Innovation in Procurement
A Case Study of Sensys Traffic AB

Master Thesis within International Logistics and Supply Chain Management

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Abstract

Problem: There has been a limited amount of study in procurement within SMEs (Quayle, 2002). In general, for all sizes of organizations, the procurement function has often been regarded as a transactional based function and plays a supporting department to the value-adding process. These organizations view procurement as a simple function of the entire firm (Hutchins, 1992). It is more commonly found that procurement in SMEs tend to be fragmented and non-strategic (Zheng et al., 2007).

Purpose: The purpose of this thesis is to investigate innovation in procurement in small and medium-sized enterprises

Method: A qualitative research method with an abductive approach was used to conduct this research. A primary and secondary material was gathered from Sensys Traffic AB which was used as a case study in investigating into the innovation in procurement within small and medium-sized enterprises.

Theories: The theoretical framework that was utilized in this investigation consisted of procurement processes, strategies, roles, and innovation.

Conclusion: An organization can compete for the present and the future by placing more emphasis and priority within procurement in SMEs, developing the procurement department and employment skills, coordinating and collaborating within both internal and external members, forming ‘win–win’ relationships with suppliers, and proactively looking for ways to innovate. Furthermore, by specifically looking to innovate within these areas the procurement function can leverage itself and its firm to be able to achieve reduced total cost of ownership and higher quality products/services. These special areas which were outlined by Spray (2009) are new sourcing ideas, new insights, new partnerships and new technologies.
1 Introduction

This chapter deals with the area of our investigation which in turn leads the reader into a background, followed by the problem discussion presenting issues concerning procurement and it ends with the purpose and research questions.

1.1 Background

According to Yeh (2008), the focus upon organization turned to re-engineering, economizing, and core competence have altered the structure of supply chains, the positions of organizations and rearranged their organizational functions within the industry. This is the case where organizations have encountered economical and industrial unstable transformations. As a result, organizations must offer improved levels of availability in first-rate, high quality products at increasing lower prices, in both relative and fixed terms (Rajagopal & Bernard, 1994). This shows how organizations can competitively create and add value to their products by satisfying their customers, the environment and the whole chain respectively in response to the diverse transformations within their industry. Moreover, Rajagopal and Bernard (1992, 1993) mentioned that organizations procure items for over 70% or more of the overall costs of their final manufactured goods. It is important to properly coordinate each organization in the supply chain which includes the control and coordination of the procurement of raw goods and components, the value-adding process and the final delivery to the customer.

Organizations seek for reliable suppliers thereby building long-term mutual relationships in order to reap benefits of efficiency, quality, performance, opportunities, and competence (Yeh, 2008). Organizations can achieve this through cooperation and collaboration with their suppliers. Hawkings, Stein, Wyld and Foster (2004) mentioned that procurement process has evolved into a strategic resource as a main driver within the supply chain. In continuation, Kalakota and Robinson (2001, p.3) emphasized these main drivers outlined in areas such as “trends in global sourcing, emphasis on time to market, product quality based competition, customer uncertainty and the need to improve bottom-line costs”. This depicts the reasons for the popularity of procurement.

Cox (1996, p.59) defined procurement as:

“a process or method for achieving a ‘sustainable position’ for an organization within specific supply and value chains”.

Another definition of procurement from Jahns (2005a, p.20) is described below;

“...a company-wide process with a special focus on the security and cost aspects of purchasing...contains single strategic activities and considers the technical and economical aspects of the supply market”.

Baily, Farmer, Jessop and Jones (1998) clarify the differences between procurement and purchasing. They described purchasing as a transactional clerical activity. In addition, Jahns (2005a, p.20) also defined purchasing as “a description of a purely transaction-oriented, operative supply function which only comprises administrative and short-term effect activities”. Lysons and Gillingham (2003) mentioned that procurement is a more extensive term than purchasing and is a more accurate term which supplants purchasing. Furthermore, the term, purchasing has
been displaced in job titles from “purchasing manager” to “procurement manager”, “procurement agents” and “head of procurement” (Lysons & Gillingham, 2003).

1.1.1 Small and Medium-Sized Enterprises (SMEs)

Procurement

Quayle (2002) mentioned that the image of procurement is slowly transforming from a clerical function into a strategic function. Further, Quayle emphasizes that procurement is more important in SMEs. Tam, Moon, Ng and Hui (2007) and Mascarenhas (1999) added that SMEs outsource extensively due to their limited resources. They tend to outsource functions but prefer to retain some control and knowhow while benefiting from suppliers’ expertise, investment, and scale economies and sharing the risk.

Innovation

Accordingly, SMEs play more often an influential regional role, aims for specialization, displays more innovativeness and regarded as more proactive (Elo, 2005). Lafley and Charan (2008, p.5) describes innovation that “… enables expansion into new categories, allows us to reframe businesses considered mature and transform them into platforms for profitable growth, and creates bridges into adjacent segments”. Furthermore, SME’s strengths lie in their ability to be flexible, decisive and work closely with its employees (Dangayach & Deshmukh, 2001). In this case, SMEs are able to adjust to situations quickly due its agility, its size and low level organizational hierarchy (less bureaucratic).

1.2 Problem Discussion

Large Enterprises (LEs) Advantage in Procurement

Strategic sourcing has grown to become one of the necessary procurement strategies which ensure the survival and growth for firms. Evidence shows that SMEs and LEs pursue different sourcing strategies (Quayle, 2002; Tam et al., 2007) due to differences of size and strategies. LEs have obvious advantages due to the sheer physical size, and resources (human, capital, equipment). Further, LEs have the advantage of having more power to influence a smaller organization (Tam et al., 2007).

LEs often order in more consistent and in higher volumes than SMEs, which makes them preferential customers. Additionally, these organizations receive the advantage of recognition, credibility and stability (Tam et al., 2007). This means that, LEs receive favoured treatment via discounts and offer higher quality. They have greater resources for research and development, as their development costs can be spread over the large scale output. This allows the organization to be able to afford to take risks (Tam et al., 2007).

Lack of Procurement Priority in SMEs

There has been a limited amount of study in procurement within SMEs (Quayle, 2002). Moreover, studies comparing production sourcing strategies between SMEs and LEs is also narrow (Tam et al., 2007). In general, for all sizes of organizations, the procurement function has often been regarded as a transactional based function and plays a supporting department to the value-adding process. These organizations view procurement as a simple
function of the entire firm (Hutchins, 1992). It is more commonly found that procurement in SMEs tend to be fragmented and non-strategic (Zheng et al., 2007).

Purchasing structure and the role of purchasing in organizations appear to be different within SMEs and LEs. LEs tend to recognize the strategic importance of procurement and utilize a procurement department with professional purchasers. By viewing the procurement function as a strategic role, an organization will tend to look beyond the present and strategically plan three to five years out. Thus, organizations will be prepared to optimally purchase for critical business categories at the right times and anticipate and prepare themselves for future changes. These actions will allow organizations to achieve higher total cost of ownership savings, increase percentage of spendings controlled by procurement and reduce the ratio between cost of ownership reduction and procurement operation costs (Spray, 2009). In contrast, purchasing in SMEs is more likely seen as transactional. Moreover, most SME organizations do not have a person who has sole responsibility for procurement. In these organizations, the general manager or owner will include procurement into his duties (Quayle, 2002).

Possibility to Innovate

Studies have proven that SMEs can be very innovative due to the lack of a vertical hierarchy and bureaucracy which impedes a LE (Tam et al., 2007). The strategic importance of the purchasing (or procurement) function should be seen as one of the main determinants of both competitiveness in the market and profitability. Rajagopal and Bernard (1994) mentioned that it is of great importance that organizations take proactive actions to increase proficiency in their procurement to increase their overall competitiveness. By selecting and implementing appropriate sourcing strategies and managing supplier relationship can help organizations build a sustainable competitive advantage (Villa, 1998). Further, Spray’s (2009) article discussed innovation in procurement directed to processes and potential, can achieve low-cost, high quality products through new sourcing strategies, new insights, new partnerships and new technologies. Thus, innovation might be the introduction of purchasing professionalism in SMEs and increase the possibility of larger purchasers (Quayle, 2002).

Due to the limited amount of previous research on procurement within SMEs and the lack of priority given to the procurement function within SMEs by management; the authors will adapt the procurement framework which is commonly found for LEs and apply it within the context of SMEs. The next section elaborates the purpose and scope of the research.

1.3 Purpose of Research

Given that there is limited study of procurement in SMEs, less strategic priority, and the potential opportunities of improving their procurement efficiency denotes the reasoning for this study. The below statement outlines the purpose of the research:

The purpose of this thesis is to investigate innovation in procurement in small and medium-sized enterprises.

1.4 Research Questions

Below are the arguments for the research questions in order to fulfil the purpose of this thesis.
The relationship or collaboration between suppliers, other external parties and buyers tend
to be an adversarial relationship as Morrissey and Pittaway (2004) described that it portrays
an image of a short-term relationship where price denotes the main focus. Furthermore,
Langfield-Smith and Greenfield (1998); Saunders (1997) pondered on this aspect of rela-
tionship/collaboration that the connection between suppliers and buyers was constrained
to a level with which the medium of communication was based on formal transactional sys-
tems. In addition, the embracing of a collaborative type of relationship is not commonly
utilized in SMEs (Morrissey & Pittaway, 2004). This is an aspect that results in a situation
that can lead to a “win-lose” situation and leads to continuous replacement of suppliers.
The necessity of collaborative/relationship of organizations procuring with suppliers and
external parties leads to the first research question:

- What is the extent of relationships/collaborations between procurement function with suppliers and
  other external parties?

The procurement function is perceived as low priority and is managed on a tactical level. In
other words, it is based on a purely transaction-oriented. Kaufmann and Carter (2004);
Cox, Chicksand, Ireland and Davies (2005) contributed to this argument that the procure-
ment role or the procurement function is still basically a support function which carries out
low value adding activities. As a result, the second research question is structured:

- What is the extent of the strategic role of the procurement function within the overall business strat-
egy?

Given that procurement can play a significant role in most organizations, it should be por-
trayed to be a core component and regarded as a major strategic force within the organiza-
tion. Furthermore, Tassabehji and Moorhouse (2008) added that procurement incorporated
in most organizations influences areas such as planning and handling strategic partnerships
and alliances, risk management and moreover, adding value to the entire organization. With
this, the third research is developed as:

- How is the procurement integrated into the organization (activities, roles, strategy)?

Communication and collaboration between other inter-functional departments can be
beneficial. However, most practitioners mention that it is difficult for the procurement
function to be acknowledged by the heads of other inter-functional departments and/or be
involved in decisions making (in terms of e.g. investments) (Tassabehji & Moorhouse,
2008). With this being said, it leads to the fourth research question:

- What is the extent of communication and collaboration within inter-functional roles?

Innovation should be directed to processes and potential in procurement which achieves
acquiring low cost and high quality products. The authors would like to fulfil the following
question:

- What innovative actions have organizations implemented within their procurement processes?
1.5 Disposition

Chapter 1 - Introduction: The background of the chosen subject is provided to the readers, pursued by an extensive problem discussion. The chapter ends with a description of the purpose of the thesis, and research questions.

Chapter 2 - Frame of Reference: The second chapter presents theories and models that offer readers a thorough understanding of topics concerning procurement (its processes, strategy and role), innovation and other relevant theoretical information for the purpose of this research. The chapter acts a foundation and formulates decision in regards to the gathering of materials and analysis.

Chapter 3 - Method: The third chapter presents the choice of method, the research approach followed by the case study used in the research. Furthermore, a description of the method utilized throughout the empirical part is presented as well as a discussion on trustworthiness.

Chapter 4 - Empirical Findings: The fourth chapter denotes the empirical findings of the single-case study company. A description of the chosen company is provided pursued by the materials gathered at the interviews.

Chapter 5 - Analysis: The fifth chapter denotes the combination of the theories and the empirical findings in order to analyze and offer answers to the research questions at hand.

Chapter 6 - Conclusion: In the sixth chapter and final chapter, the authors sum up the output of the analysis and offer the readers with an extensive number of conclusions. The conclusion is conducted with the objective to explore whether the purpose of this investigation is accomplished. Furthermore, theoretical and managerial implications were composed. Finally, the limitation of the study is discussed.
2 Frame of Reference

This chapter deals with the frame of reference presenting relevant theories concerning procurement, procurement process, strategy, role, functions, and innovation (characteristics, and processes) and summary of the respective areas.

The purpose of this thesis is to investigate innovation in procurement in small and medium-sized enterprises. From the introductory chapter, the authors discussed various aspects of procurement. In general for most organizations, the procurement function or role has often been regarded as a transactional-based function and plays a supporting department to the value-adding process. Thus, organizations view procurement as a simple function of the entire firm (Hutchins, 1992). In this case, the strategic importance of procurement should be perceived as one of the central determinants of both competitiveness in the market and profitability. Thus, organizations will be prepared to optimally purchase for critical business categories at the right times and anticipate and prepare themselves for future changes. These actions will allow organizations to achieve higher total cost of ownership savings, increase percentage of spendings controlled by procurement and reduce the ratio between cost of ownership reduction and procurement operation costs (Spray, 2009). Furthermore, organizations should take proactive actions to increase proficiency in their procurement to increase their overall competitiveness as stated by Rajagopal and Bernard, (1994). This can be done by implementing appropriate innovative ways within organization’s procurement processes in order to achieve high quality goods of low cost.

With this, theories on procurement and innovation set the conceptual framework for this thesis.

2.1 Classification of Organization

The size of organizations is classified via the number of employees due to legal and general statistical purposes by the European Union (EU). Considering this, the definition of a SME comprises up to 250 people and can be further divided into three size bands: micro business (0-9), small business (10-49), and medium-sized business (50-249) (EC, 2008). In addition, an LE is defined by EU as one comprising of 250 or more employees (Office of National Statistics, 2008).

2.1.1 SMEs

According to Elo (2005), attention has been focused on the international actions of small and medium-sized enterprises (SMEs) due to its swift rise in value within international and global settings. SMEs tend to be more dependent on external resources and are more susceptible to be influenced by those business networks (Elo, 2005). This is viable with respect to the scope and scale that SMEs have in attaining its improvement in quality, services, and relationships. In addition, SMEs are more cash focused; short term oriented and inspires improved communications and incentives for developing internal knowledge (Brynjolfsson, 1994). The flat structure feature found in SMEs, facilitates communication between cross-functional units and aids the creation and sharing of knowledge.
2.2 Supply Chain Management (Contextual Relationship with Procurement)

Supply chain management (SCM) is an important aspect when discussing the framework of procurement and its processes. The reason being, organizations cannot only conduct activities or compete in isolation but need to seek to develop relationships and linkages with trading partners. This facilitates the value chain in making products and offering services to customers (Cox, Blackstone & Spencer, 1995). According to Mentzer, DeWitt, Keebler, Soonhong, Nix, Smith and Zacharia (2001, p.18), SCM is defined as

“the systematic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across business within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole”.

London and Kenley (2001) also described that SCM is a merging of logistics, procurement, marketing and strategy, and industrial organization economics. Furthermore, Morris and Pinto (2007) talked about the relationship between supply chain management and procurement. The authors also mentioned that procurement represents a main activity within supply chain management with which it integrates the processes and activities of suppliers, vendor, producers, and customers. As a result, the integration between the vendors, the suppliers, the customers and the producers is relied to shape the organization’s strategy in order to form partnerships, alliances, and joint ventures (Morris & Pinto, 2007).

In addition, Battaglia (1994) explained that most organizations leading the drive to implement SCM visualize the need to go beyond the logistics function and focus on conducting their business processes in an effective and efficient manner. These business processes include: development, marketing, procurement, production, and delivery of goods and services (Battaglia, 1994). This leads to the next section describing in-depth, procurement, its processes, strategies, role and function.

2.3 Procurement

Procurement entails all activities needed to get a product from a supplier to its last destination. These activities are purchasing function, stores, traffic and transportation, incoming inspection, quality control and assurance, and salvage and environmental issues (van Weele, 2002). They emphasize that procurement is value adding to the final product/service in adding value to the organization.

According to van Weele (2002) procurement relates to the activity of purchasing inputs that is utilized in organization’s value chain. This includes raw materials, supplies, and other items as well as assets like buildings, office supplies, machinery, etc. This illustrates that procured items that are transferred into an organization is connected to primary activities as well as support activities. This is what Porter (1985, p.39-40) described procurement as a support activity and not a primary activity. As a result of this, there are processes that organizations go through in order to transfer a purchased item into the organization and thereby adding value to it. In order for this to take place, negotiations are then undertaken
with all parties involved to come to a consensus. Furthermore, van Weele (2002) explained that there need to be a negotiation situation where parties involved are brought together and thereby can look back on the negotiations with ease. This is apparent in the procurement area where its function is to check issues such as quality and delivery reliability, and also after sales services for internal and external satisfaction (van Weele, 2002).

Procurement is defined by Jahns (2005a, p.20) as:

“...a company-wide process with a special focus on the security and cost aspects of purchasing...contains single strategic activities and considers the technical and economical aspects of the supply market”.

This definition denotes how organizations are focusing on the security and cost aspects of purchasing. Security through the means of increasing its survival and purchasing costs by running processes to ease developments. Rajagopal and Bernard (1993) added that since motives of procurement are diverse and focus on the reduction of cost or attaining an assured source of supply. There are other factors that are driving forces namely: product and/or service innovation, quality enhancement, technology acquisition, and time compression. As a result, organizations have accepted an approach to procurement as revenue driven to the effects that is generated from the driving forces mentioned above.

Furthermore, Morris and Pinto (2007) explained that procurement has evolved with time with which activities related to it has led to organizational success significantly. In these cases, it clarifies the importance of procurement that was once seen as a clerical activity instead to be perceived as strategic. Procurement also entails the activities related with deciding on an item being made in-house or being bought from outside vendors or as the make/buy analysis (Morris & Pinto, 2007). In addition, activities also associated with procurement perceives to be settling upon which vendor or a group of vendors to employ in order to procure an item.

