Dissertation
on
Performance Measurement of Procurement

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Semester: Summer 2021

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Date of Submission: **28 September 2021**

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Letter of Transmittal

28 Sep 2021
Amir Husen
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Subject: Submission of dissertation

Dear Sir

With humble honor and respect, I am submitting my dissertation report on Performance Measurement of Procurement. As per partial accomplishment of the requirements for the MBA degree, I have completed dissertation report on "DBL Group" under the supervision of you.

This report is an integral part of our academic courses in completion of the MSCM program which has given me the opportunity to have an insight into the MSCM. I hope this report reflects on the contemporary issues on the MSCM that are being Practiced by organizations in our country.

In completing the report, I tried my best to blend all my knowledge and imparted every available detail and also attempted to avoid unnecessary amplification of the report.

I humbly request you to accept this report for your kind evaluation.

Sincerely

A. K. M. Aleptagin
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Letter of Authorization

Certified that this dissertation report titled “Performance Measurement of Procurement of “DBL Group” is the bonfire work of Student’s name A. K. M. Aleptagin, who carried out the report under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

……

Amir Husen
Assistant Professor
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Acknowledgements

The completion of this dissertation would not have been possible without the steadfast support of my Supervisor. First of all, I would like to express my deep appreciation and sincere gratitude to Mr. Amir Husen, Assistant professor, for his wisdom, invaluable guidance and professionalism from the beginning to the end in the course of my work. He is excellent mentor and have provided support throughout my MSCM study. I would like to extend my heartiest thanks to him for his patience and kind involvement in this study.

Next, I was also indebted to the University of Sonargaon for the opportunity given to me in pursuing this MBA Program. My gratitude also goes to all representatives from my company, DBL Group, who provided personal accounts and primary material for the report. Your contributions, detailed comments and insight have been of great value to me. Let me also say 'thank you' to my Sonargaon University class mates, colleagues and all others who have rendered assistance and support in one way or another to make this study possible.

My final acknowledgements go to the people in my life who supported me throughout this process. I thank my sisters, my brother and my family members who provided their encouragement through my report. I also thank my lovely mother for always being there for me.

Executive Summary

The core objective of the dissertation is to fulfill the requirement of the MSCM program as prescribed by the SU. I am a supply chain professional of DBL Group. The main objective of the dissertation is to get the hands-on experience of the real-world organization. The dissertation was completed with the objective of getting practical knowledge in the performance measurement of Procurement department of DBL Group.

Supply chain management has become one of the most discussed topics in business literature and is by many organization's considered a key strategic element. Today, markets have become more dynamic with rapid changes in customer requirements. These rapid changes have increased the importance for companies to ensure that materials and information flow smoothly between the actors in a supply chain.

Being able to measure supply chain performance is important since it leads to a greater understanding of the supply chain and provides important feedback on the improvement progress. In spite of companies' and managers' recognition of the importance of supply chain management, they often lack the ability to develop effective performance measures and metrics. In addition, relatively little literature covering PMSs and the selection of performance measures in the context of supply chain management exists.

Performance measurement of Suppliers is one of the major parts of my work responsibilities and I frequently maintain Suppliers Evaluation Data Sheet. I realized that I was successful to gather a lot of significant learning experiences which would be helpful in my future career. The Procurement department of DBL offered me ample space and opportunities, not only to learn but also to exhibit my skills as a Procurement team member. I could use my theoretical knowledge of Procurement in real practice while participating in many discussions. I was actively involved in the department meetings where I shared my knowledge and views regarding the performance in Procurement of DBL Group.

The purpose of the report is to develop a structured framework for creating and evaluating supply chain performance indicators with the aim of facilitating organizations' efforts when measuring supply chain performance. The theoretical framework, focusing on relevant aspects when measuring supply chain performance, was formed and used in order to develop a new framework for measuring supply chain performance.

