses different focus areas. The focus of SCM can differ from government sector-to-sector and SCM can differ from industry sector-to-sector. An example of a government sector to sector focus area could be in the health sector, where the focus may be more on logistics and the effective movement of goods and services in and out of hospitals whereas SCM in the education sector may focus on streamlining the chain through which teaching materials are delivered to students. The shape of the supply chain and the supply chain management processes employed will vary considerably depending on a range of different considerations (OGC, 2005).

Public sector SCM offers a reference framework for the composition of public sector supply chains and multilevel networks (Migiro & Ambe, 2008). Actors in public sector supply chain comprise (1) private firms which receive orders from public sector agents, (2) accounting officers and (3) policy-makers. The SCM in the public sector not only concentrates on the question, which institutions cooperate in goods and services, but also how these enterprises are involved with enterprises operating at other levels. Thus, analyses of intra-network-relationships as well as analyses of inter-network-relationship are essentially necessary elements of the concept.

2.1 Importance of supply chain management in the public sector

Supply chains and their associated management processes often remain invisible to the public sector client. Government has traditionally focused on the contracting process with first tier suppliers, the supply chain members with whom the procuring organisation directly contracts. According to OGC, UK (2005), the 2004 Public accounts committee Report on 'Improving departments' capability to procure cost-effectively' highlighted that only 17% of departments, agencies and non departmental public bodies analyse their suppliers' supply chains as part of their criteria for selecting suppliers and thus suffer from a lack of assurances about the reliability and resilience of their key suppliers' subcontractors. In 2004, OGC undertook a survey of central civil government (CCG) departments and key suppliers to the public sector looking at activities and attitudes in relation to SCM. The findings reveals that 68% of respondents did not know how their main suppliers advertised opportunities to potential new entrants to the SC, while 36% of respondents sought feedback from main suppliers' subcontractors during contract delivery. In a survey conducted in the local government sector by IdeA in 2004 to evaluate progress against milestones for the National Procurement Strategy for Local Government in the UK, denoted that 41% of councils report that they invite bidders for partnership contracts to demonstrate their track record in achieving value for money through their use of the supply chain, including use of small firms and only 39% track suppliers' use of the supply chain in contract management.

In the 'A New World of Risk' by Zurich Municipal (2009), a survey conducted by the House of Commons Public Accounts Committee's 2009 report, on Central Government's Management of Service Contracts, indicated that the extent to which central government tests the value for money of ongoing services and contract changes is variable. 41% of contract managers do not test the value for money of new services purchased under an existing contract. Planning and governance is one of the weaker areas of contract management, and 30% of contracts where suppliers were dealing with personal or security information did not have a risk register. In the Republic of South Africa (RSA), report on Opportunities for Reform of Government Procurement and Joint Country Assessment Review (CPAR) conducted by the World Bank during 2001/2002 indicated that there were divergent interpretations of government's objectives and strategies. The difficulties highlighted was that, there were inadequate provisions to capacity building for disadvantaged enterprises to successfully compete for government contracts. Also, the preferential procurement policies were not clearly formulated and targets were not met. The performance of these initiatives did not take place in a holistic evaluation environment. Furthermore, the report revealed that the effective and efficient financial management within government was questionable (National Treasury, RSA, 2005).

Whilst it is relatively common, especially in complex procurements, for the first tier supplier(s) to manage the supply chain on behalf of the contracting authority, relatively little effort has been made by the public sector to improve its visibility of SCs and its ability to exert influence over how the first tier supplier(s) manages this chain, except perhaps in the construction industry. The limited effort in other industries to improve supply chain performance could be for reasons of simplicity, resource constraints, a lack of understanding or perceived need for understanding, or perhaps even a perception on the client side that the policy and legal framework does not allow for such activities. Increasingly, the complexity of many contracts, a greater appreciation of the need to improve competition and innovation, and an increasing awareness of the impacts of terrorism or natural disasters

on SCs and business continuity, means that wider supply chain issues increasingly need to be taken into account in seeking improved efficiency and value for money. The supply chain is an area of strategic importance to an organisation due to the significant percentage of overall cost it accounts for. But is it strategic? In the commercial world companies seek to create competitive advantage, lowering their cost base to contribute to their bottom line, that is profit. In the public sector the cost advantage gained through the procurement function contributes to lower costs for the organisation, enabling funds to be diverted to frontline services such as hospitals and schools. This means better value for money for public sector shareholders that are taxpayers.

As noted by Ambe (2009), countries such as the UK, US and Canada have long employed SCM in the management of their procurement and logistics. Gansler et al. (2004: 4) acknowledge that the Department of Defence (DOD) in the US have minimised cost through lead time in the management of its logistics by employing SCM best practices. Also, the Office of Government of Commerce (OGC) in the UK releases year to year updates about best practices of SCM in the public sector. Luby [Consultant for Department of Defense Supply Centres and Defense Supply Chain Leader with IBM Consulting Services (2004)] noted that “the key to modernizing SCM in the private sector has been internal and external digital integration, including new linkages, procurement and finance operations. He however, suggested that governments can and must do more to adopt available and proven tools for implementing a modern supply chain. These include: instant worldwide communications; interoperable, flexible and secure information technology; remote diagnostics and automated decision-making aids and employ modern, high-speed transportation (Essig & Dorobek, 2006). Streamlining and modernising government supply chain can result in substantial cost savings as well deliver-time improvement (Gansler et al., 2004).