Procurement has long been considered to be in functional terms that is, representative of division of labour (e.g. buying items vs. making them), precise job tasks (e.g. market research, acquiring vendor quotations), and worker skills (e.g. contract interpretation, negotiation). Additionally, in organizational terms, procurement represents an exact department or other function within the organization, and it has its own administrative hierarchy, employee roles, and organizational tasks (Morris & Pinto, 2007). Furthermore, procurement entails the assessment of its inputs (e.g. requirements, information), outputs (e.g. purchase orders, inward bound vendor items), transfer function (e.g. vendor selection, vendor management), and environment (e.g. corporation, industry). All the above features are perceived as a system as described by Morris and Pinto (2007). This is significant in organizations as procurement is portrayed as a system where an examination of its inputs, outputs, transfer function and environment play a role in linking vendors, suppliers, producers, and customers collectively. Consequently, Waters (2003) stated that procurement does not generally move materials by itself, however, organizes its transfer. In this case, the process of information is largely seen in the perspective of procurement as it involves the gathering of information, analyzing it and transferring the information to the entire supply chain. Moreover, the significance of procurement on a broader view depicts that procurement transfers messages or information backwards that is, telling what customers want and transfers messages or information forward that is, stating what suppliers have in stock (Waters, 2003).

Another perspective of procurement is the process. Morris and Pinto (2007) stated that procurement is also seen as a process whereby a set of processes interconnects producers,
vendors, and customers through the supply chain. Thus, it gives rise to the linkage with work activities (e.g. requirements determination, source selection), actors (e.g. market researchers, buyers), organizations (e.g. purchasing, contract management), and technologies (e.g. electronic catalogues, communication networks) (Morris & Pinto, 2007). The authors also contended that this is viewed on a perspective of cross-functional, inter-organizational, and systemic. Consequently, it facilitates one to converge into important aspects of organization’s activities thereby causing performance improvements.

2.3.1 Governance

Procurement processes are not only conducted externally but also internally within the organization. In this case, conducting the processes within an organization is related to the development of a say, a product, or the feasibility of ideas, or simply having contacts (van Weele, 2002). From the perspective of external negotiations, it refers to the processes that relates to suppliers or vendors for the particular organization. Barney (1999) mentioned that the “governance” aspects of transaction cost economics relates to the decisions that organizations make when managing an economic exchange. This is particular in organization that makes the decision in negotiating with other parties for a good deal.

Barney (1999) further stated three broad categories that are: market governance, intermediate governance and hierarchical governance. In the market governance, organizations manage an exchange or trade when there is an interaction with an organization at an arm’s length within a certain unspecified market, and also rely mainly on market-determined prices in order to handle the exchange. Intermediate governance is when organizations use complex contracts and other forms of strategic alliances, which includes joint ventures in order to handle an exchange. A case in this sphere is when say, an organization acquire products by negotiating long term supply contracts with vendors, and with the connection by use of an electronic data interchange, and locating these vendor close to the organization. Finally, in hierarchical governance organizations bring an exchange within its own boundary. Organization uses hierarchical governance when it possesses and manages a factory that supplies its products that is offered to the market. All these perspectives are vital to what extent an organization have to go through in terms of its procurement processes and as to the necessary mechanism of how the organization manages the exchange. Furthermore, this leads to the next part on trends of procurement.

2.4 Trends in Procurement

Accordingly, there are changes like increased globalization, consumer changing demands, etc., that impact on function of procurement. As a result of these changes, the role of procurement has an important part to play in most organizations that calls for its development. Furthermore, it is a challenge for the procurement function in its development. These challenges, according to Carr and Smeltzer (1997); Lamming, Johnsen, Zheng and Harland (2000); Handfield and Nichols (2002); Knudsen (2003) are increased specialization, transition from purchasing activities to processes and from transaction to relationship management and the recognition for managing the supply chain.

The contextual environment for procurement has been turbulent within the last few decades (Schul & Blanc, 2008). The authors identified seven mega trends, which reinforce the importance to develop an organization’s procurement function.
These include the following:

- Managing extreme competition and pressures for deep cost reduction
- Addressing the accelerating pace of globalization
- Addressing the proliferation of unique and dynamic relationships with customers, suppliers and outsource partners
- Coping with the rapid advance of technology in products and services and in procurement operations
- Assisting with revenue growth and innovation
- Managing constantly changing consumer demand
- Dealing with complex regulatory, environmental and ethical requirements

It is becoming increasingly difficult to compete. Customers demand both for both low-priced goods while expecting for responsive services. Coupled with the rising costs for commodity items, it makes it especially difficult for an individual firm to satisfy these requirements. Moreover, globalization and the increase of a global supply enhance the importance of the role of the procurement function. This trend expands the market for customers and suppliers, as well as exposes firms to more competition. The complexity of supply chain and interaction between different supply chains has significantly increased; customers and suppliers can both become one’s competitors. Furthermore, former competitors could become potential allies, which break away from tradition relationships. Organizations have also shifted their goals of selecting suppliers that offer the lowest cost product/service to suppliers who have the ability to foster innovation and related capabilities which final consumers’ require (Schul & Blanc, 2008).

The advancement of technology continues to rapidly increase. Product life cycle continues to shorten and some products can become obsolete within hours. Organizations must continuously be aware of the advances of technologies which make the importance of supplier selector higher and gather information which will ease decision-making. In addition, tech-
nology can enable and facilitate procurement activities. It can eliminate unnecessary paper
work and automate the process.

Procurement can be a source for assisting revenue growth and innovation as well. Organi-
zations are entering into new markets therefore growth could come from existing custom-
ers, new customer, new markets, new channels or new products and services. New prod-
ucts and services are sources for new revenue streams. Different approaches and strategies
must be developed such as more customer encounters and interfaces (Schul & Blanc,
2008).

Further, governmental regulations and the growing preferences for socially and environ-
mentally responsible organizations are demanded (Schul & Blanc, 2008). This leads to the
next section on procurement strategy stressing on the make or buy decision.

2.5 Procurement Strategy (Make or Buy Decision)

According to Lysons and Gillingham (2003) the decisions to make or buy is comparing the
cost of producing a part or offering a service internally versus the cost of procuring the
part or attaining service from an external vendor. This is apparent in organizations that
produce their own component or make the decision to procure components from external
sources by virtue of the costs involved. Probert (1995; cited in Lysons & Gillingham, 2003,
p.346) identified three levels of make-or-buy decisions namely: strategic, tactical and component.

Strategic Make-or-Buy Decisions

This level verifies the shape and capability of the manufacturing operations of an organiza-
tion by impacting:

1. What products to make;
2. What investment to invest in machines and into labour in building the products;
3. The ability to create new products and processes given that the knowledge and skill
attained by manufacturing-in-house may be vital for potential applications;
4. The selection of suppliers whom are involved in production processes and design;
5. Improper allocation of work to suppliers damaging an organization by creating a
new competitor or damaging product quality or performance;
6. Profitability, risk and flexibility.

The next level offers the framework for shorter-term tactical and component decisions.

Tactical Make-or-Buy Decisions

This level deals with the issue of short-term imbalance of an organization’s manufacturing
capacity:

1. Changes in demand making it impossible in producing all components in-house.
2. A fall in demand making an organization to bring in-house operations that is for-
merly bought out.
In this case, organizations require a criterion in choosing between the available options above.

Component Make-or-Buy Decisions

This level is made, preferably at the design stage and it relates to whether an actual component of a product should be developed in-house or bought in.

In continuation, Lysons and Gillingham (2003) mentioned that considering the above levels, there are other quantitative and qualitative factors that needs to be regarded in deciding whether to make or buy. This is relevant in organizations irrespective of whether it is strategic, tactical or component. Below are the factors describing the quantitative and qualitative aspects of the make or buy decisions;

Quantitative factors in favor of making include:

- Chance to use up idle capacity and resources.
- Potential lead time reduction.
- Possibility of scrap utilization.
- Greater purchasing power with larger orders of a particular material.
- Large overhead recovery base.
- Exchange rate risks.
- Cost of work is known in advance.

Quantitative factors in favor of buying include:

- Quantities required too small for economic production.
- Avoidance of costs of specialist machinery or labour.
- Reduction in inventory.

Qualitative factors in favor of making include:

- Ability to manage resources.
- Commercial and contractual advantages.
- Worries are eliminated regarding such matters as the stability and continuing viability of suppliers or possible repercussions of changes in supplier ownership.
- Maintaining secrecy.

Qualitative factors in favor of buying include:

- Spread of financial risk between purchaser and vendor.
- Ability to control quality when purchased from outside.
• Availability of vendor’s specialist expertise, machinery and/or patents.

• Buying, in effect, augments the manufacturing capacity of the purchaser.

In addition, Spray (2009) contributed a framework for a make-or-buy decision. The author defined the make or buy decision as “the principal framework for a company’s decision on how to work with an outside services provider” (Spray, 2009, p.42)

![Make or Buy Framework](image_url)

The author described that an organization has four major sourcing options that is;

**Insourcing** – (Procurement regarded as a profit center or cost center): It describes that, fully operational task remains in-house, with little or no external resources deployed.

**Buy In** – Describing that, fully operational tasks remains in-house however, external resources such as consulting, auctioning or transaction processing services are bought regularly.

**Contract Out** – This explains that the procurement organization contracts out to a procurement centre or hub that still belongs to the organization.

**Outsourcing** – This is when a third party presume to take the entire operational responsibility, including human resources allocated to sourcing, transaction processing, category management, call centre, application management and so forth.

### 2.5.1 Outsourcing

Outsourcing expanded as a reaction in the 1970s and 1980s to the over-diversification that occurred. In this case, many organizations reconsidered their core activities and focused on their core competencies (Lysons & Gillingham, 2003). Outsourcing in a broader context is defined by Deavers (1997, p.503) as “the result of a complex change in the cost boundaries facing firms as they choose between inside and outside production”. Furthermore, Outsourcing Interactive (2009) explained outsourcing as a strategic utilization of resources for conducting activities...
which is managed by internal staff and also the contracting out non-core tasks to special-
ised service providers.

Most organizations are re-organizing the way they operate their business processes by fo-
cussing on their core competencies and contracting out the non-core activities. According
to Mol (2008) outsourcing is one of the main central restructuring tools for most organiza-
tions with the aim of improving performance within the organization. The author further
mentioned that outsourcing can be a solution for some other activities which promotes in-
tegration. Integration for other activities denotes that organizations implementing a better
way in managing their relationships with other organizations (external suppliers). Mol
(2008) claimed that in order to observe results or optimize performance of organizations,
by making the right outsourcing decisions, an organization can improve its performance.

Benefits of Outsourcing

The benefits of outsourcing classified by organizations which have taken on outsourcing as
their tool are freeing of management time, reduced costs, increased flexibility, cost cer-
tainty, reduction in staff management problems, improved consistency of service, reduced
capital requirements and reduced risks (Carrington, 1994, p.34). Accordingly, Carrington
(1994) identified the largest benefit that organizations identify when accepting outsourcing
is the freeing of management time. With this, the organization can concentrate on their
core business activities. The diagram below illustrates the benefits of outsourcing.

![Fig. 2.3 Main Benefits of Outsourcing (Carrington, 1994, p.34)](image)

In addition, Lysons and Gillingham (2003) added extra advantages of outsourcing to those
mentioned above by Carrington. These are:

- Acquiring access to world class capacities;
- Expanding organizational focus;
- Making capital funds accessible.

Conversely, there are some problems of outsourcing. Organizations that outsourced took
long time (up to 2 years) to reap benefits and thus, the process regarded to be cost neutral
(Lysons & Gillingham, 2003). In addition, extra training, increased dependence on suppliers, more effort in communication with suppliers, long-term commitment, and coordinating different suppliers were considered to be some other problems of outsourcing (Carrington, 1994, p.34).

2.5.2 Sourcing

Zenz (1994) referred sourcing as a philosophy of choosing vendors in a way that makes them an essential part of the buying organization for a particular component or a fraction of a product. In this case, organizations are to use this attitude to maintain and develop their competitive advantage. Furthermore, as organizations within supply chains are closely partnering, sourcing becomes essential in cutting across organizations boundaries with a focus on decreasing costs, improving quality, and augmenting shareholder value (Spekman, Salmond & Kamauff, 1994). Based on the features of production sourcing strategies with which Tam et al (2007) described in their study, they mentioned about seven sourcing strategies described by other authors namely:

- **Multiple Sourcing** – This is when organizations have business connections with certain number of suppliers, where each supplier acts in response to the demands and requirement of a particular quotation from the buying organization (Zeng, 2000).

- **Single Sourcing** – This entails the initiative to reduce the number of suppliers with which an organization does business with; and sourcing from a single source (Krotseng, 1997).

- **Local Sourcing** – With this, it involves organizations use of local suppliers (Arndt, 1997).

- **Offshore Sourcing** – This is when some of the actions or operations engaged in creating a product is conducted overseas (Arndt, 1997).

- **Global Sourcing** – This is defined as the integration and management of procurement conditions across international business units (Rajagopal & Bernard, 1994).

- **Insourcing** – This explains that organizations conduct tasks internally (King, 2001).

- ** Outsourcing** – It is referred as a strategic perception on outside resources (Arnold, 2000).

These definitions were all cited in Tam et al. (2007).

Consequently, Spekman, Kamauff and Spear (1999) also presented and discussed in their study, ten principles that strive for an effective sourcing and supplier management. Below the ten principles:

- Integrate suppliers into the supply chain;
- Share information;
- Develop trust;
- Organize effectively to achieve alignment;
• Use commodity teams;
• Look globally for advantage – global sourcing;
• Focus on total costs;
• Rationalize the supply base;
• Let the suppliers manage it;
• Leverage technology.

In the authors’ findings, they stated that high performing organizations can handle their supply base as a valued source by means of their sourcing strategies. With this, it falls on the note of having an appropriate range of partners. In order to strategically choose the right partners in filling up the gap, most organizations must firstly verify what is core and what non-core activities is (Dyer, Cho & Chu, 1998). Referring to one of the ten principles mentioned by Spekman, Kamauff and Spear, that is, integrating suppliers into the supply chain, is an aspect to be considered. In this regard, attaining supply chain integration depicts the need for one to comprehend with organizational drivers that soothes the tensions within partners. Such soothing of tensions within partnerships is conducted by sharing information, building up trust and promoting personal relationships (Spekman, Kamauff & Spear, 1999). With this, the authors further discussed that the joining of suppliers can be practiced by integrating key sourcing aspects in strategy, systems or processes and operations parallel with the supply base. Moreover, organizations that have discovered to leverage procurement have mastered the configuration of strategy, systems or processes and operations (Spekman, Kamauff & Spear, 1999). This aims in leading to an effective sourcing. The diagram below illustrates the configuration.

![Diagram of Key Sourcing Dimensions Required for Alignment](Spekman, Kamauff & Spear, 1999, p.104)

This leads to the next section on procurement role.
2.6 Procurement Role

Humphreys, McIvor and McAleer (1998) stated that in order to develop the intellectual capital of the procurement function, the purchasing manager is the ideal person responsible. Consequently, the intellectual capital mentioned is regarded as the intangible assets of skill, knowledge and information. This is perceived to be significant to success of the supply management activity.

As a result, a model developed by Maister’s Professional Service Firm (PSF) cited in Humphreys et al., (1998) sets a strategic framework in assessing training requirements, human resources professionals within organizations. Maister defined three kinds of PSF activities that is; Brains, Grey Hair and Procedure. In each of these activities, the target is to aim different market and different pricing structure. The author continued by stating that for an organization to survive, it has to attain dominance in its chosen markets.

**Brain** – It is described as the problems that are seen to be extremely complex and demands a professional or technical knowledge. Also, it concentrates on problems that need novel solutions with the use of highly creative individuals and commanding the highest price.

**Grey Hair** – This is when there is a provision of customized service derived from experience of solving particular kind of complicated problems. The nature of the problems is familiar and the operations needed demand less innovation and creativity.

**Procedure** – It is regarded as programmable in nature that is, with a familiar standard solution conveyed efficiently.

Below is a classification of activities of the purchasing or procurement function under the Maister model. The table implies on how the purchasing function (or procurement function) take into account the relationships with suppliers. In addition, the table shows three groups categorized under the model that is;

- **Brains** – Largely the affair of purchasing managers (Role played as mentoring, coaching and assisting the purchasing individuals, alongside maintaining and enhancing connection with customers and suppliers at a strategic level).

- **Grey Hair** – Largely the affair of purchasing executives (Role played as the one adding value to the procured package, working closely together with, coordinating, operationalizing and improving organizational effectiveness).

- **Procedure** – Largely the affair of planner/buyers (Role played as an administrator, coordinating the scheduling and flow of materials from suppliers, supervising and maintaining the Material Requirement Planning (MRP) system, determining inspection and testing requirements, indicating packaging and shipping instructions and managing financial queries).
Table 2.1 Purchasing Function Activities Matrix: Applying Maister’s PSF Model (Humphreys et al., 1998, p.8)

<table>
<thead>
<tr>
<th>Purchasing function activities matrix: applying Maister’s PSF Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brains – purchasing managers</strong></td>
</tr>
<tr>
<td><strong>Intellectual capital</strong></td>
</tr>
<tr>
<td>Mentoring/coaching role</td>
</tr>
<tr>
<td>Communicating and capturing lessons learned from previous projects</td>
</tr>
<tr>
<td>Improve technical competence of function through training and development role</td>
</tr>
<tr>
<td>Leadership</td>
</tr>
<tr>
<td><strong>Consultancy role</strong></td>
</tr>
<tr>
<td>Identifying strategic partnerships</td>
</tr>
<tr>
<td>Concurrent engineering</td>
</tr>
<tr>
<td>Strategic make/buy decisions</td>
</tr>
<tr>
<td>Just-in-time</td>
</tr>
<tr>
<td>Competition/best in class benchmarking</td>
</tr>
<tr>
<td>Customer analysis</td>
</tr>
<tr>
<td>Gather competitor and market intelligence</td>
</tr>
<tr>
<td>Continuous improvement projects</td>
</tr>
<tr>
<td>Business process reengineering</td>
</tr>
<tr>
<td><strong>Other</strong></td>
</tr>
<tr>
<td>Responsible for department budget</td>
</tr>
<tr>
<td>Assist in resource allocation to cells</td>
</tr>
</tbody>
</table>

The model of Maister defines the role and responsibilities of the procurement function (purchasing function), which has decentralized its support function, and in a direction of partnering. This illustrates the vital issues that aid managers and purchasing personnel in their roles.