I also attempted to gather more information on basic job functions of other departments to have better understanding of the relation between them and the Procurement department. It was commendable to see how wholeheartedly they welcomed, acknowledged and appreciated new ideas and knowledge. I have provided few recommendations based upon my understanding and knowledge.

I successfully completed all the assigned duties and handed them over to the senior supervisor at the end of the dissertation. I thoroughly enjoyed the challenges that came along every single day.

Table of Abbreviations

SC:	Supply Chain
SCM:	Supply Chain Management
KPI:	Key Performance Indicator
SCP:	Supply Chain Performance
PCTM:	KPI Cost Transformation Matrix
JIT:	Just in Time
TQM:	Total Quality Management
PBC:	Performance Based Costing
CRM:	Customer Relationship Management
QoS:	Quality of Services
DEA:	Data Envelopment Analysis
SCOR:	Supply Chain Operations Reference-model
SCC:	Supply-Chain Council
EDLP	Everyday Low Pricing
GSC	Global Supply Chain
HLP	High-Low Pricing
KPI	Key Performance Indicator
OEE	Overall Equipment Effectiveness
PL	Planning & Logistics
PMS	Performance Measurement System
POA	Performance of Activity
PSI	Product Supply & Innovation
QDE-STEP	Quality, Delivery, Economy, Safety, Technology, Environment, Personnel
SKU	Stock Keeping Unit

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Chapter 01

Introduction

1.1 Introduction

Many organizations spend millions of shillings on procurement, which refers to all of the activities required to get a product or service from a supplier to the user. The activities encompass the purchasing function and management of the relationships between suppliers and internal customers.

Generally, procurement activities are increasingly receiving recognition due to their importance to organizations. Purchasing and supply activities contribute in a significant way to the success or failure of an organization.

Performance measures have two central effects and work in two directions. First of all they can be used to describe the past and present of the process being considered. On the other hand, they can be used to set performance goals. This allows establishing a focus on the future. By fixing a will-be value or target of a performance measure it is possible to watch the progress in reaching the target and the success in achieving the target itself.

Organizations measure their performance in order to monitor their employees and departments, to direct them, to provide feedback for being able to carry on their goals and to assess the performance of the organization vis-à-vis the strategic and continuous improvement goals. Organizations need both short term and long-term performance assessment. Traditional performance measurement systems rely on static metrics that are easier to measure, to gather and to quantify. However, the focus in the contemporary business environment has shifted from the present to the future. Thus, dynamic metrics which show the movement of a variable toward a target ratio are more meaningful. Procurement function not only sources but also manages stock, which represents a major part of an organization's working capital.

In addition, procurement is the contact function between external suppliers and the organization's needs. It is about connecting external sources to internal needs of an organization. In fact, procurement work to a large extent starts from one function in the organization and ends in another function within that organization or an external organization. This makes it a critical function in terms of relationship management both internally and externally.

Despite the contribution of procurement to manufacturing organization, performance (efficiency and effectiveness) is the least measured activity. However, the organization's efficiency and effectiveness are the two most fundamental dimensions of performance and hence the two must be measured.

Over the years, organizations have measured their performance using financial based performance measurement systems and indicators. However, this approach is losing popularity.

This has been due to environmental turbulence in terms of frequency and unpredictability of changes and on the other hand, the managerial complexity due to passage from strategies based on cost leadership to those based on differentiation/customization, a passage that increases competition between the firms and requires more complex organization. The change has led to the adoption of non-cost performance measures, which relate to physical measures pertinent to the characteristics of the product, the production technologies and the managerial techniques of the plant.

Some of the performance measurement systems (PMS) include: The Balanced Scorecard, the Performance Pyramid System and the Performance Prism.

The need for performance measurement has increased with changing business environments, leading to more rapid changes in business strategy. In response to this, organizations have had to change their performance measurement systems, dimensions and indicators so as to align them with their strategy.