According to Essig & Dorobek (2006), the integration of SCM in the public sector is playing a critical role in optimising logistics support and improving the management of secondary inventory. All governments attempt to promote efficiency in the public sector. People want to see efficient financial management. One of the ways governments in several jurisdictions are attempting to significantly improve efficiency in the delivery of public-sector services is through the introduction of supply chain management (SCM) best practices. Citizens expect their public services to operate as an efficient, seamless and effective system. Governments, along with its partners, through SCM are trying to ensure this is happening. If vital amounts are spent needlessly on back-office processes, fewer amounts are left to be spent on classrooms, hospital wards and lecture halls. It makes sense, therefore, that if there are better ways for the public sector to plan, source, move and pay for goods and services, these should be examined and implemented.

There are a number of clear benefits to the public sector for effective management and controlling SCM. Some of the clear benefits include:

- **Better risk allocation.** Effective risk allocation is a critical consideration in procurement. Risk should always be allocated according to the party best placed to manage it, and a better understanding of the way in which the requirement can be delivered.
- **Greater visibility.** Visibility creates subcontracting opportunities for a diverse range of organisations that can bring increased competition, dynamism and particular skills or strengths to the public sector. This can increase competition and allow organisations with particular skills or strengths to get involved in the public sector marketplace.

- **Greater opportunities for innovation.** Supplier innovation in the SC can contribute to better quality, faster delivery and reduced whole life costs. Effective SCM offers strong potential for innovation to be released through the supply chain.
- **Better-defined requirements.** Early supply chain involvement shapes business need through market sounding.
- **Improved ability to identify risks or bottlenecks.** In contract delivery, greater authority creates awareness of exactly how the contract is going to be implemented and the key SC dependencies.
- **Better quality.** Solutions offered by suppliers as opportunities can be more easily identified in their supply chains to improve quality, increase delivery times and reduce costs.

More effective use of the supply chains contributes to the wider agenda of improving efficiency and value for money in the public sector's commercial activities, by promoting competition, not just at first tier supplier level, but across the wider supply base and also encouraging more efficient management of suppliers.

2.2 Need for controlling in public sector supply chains

There are enormous challenges in the application of SCM both in the private and the public sector management. Some of the challenges that need to be addressed for successful management of the public sector supply chains include: tension between citizen and customer requirements, cost pressure in public supply chains, and complexity of multidimensional supply chains as reasons for a need of controlling in public supply chains.

2.2.1 Tension between citizen and customer requirements

In the private sector, SCM as a concept, points to increasing demands for customer proximity as a key objective to be achieved through controlling (Jehle et al., 2002). In the public sector, the need for controlling is derived from the complex relation between citizens' general demand for public goods and the individual citizen's willingness to pay for provision of good. Citizens have multiple differing interests – some of which are trading off one another. Citizens as taxpayers demand economic utilization of public resources (Brösel & Keuper, 2004). These reveal a serious tension between citizen and established SCM's assumptions. Due to non-conclusive exchange relationships, citizens become most frequently 'forced' customers. The central benefit of rewarding the entire network with a customer's positive purchase decision provided by SCM thus loses its effect in public supply chains. Citizen/Customers' demands are understood in term of a society's interest in public goods. However, due to the peculiarities of public goods and the resulting problems of collective action, it is difficult to assess citizen/customers' demands by their willingness to pay.

2.2.2 Cost pressure in the supply chain

A major reason for controlling given by (private) SCM apart from the demand for ever increasing performance is the mounting pressure towards cost reduction. Well-devised controlling for the supply chain can yield both cost reduction and economization effects (Jehle et al., 2002). Cost pressure in the public sector results from legal regulations prescribing economic utilization of resources. The frequent failure of administrative agencies to integrate single policies into coherent strategies instead of resorting to an indiscriminate distribution of means results in inefficiency and waste of resources

(Bergmann, 2004; Scherer & Alt, 2002). Taking the public sector perspectives into consideration, cost pressure in public supply chains are derived from legally prescribed economic utilization of resources on both network levels of political governance and public administration as well as from the pressure to reach 'competitive advantages' on the network level of private enterprises within public supply chains.

2.2.3 Complexity of multidimensional supply chains

As denoted by Essig & Dorobek (2006), SCM asserts an increasing need for controlling in private sector to counteract the rising complexity of goods and services. It is also used to accelerate dynamics and ambiguities that go along with it by improving transparency and manageability. In the public sector, the need from a lack of strategic considerations: a deficit in public agencies' consciousness for strategic implications of single decisions leads to spontaneous and unintentional creation of programs that take long-term effects by setting paths for future decisions. Public supply chains compared to private ones in addition consider the level of political governance as well as the level of public administration. This multidimensionality adds a further level of complexity to the already existing problems of coordination on the network level of private enterprises that correspond to those established by the private sector. Deficits in strategic consideration on the level of political governance may produce sub-optimal and/or unintended outcomes on the administrative level. The administrative level in turn is directly affected by the increased complexity in the fabrication of goods and services and the resulting effects on the level of private enterprises - requiring for instance a high degree of technical expertise (Essig & Dorobek, 2006).