As part of the discussion on the procurement role, another aspect of procurement is the characteristics of skills, which is the next section.

### 2.6.1 Characteristics of Skills Needed for Procurement

Tassabehji and Moorhouse (2008) introduced a new taxonomy of procurement skills that classifies procurement skills into five categories that depicts the requirements of the modern day procurement experts. Below are the definitions of the groupings namely:

- **Technical Skills (TS)** – This is the primary and basic administrative skill crucial for any procurement specialist. It includes product knowledge, computer literacy, total quality management and government legislation. Also, one aspect of the technical skills is that of the Advanced Procurement Process Skills (APP), which includes category management, global sourcing development, and detailed cost driver analysis calling for advanced analytical capabilities needed to generate value. Furthermore, with these basic procurement skills, it is portrayed as the foundation for developing more strategic skills.

- **Interpersonal Skills (IS)** – This is required for interaction with people in teams and also on the individual level. Consequently, it includes oral and written communica-
tion, conflict resolution, influencing and persuasion, group dynamics, leadership, problem solving and interpersonal and cultural awareness. Moreover, these skills are a necessity at all levels for an effective procurement management.

- **Internal Enterprise Skills (IE)** – These are skills that are related to the overall business and how interactions amongst the different functions are perceived. The IE facilitates to effectively perform market analysis, handle internal relationships, global sourcing evaluation, internal change management and planning, and organizational skills.

- **External Enterprise Skills (EE)** – These are skills relating to the supply chain/network and its shareholders. The EE facilitates in the management of external relationships, and stakeholders change management.

- **Strategic Business Skills (SB)** – Skills that relates to the extensive strategic issues and how procurement influence on the organizational value on the whole. It includes planning and managing strategic partnerships and alliances, risk management and adding value to the organization.

This new taxonomy of procurement skills highlights the skills needed for the procurement role within organizations. Tassabehji and Moorhouse (2008) perceived these varying skills requirements of the procurement experts are more of a generic and management oriented, but practical in a procurement context. In this case, these skills are seen as the core requirement, which is surrounded by a whole array of generic managerial skills distinctively honed for procurement and other functions in the organization. The diagram below differentiates the new taxonomy.

![Fig. 2.5 New Categorization of Skill Types Required for Procurement (Tassabehji and Moorhouse, 2008, p.60)](image_url)
Table 2.2 Development of Requisite Professional Procurement Skills (Tassabehji & Moorhouse, 2008, p.64)

<table>
<thead>
<tr>
<th>Competency required</th>
<th>Skill reference</th>
<th>Implication/impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical skills (TS)</td>
<td>• Technical skills (Kolchin and Giampiero, 1993)</td>
<td>Using new technology for effective procurement decision-making</td>
</tr>
<tr>
<td></td>
<td>• Quantitative, decision-making, negotiation skills (Giampiero and Pursey, 2000)</td>
<td>Undertaking negotiations and discussions</td>
</tr>
<tr>
<td></td>
<td>• Technical skills and techniques (Carr and Semetra, 2000)</td>
<td>Essential skills for creating value, improved value focused and strategic decision-making</td>
</tr>
<tr>
<td></td>
<td>• Technical skills (Counis et al., 2006)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Technical, broad financial (Giampiero et al., 2005)</td>
<td></td>
</tr>
<tr>
<td>Interpersonal skills (IS)</td>
<td>• Interpersonal, individual and management skills (Kolchin and Giampiero, 1993)</td>
<td>Effective two-way communication</td>
</tr>
<tr>
<td></td>
<td>• Behavioral, team, process management skills (Giampiero and Pursey, 2000)</td>
<td>Effective personal development, awareness and management</td>
</tr>
<tr>
<td></td>
<td>• Technical skills and skills techniques (Carr and Semetra, 2006)</td>
<td>Building and managing cross-functional teams and relationships</td>
</tr>
<tr>
<td>Internal enterprise skills (IE)</td>
<td>• Cost analysis skills (Counis et al., 2006)</td>
<td>Higher level business decision-making</td>
</tr>
<tr>
<td></td>
<td>• Management, team skills (Giampiero and Pursey, 2000; Giampiero et al., 2005)</td>
<td>Managing internal politics and barriers</td>
</tr>
<tr>
<td></td>
<td>• Get ‘Buy in’ from different departments/groups</td>
<td>Resolving internal issues</td>
</tr>
<tr>
<td>External enterprise skills (EE)</td>
<td>• Cross-functional, team-building (Laming et al., 2005)</td>
<td>Early involvement in purchasing decisions</td>
</tr>
<tr>
<td></td>
<td>• Strategic skills (Giampiero and Pursey, 2000)</td>
<td>Collaborating with value-adding suppliers</td>
</tr>
<tr>
<td></td>
<td>• Supplier/product monitoring (Counis et al., 2006)</td>
<td>Effective supplier selection and stakeholder involvement and management</td>
</tr>
<tr>
<td>Strategic business skills (SB)</td>
<td>• Management (Kolchin and Giampiero, 1993)</td>
<td>Recognition of the value of procurement</td>
</tr>
<tr>
<td></td>
<td>• Strategic skills (Giampiero and Pursey, 2000; Giampiero et al., 2006; Laming et al., 2005)</td>
<td>Takes role to the strategic level of procurement</td>
</tr>
<tr>
<td></td>
<td>• Strategic planning (Giampiero et al., 2006; Laming et al., 2005)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Flexibility (Giampiero et al., 2005)</td>
<td></td>
</tr>
</tbody>
</table>

These skills enhance procurement’s ability to achieve its goals. Tassabehji and Moorhouse (2008) added that the procurement role within organizations should create and develop cross-functional strategies and should acquire internal selling, change management, supplier relationship and partnership management skills. This depicts the internal and external role it plays in adding value to the entire organization. Subsequently, the role of procurement acts as a vital foundation for the attainment of strategic procurement. The authors also added that, for the role of procurement to attain high status levels within an organization, a strong management support (that is influencing organization’s attitude and allotment of resources) need to be acquired. In this case, management support shows a relationship with the attainment of high status level for procurement function. Tassabehji and Moorhouse (2008) mentioned that the procurement role within most organization do not have a highly developed skill set would attain a low status level.

In addition, talking about the effectiveness within an organization, Tassabehji and Moorhouse (2008) developed a matrix on the degree of effectiveness of the mix of procurement skills. Below is the diagram showing the matrix:
Fig. 2.6 Procurement Effectiveness Matrix (Tassabehji & Moorhouse, 2008, p.65)

The authors described in this matrix that, for procurement to advance to strategic, it needs to acquire a strong set of fundamental skills and capabilities. This is explained in the diagram in table 2 by Carr and Smeltzer (2000) and Cousins, Lawson and Squire (2006). In continuation, the list of skills on the horizontal axis of the matrix denotes the features of the new taxonomy in figure 2.5. This is largely cumulative with which one develops its core procurement skills in reaching the critical level of skills for operating strategically. Tassabehji and Moorhouse (2008) proposed that in optimizing the role of procurement in attaining added value within an organization (i.e. the top right square of the matrix), the procurement function must build up technical (includes advanced procurement process skills), interpersonal, internal and external enterprise and strategic business skills together with a high level of support and internal recognition. Furthermore, the role of procurement needs to be established by demonstrating value internally and acquiring the appropriate skills in becoming strategic. The authors described that the “strategic purchaser” adds most to organization’s performance and has a full range of vital skills and internal recognition and support. The “celebrity purchaser” lacks the necessary procurement skills in spite of organizational support. Moreover, “capable purchaser” has acquired a variety of skills however, lacks organizational support with some degree of effectiveness. The “underdeveloped purchaser” needs skills and organizational support in order to be effective respectively.

2.7 Summary of Procurement Characteristics

In this section, SCM and procurement aspects were discussed as a significant feature in context to organizations utilizing their procurement processes, its role, and strategy for their respective form to maintain a competitive advantage. This leads to high organizational performance. Procurement is described as a system and a process. System denoting an examination of inputs, outputs, transfer function and environment that play a role in linking vendors, suppliers, producers, and customers collectively. On the other hand, procurement can be seen as a process whereby a set of processes interconnects producers, vendors, and customers through the supply chain. In this case, an amount of activities (that is, purchasing function, stores, traffic and transportation, incoming inspection, quality control and assurance, and salvage and environmental issues) are performed in order to link all these partners or actors together.
Another aspect discussed is how most organizations re-organize their business processes by focusing on organization’s core competencies and contracting out non-core activities. This depends on the characteristics of skills denoting the efficiency of procurement in the organization. Characteristics of skills required for procurement are the technical, interpersonal, interpersonal enterprise, external enterprise and strategic business skills. This enhances the procurement’s efficiency to achieve its goals.

Another perspective that is significant in this research is innovation which is described in the next section.

2.8 Innovation

2.8.1 Definition and Types

Innovation is a vast subject and there is much literature regarding the topic. The authors of this report will begin a review of the definitions of innovation.

Thompson (1965, p.36) described innovation as “the generation, acceptance, and implementation of new ideas, processes, products or services” (cited in Hurley & Hult, 1998, p.44). “Innovation is defined as the adoption of an idea or behaviour, whether a system, policy, program, device, process, product or service that is new to the adopting organization” (Daft, 1982; Damanpour & Evan 1984) (cited in Damanpour, 1992, p.376). Zaltman, Duncan, and Holbek (1973) stated that “innovation is an idea, practice, or material artifact perceived as new by the relevant unit of adoption” (cited in Hurley & Hult, 1998, p.44). Innovation is the “successful implementation of creative ideas within an organization” (Amabile, 1996, p.25) (cited in Hurley & Hult, 1998, p.44). Moreover, the difference between innovation and creativity is that innovation implements ideas and brings them into existence (Tucker, 2002).

Innovation is commonly characterized to be associated with technological achievements and new products but it can rely on other changes to (Kline & Rosenberg, 1986, p.279):

- A new process of production
- The substitution of a cheaper material, newly developed for a given task, in an essentially unaltered product;
- The reorganization of production, internal functions, or distribution arrangements leading to increased efficiency, better support for a given product, or lower costs; or
- An improvement in instruments or methods of doing innovation

Furthermore, Damanpour (1992) classifies innovation to be three dualism types. They are shown below:

- administrative versus technical
- product versus process
- radical versus incremental

“Technical innovations pertain to products, services, and production process technology; that is, they are related to the basic work activity of the organization” (Damanpour & Evan 1984; Knight, 1967)
Administrative innovations involve organizational structure and administrative processes; that is, they are indirectly related to the basic work activities of the organization and more directly related to its management” (Damanpour & Evan 1984; Kimberly & Evanisko 1981; Knight 1967) (cited in Damanpour, 1992, p.398). “Product innovations refer to the introduction of new products or services to meet an external user or a market need, while process innovations refer to the introduction of new elements in the organization’s production or service operations – input materials, task specifications, work and information flow, and equipment – that are used to produce a product or tender a service” (Knight 1967; Utterback & Abernathy 1975) (cited in Damanpour, 1992, p.398). Radial innovations are those that produce fundamental changes in the activities of the organization and represent clear departures from existing practices, while incremental innovations result in a lesser degree of departure from existing practices’ (Dewar & Dutton, 1986; Ettlie, Bridges & O’Keefe, 1984) (cited in Damanpour, 1992, p.398).

Tucker (2002) place innovation into three categories. “Product innovation is the result of bringing to life a new way to solve the customer’s problem that benefits both the customer and the sponsoring company or simply put value creation for the customer” (Tucker, 2002, p.21). Top-line is increasing revenues while bottom-line is decreasing costs, both outcomes result in higher profitability for an organization. The second type of innovation, “Process innovation aims to increase bottom-line profitability, reduce costs, raise productivity, and increase employee job satisfaction” (Tucker, 2002, p.22). This will increase the level of quality and create a more consistent product or service. For manufacturing, process innovations include new manufacturing methods and technologies that lead to value creation in cost savings, quality improvements, cycle times, and development times, speed of delivery or ability to mass-customize products and services. Process innovations in service introduce new, efficient and better services which aim to benefit the customers, both indirectly and directly. The third type is strategy innovation.

“Strategy innovation is about using challenging existing industry methods of creating customer value in order to meet newly emerging customer needs, add additional value, and create new markets and new customer groups for the sponsoring company. Strategy innovation results in new approaches to marketing or advertising your offers, in introducing new sales methods, and in new approaches in enhancements to customer service or market positioning. Strategy innovation results when your firm changes the customer groups it targets and how it ‘goes to market,’ meaning how it distributes its offerings to end customers” (Tucker, 2002, p.22).

2.8.2 Reasons to Innovate

Companies are facing increasing competitive pressures and the market is continuously evolving and more increasingly difficult to anticipate. The political and economical situations of today results in markets opening up or closes others, as well as consumer market changes. It is becoming more difficult to satisfy rising customer’s demands such as higher demands for customized services, fast delivery, high quality, lower prices and sound environmental performances (Riel, 2005; Cobbenhagen, 1999). As well, the life cycle is shortening which decreases the amount of time a firm has for actions (Cobbenhagen, 1999). New products will find themselves quickly in the maturity phase, where competition is often fierce (Cobbenhagen, 1999, p.17). Every product or process is subject to a life cycle. “Although these life cycles vary in shape or length (depending on the product, process or line of business), sooner or later every product will become obsolete and call for a successor, an innovation” (Cobbenhagen, 1999, p.16). To remain competitive, companies must be providing a stream of new and improved products, processes and services (Cobbenhagen, 1999).
Whatever the primary source of scientific advance and even of technological change, it is the (successful) introduction of product, process and organizational innovations that allows firms to override the preexisting conditions of markets and industries, and to grow and gain market shares at the expense of non-innovating firms” (Cainelli, Evangelista & Savona, 2006, p.437).

Organizations must develop or acquire innovations to adopt as responses to changes or take proactive actions taken to alter their environment (Damanpour, 1984) (cited in Damanpour, 1992). Kline and Rosenberg (1986) state that two forces drive changes in the environment. Forces in market, such as changes in income, relative prices, deregulation and underlying demographics change the commercial opportunities. The second set of forces are changes at the technological and scientific frontiers often suggest possibilities for fashioning new products, or improving the performance of old ones, or producing those products at a lower cost (Kline & Rosenberg, 1986).

Roberts (2002, p.16) mentioned about gaps in the industry positioning map, Gaps could be new emerging customer segments or existing customer segments that other competitors have neglected; (2) new, emerging customer needs or existing customer needs not served well by other competitors; and (3) new ways of producing, delivering or distributing existing or new products or services to existing or new customer segments. Gaps appear for a number of reasons, such as changing consumer tastes and preferences, changing technologies, changing governmental policies, and so on. Further, gaps can be created proactively by the organization or by external changes. By filling these gaps, the organization is able to survive and prosper.

Organizations can generate higher profits via two ways; cutting costs or driving revenue growth. Cost-cutting efforts can help increase overall profit by increasing the spread between gross and net. Further, attempts can be made for product/service innovations or an improvement in quality can raise the revenue. It has been noted that organizations that are more innovative can produce higher profits (Tucker, 2002).

Geroski and Machin, (1992) state that innovative firms tend to have larger market shares, higher growth rates and profits than non-innovative firms (cited in Cobbenhagen, 1999). “Further, innovation is an important precondition for economic growth and the improvement of national competitive positions” (Cobbenhagen, 1999, p.15). Therefore the conclusion that innovation can drive revenue growth can be made.

2.8.3 Process and Service Innovation

“In response to all or many challenges, service providers invent, develop and provide new – and better – service offers, while developing and implementing new – and better – service delivery technologies at the same time. New services, support existing products with new services, adapt existing services to new requirements or to apply old concepts in new domains; the development of far-reaching competences in service innovation management has become crucial to the success of the new service firm” (van Riel, 2005, p.493).

Innovation within processes in an organization or within inter-firm activity could create value through “operation and maintenance processes, improved maintenance quality, improved safety, reduction in costs, reduction in execution time resulting in reduced downtime, improved availability and quality of production output” (Tidd & Hull, 2005) (cited in Panesar & Markeset, 2008, p.178).

An innovation within service is a complex process requiring management and coordination of large number of inter-organizational activities and interaction at different levels in organizations. The process for creation of new/improved services requires careful
planning and thorough understanding of the customer’s needs, wants and preferences (Panesar & Markeset, 2008, p.190).

“Firms are increasingly outsourcing to procure cheaper or high-quality goods and the increase in outsourcing of non-core activities and in-sourcing of expertise has created growth in the service industry and a more competitive market” (Panesar & Markeset, 2008, p.190). Further, side-effects of outsourcing include an increase in the complexity of industrial products and create the need for interdependence between service providers and service users. Thus, innovation in industrial services becomes increasingly important for optimization of operations and maintenance of complex production facilities (Panesar & Markeset, 2008).