1.2 Statement of The Problem

Procurement has been identified as a core function of any manufacturing organization. However, its performance measurement is said to be given less importance compared to the other management activities. Performance measures assists companies to evaluate, control and improve production processes and also to compare the performance of different organizations, plants, departments, teams and individuals as well as assess employees. However, the only performance measurement that is carried out in procurement are largely cost based despite the fact that performance measures are required to correspond to environmental requirement, organization needs and strategies to meet those needs.

1.3 Objectives of The Study

The objectives of the study are:

- To identify performance measurement factors with respect to supplier relationship management, internal procurement and customer relationship management against strategic, tactical and operational levels for a procurement performance measurement framework.

- To establish whether DBL Group formally measure procurement performance
- To identify performance measurement systems used in measuring purchasing and supply performance in DBL Group
- To identify performance dimensions emphasized by the organization when measuring procurement performance;
- To identify indicators used to measure procurement performance dimensions and
- To establish benefits and challenges of measuring procurement performance.

1.4 Significance of The Study

The findings of this study will provide managers and other practitioners with an insight into the benefits of using procurement performance measurement as a tool for effective management of the procurement function. It also provides an insight into the emerging procurement performance measurement systems, dimensions and indicators. It will contribute to the body of knowledge necessary to advance literature and instruction in the area of procurement management in DBL. To the private sector of DBL Group, this will create a greater benchmark opportunity for replication as a means of improving procurement efficiency and effectiveness. The study will also create an opening into subsequent studies into this area, which is now regarded as the greatest source of value creation in both private and public companies.

1.5 Limitations of The Study

The study faced several limitations, which should be taken into account when reading this report:

i. **Time:** time was the biggest constraint in that several respondents found it difficult to squeeze their busy schedules and respond to the questionnaire. As a result, some didn't respond at all whereas others delegated the duty to other officers some of whom might not have been adequately versed; and

ii. **Responses.** Some respondents refused to respond to certain questions or even gave half responses. This was construed to mean that either they didn't have the relevant information or they thought it was privy to their company

Chapter 02

Organization Profile

2.1 Overview:

DBL Group is a family-owned business which started in 1991. The first company was named as Dulal Brothers Limited. Over the years, the organization evolved into a diversified conglomerate in Bangladesh.

The businesses include Apparels, Textiles, Textile Printing, Washing, Garments Accessories, Packaging, Ceramic Tiles, Pharmaceuticals, Dredging, Semiconductor Design (VLSI), ICT, and Telecommunications. With a dedicated workforce of 39,000 employees, the annual turnover for the year 2018-19 was USD 600 Million.

The organization has financial investments from IFC of the World Bank, DEG-KfW (Germany), and Swedfund (Sweden). DBL engaged in its first offshore business in Ethiopia for Apparels and Textiles, creating employment opportunities for 4,500 people.

DBL is well reputed locally and globally for its diverse set of sustainability activities, working with international development organizations such as CARE, DEG, IFC, GIZ, ILO, and UNICEF. DBL's activities are in alignment with the UN Sustainable Development Goals (SDG) and have been recognized internationally by the UN Global Compact and the Business Call to Action (BCtA) of the UN Development Program (UNDP). DBL is a signatory to the Global Compact and has been publishing its sustainability reports since 2014 following the GRI guidelines.

DBL is Trustee Board member of CSR Center, founding member of Global Compact Network Bangladesh, member of the International Chamber of Commerce (ICC)- Bangladesh, Premier Corporate Member of Textile Institute, Manchester and member of World Economic Forum.

2.2 Business Concerns

Apparels and Knitting

- Dulal Brothers Ltd.
- Jinnat Apparels Ltd.
- Flamingo Fashions Ltd.
- Jinnat Fashions Ltd.
- Jinnat Knitwears Ltd.
- Mawna Fashions Ltd.

Cotton Spinning

- Matin Spinning Mills Ltd.