2.3 Features of public sector supply chains

Public sector SCM focuses on **network** of institutions, which are interlinked vertically, and horizontally to add value (Essig & Dorobek, 2006). Characteristically, SCM takes place in a multi-level-network context. Departing from established Private-SCM, this approach includes to its focus both the (network-) level of political governance and the (network-) level of public administration. Public sector SCM takes the distinction between supply chain efficiency and supply chain effectiveness. This distinction results from the assumption that public spending is subjected to criteria of efficiency. The concept of efficiency is a characteristic trait of public management. Public SCM supports this **target** by adding to reorganization and optimisation of entire public supply chains. Efficiency in the terms of public sector supply chains is targeted towards the demands of the end customer, the citizen.

Public sector SCM is considerably more complex. The public in accordance with methodological individualism citizens, to be 'customers' of the public supply chain network, a supply-chain-oriented approach to analysing **flows** of services, information and finance becomes possible. Customer demands are conceptualised as the public's, citizens', interest in public goods, for instance domestic order or national security (Budäus & Grüning, 1997). Essig & Dorobek (2006) noted that it is, however, difficult to calculate customers' demands through payment reserves due to the characteristic peculiarities of public goods. The demands, instead, are articulated according to the democratic principle through elected representatives (level of analysis: political network). Payment **flows** occur by way of taxes and duties. Thus delivered goods and services affect citizens' individual utility ratio, for instance by meeting their demand for peace. Which public goods and services a public supply chain delivers well depends on the citizens' aggregate payment reserves.

Furthermore, public sector supply chains' network-centered perspective requires an account of the **management** level that accomplishes inclusive coordination of public SCM. The government as head of the executive branch represents the political network level in an organizational sense on even same level; parliaments (legislative branch) provide checks and balances in terms of control and criticism of governmental activities. SCM takes the role of a strategic planner. This includes for instance the consideration of long-term effects (outcome of the multi-level network) and strategic objectives of public action and legislature (Thom & Ritz, 2000). Administrative agencies, representing the subordinate levels of the executive branch, are commissioned to implement the actions and legislature passed by the political network level. This administrative network level is responsible for outcomes that are within the limits of both the output demands and the budgetary restrictions imposed by the political network level (Thom & Ritz, 2000). Thus, the administrative level serves as intersection between the public sector and the network level of private enterprises. Due to social responsibility it is irrelevant whether implementation is reached through administrative action or commercial (private) suppliers' service. Table 1 summarises the features of public sector supply chains.

Feature	Description of feature
Network	Network composes of institution (Both vertically and horizontally)
Target	Key target is to achieve efficiency and effectiveness in public management
Flows	Have complex flow of information, service and finance.
Management	Headed by government and guided by legislations, laws and regulations.

Table 1. Important features of public sector supply chains

3. Case study: An examination of SCM in the South African public sector

3.1 Background

The South African public sector supply chain has undergone transformation through the introduction of procurement reforms. The procurement reforms started in 1995 and were directed at two broad focus areas, namely the promotion of principles of good governance and the introduction of a preference system to address socio-economic objectives. SCM is an integral part of prudent financial management in the South African public sector management. It introduces internationally accepted best practice principles, while at the same time addressing Government's preferential procurement policy objectives (OGC, 2005). SCM aims to add value at each stage of the process - from demand of goods or services to their acquisition, managing the logistics process and finally, after use, to their disposal. In doing so, it addresses deficiencies in current practice related to procurement, contract management, inventory and asset control and obsolescence planning. Therefore, the adopting SCM policy ensures uniformity in bid and contract documentation; and options as well as bid and procedure standards, among others, will promote standardisation of supply-chain management practices (National Treasury RSA, 2003; Mkhize, 2004).

3.2 Legislative framework governing SCM

The SCM process is guided by policies and legislations. Without a legislative framework, political representatives will not be able to make informed and intelligent decisions. The legislative requirement of the SCM warrants each department or entity to create a SCM unit and to implement supply chain management policy (SCMP) as stipulated by the SCM policy. Some of the legislative framework that guides the SCM policy includes: the Constitution; Public Finance Management Act (PFMA) (Act No. 1 of 1999); Local Government: Municipal Finance Management Act (MFMA); (Act No 56 of 2003); Preferential Procurement Policy Framework Act (PPPFA) (No. 5 of 2000); Policy to Guide Uniformity in Procurement Reform Processes In Government; Broad-Based Black Economic Empowerment Act (BBBEE) (Act 53 of 2003); Municipal Systems Act (MSA) (Act No32 of 2000); South Africa: Competition Law (Act No 89 of 1998); South Africa: National Small Business Act (Ac No 102 of 1996); Anti-Corruption Measures and Practices; South African Local Government Association (SALGA) etc (National Treasury RSA, 2005).