As an industry expands, it generates an increased demand for intermediate components and materials (Kline and Rosenberg, 1986) which reinforces the need for effective service provision. Service providers are required for enhancing operational skills and improving product performance. Partnerships which are created should “collaboratively look for solutions to improve the effectiveness and efficiency of operations, maintenance and support processes, for reducing costs as well as for improving health, safety and environmental conditions” (Panesar & Markeset, 2008, p.177).

2.8.4 Characteristics for Innovation

Kline and Rosenberg (1986) claim that there is no correct method in achieving successful innovation. The processes and systems are complex and highly variable and these make it difficult to measure the effectiveness of innovation. Considering these circumstances, organizations will vary in their ability to innovate. Further, “there is no generally agreed way of measuring the importance of innovation or its’ impact” (Kline & Rosenberg, p.182). The impact of innovations will depend from market to market, industry to industry.

Organizations can identify positioning gaps and thus hit on their strategic masterstrokes in various ways: by accident or luck, by experimenting, through a series of seemingly unrelated steps or actions, or through a proactive thinking process (Roberts, 2002).

2.8.4.1 Innovation Process

The section above describes that there is no correct formula for innovation. “Innovation is complex, non-routine and presents dilemmas and uncertainties which are mostly unknown to production processes. The key to innovative success is an effective and efficient organization of the firm’s innovative function” (Cobbenhagen, 1999, p.30).

However in all situations, innovations whether of product, process or market, always move through two quite different stages. First someone has to come up with the new idea. Then someone (often someone other than the idea originator) has to refine, focus and implement that idea (Roberts, 2002, p.1). The ideas can be generated internally or externally.
Panesar and Markeset (2008) produced the figure above which attempts to illustrate a service innovation process. The goal of this figure is to demonstrate an active image of what goes on in a process. There are many different methods suggested by researchers but innovation is a very complex process. However, researchers do generally conclude and accept the idea that control over innovation would lead to more frequent and successful innovations. Further, cross-functional and cross-organizational teams, intense communication and strategic information sharing can facilitate innovation. Black arrows on the figure above show communication links between the different stages and actors and reinforces that it is important that all participants understand the goals and work processes.

“Innovations accordingly demands feedback, and effective innovation demands rapid, accurate feedback with appropriate follow on actions. Radical or revolutionary, innovation prospers best when provided with multiple sources of information input. Ordinary, or evolutionary, innovation requires iterative fitting and trimming of the many necessary criteria and desiderata” (Kline & Rosenberg, 1986, p.286).

To manage and coordinate the process, it is necessary to have evaluations and checkpoints at different stages to monitor the innovation process (Panesar & Markeset, 2008). This creates greater control of innovation, which is a very non-steady process.

Furthermore, innovations often go through drastic changes through their lifetimes and these changes are vastly important to align or realign to market needs (Kline & Rosenberg, 1986).

2.8.4.2 Uncertainty

Kline and Rosenberg (1986) state an innovation creates uncertainty. “Generally, the greater the changes introduced the greater the uncertainty not only about the technical performance but also about the market response and the ability of the organization to absorb and utilize the requisite changes effectively” (Kline and Rosenberg, 1986, p.276).
Innovation can involve low uncertainty from the change of paint colour of a car or to the extreme of a revolutionary new product. Small innovations can have significant commercial impacts, (i.e. changing colours of a 3M note was a strong commercial success). Further, innovation can be classified between evolutionary or revolutionary change. Revolutionary changes are large changes in a short amount of time, whereas evolutionary changes are smaller and more incremental (Tushman & O’Reilly, 1996).

2.8.4.3 Criteria for Innovation Success

Kline and Rosenberg (1986) mentioned the degree of success lies between the interaction of both marketing and technical perspectives. It is important to predict and understand the market response and commercial opportunities for an innovation. A technical innovation with no specific market reaction is not successful. “Commercial success turns on the attainment either of cost levels that are below available substitutes or creation of a superior product at a cost that is at least not prohibitively expensive in comparison with lower-performance substitutes” (Kline & Rosenberg, 1986, p.277).

“In innovation, one nearly always deals with the optimization of many demands and desiderata simultaneously. Successful innovation requires a design that balances the requirements of the new product and its manufacturing processes, the market needs and the need to maintain an organization that can continue to support all these activities effectively. If a technological improvement is to have a significant economic impact, it must combine design characteristics that will match closely with the needs and tastes of eventual users, and it must accomplish these things subject to basic constraints on cost and frequently other, legally mandated requirements” (Kline & Rosenberg, 1986, p.277). Further, “close coupling and cooperation among many activities in the marketing, R&D, and production function improve the chances of innovation” (Kline & Rosenberg, 1986, p.302).

Cobbenhagen describes innovative success from his own perspective. “Successful innovation thus means more than merely investing in R&D. It also means more than innovativeness. Among other things, it implies good co-ordination with production and with market. Ideally, firms would like to bring a dominant design onto the market at just the right time, but this is no easy task. Although it pays to be the first in the market, success can rebound if the company’s haste leads to design mistakes. Being too fast can turn out to be just as disastrous as being too slow. Not only innovation itself, but the effectiveness of the innovation process has been gaining increasing importance as an area of competitive strength” (Cobbenhagen, 1999, p.19).

Innovation must be balanced between ‘control’ and ‘creative freedom’. Creative freedom must be given to come up with something new, but must be control is needed. Moreover, innovation is not just in the domain of R&D but should concern the entire organization and supply chain. It requires internal and external perspectives (Cobbenhagen, 1999).

2.8.5 Negative Consequences of Innovation

Every output requires an input and opportunities are created by taking risks. These can lead to significant problems or disadvantages which arise from attempting to innovate. Mentioned previously, when an innovation is introduced to the market, there is a great uncertainty of the market reaction to the innovation. It could be varied depending on the scale of the innovativeness of the product (revolutionary or evolutionary).
In addition, new products or services can pose threats and cannibalize existing products and services and lead to a loss of knowledge. Process innovations can result in cutting jobs or create a redundancy for less skilled workers (Cobbenhagen, 1999).

Further, a new innovation does guarantee survival. Morbey (1988) mentioned that there is a weak correlation between R&D expenditures and growth in profits (cited in Cobbenhagen, 1999).

Development costs can be substantial investments and have gone up also with the failure rate. It is of great importance to “identify the factors that increase the chances of successful service innovation to help service providers improve their competitive position and deliver upon their promises” (van Riel, 2005, p.494).

Moreover, there is often resistance found within the organization and other stakeholders related to the innovation. Management must overcome this barrier (Cobbenhagen, 1999). Innovation can side track the organization that is innovating and make the organization expand beyond its core activities which consumes lots of energy (Cobbenhagen, 1999).

There must be some consideration of disadvantages of being innovative, but refusing to innovate is more dangerous as the firm will become susceptible to threats (Cobbenhagen, 1999). Moreover, Cobbenhagen notes that there needs to be control over the costs and management of the innovation. Doing this will increase the successive rate.

2.8.6 Innovation and Organization Size

Damanpour and Evans (1984) mentioned that “effective organizations adopt innovations of all types, because performance depends primarily on the congruency of the adoption of different types of innovations, rather than on each type alone” (cited in Damanpour, 1992, p.387).

Studies have proven that there is a positive correlation between the organizational size and the organizational innovativeness of a firm (Damanpour, 1992). However, the strength of this argument sometimes will vary between the types of industries or environmental characteristics (Pavitt, Robson & Townsend, 1989; Damanpour, 1992). For example, a large organization operating in a stable environment would be more innovative, because economies of scale enhance the introduction of technical innovations in the technical core, while the higher need for integration of activities promotes the adoption of administrative innovations in the administrative core (Damanpour, 1992, p.394).

Further, analysis done by Damanpour (1992) indicate that size is more positively related to innovation in manufacturing than in service, and in profit rather than in non/profit organizations.

Complexity has been found to be positively correlated with innovation (Blau & McKinley, 1979; Meyer & Goes, 1988; Zmud, 1984). Size and complexity are also positively correlated (Blau, 1970; Boland 1973; Marsh & Mannari, 1989) (cited in Damanpour, 1992). As well, centralization – the extent to which decision-making autonomy is concentrated in an organization (Pfeffer, 1981) – hinders innovation (cited in Damanpour, 1992). “As an organization grows, decision-making discretion cannot be contained at the top; it needs to be delegated down the levels of hierarchy, as well as horizontally to those members who have specialized knowledge related to the decision” (Damanpour, 1992, p.394).

Further, Rothwell (1978) contributes that small versus large organizations’ contributions to innovation differ small firms usually make their major contribution to industrial innova-
tions in low capital-intensive industries where the development costs for producing products are low (cited in Damanpour, 1992).

Generally, innovation increases with size at a declining rate, for example, when an organization becomes larger, more resources are needed to produce an equivalent change in the degree of innovativeness (Damanpour, 1992). Each size has a different organizational strategy and the emphasis on innovation is thus different. Small organizations maybe more into the role of radical technical innovations, because many innovative start-up firms are formed from one major product or service, while larger organizations may focus upon a combination of different innovations (Damanpour, 1992).

A recent study shows that innovative firms are creating flexibility and autonomy by finding smaller and more specialized divisions while maintaining the advantages associated with large size (Damanpour, 1992).

The following sections will review the literature regarding innovation for LEs and SMEs.

### 2.8.6.1 Large Enterprises

Large enterprises often are more complex and have diverse functions. They have the financial assets which allows them to diversify into many departments and develop areas in marketing skills, research and development, product development and etc which aides the ability to adopt a large number of innovations (Nord & Tucker, 1987) (cited in Damanpour, 1992).

Furthermore, the larger quantity of resources allows a larger organization to have a larger tolerance for potential losses to unsuccessful innovations. Larger firms employ more professional and skilled workers and whom offer greater technical knowledge and technical potential. The relatively larger inputs and outputs volume allows large organizations to accumulate resources that allow them to be leaders within technological development (Damanpour, 1992).

Large enterprises also tend to purchase innovation from outside, or generate it through partnerships, joint ventures, or licensing agreements with other firms (Damanpour, 1992). LEs have the threshold essential for international competitiveness. They are at an advantage in competing in the world market. Only large organizations have the concentration of human and non-human resources to be in the forefront of technology and succeed (Business Week, 1989; Ferguson 1998) (cited in Damanpour, 1992).

Under the assumption that complex systems are mostly larger organizations, “complex organizations are more innovative because they have a large variety of specialists which provide a broad knowledge base which increases the cross fertilization of ideas” (Aiken & Hage, 1971; Kimberly & Evanisko, 1981) (cited in Damanpour, 1992, p.383).

Furthermore, monopolistic large firms are detrimental to innovation whereas a competitive market populated by small firms (Freeman, 1982; Cohen, 1995; Freeman & Soete, 1997) (cited in Cainelli, 2006).

### 2.8.6.2 Small Enterprises

Smaller organizations can be more innovative because they have the greater flexibility and a higher ability to adapt and improve to drastic environmental changes. Mintzberg (1979) argues that innovation needs the coupling of different parts of an organization, which Nord
and Tucker (1987) stated that it could more easily be achieved in small than in large organizations (cited in Damanpour, 1992, p.377).

Small organizations show greater innovativeness, as they require less communication, less coordination, and less influence to gather support (Nord & Tucker, 1987) (cited in Damanpour, 1992, p.388).

2.9 Innovation in Procurement

In the ‘Art of Procurement Mastery’ article written by George Spray, the author mentions that supply chains should be focusing upon process innovations in their procurement to improve their ability to compete within this dynamic and turbulent world. Yet, the goals of procurement remain the same from decades before; that is to obtain high quality goods and services for the lowest possible total cost of ownership. In the article, the author states that innovation would push higher efficiency and effectiveness in procurement – through:

- New sourcing strategies
- New partnerships
- New insights
- New technologies

Spray (2009) states that procurement departments which excel at the following characteristics are procurement masters:

- Total-cost-of-ownership (TCO) savings
- Percentage of spend controlled by procurement
- The ratio between total cost of ownership reduction and procurement operating costs
- Percentage of new product designs/introductions in which procurement has a material role
- Share of suppliers managed through a formal process

Not only are masters superior at these qualities but they are able to avoid or overcome issues such as functional silos and other organizational barriers, limited amount of resources and talent, and the lack of authority to get things done (Spray, 2009).

Masters are technology leaders, they outsource processing power to increase efficiency; make better of faster decisions; leverage and focus internal skills and connect with suppliers and third parties.

2.9.1 New Sourcing Strategies and Insights

Further, masters approach procurement both strategically and holistically. Masters actively think about the future and predict market trends and needs. By performing this, masters achieve optimal purchases of quantity and price at the right times (Spray, 2009). The procurement department is supported by the firm and the employees are empowered.
2.9.1.1 Outsourcing Procurement

Masters are more likely to outsource their procurement out to third parties; this can vary from single procurement activities to the entire procurement function. Single activities can be order receiving, help desk, accounts payable and strategic activities can consist of strategic planning and sourcing management (Spray, 2009).

Reasons to outsource procurement can include gaining access to greater levels of cost savings and value, access to knowledge, avoid capital expenditures, access to technology platforms, focus on initiatives critical to success, access to supply market expertise, speed to value, improved user experience, and higher certainty of outcomes. To summarize, outsourcing parts to all of the procurement “can reduce risk and increase the control of inefficient or incompatible processes and technologies while enabling a company to focus on mastering overall business integration and strategic value creation” (Spray, 2009, p.39). Outsourcing procurement leverages the organization to be able to bargain.

When considering outsourcing procurement, there must be some considerations of the trade offs of developing and managing it internally compared to outsourcing it to an external party. Factors could include strategic alignment and costs.

“An outsourcing buyer has a more comparative, multi-client view of how a supplier’s performance stacks up in terms of pricing, technology delivery and reliability” (Spray, 2009, p.42).

2.9.1.2 Other Potential Strategies

Multiple sourcing, single sourcing, local sourcing, offshore sourcing, global sourcing, in sourcing and outsourcing are innovative options for procurement to operate more efficiently. These are explained earlier within the thesis.

2.9.1.3 Open Innovation and Seeker Solver Networks

Billington and Jager (2008, p.23) believe that it is important “for procurement professionals to develop new ways to define and identify needs inside their organizations, to assess the capabilities of the organizations’ internal resources to meet those needs, and to match them against all available external resources.”

In their article, they mention that the use of the internet can match needs and capabilities and that, firms should take this approach. There are formal networks which charge a fee for access which can link suppliers and buyers together or seeker solver networks.

Open innovation is the concept of “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively” (Billington & Jager, 2008, p.24). This paradigm assumes that companies can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology (Billington & Jager, 2008).

When organizations implement these two concepts, procurement groups will be placed to acquire and assign the resources to take on their new roles (Billington & Jager, 2008).

2.9.2 New Partnerships

One of the main purposes of procurement managers is to select strategic partnerships which will furnish them with products, components, services and materials to create or maintain a competitive advantage (Sarkis & Talluri, 2002). Gone are the days of traditional relationships based on price which have been replaced by emphasize on other strategic and
operational criteria such as minimum lead time, quality and flexibility (Sarkis & Talluri, 2002). Strategic relationships play an important role in the supply chain health. Furthermore, the level of competition has changed and is no longer firm versus firm, but supply chain versus supply chain. By forming partnerships or strategic alliances, firms can combine their individual strengths and unique resources to produce a strong outcome (Whipple & Frankel, 2000).

2.9.3 New Insights: Better Guidance and Innovation in Processes

By managing the procurement process while empowering employees, organizations can increase their efficiency in procurement.

If cross functional teams are implemented in the steps below, an organization can improve its procurement efficiency. However, certain control must remain over these cross functional teams.

- set a leading practice in strategic sourcing process and structure in place
- managing projects
- formulating strategies
- managing supplier selection
- implementing contracts

Activities need to be formally tracked to ensure that there is some control. Moreover, feedback can lead to improvements of process innovations. Emphasis should be placed upon the total cost of ownership rather than price and quality. Poor quality can lead to huge costs within the after sales services. Furthermore, Masters assign a procurement board which leads the organization to focus on an end to end supply chain orientation. These boards would consist of many different roles and functions.

Masters work closely with suppliers and more often look to collaborate to create extra value (supplier relationship management). By properly managing the supplier network, a firm and its partners are able to achieve deep cost savings (i.e. eliminating redundancies and wastes) and further create enhanced value (Spray, 2009). Supplier chain management involves deep relationships, long partnering agreements, joint operations based on knowledge sharing, seamless processes and striving for mutual benefits (Spray, 2009). The barrier of “us” versus “them” must be removed and mutual goals should be set.

Integrating and streamlining processes across multiple business functions is critical to achieve the end-to-end perspective of the procurement master. Integration, visibility and standardization create effective procurement processes (Spray, 2009). Information is clearly transferred between functions and supply chain members all the way to the end users (Spray, 2009).

Master’s category specific processes are carefully defined and consolidated through buying portals. Process excellence maximizes the value of procurement. Ensuring that everything is streamlined and that everything has influence on the role of procurement (Spray, 2009).
Furthermore, “companies must therefore take a more integrated view, bringing together their processes and practices, and combining cultures and skills with well-defined roles and responsibilities” (Spray, 2009, p.41).

Employing a superior workforce and frequent adjustments to organization skills, ongoing training, and hiring personnel from different backgrounds and expertise would be another benefit to a more efficient firm (Spray, 2009).

### 2.9.4 Technology

“Technology is also an enabler of procurement processes. Here again, the trend is toward dramatic change. For example, leading companies are streamlining processes on a channel-by-channel basis, optimizing the mix of methods by category, and not relying on too few or too many options for sourcing, buying and paying” (Schul & Blanc, 2008, p.34).

This might mean implementing a procure-to-pay process where key elements of each transaction are fully automated. It might mean e-procurement solutions, web-based supplier networks, and/or supplier portals all integrated with or integrated to an overall ERP system. Or another channel might embrace a sophisticated planning model featuring full supply chain integration with key suppliers/partners. Such a system might include capabilities such as real time supply/demand planning portal auto replenishments or even contemporaneous engineering (Blanc & Schul, 2008).