Fabric Dyeing and Finishing

- Mymun Textiles Ltd.
- Hamza Textiles Ltd.
- Color City Ltd.

Fabric Printing

- DB Tex Ltd.

Garments Printing

- Thanbee Print World Ltd.

Packaging

- Parkway Packaging & Printing Ltd.

Distribution

- DBL Distribution Ltd.

Ceramic Tiles

- DBL Ceramics Ltd.

Textile Testing

Textile Testing Services Ltd.

ICT & Telecommunications

- DBL Telecom Ltd.
- DBL Communications Pvt. Ltd.
- DBTEL

Sports

- DBL Sports Ltd.

Dredging

- DBL Dredging Ltd.

VLSI Design

- Neural Semiconductor

Sewing Thread

- Color City Ltd. (Eco Threads & Yarns)

2.3 Vision

We envision to sustain and grow as a diversified global conglomerate.

2.4 Mission

We strive to attain our vision by practicing corporate governance, empowering and inspiring our associates, being transparent in our work process, continuously developing expertise, meeting & exceeding customer needs, demands & expectations, maintaining quality & consistency of our products & services, engaging with community, caring for environment and maintaining networks with our global partners.

2.5 Sustainability

DBL Group defines Sustainability as "the ability to survive and grow". DBL's Sustainability is based on five pillars: People, Process, Product, Community, and Environment; thus, integrating a holistic approach towards Sustainability. If any of these pillars are missing, the organization will not survive.

Different initiatives, whether they be with our various knowledge partners or of our own, are taken to address these five pillars. People development focus on empowerment, health, and hygiene. Process encompasses the machineries used in the production processes, interventions to improve efficiency, and even skill development. Products refer to innovations and the responsible use of materials in production.

Community concentrates on the various development needs of the local community including education, health, hygiene, and even safety. Environment requires to be addressed to preserve the natural resources such as water, carbon emissions, etc. so that the future generations can avail them. DBL believes in voluntary doing to understand the needs and requirements and act accordingly to fulfill them.

DBL's practices integrate the values "Learning is growing" and "Sharing is caring". Through existing and future practices and programs, DBL wishes to learn and adopt globally recognized standards and encourage other to do the same.

2.5.1 People

As an organization, DBL Group realizes its responsibility towards its people: our employees. Our company understands how the business practices impact our employees and we work to serve in their best interests.

2.5.2 Process

DBL Group is committed to continuously improve all its business processes: ranging from purchasing raw materials to transporting final finished goods. We give a strong emphasis on

eliminating non-value-added activities while delivering quality products on time with the least effect on the environment and greater efficiency.

2.5.3 Product

DBL Group continuously works towards improving the quality of the products, and all the processes that go into making the final finished product, and ensures to minimize the negative impact on the environment and the consumers. The R&D department is actively involved in creating new and reporting existing products and the processes associated with them.

2.5.4 Community

We believe that together with our employees, customers, business partners and other stakeholders, we can create real and long-term changes for the betterment of the community and the environment. And together with our thousands of employees we can extend this impact even further – from improving the livelihood of our employees to the development of the society where we conduct our businesses.

2.5.5 Environment

Environment is a high priority for our company and we work to decrease carbon footprint, water consumption, and waste from our manufacturing processes. We dedicate ourselves in conserving energy, managing waste effectively and replenishing the environment to the best of our capacity. DBL recognizes that its own sustainability rests on its ability to work harmoniously in its social and environmental settings. So, with economic success we also want to balance social and environmental prosperity.