3.3 Key elements of SCM

The South African National Treasury provides guidelines for implementation of the SCM policy. The framework for the SCM system constitutes demand management, acquisition management, logistics management, disposal management, risk and performance management. The framework is guided by the preference point system to achieve re-distribution of wealth (ensuring equal opportunities). The components of the supply chain constitute the elements of the supply chain management systems. The supply chain is build upon ensuring value for money, open and effective competition, ethics and fair dealings; accountability and reporting; and equity. Ensuring these will achieve the ultimate goal of uniformity in procurement processes, good governance and economic development (NT, 2005). Elements of the SA government SCM and their activities are stated below:

- **Demand management:** The first element of SCM. Fulfil the needs identified during the strategic planning process; total needs assessment should be undertaken; Resources required must be analysed and assessed; Key elements in the demand management process should be considered; Brings the SCM practitioner closer to the end users; Bid specification committee; Procurement methods etc.
- **Acquisition management:** The management of procurement; Evaluate bids (comprise of bid committees; Consult register for defaulters; Range of procurement systems; Establishment of total cost of ownership of assets; Bid adjudication; Appointment of consultants etc.
- **Logistics management:** Strategically manage acquisition, movement and storage of materials; Cost fulfilment of orders; Ensure effective flow of goods, services and related information from the point of origin to the point of consumption etc.
- **Disposal management:** Management of assets that are no longer needed; Gives consideration to obsolescence planning; create a database of redundant materials; Inspect materials for re-use; Determine disposal strategy and methods of execution etc.
- **Risk management:** Management unintended or unexpected outcome of a decision; Make provision for identifying, consider and avoid risk as well as provision for adequate cover for residual risks etc.
- **Supply chain performance:** Monitor progress undertaken a retrospective analysis to determine whether the processes have been followed and if the desired objectives were achieved. Usage of the National Treasury template for measuring performance.

3.4 Role players

Based on the SCM policy, each government unit adopts the SCM policy to suit it needs. The structures for management of supply chain activities within the Country are unique. The document “SCM guide for Municipalities/Municipal Entities” prescribed the actors of SCM, their roles and duties (National Treasury RSA, 2005). The SCM policy requires the creation of bid committees. The various committees to be created include: the bid specification

Key role players	Functions
National Treasury	Introduce and oversee the implementation of SCM; Develop treasury regulations; Issue guidelines, general conditions of contract and bid documents to Accounting Officer; Setting minimum reporting standards; Monitor policy outcomes.
Provincial Treasuries	Assist departments with the implementation of SCM; Support departments by providing advice and build capacity; Co-ordinate training in the province; Monitor policy outcomes.
Accounting Officer/Chief executive Officers	Establish a SCM unit under the direct supervision of the Chief Financial Officer; Compile and implement a SCM policy; Adhere to guidelines supporting documents for the implementation issued by the National Treasury; Develop internal procedures and processes; Ensure that officials are trained and adequately skilled; Report to National Treasury; Comply with ethical standards.
Chief Financial Officer/ SCM Units	Recruiting, selecting, developing and managing skills to build and maintain an effective SCMU; Training skills and resources to develop managers and supervisors to operate and manage varieties of SCM activities, facilities and networks.

Table 2. Key role players of the SA government SCM and their functions

Bid committee	Constituent of the committee and functions
Bid Specification Committee	May comprise one or more official, preferably manager responsible for function including external specialist advisors (cross functional principle); Accounting Officer or delegated official to appoint chair person ROLES: Compile technical specifications; terms of reference; requirements; conditions of contract; evaluation criteria; determine goals; and indicate method of procurement.
Bid Evaluation Committee	Comprises of a SCM practitioner; technical expert from department requiring the good/service. ROLES: Accounting officer must appoint the chair person and members; evaluate bids accordance with the criteria (PPFFA); Evaluate bidders tax matters; Submit a report for recommendation regarding the award; check list for restricted bidders; consult the register for tender defaulters.
Bid Adjudication Committee	Comprises of at least 4 senior managers which include: the CFO; at least one senior SCM practitioner to ensure compliance and a technical expert who is an official to ensure compliance to the specification. ROLES: Accounting officer must appoint the chairperson and members; A member of the bid evaluation committee may presents its case to the bid adjudication committee; neither a member of or a person assisting the bid evaluation committee, nor any advisor may be a member of this committee

Table 3. Bid committees, Constituent and roles.

committee, bid evaluation committee and the adjudication committee. The document "SCM guide for Municipalities/Municipal Entities" prescribed the actors of SCM, their roles and duties. Table 1 shows the actors of the government SCM, their roles and duties.