Masters are known to work closer with technologies than other firms. Technology supports and facilitates the optimization of supply chains. It creates a real-time image of the flow of goods and cash. Moreover, allows organizations to take advantage and streamline and optimize supply chains (Spray, 2009).

Technology can support innovation by easing the measurement of performances. It creates new value by modern sourcing or the availability of purchasing tools (e-procurement). Further, technology is a source which can develop communication links and connections with other internal functions and externally.

Technology also offers new web based tools to gather, interpret and share procurement related information (Spray, 2009). It is essential that procurement shall “change at a rate equal or faster than the business” (Spray, 2009, p.43). Below are the two applications that organizations can implement to achieve process and potential innovation.

**E-Sourcing**

E-sourcing is an easy means for suppliers to bid for contracts online through reverse auctions or by submitting electronic requests for proposals, quotes, and information. It provides suppliers the information they need. It brings standardization into a function which is ad hoc (Ghahremani, 2008). E-sourcing software vendors claim users can negotiate 10 to 20 percent in savings. Furthermore, E-sourcing allows firms to measure their suppliers on a score card which they can share to them (Ghahremani, 2008).

**Enterprise Resource Planning (ERP)**

Companies must increasingly share with their suppliers, distributors, and customers the critical in-house information they once aggressively protected (Umbe, Half & Umble, 2003). The company’s different functions must communicate timely and accurate information.
ERP systems aligned with business processes can have two benefits. The first is a unified enterprise view of the business that encompasses all functions and departments; and the second is an enterprise which contains all the business transactions. This system will facilitate communication, cooperation and coordination among the departments as well as to all stakeholders (Umbe et al., 2003).

ERP provides a way to keep track of materials, inventory, billing, human resources and purchasing orders (Inman & Hillstrom, 2005). Other benefits directly to procurement are that it supports a master production schedule and the bill of materials (Umbe et. al, 2003). Sales planning and demand management, production levels were also other benefits (Umbe et al., 2003).

However, not every firm is suitable for an extensive ERP system. First a firm must decide whether the benefits of the ERP system will surpass the costs. As well, if the ERP system will align with the business processes or should the firm realign its business processes to suit the ERP system (Umbe et al., 2003).

### 2.10 Summary of Innovation

The contextual environments which all companies face are dynamic. Companies are facing increasing competitive pressures. The business today is continuously evolving and more increasingly difficult to anticipate. The political and economical situations are always turbulent which results in markets opening up or closes others, as well as consumer market changes. It is becoming more difficult to satisfy rising customer’s demands. These include higher demands for customized services, fast delivery, high quality, lower prices and sound environmental performances (Riel, 2005; Cobbenhagen, 1999).

To remain competitive, companies must be proving a stream of new and improved products, processes and services (Cobbenhagen, 1999). Organizations must be ready to align their strategy to remain competitive.

Innovation is commonly characterized to be associated with technological achievements and new products but it can rely on other changes to (Kline & Rosenberg, 1986, p.279):

- A new process of production
- The substitution of a cheaper material, newly developed for a given task, in an essentially unaltered product;
- The reorganization of production, internal functions, or distribution arrangements leading to increased efficiency, better support for a given product, or lower costs; or
- An improvement in instruments or methods of doing innovation

Kline and Rosenberg (1986) claim that there is no correct method in achieving successful innovation. The processes are systems are complex and highly variable and these make it difficult to measure the effectiveness of innovation. Considering these circumstances, organizations will vary in their ability to innovate. Further, “there is no generally agreed way of measuring the importance of innovation or its’ impact” (Kline & Rosenberg, p.282). The impact of innovations will depend from market to market, industry to industry.
Striving for innovations is not without risks. The failure rate for new products is extremely high and the costs for R&D are increasing. Further new products or services can cannibalize existing products and services. Process innovations can result in cutting of jobs or create a redundancy for less skilled workers (Cobbenhagen, 1999). A new innovation does not guarantee success either (Cobbenhagen, 1999).

For the most successful innovations there must be control between costs and innovations and proper control of creativity.

Another example of disadvantages can include resistance found within the organization and other stakeholders related to the innovation. Management must overcome this barrier (Cobbenhagen, 1999). Innovation can side track the organization that is innovating. It can go beyond its core activities which can consume lots of energy. There must be some consideration of disadvantages of being innovative, but refusing to innovate is more dangerous as the firm will become susceptible to threats (Cobbenhagen, 1999).

Studies have proven that there is a positive correlation between the organizational size and the organizational innovativeness of a firm (Damanpour, 1992). However, the strength of this argument sometimes will vary between the types of industries or environmental characteristics (Pavitt, Robson & Townsend, 1989; Damanpour, 1992).

Generally innovation increases with size at a declining rate, for example, when an organization becomes larger, more resources are needed to produce an equivalent change in the degree of innovativeness (Damanpour, 1992).

Large enterprises often are more complex and have diverse functions. They have the financial assets which allows them to diversify into many departments and develop areas in marketing skills, research and development, product development and etc which aides the ability to adopt a large number of innovations (Nord & Tucker, 1987) (cited in Damanpour, 1992).

Furthermore, the larger quantity of resources allows a larger organization to have a larger tolerance for potential losses to unsuccessful innovations. Larger firms employ more professional and skilled workers and whom offer greater technical knowledge and technical potential. The relatively larger inputs and outputs volume allows large organizations to accumulate resources that allow them to be leaders within technological development (Damanpour, 1992).

Smaller firms can be more innovative because they have the greater flexibility and a higher ability to adapt and improve to drastic environmental changes. Mintzerg (1979) argues that innovation needs the coupling of different parts of an organization, which Nord and Tucker (1987) stated that it could more easily be achieved in small than in large organizations (cited in Damanpour, 1992, p.377).

Small organizations are show greater innovativeness, as they require less communication, less coordination, and less influence to gather support (Nord & Tucker, 1987) (cited in Damanpour, 1992, p.388), while larger organizations facilitate the initiation of innovations because of higher knowledge resources, a more differentiated structure, and higher professionalism (Nord & Tucker, 1987) (cited in Damanpour, 1992, p.388).

A recent study shows that innovative firms are creating flexibility and autonomy by finding smaller and more specialized divisions while maintaining the advantages associated with large size (Damanpour, 1992).
Spray defines four changes that enterprises must focus to develop their procurement department and these are the following:

- New sourcing strategies
- New partnerships
- New insights
- New technologies

2.11 Summary of Frame of Reference

In fulfilling the purpose of this research, the authors have discussed various theories in regards to organizational size, an in-depth examination of procurement and innovation. In addition, the authors managed to link the crucial connection of innovation in procurement in providing an in-depth overview to support the purpose of this research.

In summary, procurement was described as activities needed to get a product from a supplier to its last destination. Activities include the purchasing function, storage, traffic and transportation, incoming inspection, quality control and assurance, and salvage and environmental issues (van Weele, 2002). Conversely, Thompson (1965, p.36) defines innovation as “the generation, acceptance, and implementation of new ideas, processes, products or services” (cited in Hurley & Hult, 1998, p.44).

The authors summarized the theories with the combination of innovation in procurement. By employing innovations within these areas, sourcing strategies, partnerships, insights and technologies, an organization proceeds towards procuring goods at low total cost of ownership and high quality, higher percentage of spend controlled by procurement, lower ratio between total cost of ownership reduction and procurement operation costs, percentage of new product designs/introductions in which procurement has a material role, and larger share of suppliers managed through a formal process (Spray, 2009).
3 Method

In this chapter, the authors aim to clarify the understanding of the reader upon the preference of method in order to define the area of investigation.

According to Saunders, Lewis and Thornhill (2007, p.5), they termed business and management research as “undertaking systematic research to find out things about business and management”. This is based intuitively on a perspective that researchers are increasingly expanding their knowledge. The two main ideas on the definition above is “systematic” and “to find out things” are important aspects. “Systematic” as described by Ghauri and Grønhaug (2005) portrays that researches are conducted not on beliefs however, on logical relationship. In this case, the research explaining the technique used in collecting information, the meaning gotten out of the results, and any other limitations found. Saunders et al. (2007) described “to find out things” as the diversity of possible purposes for the research. With this, it takes account of describing, explaining, understanding, criticizing and analyzing (Ghauri & Grønhaug, 2005). Ghauri and Grønhaug (2005) proposed on the point of “to find out things” as having an understandable purpose or acquiring a set of “things” that researchers want to discover that is, answers to questions. Furthermore, the purpose of this thesis is to investigate innovation in procurement in small and medium size enterprises. In this case, the authors have been collecting information, arguing to obtain a meaningful perspective on the information and thereby discovering results on the investigation.

3.1 Choice of Method

Saunders et al. (2007) mentioned that “methods” are the techniques and processes utilized in attaining and evaluating information. This includes questionnaires, observation and interviews and both qualitative (non-statistical) and quantitative (statistical) study methods (Saunders et al., 2003). According to Miller and Dingwall (1997) there is the distinction between two methodological approaches in literature that is, the qualitative and the quantitative approaches. In this case, both methods are evaluated differently.

The qualitative method involves examining and reflecting on observation. This is what Strauss and Corbin (1998, p. 10) defined qualitative research as “any type of research that produces findings not arrived at by statistical procedures or other means of quantification”. The authors pointed out that the qualitative research could be on lives of persons, lived experiences, behaviors, emotions, and feelings in addition to organizational operations, social movements, cultural experiences and connections between nations. Strauss and Corbin (1998) continued that there are several reasons for carrying out a qualitative research. These reasons are the preferences or experiences of the researcher (i.e. researchers being more familiarized with the investigation) and the nature of the problem investigated (i.e. investigations that attempt to comprehend the meaning or nature of say, experiences of persons).

On the other hand of a quantitative method, it concentrates on quantifying a phenomenon. Muijs (2004, p.1) defined quantitative research as “explaining phenomena by collecting numerical data that are analysed using mathematically based methods (in particular statistics)”. Furthermore, Collis and Hussey (2003) added that the quantitative research is based on collecting and analyzing numerical data and applying the data to statistical analysis. Consequently, this method utilizes a standardized way to attain large samples with high generalization.

In order to achieve our purpose, the authors chose to use a qualitative method. The aim of this thesis is to investigate innovation in procurement in small and medium-sized enterpris-
es. With this, this investigation requires an understanding of the social and human activities or in other words, the understanding of organizational operations. Consequently, a deeper knowledge in this particular research would be attained since all aspects of the study would be based on examining and reflecting on interviews. In this case, the authors regard that a qualitative method is best suited for the purpose.

3.2 Research Approach

In a research there are several approaches in attaining what one intends to find with relation to that particular research. Saunders et al. (2007) mentioned that in order to fulfill the purpose of a research it should entail the use of a theory where the theory may or may not be made clear in the design of that research. This is apparent in researches where researchers deliberate whether to use the deductive approach or the inductive approach as stated by Saunders et al. (2007). According to Saunders et al. (2007, p.117) deductive approach is when one “develop a theory and hypothesis (or hypotheses) and design a research strategy to test the hypothesis”; and on the other hand, inductive approach is when one “collect data and develop theory as a result of your data analysis”. These two approaches are vital in the design of the research. In this study the combination of an inductive and a deductive approach would be used. The combination is known as an Abductive approach. Danermark, (2001); Dubois and Gadde (2002) explained the concept, abductive (abduction) approach as the deducing or re-contextualizing individual experiences within a contextual framework, and aims to comprehend something in a new way, from the standpoint of a new conceptual framework. Kovács and Spens (2005) added that for researchers to take on the abductive approach leads to new insight regarding existing phenomena by examining these from a new viewpoint. Furthermore, acquiring new insights derived from existing experiences creates the knowledge. Kovács and Spens (2005) also mentioned that the abductive approach highlights the search for appropriate theories to a practical observation. This is what Dubois and Gadde (2002) termed as “theory matching”, or “systematic combining”. In this case, this process depicts that information that is gathered concurrently to theory building implies a learning loop (Taylor, Fisher & Dufresne, 2002) or in other terms the process of “back and forth” route between theory and empirical study (Dubois & Gadde, 2002; Wigblad, 2003). Moreover, Alvesson and Sköldberg (1994); Dubois and Gadde (2002) noted that the interplay between theories and practical study is found and commonly used in a case study research. The diagram below illustrates the research process of an abductive approach:

The abductive research process

(0) Prior theoretical knowledge

(1) Dev inventing real-life observations

(2) Theory matching

(3) Theory suggestion

(Final conclusions: H/P)

(4) Application of conclusions

Part of the research

Theoretical

Empirical

38
In this investigation, the authors have chosen an abductive approach with which the theories are used to inform the process of observing. This is vital in this research as the authors are re-contextualizing practical experiences within a conceptual framework in order to understand something in a new way. Since the purpose of this thesis is to investigate innovation in procurement in small and medium-sized enterprises, the abductive approach would be best suited for the study. This is to utilize what Dubois and Gadde (2002) termed as “theory matching” in order to emphasize the search for appropriate theories to practical observation. In this case it would be a case study of Sensys Traffic AB. In this research, theories on innovation and procurement were conceived prior to the interview questions. Upon meeting the interviewee, new insights were formulated from the interview which brought attention to the authors to apply more theories. Thus, the authors looked into the theories and devised more questions for another follow-up interview.

3.3 Case Study

Saunders et al. (2007) presented eight strategies that could be employed in research work that is; experiment; case study; survey; grounded theory; ethnography; action research; cross-sectional and longitudinal studies; exploratory, descriptive and explanatory studies. Case study has been a familiar research strategy in sociology political science, psychology, business and community planning, and social work. Yin (2003) mentioned that case study permits researchers to maintain the holistic and meaningful features of real life events. According to Robson (2002, p.178) “case study is a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence”. In this context, the author further explained the vital points in the definition above as that:

- A strategy that is, a stance or approach, rather than a method, such as observation or interview;
- Concerned with research, taken in a broad sense and including, for example, evaluation;
- Empirical in the sense of relying on the collection of evidence about what is going on;
- About the particular: a study of that specific case (the issue of what kind of generalization is possible from the case, and of how this might be done);
- Focused on a phenomenon in context, typically in situations where the boundary between the phenomenon and its context is not clear; and

In this thesis, a case study strategy is employed in order to get a deeper knowledge and analysis of the area investigated. This is to centre the attention on the phenomena in context by using different evidences or material collection to know what is going on. Furthermore, Yin (2003) clarified the essence of a case study as that; it aims to enlighten a decision
or a set of decisions: why they were taken, how they were implemented, and with what result. This is important as the thesis would be finding out the why, what and how part of the research questions. This is what Saunders et al. (2007, p.93) stated that the case study strategy has the extensive ability to produce answers to why, what and how questions.

Furthermore, there are two main types of case study namely; single-case study and multiple-case study. Yin (2003) described the two entities as that; single-case study corresponding to a single experiment as the multiple-case study considered as a “comparative” and seen to be compelling and regarded as more robust. The basis for a single-case study is to assess a well-formulated theory or to deal with an extreme or exclusive case, or to study a phenomenon. With a multiple-case study, a disadvantage is that it is time extensive and is not appropriate to carry out exclusive or extreme case (Yin, 2003).

In relation to our purpose of this thesis, the authors have chosen to carry out a single-case study where a thorough investigation of one company is required to get an understanding and knowledge of innovation in procurement. The authors used a single-case study where they conducted the investigation of Sensys Traffic AB, which is located in an undisclosed location. The authors investigated the procurement processes and innovation within Sensys Traffic AB in the real life context by means of an interview with the Director of Sourcing and Supply.

Next, the authors addressed the subsequent research questions to attain the purpose of the investigation:

- RQ1: What is the extent of relationships/collaborations between procurement with suppliers and other external parties?
- RQ2: What is the extent of the strategic role of the procurement function within the overall business strategy?
- RQ3: How is the procurement integrated into the organization (activities, roles, strategy)?
- RQ4: What is the extent of communication and collaboration within inter-functional roles?
- RQ5: What innovative actions have organizations implemented within their procurement processes (strategic planning)?

### 3.4 Collection of Material

The collection of material for the research is an important aspect. According to Stake (1995) there is no particular instant when the material collection commences. Consequently, the material collection starts even before there is a commitment to conduct the investigation that is, including first impression from the organization, background information retrievals and also being familiar with similar research.

The data collected in various researches can be classified either as a secondary or a primary data. In continuation, secondary data is the data that is previously collected for another reason while the primary data on the other hand is the data gathered by the researcher for the first time for that specific research (Wrenn, Stevens & Loudon, 2002)

*Secondary Data*
In a research design, secondary data is vital and has several uses. According to Wrenn et al. (2002) secondary data can be utilized in order to:

- Understand the problem situation and provide an overview,
- Make available information and insight for answering the research questions,
- Provide exploratory information in order to plan and design primary data tools,
- Evaluate primary data as a check and standard,
- Give insight to sample selection,
- Provide the primary data phase with research hypothesis or ideas to be studied.

In addition, the author also mentioned that secondary data has the advantage of being of low cost, availability, speed, and flexibility as well as its disadvantages as being a poor fit, accurateness, age, and quality. This is due to the fact that the materials collected are not for the specific investigation and that the information regarding the material can be unfamiliar (Wrenn et al., 2002).

In this thesis, the authors used the website of Sensys Traffic AB as a secondary material source in order to comprehend with the problem situation and give an overview of the investigation.

**Primary Data**

According to Wrenn et al. (2002), for answering research questions or testing of a hypothesis of the research, it is needed to go further than the examination of the existing material. This is to actually conduct a different type of data collection that has to be beyond the assessment of only the existing material. In this case, the major sources of primary data are the organization.

According to Churchill (1996) primary data is information collected for the problem investigated by the researcher. In continuation, Brannick and Roche (1997) also mentioned that the primary data collection method was classified by researchers conducting the investigation and that the materials were gathered from the examination of the interviewees or the focus group.