2.6 Supplier Relationship Management

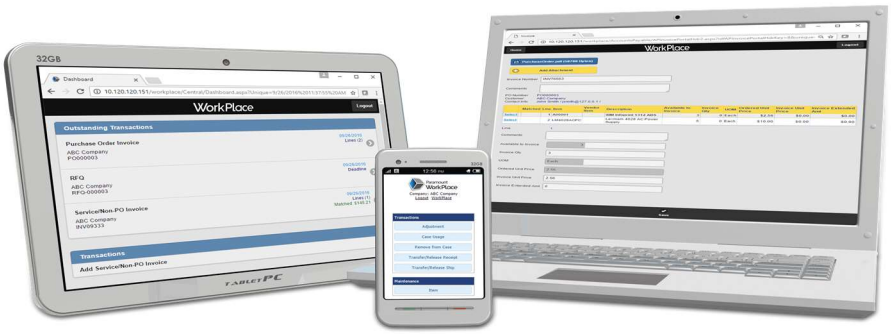
Achieve more with less from Supplier Relationship Management. With an easy-to-use supplier self-service, you can now obtain vendors and suppliers information, free up AP and procurement team's time, reduce cost, and negotiate contracts, and focus on your long-term buying and relationships strategy.

With offering effective self-service, you can now shift your focus from merely cost-cutting and communications to determining more critical areas of your partnership. You will have time to

identify the supply categories that are important to you and creating strategies that manage these items, and many possibilities from supplier partnership dynamics.



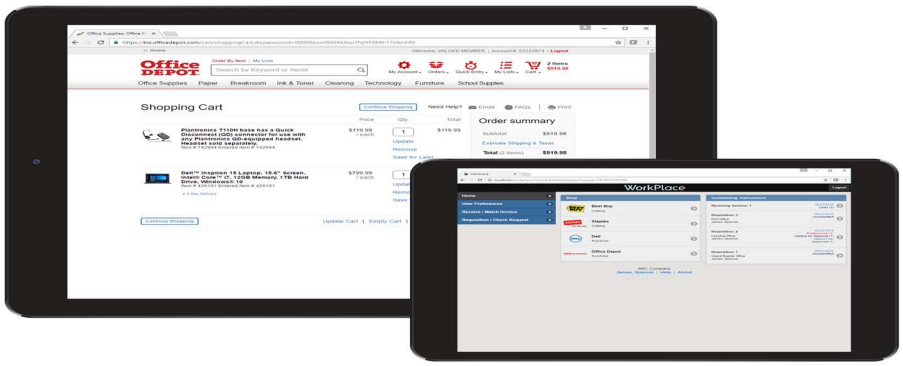
INTUITIVE VENDOR INVOICE PORTAL



Empower vendors and suppliers with a self-service portal for purchase order/non-purchase order invoice entry. Increase communications and collaboration with your Vendor and Supplier Network and eliminate data entry for your Payables team and reduce internal cost.



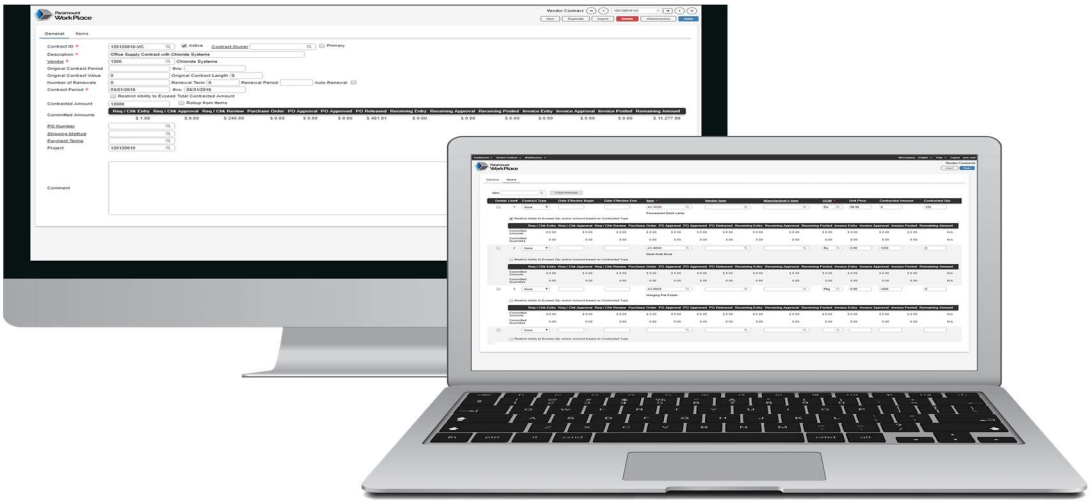
PUNCHOUT CAPABILITIES



Speed order processing and lower procurement cost by integrating real-time with suppliers' online catalogs.