The SCM policy requires the creation of bid committees. The various committees to be created include: the bid specification committee, bid evaluation committee and the adjudication committee. Table 2 shows the bid committees, their constituent and roles

4. Differences between public and private sector supply chain

The literature suggests that public procurement professionals have different perspectives of SCM to their private sector counterparts (Larson, 2009). To be able to understand and make comparisons between public versus private sectors SCM, it is important to understand the concept of public procurement. Larson (2009) denoted that public procurement is very "big business." In public Works and government services, billions are spend on goods and services annually, to support the activities of agencies and departments. Public sector procurement forms the biggest national spend and in South Africa, it is decentralized within a strictly controlled legislative environment wherein processes are prescribed and the relevant norms and standards constantly monitored.

"In South Africa and the emerging world many practitioners still consider the terms to be interchangeable. However various academics and seasoned industry professionals have over the last twenty years succinctly distinguished between SCM and Procurement. Based on extensive consultation within Europe, America and Africa, the preferred view is one which provides a clear distinction between SCM and Procurement management. SCM involves the management of all the inter-linked activities within a value adding chain. These include, but are not limited to, Planning, Procurement, Manufacturing or Production Distribution and Customer Service. Also included are all the value adding linkages outside an organisation. "Procurement management, on the other hand, is one of the elements within a supply chain primarily focusing on the sourcing and purchasing of goods and services within the supply value chain" (Boateng, 2008). In line with the views of the Chartered Institute of Purchasing and Supply (CIPS) and Council of Supply Chain Management Professionals (CSCMP), procurement can be described as one of the macro processes within a supply chain. It is the activity to plan, implement and control the sourcing and purchasing of tangible or intangible goods.

McCue & Pitzer (2005) stated that, public and private procurement professions "are essentially different in their fundamental goals and practices." While public sector practitioners are governed by legislative bodies, laws, and regulations; private sector practitioners are guided by boards of directors and business plans. Public agencies draw revenues from taxes and fees, and use these funds to serve the public. On the other hand, private firms generate revenue through sales of goods and services. Unlike their public sector counterparts, these private firms have profit-making motives. McCue & Pitzer (2005) also suggest that private sector purchasing has been redefined in terms of strategic SCM. However, constrained by rules and regulations, the public sector remains unable to develop strategic supply chain partnerships. In South African public sector, the head of SCM unit is the National Treasury. The National Treasury (NT) develops laws, policies and regulations governing SCM implementation.

Leenders, Fearon, Flynn, & Johnson (2002) describe a number of unique characteristics of public sector purchasing, including the following: (1) perceived lack of interest expenses and

other inventory carrying costs, (2) lack of traffic and transportation expertise, (3) lack of confidentiality about dealings with suppliers, and (4) emphasis on competitive bidding (vs. negotiation) in the procurement process. These characteristics have implications for public sector procurement and SCM and a lack of collaborative, long-term relationships with suppliers. SCM occupies a centre stage in the financial management reform process in the public sector in South Africa. SCM aims to add value at each stage of the process from demand of goods or services to their acquisition, managing the logistics process and finally, after use, to their disposal. However, studies reveals that the implementation of supply chain management practices is far from satisfactory (Mathee, 2005; Ambe, 2006; van Zyl, 2006; Migiro & Ambe, 2008). This is as result of lack of personnel with the necessary knowledge, skills and capacity to effectively implement supply chain management as required by the SCM policy in various departments and municipal entities.

In the public sector context, Korosec (2003) states "SCM is a procurement tool that, strategically integrates the whole procurement process." Thus, SCM is thought to be narrow in a functional sense, an element of procurement rather than spanning multiple functional areas. To the contrary, in the private sector context, Mason-Jones (2004) argues that "procurement is a crucial central element of SCM" and SCM covers "all functions throughout organisations, from marketing and production to procurement." Similarly, Lambert (2004) describes SCM as the integration of eight business processes: (1) customer relationship management, (2) customer service management, (3) demand management, (4) order fulfillment, (5) manufacturing flow management, (6) supplier relationship management, (7) product development and commercialization, and (8) returns management. These eight processes subsume much of logistics, purchasing, operations management and marketing. According to Mentzer et al. (2001), SCM consists of "all the traditional intra-business functions." These traditional business functions are marketing, sales, research and development, forecasting, production, purchasing, logistics, information systems, finance and customer service. South African public sector addresses six key elements constitutes demand management, acquisition management, logistics management, disposal management, risk and performance management. Proper implementation of these elements ensure value for money, open and effective competition, ethics and fair dealings; accountability and reporting; and equity, thus creating uniformity in procurement practices, good governance and to enhance economic development.