In this thesis, primary data were gathered by the use of face-to-face interviews with the Director of Sourcing and Supply of Sensys Traffic AB. This is what Sekaran (2000) stated that there are ways in gathering materials and that the frequently used methods ranges from face-to-face interviews, telephone interviews and computer-assisted interviews. In addition, since one of the authors of this thesis is a Marketing Consultant in Sensys Traffic AB, more information was retrieved to get a deeper insight into the area of investigation. The marketing consultant has access to information and employees which a person who is not affiliated with Sensys Traffic normally cannot get. The consultant contributed to the research by adding useful observations and knowledge from his regular work routines and not from the scope of this study.
3.4.1 Interviews

According to Saunders, Lewis and Thornhill (2003) interviews are useful in gathering suitable and reliable material that are necessary to the research questions and objective. This is vital as more suitable materials can be retrieved from the interviewee in order to have a full understanding of the area investigated. “The purpose of interviewing is to find out what is in and on someone else’s mind. We interview people to find out from them those things we cannot directly observe” (Patton, 1990; cited in Greenfield, 2002, p.209). Furthermore, Yin (2003) mentioned that interviews are vital sources in case studies. As a result of this, the aspect of interviewing serves as a tool for collecting information and also to have the insight to another person’s knowledge and perceptions.

Different authors classify interviews in diverse ways. Below is a summarization of the classification of interviews from different authors in the field of interviews.

Table 3.1 The Types and the Degree of Standardization of Interviews (Author’s classifications).

<table>
<thead>
<tr>
<th>Interview Classification from Different Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized</td>
</tr>
<tr>
<td>Semi-structured</td>
</tr>
<tr>
<td>Non-standardized</td>
</tr>
<tr>
<td>Non-standardized</td>
</tr>
</tbody>
</table>

In the table above, one can perceive that the authors utilized the same classification schemes but described it differently. In this case, the authors of this thesis agree to the classifications made by Yin (2003) and Hughes (2002) on the importance of interview as an in-
instrument for information collection. The reason being that an understanding of what the interviewee is saying or implies regarding the questions could be gotten.

Moreover, the focused interview or the interview guide approach denotes that the authors prepare a set of questions in advance either based on whatsoever approach used. Hughes (2002, cited in Greenfield, 2002, p.211) reviewed the disadvantages and advantages of setting such approach. The advantage in this sphere boosts the comprehensiveness of the material thereby making its collection more organized. On the other hand, its disadvantage is that vital topics might be unintentionally misplaced.

Yin (2003) talked about the open-ended or the informal conversational interview approach as that, it is frequently common in gathering information in case studies with which the interviewer could pose questions not only on the fact of the investigated area but also an outlook regarding the events. Hughes (2002, cited in Greenfield, 2002, p.211) mentioned the advantages and disadvantages of the approaches. With the open-ended interview approach, the advantage is that it enhances the salient and importance of the questions posed. On the other hand, the disadvantage of the informal conversational interview approaches entails that diverse information would be gathered from different persons with different questions.

In this thesis, the authors have chosen to combine the focused and open-ended interview approach proposed by Yin (2003) or in other words, the interview guide approach put forward by Hughes (2002, cited in Greenfield, 2002, p.211). This is to make the interview more organized and at the same time enhances the interview to be more prominent. Furthermore, one of the authors asked the questions whiles the other typed in the information or took notes. There were 2 interviews conducted where the first lasted for about 90 minutes and the second lasting approximately 30 minutes. Regarding the second interview the authors followed-up with some open-ended questions that were needed for the thesis. The authors asked questions not only from the interview guide (see Appendix 1) however, questions that came out during the dialogue with the Director of Sourcing and Supply. By undertaking the interviews with the Director of Sourcing and Supply, the authors were able to comprehend with the conditions within the company in terms of procurement processes, innovations, relationships with suppliers, and other relevant parts that are related in the supply chain of Sensys Traffic AB.

3.5 Trustworthiness

Every research is regarded to be trustworthy in the sense that the information given in that research has to be valid and reliable in a right conduct. The reliability and validity boosts the degree of trustworthiness of the investigation. Merriam (1998) mentioned that case studies acquire limitations with regards to validity and reliability. In this case, these limitations are by reason of the deficient in representativeness and the lack of rigidity in gathering, construction, and analysis of the empirical findings (Hamel, 1993). With this, it denotes that the investigation is of a subjective nature.

3.5.1 Validity & Reliability

Validity is a significant aspect in the consistencies between questions, conceptual framework and empirical findings. According to Wisker (2001) if the method, approaches and techniques go with the research subject, then the findings are liable to be valid and in the
opposite. Furthermore, there are four different tests that are relevant to the credibility and quality of the research namely:

- **Construct Validity** – This is setting up correct operational measures for the research investigated.

- **Internal Validity** – This is denoting the creation of a causal relationship whereby certain circumstances are shown to lead to other circumstances.

- **External Validity** – This is the setting up of a domain with which the findings of an investigation can be generalized.

- **Reliability** – This is also denoting the activities within an investigation, such as information gathering procedures can be repeated with the matching results (Yin, 2003).

In this thesis, the authors constructed validity by using multiple sources of evidence. Interviewing the Director of Sourcing and Supply and retrieving secondary information from the company’s website. Furthermore, the authors tested the internal validity of the research by conducting a pattern-matching where innovation, procurement processes are defined prior to the collection of information from Sensys Traffic AB. However, it is difficult to make certain the existence of the external validity since the overall results requires to be experimented or tested at least two or three times on other cases. Although, the area of investigation on innovation in procurement would serve as a domain with which the results could later be generalized.

According to Bryman (2001), reliability denotes that a particular study is repeatable. Furthermore, Merriam (1998) stated that reliability denotes the degree with which research result could be replicated. With this, the essence of reliability study is to attain the matching results if researchers pursue the same process. As a result, the main aim of reliability is to reduce the errors in the investigation. Yin (2003) mentioned that in order to attain reliability, researchers are to utilize case study practice and build up a case study database. Furthermore, the author proposed that to enhance the reliability by observing phenomena, a general process is to acquire more than a single observer making the observation.

In showing the reliability in the study, the authors conducted the interview by taking notes and recorded by typing on a laptop. Also, useful information retrieved from the marketing consultant and his own observation reinforced the study and made it more trustworthy.

In addition, due to time constraints the authors were forced to retrieve bit and pieces from procurement strategies, its function, role, processes and theories on innovation which forms the theoretical framework. As well, not enough time was offered to the authors to have thorough in-depth of successive interviews.
4 Empirical Findings

This part entails the findings from the interviews of Sensys Traffic AB for the investigation.

4.1 Background (Sensys Traffic AB)

In this section, the information gathered for the background of Sensys Traffic was retrieved solely from the company’s website.

“SENSYS® was founded in 1982 as a development company. In 1987 our activities expanded when a Swedish tender requested technology that could fulfill the stringent requirements of the Swedish National Police Board. SENSYS won the tender and has been supplying systems to the Swedish Government ever since”.

The company expanded and modified its strategy in 2001 in accelerating its competences in developments. Its business spanned and received orders from and across countries like Australia, China, Finland, Iran, Kingdom of Bahrain, Lebanon, Malta, Lithuania, Mauritius, Norway, United Arab Emirates (Dubai, Ajman, and Sharsja), the United States, Saudi Arabia, Sweden, and Taiwan. Furthermore, the vision of the company is “to be the leading provider of advanced traffic system solutions that save lives, save the environment and other society resources”.

Sensys Traffic AB is a publicly listed firm on the Nordic Stock Exchange. Its main office is located in an undisclosed location in Sweden. The company’s core business is providing traffic informatics and traffic safety, which benefits governments through decreased road accidents, minimized environmental pollutions, and reduced traffic congestions.

The small enterprise’s core capability lies in its radar technology and is the backbone of all the organization’s products. Through this technology, Sensys Traffic applies and sells different detection applications such as speed, red light control and monitoring, traffic counting, tailgating, changing lane, incident detection, and etc.

Sensys Traffic AB works with traffic, transport, police and rail administrations throughout the world. The firm has built its business on mutual respect and trust for and with each of their customers. The company works hand in hand with end-customers to develop and test prototypes to ensure quality. When entering new markets, Sensys Traffic AB sets up partnership with a high-tech local partner to understand the needs, activities and plans for the local market and then collaboratively work together to solve the task.

Products

RS 240 Product Line

Sensys Traffic AB prides itself on its unique radar capabilities, which are the heart of all its products. It can be used for red-light monitoring, speed enforcement, traffic counting, video monitoring, incident detection and much more. It works under the principles of the Doppler Effect. The radar sends out electromagnetic waves 20 times every second but detection is limited to moving objects. Measuring the time a bounced signals, the radar is able to measure the distance a car is away and its current speed.

The radar is the backbone to the following products:

- Fixed speed enforcement system
• Mobile speed enforcement system
• Red-light enforcement system
• Speed zone enforcement system
• Work zone safety equipment

These products are combined with video cameras to allow a method called Number Plate Recognition to capture red-light or speed offenses, and wanted vehicles (stolen, vehicles that are prohibited to be used in traffic, vehicles with unpaid fines and so on). Data is either stored on site or can be sent to a central computer.

**Developing Products**

*Traffic Light Control*

By far the most common method of vehicle detection when building an intelligent traffic light intersection is inductive loops, which are used to gather data regarding the movement of approaching vehicles. This data is used to regulate traffic signals in order to create an optimal traffic flow (traffic light control). Two major drawbacks with inductive loops are that they need to be embedded in the road surface, and that they only give a snapshot of information about a vehicle. This means that not only do the loops have to be installed at considerable cost, but that several have to be installed to provide sufficient information of vehicles approaching the red-light controlled intersection.

Sensys Traffic AB can replace these inductive loops with a tracking-radar. The radar is non-intrusive (which means it does not have to be buried into the ground) and covers the whole intersection. The tracking-radar therefore eliminates costly installations and replaces a number of inductive loops. In addition, significantly more information concerning an approaching vehicle is available from a tracking-radar, such as acceleration and retardation, which can be used to develop traffic light control systems beyond current levels.

*Automatic Pantograph Monitoring System (APMS)*

The second product is the Automatic Pantograph Monitoring System, which is also one of a kind device. Today’s electric trains are run by two types of power sources. The first type is called third rail and is more commonly used for metro and subway systems and is located on the ground. The second technology type is catenary lines which are electrified lines hung over the trains or trams. An electric train has a pantograph attached on top of it and has a point, a carbon strip, which is pressed against the wire and collects the current. Sometimes, this point becomes weary and can rupture the line, which will create a lot of problems as the train will lose power and become stuck. This creates problems for the railway network as the costs are substantial to retrieve the train and the downtime can be devastating to the railway operators.

Sensys Traffic AB has developed a technology that monitors the carbon strip on the pantograph of each train. A camera takes high-resolution digital images of the carbon strip when a train is passing. After the camera captures the image of the current collector, the digital image is transferred to the Master Controller (MC) and further to the Image Processing Unit which separates and checks the image of the carbon strips. If the check shows that the carbon strip has been damaged or worn down (option), an alarm is trans-
mitted through Ethernet or a GSMR/GPRS modem. This allows the pantograph to be re-
placed immediately.

Customers

The end customers are mostly municipalities, police, national road administration and re-
lated traffic administrations. Sensys Traffic is customer oriented and the company sells so-
lutions customized for each customer and not products. Sensys Traffic AB often sells to an
intermediate that packages the product and sells an integrated package to the customer.
The organization works closely with end customers when developing and testing these
products. Products are placed at live test sites and thoroughly tested to ensure accuracy, re-
liability and quality. (Sensys Traffic AB, 2009)

4.2 Intelligent Transport Systems (ITS) Industry

Sensys Traffic faces stiff competition from many different traffic solution providers, both
foreign and domestic, and from other detection systems such as image processing and even
the traditional traffic control methods (Marketing Consultant, personal communication,
2009-05-18). However, the market for intelligent transport systems is a growing 25% each
year (Director of Sourcing and Supply, personal communication, 2009-04-15). The EU,
World Health Organization and other road safety initiatives have begun to realize and
promote road safety among the union states. Further, the EU demands and provides fund-
ing for Eastern European countries since their accession into the EU to improve upon
road safety. This provides an enormous opportunity for companies like Sensys Traffic
(Marketing Consultant, personal communication, 2009-05-18).

The costs of a deceased or serious injury can be costly to the government. Customers can
benefit from Sensys Traffic and other related traffic safety and traffic information provid-
ers through:

• Reduced costs from loss of life or supporting serious injuries
• Revenue generation from traffic fines
• More safety on roads and efficiency (Marketing Consultant, personal communica-

4.3 Structure of Sensys Traffic

There are approximately 45 employees within the main office. The chief executive officer is
at the top of the organizational hierarchy. Further, there are 25-30 employees whom are in-
volved with research and development, one in finance, seven employees in sales and mar-
keting, three employees in sourcing and supply, and seven to eight in after-sales service.
Like any publicly shared firm, the company’s goals are to increase shareholder value and
maximize profits.
The firm is unique in the fact they have produce nothing on site. All production is outsourced to two suppliers named Supplier A and Supplier B. Supplier A is located on the east coast of Sweden and Supplier B is located in an undisclosed position (Director of Sourcing and Supply, personal communication, 2009-04-15).

4.4 Procurement

The procurement department is made up of three members and its responsibility lies from the time of customer orders to the delivery of the product to the time and place specified by the customer. The procurement’s goals are aligned to create profits and enhance the value of market shares. The startup idea of the company was the decision to buy (Director of Sourcing and Supply, personal communication, 2009-04-15).

The Director of the Procurement and Sourcing Department is a recent member to Sensys Traffic AB. The director has had a long history with procurement and has an extensive network of expertise and existing suppliers. Moreover, the director worked formerly in the telecommunications industry (Ericsson) and was even located in Brazil prior to joining Sensys Traffic. The director has brought Sensys new existing network of suppliers from previous experiences that are more reliable and competitive than some previous suppliers.

The director is responsible for the price agreements and negotiations. Another member of the procurement function (Member 2) is responsible for the actual purchasing and transaction fulfillment and organizing the logistics (both inwards and outwards). In addition, member 2 is also responsible for inventory management at the different suppliers. The other employee (Member 3) is responsible for technical inquires that the suppliers have. Also, member 3 consults with the R&D function for inquiries that cannot be solved on his behalf.

Sensys Traffic prides itself on delivery excellent service,

“competition delivers in 270 days while Sensys is within 90 days” (Director of Sourcing and Supply, personal communication, 2009-04-15).
Some new goals that the procurement has set out are to pursue lower cost of ownership and to shorten lead times.

The procurement department manages all the sourcing negotiations, and logistics. Mentioned above, Sensys Traffic AB has no production but outsources to their two first tier suppliers called Supplier A and Supplier B (name withheld). Due to the characteristics of the industry and the demand inconsistency, it is too expensive to set up production for each order.

The Bill of Materials (BOM) could consist of over 1000 articles for any of Sensys Traffic’s product lines. The procurement department ranks these articles to strategic value, price and lead times to manage their supply chain more efficiently. The main task of the procurement department is to integrate the bill of material list together.

In most situations, the procurement department contacts, negotiates and finalize agreements with sub-suppliers and then make the proper introductions to the first tier suppliers. The partnership between the first tier and second tier suppliers will follow the terms of department’s contract decisions. Given the vast knowledge of the electronics company, the first tier suppliers sometimes are given freedom to source on their own. This is after careful consideration regarding the extent of a component’s strategic value, price and lead times. In some situations, the procurement department leverages competitors against each other in order to get the best price and best services. However, Sensys Traffic strives to manage its own vertical chain (Director of Sourcing and Supply, personal communication, 2009-04-15).

4.4.1 Procurement Strategy

As expected, the interviewee responded that procurement is a very strategic function of the firm. More so due to the fact that production is not within the company’s control. The interviewee mentioned that around January, 2009 the CEO recognized the need to develop their procurement. Previously, another employee was responsible for this but the function was under the management of the sales department. Johan Frilund created the position of director of sourcing and supply and made the position into a management level. The reasoning to this is because Sensys Traffic is heavily dependent on the suppliers and needed a strategic and effective department to manage them.

Supplies are ordered when products are sold so there is little inventory held. Further, business sales are very unpredictable and inconsistent. The orders are quite large when there is a sale and each order is customized to the specific needs of the customer. There are many parties involved with the production of Sensys Traffic’s goods and hence all the products must be streamlined in order to deliver the ordered goods 90 days or less (Director of Sourcing and Supply, personal communication, 2009-04-15).

Meanwhile, if there is no order to be assembled, the procurement department is planning and preparing competitive pricing, logistics, and inventory management. From January 2009 to recent, there were no orders, but there were two orders from Saudia Arabia and Sweden in consecutive days (Director of Sourcing and Supply, personal communication, 2009-05-14).

There is quite a lot of contact with the departments of the firms. When a sale is made, the sales and marketing department gives notice to the procurement to start producing the order.
Procurement communicates to a large extent to research and development as Sensys Traffic is continuously innovating to remain competitive. An issue arises when the R&D department decides to use a niche part or a certain brand. This limits the procurement’s ability to negotiate for lower prices. Further, the limited negotiating leverage can result specialized parts to have longer lead times. Sensys Traffic must attempt to reason with the R&D to change the parts to more general and available components (Director of Sourcing and Supply, personal communication, 2009-04-15).

**Differences between LE and SME**

When asked about differences between procurement in LEs and SMEs, the director answered that SME’s procurement is able to realize the entire picture and manage the entire range of articles for a BOM. In contrast, LE’s have too many products and too many ranges that procurement buyers specialize in only a set of articles. The LE’s buyers are unaware of competitive prices and lack any knowledge to compare article prices to (Director of Sourcing and Supply, personal communication, 2009-05-14).