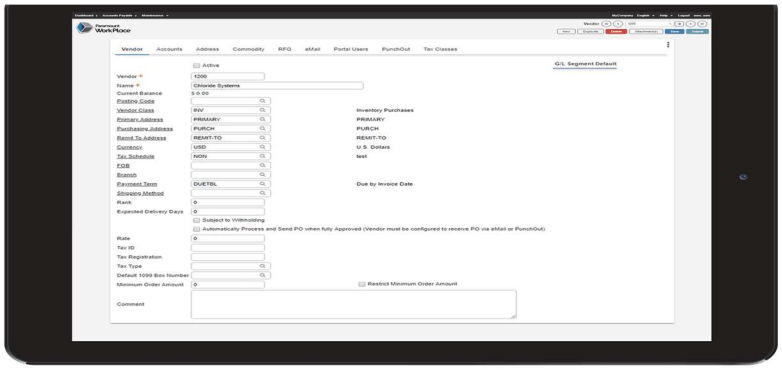
POWERFUL VENDOR CONTRACT MANAGEMENT



Enforce vendor-negotiated terms and provide blanket purchase order capabilities.



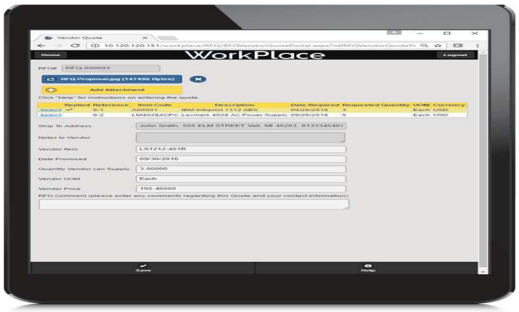
FLEXIBLE VENDOR APPROVAL



Control vendor creation within the ERP by keeping vendor approvals with A/P while providing requisition & procurement users an easy way to request a new vendor.



EFFECTIVE REQUEST FOR QUOTE



Obtain the best deal and turnaround time. Submit and manage request for quotes to multiple vendors. Compare quotes based on delivery date and price. Manually or automatically award purchase orders in seconds.

Theoretical Framework

3.1 Frameworks of procurement performance measurement

The performance of procurement is required to measure with respect to some standard models or frameworks. Beamon (1999) presents an overview and evaluation of the performance measures used in procurement models and also presents a framework for the selection of performance measurement systems for manufacturing procurements. Three types of performance measures (resources, output and flexibility) are identified as necessary components in any procurement performance measurement system, and flexibility quantitative measurement approach for procurements are proposed. However, it lacks of system thinking, in which a procurement must be measured widely across the whole.

Gunasekaran et al. (2001) illustrate and discuss different performance measures and metrics of the procurement with the help of a framework that gives cohesive picture to address what needs to be measured, and how it can be dealt with. The framework is classified into strategic, tactical and operational levels of management. The metrics are also divided into financial and non-financial so that a suitable costing method based on activity analysis can be applied. However, due to the large number of metrics and measures given in the framework, firms find it difficult to use. Not many firms use all metrics and measures in day-to-day business operations. Also, the framework does not provide guidelines to priorities these metrics. Further, firms require a comprehensive way to analyze their operations from every angle that covers all perspectives of business.