Newman (2003) noted that, while private sector procurement is more receptive to entrepreneurship and innovation; public procurement is based on legislation, policy and process. Public sector procurement serves a broader range of stakeholders, places greater emphasis on accountability and transparency, and allows little or no flexibility for negotiating with bidders/responders to a request for proposal (RFP). McGuinness and Bauld (2004) concur that "the skill set of the public sector purchasing manager is geared more toward supervising the procurement process and preparing reports than negotiating the best deal." However, they suggest flexibility rather than formality is the key to improving public procurement performance. The South African National Treasury provides guidelines for implementation of the SCM policy. Accounting Officers in municipal entities and departments have to ensure compliance of the SCM process and reports to the treasury. According to Gragan (2005), the public procurement task is "to help user agencies obtain the goods and services needed to do their jobs, while controlling the process that spends large amounts of public funds." Although public sector procurement operates in a rulebound environment, many of its tasks can be automated. Gragan advises public procurement

professionals to promote communication with vendors and users, and to explain the strategic role of purchasing in public sector operations to their requisitioners or users, in particular. He also argues that "training should be mandatory for anyone charged with spending public funds." Public procurement has a reputation of being tactical, even clerical; adhering to "stringent policies and guidelines;" not requiring highly educated professionals; and stifling innovation (Matthews, 2005). However, public sector procurement is shifting from tactical to more strategic-and a focus on alliances, global sourcing, life cycle costing, empowerment, and tools such as procurement cards. According to Baily, Farmer, Jessop, & Jones (2005), "professional training and education of those personnel responsible for the strategic direction and practical application of procurement action" is needed in the public sector. In South Africa, training has been ongoing from 2005 on the implementation of SCM involving actors such municipal entities, departments and stakeholders. Several initiatives are being considered by the government to dramatically increase efficiencies and service delivery country wide. Among these include rolling out strategic sourcing objectives and transversal contracts.

Based on the review indicated above, it is evident that there is a difference in the application of SCM in the public and private sectors. This is because the two sectors have diverse goals and objectives. While the key goal in the public sector is delivering value service to the public, the private sector goal is to maximize value and profitability in its supply chain. Table 2 shows the difference in practices between private and public sectors supply chain management.

Feature	Private sector SCM	Public sector SCM
Goal	Profit making from customers	Quality service delivery to citizens
View of SCM	Procurement is viewed as an element of SCM	SCM is viewed as a procurement tool
Sources of revenue	Sales of goods and services	Taxes and fees
Governance	Guided by board of directors and business plans	Legislative bodies, laws and regulations
Skills	Have highly skilled actors	Have less skilled actors
Receptiveness	Emphasis on innovation and entrepreneurship	Emphasis on accountability and transparency
Organisational structures	Firms of many sizes with room for new entrants (less complex)	Highly complex system of organizations with various tasks
Competencies	Very high	Low
Confidentiality	Very high	Low
Degree of collaboration	Very high	Low
Degree of integration	Very high	Low
Strategic partnership	High level	Low
Degree of implementation	High	Low
Technological application	High application	Low application

Table 4. Public versus private sector supply chains

The major difference between the public and private sector SCM is their main goals. The private sector is profit oriented while the public sector is oriented toward quality service delivery. Furthermore, the enablers of SCM (which include integration, collaboration, coordination and information systems) are applicable both to the private and public sectors. However, the rate of application in the public sector is limited due to complex rules and procedures. Despite the comprehensive legislation and measures implemented by the public sector, there are always challenges to manage the risks of fraud and corruption in the supply chain. Incidence of financial mismanagement which includes the SCM process remains prevalent in the public sector. Therefore, a system of continuously monitoring and improvement of the supply chain is critical for the success of the public sector.

5. Public sector supply chain performance

The public sector is under pressure from both internal and external sources to demonstrate improvements in their performance (McAdam et al. 2005). Local/municipal entities and other government departments are taking an interest in supply chain performance measures and reporting for improving performance and increasing accountability (Barry 2000; Berman & Wang 2000). Public sectors need to review the way they plan, prepare budgets, implement and manage programs and deliver services to meet the government's and citizens' demands for improved performance and accountability. Countries such as Australia, Britain, South Africa and New Zealand have instituted public sector reform to improve their performance and consequently many organisations are going through the process of change management (Boyne 2003).

As part of overall management strategy, the managers of public organisations need to measure performance to evaluate whether departments are performing as expected, to ensure that the employees are doing the right things, to motivate line staff / middle managers and the stakeholders to do the things necessary to improve performance, to determine the budgeting priorities such as on which programs the agency should be spending the public's money, to convince legislators / stakeholders that the agency is doing a good job, to learn whether the activities are working, and determine exactly who should do what to improve performance (Behn 2003). There is growing recognition that using performance measures to gauge success is vital to any organisation, in the private or public or non-profit sectors (Niven 2005). Measuring performance, however, has been a challenge for both managers and researchers (Maltz et al. 2003) as the process of 'designing and implementing an effective performance management system' involves 'addressing a number of methodological issues' and managing the change process (Poister 2003). In spite of having workable performance management systems in place in public organisations, 'many of those systems fall apart' before they are complete and also there are others who 'end up installing a system that is not helpful or is simply not used effectively' (Poister 2003).

There are different types of performance measurement systems that can be applicable to public sector supply chains. Some of the common performance measurements methods include the balanced scorecard, SCOR model and benchmarking (Handfield et al., 2009). The Balanced Scorecard (BSC) approach to performance measurement was developed by Kaplan and Norton (1992-1996) as a way to align organisational performance measures with its strategic plans and goals (Fawcett et al., 2007; 2007; Wisner et al., 2008). The SCOR model is used as a SCM diagnostic, benchmarking and process improvement tool by manufacturing and service firms in a variety of industries around the globe (Wisner et al., 2008).