### 4.4.2 Suppliers

The company’s suppliers are divided into four tiers. The production is outsourced to the 1st tier suppliers (Supplier A and Supplier B). Sensys Traffic considers these partnerships as strategic alliances. Supplier A has been with the company since the 1990s and communicates daily with Sensys Traffic. Further, the two companies are within the same city which minimizes transportation times for meetings. Sensys Traffic works closely with Supplier A during the development phase.

Last year, Sensys Traffic added Supplier B to their repertoire. Supplier B is one of the largest electronics manufacturers in the world and the current CEO of Sensys Traffic was the former global managing director (MD) for them. In that case, there is the connection between Sensys Traffic with both its suppliers. At the moment, Supplier A gets most of the production.

The director states by using two producers, Sensys Traffic is able to turn the producers into competitors and force them to lower their costs. The 1st tier suppliers are paid by Sensys Traffic through an hourly labour rate, materials and their mark ups.

Altogether, there are 100 suppliers for Sensys Traffic: two 1st tier suppliers and thirty 2nd tier suppliers (in 10 areas) and the rest of the suppliers belong in the 3rd tier (3 areas) and 4th tier areas are components. Components can be considered strategic and can be both placed on the second tier and can also be placed within the third tier. The diagram below describes the upstream chain:
Fig. 4.2 Relationships between Sensys Traffic AB and its Suppliers (Author’s own diagram)

Sensys Traffic has worked with some of the suppliers since the beginning but a number of suppliers are recently new. Suppliers are found using previous experiences, encounters, and recommendations from internal and external sources and are selected upon request for quotations. Upon selection, Sensys Traffic and the supplier set up a frame agreement which consists of basic parameters which include payment, freight, lead and guarantees. If the pricing changes due to exchange rate fluctuations or there is a particularly large order, then Sensys Traffic AB must re-negotiate for fairer prices.

The director organizes a set price list for different volumes of goods. Once an order is made, the director will decide among the different suppliers based on the price and lead time.

The first tier suppliers are both located in Sweden while the second tier is mostly in Sweden but some are produced abroad but are brought in from a Swedish distributor. Third tier are all Swedish suppliers. The majority of the components are produced abroad.

Sensys Traffic pays an invoice to the supplier who purchases the sub-supplies. Suppliers are selected from responses to Request for Quotations and the one wins gets the serious order. Sometimes the supplier may not have enough capital to purchase and Sensys Traffic pays for the goods first. Then the company lets the sub-supplier purchase it back (Director of Sourcing and Supply, personal communication, 2009-05-14).

If lead times are long, then Sensys Traffic secures an agreement with the supplier and instructs the sub-supplier so they could stock some buffer inventory. Sensys Traffic gives a material agreement guarantee which states that the supplier should purchase this component and for this number of quantity. In addition, if these items have not been picked up by this date, the suppliers can send this to Sensys Traffic.
At the moment, the procurement department wants to switch suppliers because there are many internal processes, which are not efficient. Consequently, Sensys Traffic freely shares information to their production and component suppliers. All information is offered on Sensys Traffic’s extranet.

Sensys Traffic has recently adopted sales forecasting. This has never been done before, as sales are periodic and variable. These sales forecasts are done under sales and marketing, but the information is also transferred to the procurement. This helps the company plan ahead for products with long lead times (Director of Sourcing and Supply, personal communication, 2009-04-15).

Sensys Traffic mentions that they would rather have quality than price because in the end quality issues can become huge costs for the after-sales department. Since joining, the interviewee has created value by his extensive knowledge of the industry. The director plans to secure components from his network for 50% to 70% less than Sensys Traffic’s current suppliers (Director of Sourcing and Supply, personal communication, 2009-05-14).

**Communication**

The procurement director normally talks to Supplier A everyday and Supplier B once every other week. The cable suppliers once every other month, the video suppliers once every other month, the sheet metal one time every two weeks, electric boards twice a week, and flashes once a month. If there is an order, there would be more communication (Director of Sourcing and Supply, personal communication, 2009-05-14).

**Performance Measurement**

At the moment, there is no performance measurement done. Traffic fairs create contact points for feedback, potential suppliers, and potential customers. Further, there are many newspapers, magazines, conferences, seminars, and websites that provide feedback to all traffic related products (Director of Sourcing and Supply, personal communication, 2009-04-15).

**Problems**

Products sold to customers are customized to their preferences. The same product that is delivered to Saudia Arabia can be significantly different from an order to Sweden. This makes it vital that communication and details are made.

If the order is not clear, the procurement department must speak to the sales department who must contact the customer again. Sometimes the order is made before the product design is made. The sales department completes an order and they give them a quotation of the price for the required specifications. The development and the design have not been started. This creates a set back and the design must be hurriedly created to finish the order.

**Future Outlook for the Company**

The company is doing well in the current economic conditions. This is because when unemployment is high, governments will invest into infrastructure that will create jobs. Infrastructure denoting roads, rail and more. Further, Sensys Traffic products repay themselves. This is through fines after identifying and capturing traffic offenders. The market for Sensys Traffic is growing 25% every year (Director of Sourcing and Supply, personal communication, 2009-04-15)
4.5 Innovation

Sensys Traffic, a research and development oriented company, according to the director of sourcing and supply has not really pursued any new methods of purchasing. It uses traditional sourcing methods and requires a person who has extensive knowledge of suppliers. However, information is freely shared with the suppliers and communication points are quite extensive. The interviewee believes that new methods of searching for commodities and consumer articles would be a possibility, but it is important to consider the total cost of everything. Otherwise for more specialized parts, the current suppliers are performing quite well.

One of their production manufacturers is the largest electronics manufacturer in the world and has extensive knowledge. Sensys Traffic takes advantage of their knowledge and gives them the permission to outsource on their own. However, from a strategic view, there needs to be control over some components. Sensys Traffic prefers to manage its own supply chain (Director of Sourcing and Supply, personal communication, 2009-04-15)

4.5.1 Technology

Technology plays a large impact for Sensys Traffic. Every office is equipped with at least one office. Development and designs are done through computers. The development department defines to the procurement department what parts are needed. Designs are sent via e-mail or available through a protected extranet for suppliers or prospective suppliers (Director of Sourcing and Supply, personal communication, 2009-04-15)
5 Analysis

This part entails the combination of the material gathered from Sensys Traffic AB with the theoretical framework.

The purpose of this thesis is to investigate innovation in procurement in small and medium-sized enterprises. In order to fulfill this purpose, the authors analysed the empirical findings of Sensys Traffic AB together with the respective theories in the theoretical framework.

5.1 Procurement (Characteristics of Skills)

Procurement plays an important role in most organizations. This is what Humphreys (2001); Paulraj, Chen and Flynn (2006) mentioned that procurement is deemed as organization’s core component and perceived as a central strategic importance. In this context, the role of procurement calls for certain skills and knowledge for one to acquire to perform this role. Consequently, as organizations are competing against each other based on the quality, satisfaction for customers and other factors, they strive for the best resources and/or competences. These resources are transformed into authentic value for the organization and mostly for its customers respectively. Procurement entails all activities needed to get a product from a supplier to its last destination. These activities are purchasing function, stores, traffic and transportation, incoming inspection, quality control and assurance, and salvage and environmental issues (van Weele, 2002). In this case, procurement is its respective role is an important aspect in organizations in reorganizing its structure to provide value internally and externally. From the findings, the director of sourcing and supply in Sensys Traffic had the skills in procurement and an extensive network of expertise and existing suppliers. In addition, he worked with one of the successful companies where his experiences in procurement advanced. The role the director plays for Sensys Traffic is significant to the entire organization. Besides, the director is responsible for the price agreements and negotiations with external suppliers. As part of the role the procurement department in Sensys Traffic plays, activities like actual purchasing, transaction fulfillment, organizing of logistics (both inwards and outwards), inventory management and technical inquiries, depicts different respective skills that add value to the entire organization. Relating these aspects of skills needed for procurement activities found in Sensys Traffic’s procurement department, is analyzed with what Tassabehji and Moorhouse (2008) described in their new taxonomy of procurement skills. Explicitly, this is required for the procurement role within organizations.

Technical Skills (TS) – This role is the basic and primary administrative skills essential for the procurement person. From the findings, other members from the procurement department played these primary administrative skills such as inventory management, conducting technical inquiries, transaction fulfillment, total quality management, etc. In this case, the authors of this thesis believe that these members are performing their technical skills in adding value to Sensys Traffic. Thus, it is an important aspect of the role the procurement department in Sensys Traffic plays in its administration. This sets a foundation for creating a more strategic skill for the entire organization.

Interpersonal Skills (IS) – For an effective procurement management in organizations, this skill is required for interaction with people in teams, and also on an individual level. From the findings, the director of sourcing and supply and the other members in the department effectively work hand in hand as to finding the best sourcing activity for the entire organi-
zation. Furthermore, the director having an extensive knowledge and skills in his field brought his existing network of suppliers to Sensys Traffic. They are more reliable and competitive to Sensys Traffic. In this case, it depicts his interpersonal and cultural awareness in the procurement role as described by Tassabehji and Moorhouse (2008). Moreover, this kind of procurement skills is a necessity at all levels in organizations.

Internal Enterprise Skills (IE) – These skills are connected to the entire business where interactions amongst different functions within an organization are seen. This is an important aspect with regards to the role played by the procurement department. From the findings, one can note that quite a great deal of contacts is made within departments in Sensys Traffic. For instance, the sales and marketing department give notice to the procurement department to start producing orders whenever sales are made. Another aspect is that the procurement department frequently communicates to the research and development as the company continuously innovates in remaining competitive in the market. This is an essential aspect as communications plays a vital role in the procurement, R&D, sales and marketing department of Sensys Traffic in order to add value to their products and to end customers. Consequently, relating this to what Tassabehji and Moorhouse (2008) explained, the internal enterprise skills that the procurement department acquires in managing internal relationships with other departments, internal change management and planning with R&D, and organizational skills have brought Sensys Traffic on a competitive edge.

External Enterprise Skills (EE) – This relates to the skills in managing the supply chain/network and its shareholders. The findings show that the procurement department in Sensys Traffic contacted, negotiated and finalized agreements with sub-suppliers, first and second tier suppliers. Also, partnering with its suppliers is based in terms of the department’s contract decisions. With this, it demonstrates its role in facilitating the management of its external suppliers as well as its relationships with them. Thus, this aspect that the procurement role plays is a significant issue with respect to the actors involved within the supply chain.

Strategic Business Skills (SB) – This links to the strategic issues and the impact of procurement on the organizational value as a whole. Relating this to the findings, the CEO of Sensys Traffic recognized the need to develop the company’s procurement department. Furthermore, the position of director of sourcing and supply was created to form part of the management level all because of its dependence on suppliers. Also, the interviewee mentioned that their procurement department’s role is very strategic since production is not within the company’s control. One can perceive that the strategic business skills of the procurement role in Sensys Traffic represent its management of its suppliers, and the forming of strategic partnerships with its suppliers. As a result, the overall accomplishment is the creating and adding of value to its suppliers, the organization and finally to its customers.

In addition, Tassabehji and Moorhouse (2008) deliberated that these varying skills of the procurement department or persons, are more of a generic and management oriented. In this nature, the role played by the procurement department of Sensys Traffic highlights its skills as the core requirement needed internally and externally of an organization. Furthermore, the procurement department playing their role in terms of technical (includes advanced procurement process skills), interpersonal, internal and external enterprise and strategic business skills optimizes their role extensively. Also, together with a high level of support (that is, from CEO) and internal recognition, the procurement department or function is strategic. In this case, the function is seen as a strategic purchaser (described by Tassabehji & Moorhouse, 2008) since Sensys Traffic’s performance is superior to its competitors. The authors also believe that since the procurement department of the company played a role
of a strategic oriented manner, it depicts its value amongst other departments, and the entire supply chain as a whole.

5.2 Procurement Function

As mostly described above on the procurement role, another important aspect of procurement is the department itself or the function. From the findings, the procurement department or function is made up of three members. Moreover, their responsibility lies from the time of customer orders to the delivery of the product. The director of sourcing and supply is responsible for the price agreements and negotiations. Member 2 is responsible for the actual purchasing and transaction fulfillment while organizing the logistics (both inwards and outwards). In addition, this member is responsible for inventory management at the different suppliers. Member 3 within the procurement function in Sensys Traffic is responsible for technical inquiries that the suppliers have and also inquiries concerning R&D designs. With this, it can be linked with Maister’s PSF model cited in Humphreys et al. (1998). The responsibilities observed from the members of the procurement function within Sensys Traffic can be matched with the model as Grey Hair activity and Procedure activity. The authors believe that the director of sourcing and supply is performing the grey hair activity whereas the other members are performing a procedure activity.

The director of sourcing and supply conducts activities such as price agreements, negotiations with external suppliers, and also execute contracts decisions to form partnership with suppliers. This aspect is an important role played by the director of sourcing and supply. In this case, due to the characteristics of the industry and demand inconsistency, the director’s role should be regarded as a big significant role in the organization. The reason is that one performing a grey hair activity is the one adding value to the procured package, working closely together with suppliers and other internal functions. As well, coordinating, operationalizing and improving effectiveness within the organization. Moreover, in terms of supply analysis mentioned in the Maister model, the director performs most of the activities regarding external suppliers. An example is sourcing negotiations with first tier and second tier suppliers.

Moreover, member 2 and 3 of the procurement function within Sensys Traffic are also important. Their tasks or responsibilities are matched as a procedure activity where all activities are perceived to be a procurement system described in the Maister model. These members play their role as administrators, coordinating the scheduling and flow of materials from suppliers, indicating packaging and shipping instructions (that is, logistics aspects), determining inspection and testing requirements, (that is, inventory management aspects) and managing technical queries that the suppliers have.

Consequently, since the goal of the procurement function of Sensys Traffic is to create profits and enhance the value of market shares, the authors believe that with a defined responsibility that goal can be achieved. With this, Sensys Traffic has an effective procurement function where procurement plays a major role within their business strategy. This is because the company has no production but has outsourced to its suppliers. This has led the company in the direction of partnering with suppliers. Thus, it is due to its well-defined procurement tasks.
5.3 Procurement Strategy

Regarding the procurement strategy, the make or buy decision concept is a good framework that aids most organizations to decide on how to work with an outside provider (Spray, 2009). In this case, the basis for this attitude is to be competitive. Being competitive depends on either organization produce in-house or procures resources from outside providers. In the findings, Sensys Traffic have outsourced to two main suppliers (first tiers) as well as other parties involved in the production of their products. Furthermore, the startup idea of this company was the decision to buy. With this, it can be said that it was cost-effective to make the decision to outsource to external sources. As stated, the characteristics of buying includes avoidance of costs of specialist labour or machinery, reduction in inventory, the spread of financial risks, and the availability of supplier’s specialist expertise. In this case, these features can be related to Sensys Traffic. Sensys Traffic has contracted out to its suppliers with all production and sources of supply which makes them quite unique. With this, the company was able to manage by reducing its inventory and shortening its lead time to 90 days. Moreover, the company was also capable in spreading the risks to its suppliers since the partnership between Sensys Traffic and its suppliers is regarded as a strategic alliance. In this case, the benefits captured are reduction in costs, increased flexibility, and reduction of risk as stated by Carrington (1994).

5.4 Procurement Processes

Procurement as described by van Weele (2002) relates to the activity of purchasing inputs that are utilized in organization’s value chain. In this case, negotiations with external sources become an essential aspect with regards to the inputs to be used. Talking about the procurement processes, Sensys Traffic negotiated with its external suppliers based on price agreements, lead times and logistical issues. This aspect of negotiations is important for Sensys Traffic as to the nature of their business. Van Weele (2002) mentioned that when there is the fit in the negotiations, parties involved could look back at ease. This is apparent in Sensys Traffic where its suppliers are given the freedom to source on their own based on the extent of a component’s strategic value, price and lead times. With this, it shows the fit in the relationship and also the type of sourcing negotiations between Sensys Traffic and its suppliers.

Moreover, in the findings, the interviewee mentioned that Sensys Traffic regards quality as a main feature and if ignored, can bring up huge aftersales service costs. This affects processes within most organizations. With this, adding value to the procured package or inputs to be used is deemed to be important for organizations. Consequently, quality of the procured package should be of worth thereby avoiding quality issues cropping huge costs. In relation to the theory, van Weele (2002) stated that the role of the procurement function is to check issues like quality and delivery reliability, and also after sales services for internal and external satisfaction. This is what Sensys Traffic considers to be of importance than price as found in the findings.

5.5 Innovativeness

It is evident that Sensys Traffic is a firm which strives to be innovative. The web-site clearly states their vision to be “the leading provider of advanced traffic system solutions that save lives, save the environment and other society resources” (Sensys Traffic, 2009). Further, Sensys Traffic is customer orientated. They do not sell products, but solutions customized to the specific customer’s needs. In the prior research conducted, being customer-first generally indicated
some degree of innovation (Kline & Rosenberg, 1986). Further, like most profit organizations, their goal is to maximize the shareholders’ value. Geroski and Machin (1992) stated that innovative firms tend to have larger market shares, higher growth rates and earn higher profits (cited in Cobbenhagen, 1999).

Of 45 employees, 30 of them are dedicated to research and development. The firm occupies two floors in a business centre. The proximity of the different functions allows for lots of human interaction and knowledge sharing throughout the firm. Panesar and Markeset (2008) commented that intense communication, cross-functional and cross-organizational, and strategic information sharing can facilitate innovation.

Due to characteristics of the industry, orders are infrequent and unpredictable. Further, the orders are large when made and customized to a degree to the specific customer. The industry is made up of many different traffic solution providers which include video tracking and traditional traffic control methods which make competition extremely high. With the high innovation character of the industry, it is continuously bringing to the market new services. Sensys Traffic is continuously innovating as it must remain competitive. This agrees with the statement by Cobbenhagen (1999), which is companies must be providing a stream of new and improved products, processes and services.