Chan and Qi (2003) propose an innovative performance measurement method to contribute to the development of procurement from five core processes: supplying, inbound logistics, core manufacturing, outbound logistics and marketing & sales. These process-based systematic perspectives are employed to build an effective model to measure the holistic performance of complex procurements (cross organization). Fuzzy set theory is introduced to address the real situation in judgment and evaluation processes. However, this proposed model overlooks the decision making ability across strategic, tactical and operational levels.

Gunasekaran et al. (2004) develop a framework to promote a better understanding of the importance of procurement performance measurement and metrics. The proposed framework considers the measurement of procurement processes (plan, source, make and deliver) with respect to strategic, tactical and operational levels and evaluates a score for prioritize for each metric by three level: highly, moderately, and less important level from an empirical study of selected British

companies. It lacks identifying critical success factors for the whole procurement system. Furthermore, for evaluating the score, the organization, suppliers and customers should come together to discuss how they will address the measurement and improvement of procurement performance. Industry consortiums, consultants and reporters could be helpful in promoting procurement performance measurement generally, and in developing measures and measurement techniques specifically.

Huang et al. (2005) summarize the procurement operations reference (SCOR) model, its benefits along with illustrative case stories and describe a computer-assisted tool to configure procurement threaded diagram per SCOR specification. Procurement configuration is an integral part in SCOR project implementation. Currently, the configuration of 'as-is' or 'to-be' threaded-diagram describing a procurement is done manually. To automate this process, a computer-assisted configuration tool has been developed and described in this paper. However, the configuration tool can so far only deal with a single manufacturing facility of a company. It does not take into account the interactions among multiple manufacturing facilities. Thus, this report limits to only single manufacturing facility of a company for studying.

3.2 Performance Measurement in Procurement

Procurement can be defined as all of the activities required in order to get a product or service from a supplier to the final destination. It encompasses the purchasing function, storing, transportation and management of the relationship between suppliers and internal customers (Van Weele, 1994). Although somewhat different, the term procurement and purchasing are interchangeably used in many business organizations (Dobler and Burt, 1996, 3, Corey, 1978).

In this report, the two are used interchangeably.

Generally, procurement and supply activities are increasingly receiving recognition for their importance to organizations. According to Baily et al (1994), there seems to be a general recognition that purchasing and supply activities contribute in a significant way to the success or failure of an organization.

Procurement's close link to profitability has been one of the major concerns that have led to the elevation of its status in business. According to the U.S. Bureau of Census (1981), the Procurement function plays an important role in most organizations since purchased parts, components, and supplies typically represent 40 to 60 percent of the sales value of its end products. This means that relatively small cost reductions gained in the purchase of materials or supplies can have a greater impact on profits than equal improvements in other cost-sales areas of the organization (Ballou, op. cit., 1992, p. 546). This has also been re-affirmed by studies done by PIMS Associates who found that purchasing effectiveness is one of the most critical factors in determining the profitability of business (Hillier, 1997).

With the raging wave of globalization and technology development, procurement has become a quite involving process since so many aspects have to be considered before a transaction is concluded. With time, it has grown from a clerical paperwork function concerned with transactional issues to a strategic unit of importance (Syson, 1992).

According to (Gadde and Hakansson- quoted in Knudsen, 1999) procurement, as a strategic function play three roles: the development role, the rationalization role and the structural role.

The development role stresses the importance of using suppliers as an essential resource in the product development process. This is done by systematically matching the buyer's own need with the capabilities of the supplier's report and development capabilities. By so doing considerable synergy effects are reached.

The rationalization role encompasses all activities aimed at reducing costs. This is done by cutting prices through internal coordination, superior negotiation techniques, concentrating purchases to fewer suppliers leading to economy of scale, reducing stock levels and adapting to one's own needs to what suppliers can offer. The same is also achieved by changing internal customer needs, improving flows between suppliers and internal customers or finding better or less expensive suppliers.