Benchmarking is a popular tool which is used universally to improve organisational performance and competitiveness (Wong & Wong, 2008).

5.1 Development of a balanced scorecard for the public sector

The balanced scorecard (BSC) was originally developed for the private sector as a means of clarifying and updating strategy, communicating strategy in the company, aligning unit and individual goals to strategy, linking objectives to long term targets and budgets, and conducting performance reviews to improve strategy (Kaplan & Norton 2001a); and it is now also being used as 'a powerful tool for rapid and effective strategy implementation' (Kaplan & Norton 2005). However, in the last decade, the balanced scorecard's multidimensional focus has also been viewed as a way of addressing the need for a strategic performance measurement system within public sector organisations (Umashev & Willett 2008). Performance measurement in the public sector has traditionally focused on financial measures such as revenues and cash flows. However, the accounting or financial indicators which are readily available in most public sector organisations reflect what has happened in the organisation but do not indicate the underlying drivers of either satisfactory or unsatisfactory performance (Niven 2005; Davig et al. 2004).

Unlike the private sector, where financial measures are used such as return on assets (profitability), return on shareholder's equity, and growth, in the public sector, it is more relevant to focus on efficiency of launching the programs and making best use of resources. However, the task of determining the measures, targets and collecting the relevant information for non-financial measures is not easy. Balanced scorecard research in the public sector has been conducted within the context of the healthcare industry (Coop 2006, Yang et al. 2005), public service organisations (including local government institutions and 'municipalities') (Umashev & Willett 2008; Farneti & Guthrie 2008), and not-for profit SMEs (Manville 2007). Gumbus et al. (2003) reported a successful story of BSC application in a hospital. Likewise, the study of Askim (2004) reported how local government institutions can become active learners by adopting a performance management reform system like the BSC.

5.2 Components of balanced scorecard in the public sector

The components of the BSC in the public sector may include the citizen who acts as the customer, finance or resources, internal processes and learning and innovative perspectives as explain below.

5.2.1 The citizen's perspective

In this perspective, public supply chain serves to the public with the ultimate goal to satisfy citizen demand. Delivering services to citizens are primarily the responsibility of State and Local Governments. For example the South African public sector provides a range of services to the citizens through the Minister responsible for the function. Departments also have a legal requirements which set up 'citizen's relationships', especially with authorities such as the Auditor General and to the Parliament in respect of 'governance'. Therefore, the public sector provides services direct to the public, they are required to prepare and implement a service charter, providing a clear 'citizen relationship'. Thus three types of 'citizens' may arise when addressing the need of the public sector. This include: for most departmental activities, the Minister, and through him/her, the Government; in respect of governance, the Auditor General and Parliament, as well as the Minister; and for service delivery activities, the corporate or individual service recipients.

5.2.2 Finance/resources perspective

Financial results are among the top three indicators to achieve organisation's success. Financial management in the public sector differs dramatically from the private sector context in that the revenue side of the budget is a given, and the focus is simply on effective and efficient management of expenditure. The quantum of funds made available to a Minister to implement Government programs is the end result of a complex interplay of macro-economic deliberations, ministerial bargaining and political judgement. Issues regarding what can be delivered (in terms of quality and quantity) for the proposed funds are significant inputs. But such relationships are largely approximations. Lack of skilled management (for example as a result of high turnover or overwork) can result in errors in estimating required workload. For example, when a Government has determined its policy, the bureaucracy has only minor leeway in changing the quantum or time schedule of the service. In addition, a variety of unplanned business pressures inevitably impact on planned business. Unforeseen events such as fraud within the Department, a by-election in a sensitive electorate, or a major controversy relating to the Minister's policy responsibility inevitably generate workload which is expected to be 'absorbed'. The resource management task is to deliver the planned outputs within budget.

5.2.3 Internal processes perspective

The core processes in the public sector are essentially the same as for the private sector. These are to: establish direction; acquire resources; provide capability; and execute the mission. Whilst Governments establishes the policy and program outcomes that are to be achieved in exchange for the financial resources, management translates the vision and allocates the capabilities to achieve the delivery of agreed outputs. The resource management framework provides a backdrop for an integrated planning process that links corporate plans, business plans and individual plans. This planning process focuses on achieving results through the delivery of outputs as the agency, the business unit and the individual's performance is linked to the outputs which in turn are linked to the outcomes that the public sector desires for the community.

5.2.4 Innovation and learning perspective

In an increasingly competitive global environment, the public sector's vision for the public service should have good leadership capabilities at all levels. In order to maintain performance in the public supply chain management, it is necessary to have access to a sufficient stock of well-trained personnel. Recruitment standards should be set high. Furthermore, staff should receive support to upgrade qualifications. Middle and senior management training should be of a high priority. At the same time, work pressure on all staff, and unpaid overtime should be minimised. Figure 1 shows an illustration of a balanced scorecard in the public sector.