All of Sensys Traffic’s product line implements their unique radar technologies for their foundation. This concurs with the relevant theory that smaller firms are more orientated to radical technical innovations (Damanpour, 1992).

5.6 Gap Searchings and Market Changes

Roberts (2002, p.16) mentioned about gaps within the industry positioning maps, ‘gaps could be new emerging customer segments or existing customer segments that other competitors have neglected; new, emerging customer needs or existing customer needs not served by other competitors, and new ways of producing, delivering or distributing existing or new products or services to existing or new customer segments’.

A recent technological innovation is the Automatic Pantograph Monitoring System. This innovation is considered revolutionary as there is no other product which offers the benefits offered. Sensys Traffic was able to discover a gap, a hidden customer need, with no current competition. The APMS also implements the radar in the APMS as well.

Sensys Traffic plays an active role in continuously monitoring changes taken place within the environment. In September, 2008 the firm employed a university student as a consultant to proactively scan for competitors, determine market potential, and collect critical data. Otherwise, the firm actively scans trade fairs, publications, share information with partners and more.

Prior to broadening within this new business, Sensys Traffic must be sure that the market demand is acceptable since an innovation is not considered successful unless it gets market response while considering financial perspectives. This agrees with the statement that Kline and Rosenberg (1986) made about how technological improvement is to have a significant economic impact that it needs to be matched with the needs and tastes of eventual users yet remain within the cost constraints.
5.7 Different Innovations

Thompson (1965, p.36) describes innovation as “the generation, acceptance, and implementation of new ideas, processes, products or services” (cited in Hurley & Hult, 1998, p.44). Moreover, Damanpour (1992) adds that innovations can be classified within three dualisms. These are administrative versus technical, product versus process, and radical versus incremental. Tucker (2002) implements another classification system and places innovation with three types: product innovation, process innovation and strategy innovation.

This section will pin point the different types which were identified within this study.

Product Innovation

Knight (1967) and Utterback and Abernathy (1975) (cited in Damanpour, 1992, p.398) defined product innovations as “the introduction of new products or services to meet an external user or a market need, while process innovations refer to the introduction of new elements in the organization’s production or service”.

The company is involved with advanced sensors and systems for traffic informatics and traffic safety. The introduction of the first radar was a revolutionary innovation and thus since Sensys Traffic has continuously making incremental or evolutionary changes to it and applying it within different applications such as the APMS. The product range uses the radar as the backbone for all its products.

Administrative Innovation

“Administrative innovations involve organizational structure and administrative processes; that is, they are indirectly related to the basic work activities of the organization and more directly related to its management” (Damanpour & Evan, 1984; Kimberly & Evanisko, 1981; Knight, 1967) (cited in Damanpour, 1992, p.398).

The firm has recently reorganized their structure and created an official procurement department. Procurement was formerly run under sales and marketing. This was done because of the strategic value of procurement, especially in the Sensys Traffic’s context where they outsource 100% of their production. Also this is seen as an innovation in the procurement department as they place more strategic value to it.

Strategy Innovation

“Strategy innovation is about using challenging existing industry methods of creating customer value in order to meet newly emerging customer needs, add additional value, and create new markets and new customer groups for the sponsoring company” (Tucker, 2002, p.22).

With the APMS being implemented, there must be a specific marketing strategy or business model with it. Sensys Traffic creates a new method. This is a strategy innovation as Sensys Traffic found a new method of creating new customer value and created new markets and new customer groups. Furthermore, from the theory, they need to find a new sales method or business model to propose to the buying customers.

Process Innovation

While process innovations refer to the introduction of new elements in the organization’s production or service operations – input materials, task specifications, work and information flow, and equipment – that are used to produce a product or render a service” (Knight 1967; Utterback & Abernathy 1975) (cited in Damanpour, 1992, p.398).
Process innovations include the selection of new suppliers. Since joining Sensys Traffic AB, the Director of Sourcing and Supply has brought in his network of suppliers. From this, Sensys Traffic gains some power dominance in that it can leverage suppliers against each other in order to achieve the best value. These new suppliers were brought in because they bring the same or superior products at a better price. Suppliers are found from previous experiences or recommendations from the network. Otherwise new suppliers can be found from traffic related events (conferences, trade fairs and etc.).

Open innovation and Collaboration

Supplier A is in close proximity to Sensys Traffic and the two firms speak daily. If suppliers would like clarification or make any inquiries, there is a designated person within the procurement department to speak to. Moreover, Sensys Traffic states that they openly collaborate with suppliers to create quality solutions for their final customers. Designs are shared via extranet.

If Sensys Traffic feels a particular product is not within their research & development expertise, they can consort to external consults or look to partner up with firms whom have considerable expertise or experience. By working closely with customers and network members, Sensys Traffic eliminates uncertainties as they understand the market needs.

Open innovation is the concept of “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively” (Billington & Jager, 2008, p.24). This paradigm assumes that companies can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology (Billington & Jager, 2008). It is apparent that Sensys Traffic leans towards this concept.

Sensys Traffic also has customers and potential customers who let the company test their products. By doing this, Sensys Traffic has constant feedback to reconfigure their systems. Traffic integrators and Sensys Traffic further communicate which positively produce benefits to Sensys Traffic and its’ interests. The findings from the case study confirm with the findings from the theoretical search in that “innovations accordingly demands feedback, and effective innovation demands rapid, accurate feedback with appropriate follow on actions. Radical or revolutionary, innovation prospers best when provided with multiple sources of information input. Ordinary, or evolutionary, innovation requires iterative fitting and trimming of the many necessary criteria and desiderata” (Kline & Rosenberg, 1986, p.286). Hence, Sensys Traffic is able to market a solution customized for each customer.

5.8 Innovation for Growth

Service and product innovations are considered top line or revenue drivers whereas innovation in processes is bottom-line. They are aimed to reduce costs, raise productivity and quality, and efficiency (Panesar & Markeset, 2008). By expanding its product range, it is upping their potential revenue. By innovating their internal and external processes, they can save costs and achieve other bottom-line costs.

As of the moment, Sensys Traffic is not collecting the necessary feedback information from the performance of their suppliers as they do not implementing any kind of measuring system.
5.9 Technology

“Technology is also an enabler of procurement processes. Here again, the trend is toward dramatic change. For example, leading companies are streamlining processes on a channel-by-channel basis, optimizing the mix of methods by category, and not relying on too few or too many options for sourcing, buying and paying” (Blanc & Schul, 2008, p.34).

Technology would be a facilitator to communication throughout Sensys Traffic and the supplier network. So far, the extent of technology implemented is e-mails and an extranet.
As stated in chapter 1, the purpose of this thesis is to:

“…investigate innovation in procurement in small and medium-sized enterprises”.

In fulfilling this purpose, the following research questions were outlined:

- What is the extent of relationships/collaborations between procurement with suppliers and other external parties?
- What is the extent of the strategic role of the procurement function within the overall business strategy?
- How is the procurement integrated into the organization (activities, roles, strategy)?
- What is the extent of communication and collaboration within inter-functional roles?
- What innovative actions have organizations implemented within their procurement processes?

The authors believe that the purpose of this thesis was accomplished as the research questions were investigated and analyzed in the analysis chapter. The following will provide readers with deductions from the analysis for each research question.

**What is the extent of relationships/collaborations between procurement with suppliers and other external parties?**

Procurement is the key contact between a firm and its suppliers and with this, the relation is shaped. The function makes the decisions regarding supplier selection, sourcing strategy and so forth. By applying the outsourcing concept to external sources, they are able to cut costs and share risks. The authors believe that forming a strategic partnering with external suppliers facilitates better management of the supply chain. From the analysis, there seems to be good relationships between the company and its suppliers. The firm studied showed that they were working quite a lot of collaboration with one of their first tier suppliers and more or less some degree of collaboration with the lower tier suppliers. These relationships were considered a strategic alliance. With this, the authors think that procurement function in organizations is necessary in managing its relationships with external sources by virtue of cost reduction, shortening of lead times, low prices and the sharing of risks. Subsequently, building the relationship between the actors involved.

**What is the extent of the strategic role of the procurement function within the overall business strategy?**

From the previous research, the authors concluded that most SMEs lacked a procurement department or placed little emphasis on the importance and strategic benefits it can bring in. Within the analysis, the company had a procurement department, which has been given high strategic importance. Furthermore, the director added value to the procured package, worked closely together with Sensys Traffic suppliers and other internal functions, coordinated, operationalized and improved effectiveness within the organization. In this case, the
authors regard this grey hair activity or role mentioned in the analysis as the significant contribution for the organization. Additionally, procurement’s duties include all the processes from a product from suppliers to its final destination. These activities are all value-adding to the final customer. In this case, all these aspects discussed above depict the strategic role the procurement function plays within the overall business strategy of an organization.

How is the procurement integrated into the organization (activities, roles, strategy)?

From the analysis, one could note that the director and his colleagues utilized their skills internally and externally. Internally denoting the amount of skills the procurement function used in collaborating and communicating to other departments regarding products or processes that needs to be rendered. Activities related to procurement within most organizations contribute to its success. Moreover, procurement incorporated in most organizations influence on its overall value through planning and handling strategic partnerships and alliances, risk management and moreover, adding value to the entire organization.

This brings to mind that when procurement is integrated within organization and its strategy, it contributes added value. The value created is through the procurement function’s strategy in dealing with external actors (suppliers), its role as a strategic function in managing internal and external interactions, and processes in managing an economic exchange. This was evident in the findings from the interviewed company. Thus, the authors believe that procurement needs to be integrated within most organizations (i.e. SMEs).

What is the extent of communication and collaboration within inter-functional roles?

Communication and collaboration between other inter-functional departments can be beneficial for organizational performance and increasing the innovativeness of the organization. It is difficult for the procurement function to be acknowledged by other inter-functional as most practitioners mentioned. Thus, it impedes the procurement department effectiveness of communication and collaboration since it is not recognized as an important function. However, the case study’s analysis shows that the procurement function had regularly communicated and collaborated with the sales & marketing department concerning product orders and R&D departments concerning bill of materials and developments. In this case, the authors believe that it is necessary for inter-functional departments to communicate and collaborate in adding value to the product or service for the final customer.

What innovative actions have organizations implemented within their procurement processes?

Innovation is critical to organizational success as the environmental context is continuously changing. By innovating, an organization can match these changes and survive. The analysis showed that the case company was noted to be very innovative. Innovations can be further categorized to many types which the authors have done within the analysis. These were found to be product, process, administrative, strategy, and open innovation and all can contribute to the improving the performance of a firm.

6.1 Theoretical Implications

The foundation of the thesis was built on the limited research conducted towards procurement within SMEs. Organization procurement limited to large enterprises has been widely studied by the academic field. The authors of this paper adapted and developed the
framework from procurement in large enterprises and applied it within small and medium sized enterprises.

The findings concur that by placing more emphasis and priority within procurement in SMEs, developing the procurement department and employment skills, coordinating and collaborating within both internal and external members, forming ‘win–win’ relationships with suppliers, and proactively looking for ways to innovate can improve an organization to compete for the present and the future. Furthermore, by specifically looking to innovate within these areas, the procurement function can leverage itself and its firm to be able to achieve reduced total cost of ownership and higher quality products/services. These special areas which were outlined by Spray (2009) are new sourcing ideas, new insights, new partnerships and new technologies.

6.2 Managerial Implications

SMEs need to place more strategic emphasis within their procurement as procurement is a value-adding process for the final customers and the entire supply chain. The benefits of a more effective procurement department include reduced total cost of ownership and higher quality goods / services. These will help organizations to be more competitive.

New Insights

To begin, the procurement function must excel at reviewing and improving their processes. Thereafter, focus must be oriented towards total cost of ownership instead of price or quality, and decisions must be made with the final customer in mind. Moreover by employing a knowledgeable and skilled workforce, making use of cross-functional and cross-organization teams, more standard procedures can help guide and control innovations to improve procurement effectiveness.

A recent trend of accepting open-innovation practices was found by the authors during this study. This concept works by openly sharing information and collaborating among partners.

New Partnerships

In the case study, findings showed that the director with his extensive network and knowledge of suppliers contributed to reduced total cost of ownership and higher quality of goods / services. Thus, by selecting the best suppliers, sharing information, forming relationships and trust, a firm can also strengthen the organization’s competitiveness.

New Sourcing Strategies

The need to purchase at the right quantity, at the right price and at the right times can help an organization gain greater levels of cost savings and value, access to knowledge, avoid capital expenditures and reducing risk, access to technology platforms, focus on initiatives critical to success, access to supply market expertise, speed to value, improved user experience and higher certainty of outcomes.

Moreover, the procurement department can become more effective to achieve the above benefits by using different sourcing strategies (multiple, single, local, offshore, global, insourcing and outsourcing). The concept of outsourcing the procurement can also be an attractive option if the firm lacks knowledge and experience regarding procurement.
New Technologies

By employing technologies within procurement’s processes can significantly decrease operating costs. Moreover, other benefits include real-time tracking, minimize paper work, automation of transactions, communication links, information sharing and keeping records. In the end, all these benefits support and facilitate the optimization of supply chains.

E-Sourcing can provide an easy means for suppliers to bid for contracts online through reverse auctions or by submitting electronic requests for proposals, quotes and information. It brings needed standardization into a function which is known to be ad hoc.

6.3 Limitation of the Study

Within this investigation, the authors identified interesting aspects within procurement processes and innovation in SMEs that were not adequately enlightened and that should be studied.

Since the investigation was only conducted with one single company, the authors think that the study could not be generalized to all types of SMEs. That is, SMEs ranging from the service industry to the manufacturing industry, profit to non-profit and so forth.

Furthermore, by investigating the study within one single company, the authors were able to gain an in-depth knowledge about the procurement processes in that company. The authors suggest that an investigation similar to this one should be conducted by using other SMEs in different industries in order to acquire a broader knowledge about the subject matter in question. More information regarding supplier relationship management, IT economics, information technology and performance measurements can enhance the credibility and validity of this study.

Moreover, the interviewee chosen for this study was the director of sourcing and supply of the case company and not the other procurement members, other supply chain members nor any other Sensys employees. This would have allowed a more holistic overview of the industry and would have deepened the scope of this study.

Finally, since the study was conducted from the perspective of an SME, the authors think that further understanding could be gained from the perspective of LEs in terms of innovation in procurement.
References


Appendix 1 Interviewee
Sensys Traffic AB, Undisclosed location
Jörgen, Director of Sourcing and Supply, (2009-04-15 / 2009-05-14)

Appendix 2 Questionnaires for Interview

SME and Background
1. How many people are in the company?
2. What are your main business goals? What are the products services / products you provide? Who is your clientele? B2c, b2b, b2g? (Do they include innovation)
3. How many departments would you consider there are in your firm? Please give a percentage describing the importance of each function within the firm.

Procurement Function and Relationships
4. What is your role? What do your activities include?
5. Rate the priority of procurement within the firm. (1-10).
6. How do you see your role within the entire organization? How are you seen by the organization? What are your ultimate goals?
7. How do you coordinate / integrate / communicate between internal functions such as R&D, marketing, and incorporating customers into the procurement process?
8. How are the goals of your procurement department different to the overall firm’s goals?
9. How are the strategies of your procurement department different to the overall firm’s strategies?
   a. Decentralized versus centralized decision making? Supporting or primary activity?
10. Define purchasing and procurement. Is there a difference?
11. Please define purchasing and procurement. Would you say you place a high strategic value or is it more activity (operational) based.
12. How do you find potential suppliers and how do you choose your suppliers?
   a. Use of consultants
   b. External players (from sales force, recommendations from industry)
   c. Outsource your procurement
d. Use of seeker solver networks.
e. Trade fairs
f. Other


14. Procurement strategy – Local or Global – why? What are the advantages and disadvantages for your choice?

15. How many suppliers are kept and why?

16. Describe the extent of the relationship with your suppliers? If it varies, describe one relationship and the company you are working with. What relationship would you classify it as below?
   a. Joint Venture
   b. Strategic alliance
   c. Consulting
   d. Procurement Services
   e. Other

17. How are you integrated / coordinated? How much information do you share with your suppliers? Do you strive for mutual benefits or for your own goals?

18. What is the extent of early supplier involvement in procurement? Including potential suppliers.

19. Do you use performance measurements to rate your suppliers?

20. Please provide the percentage of product which is outsourced and which is insourced.
   a. i.e. Outsource – 4000, Insourced – 1000

21. What are the difficulties which arise from the procurement / purchasing?

**Innovation in Procurement Processes**

22. Describe the uncertainty that your department and your firm is facing.

23. Please rate the most influential trends between 1 and 10. 1 being the weakest and 10 being the highest.
   a. Acceleration pace of globalization
   b. Unique relationships with customers, suppliers and outsource partners
   c. Rapidly advancing technology
   d. Intense emphasis on revenue growth and innovation
e. Constantly changing consumer demand
f. Extreme competition and deep cost reduction
g. Increasingly complex regulatory, environmental and ethical requirements
h. Economic reasons

24. Do you proactively do environmental scanning or research? Do you collect feedback from industry, customers and suppliers? Do you benchmark?

25. Do you see that the procurement function is changing? How and why?

26. Have you pursued any new methods of purchasing? How open or eager are you to changing the procurement method? (web-based purchasing, e-procurement and open innovation)

27. What changes do you need to improve your procurement services? How much do you place on the need to address for the necessary changes?

28. How would you rate the possibility of the following activities for procurement in the future (1-10)? Are you interested in:
   a. Use of consultants
   b. External players
   c. Outsource your procurement
   d. Use of seeker solver networks.
   e. Others

**Technology**

29. To what extent does technology impact / facilitate /influence your role.

30. What is the extent of information exchange and sharing?

31. Do you use e-procurement?