6. Conclusion

The chapter examined the concept of SCM in the public sector. In the course of the chapter, the features, practices as well as the measures to improve the management of public sector supply chains were explored. SCM allows organisations to reduce costs, improve quality,

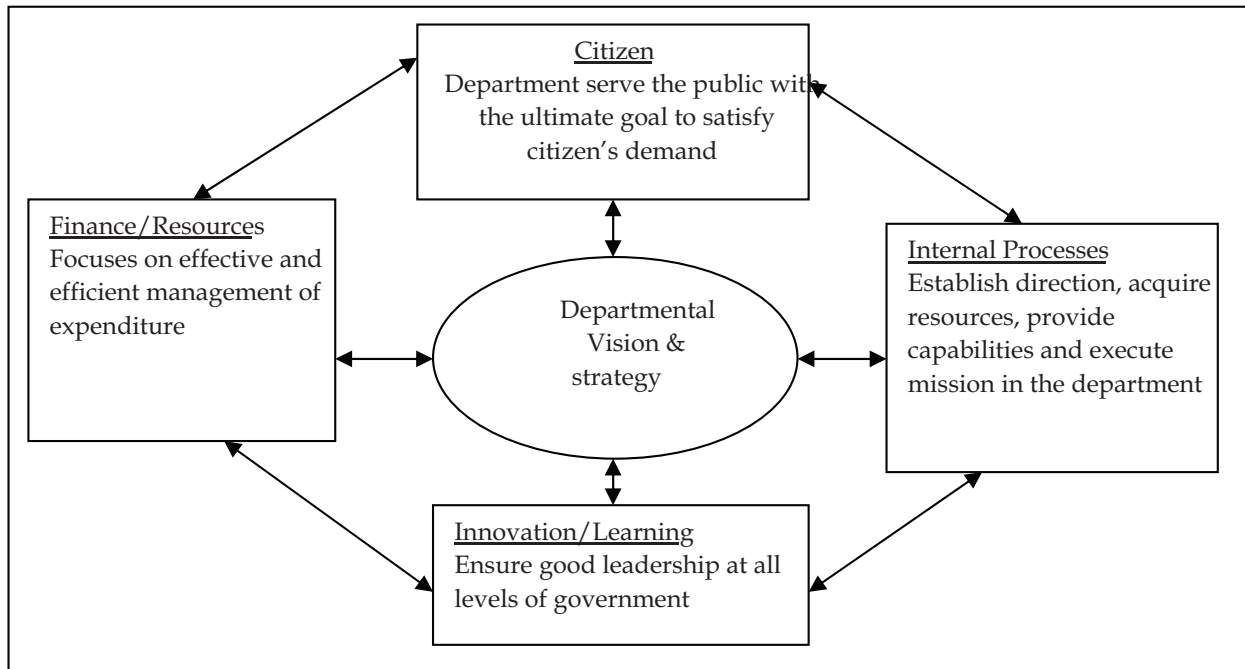


Fig. 1. Public sector supply chain scorecard

reduce lead-times, and improve organisational effectiveness. The chapter reveals that, there are major differences about supply chain practices in the private and public sectors. In the private sector, the focus of SCM is profit oriented whilst minimising production costs. In the public sector, SCM is used as an instrument to enhance quality service delivery to citizens. However, both sectors can utilise SCM enablers such as integration, collaboration, coordination and information systems to drive and enhance the practice in their respective sectors. But, the level of application of these enablers in the public sector is inhibited compared to the private sector because the sector is governed by legislative bodies, laws and regulations as well as lack of personnel with appropriate knowledge and skills.

That notwithstanding, supply chain managers in the public sector need to measure their performance to evaluate if they are performing as expected. The balanced scorecard is one of the measures that could improve the performance of public sector supply chains. SCM processes may fail if control is retained by one department in the supply chain, or if strategic fit is lacking, or if there is a lack of willingness to cooperate for the benefit of all. Therefore, understanding and managing supply chain issues such as risks, implementing longer-term commitments and developing a professionally trained procurement team, senior management can achieve commercial and operational success in the public sector.

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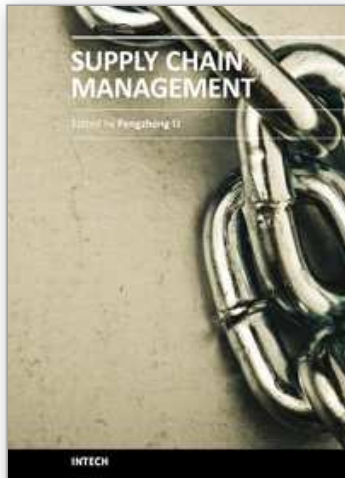
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The purpose of supply chain management is to make production system manage production process, improve customer satisfaction and reduce total work cost. With indubitable significance, supply chain management attracts extensive attention from businesses and academic scholars. Many important research findings and results had been achieved. Research work of supply chain management involves all activities and processes including planning, coordination, operation, control and optimization of the whole supply chain system. This book presents a collection of recent contributions of new methods and innovative ideas from the worldwide researchers. It is aimed at providing a helpful reference of new ideas, original results and practical experiences regarding this highly up-to-date field for researchers, scientists, engineers and students interested in supply chain management.

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