The structural role emphasizes that the decisions made in the purchasing work today affect the structure of possible suppliers available in the future.Whether strategic or clerical, the position of procurement in an organization depends on quite a number of factors. Van Weele (1994) lists some of these factors as characteristics of the product; strategic importance of the purchase function; sum of money involved in the purchase; characteristics of the purchase market; degree of risk related to the purchase; degree to which the purchase affects existing routines in the organization; role of the purchasing department in the organization.

3.3 The Concept of Performance Management

According to Latham, (1984), performance management is defined as the cyclical, year-round process in which managers and employees work together on setting expectations. It includes activities to ensure that goals are consistently being met in an effective and efficient manner (McNamara, 2000). According to McNamara, Performance management can focus on performance of the organization, a department, processes to build a product or service, employees, etc.

MacNamara notes that because performance management strives to optimize results and alignment of all subsystems to achieve the overall results of the organization, any focus of performance management within the organization (whether on department, process, employees, etc.) should ultimately affect overall organizational performance management.

Achieving the overall organization goals requires several ongoing activities, including identification and prioritization of desired results, establishing means to measure progress toward

those results, setting standards for assessing how well results were achieved, tracking and measuring progress toward results, exchanging ongoing feedback among those participants working to achieve results, periodically reviewing progress, reinforcing activities that achieve results and intervening to improve progress where needed. This requires an elaborate performance measurement using an appropriate performance measurement system. The overall goal of performance measurement being to ensure that the organization and all of its subsystems (processes, departments, teams, employees, etc.) are working together in an optimum fashion to achieve the results desired by the organization.

3.3.1 The conceptual framework themes

The framework has been developed from concepts in two fields of study, namely decision-making levels and supply chain macro processes for measuring the holistic performance of supply chain system. In each concept, it comprises of three themes of study. Decision making levels divide into strategic, tactical and operational. For supply chain macro processes, it can be classified into supplier relationship management (from upstream supplier), internal supply chain management (within company) and customer relationship management (from downstream customer). Therefore, the total themes of the conceptual framework are six key themes. These six conceptual themes.

3.3.2 Decision making levels

There is a close connection between the design and management of supply chain flows (information, product and funds) and the success of a supply chain (Chopra and Meindl, 2004). Some companies have built their success on superior strategy and operation of their supply chain. In contrast, the failure of many businesses can be attributed to weaknesses in their supply chain strategy and operation. Successful supply chain management requires many decisions relating to the flow of information, product, and funds (Chopra and Meindl, 2004). Each decision should be made to raise the supply chain profitability (supply chain surplus), the difference between the revenue generated from the customer and the overall cost across the supply chain (Chopra and Meindl, 2010). These decisions fall into three categories or levels: strategic, tactical and operational; depending on the authority decision level, the frequency of each decision and the time frame which a decision level has an impact. As a result, each category of decisions must consider uncertainty over the decision level (Chopra and Meindl, 2007).

3.3.3 Strategic decision-making level

During this level, given the marketing and pricing plans for a product, a company decides how to structure the supply chain over the next several years (Chopra and Meindl, 2010). It decides what the chain's configuration will be, how resources will be allocated, and what processes each stage

will perform. Strategic decisions made by top level management decision makers include whether to outsource or perform a supply chain function in-house, the location and capacities of production and warehousing facilities, the products to be manufactured or stored at various locations, the modes of transportation to be made available along different shipping legs and the type of information system to be utilized (Gunasekaran *et al*., 2004). A firm must ensure the supply chain configuration supports its strategic objectives and increases the supply chain surplus during this level. Supply chain strategic decisions are typically made for the long term (a matter of years) and are very expensive to alter on short notice. Consequently, when companies make these decisions, they must take into account uncertainty in anticipated market conditions over the next few years (Chopra and Meindl, 2007).

3.3.4 Tactical decision-making level

For decisions made during this level, the time frame considered is a quarter to a year. Therefore, the supply chain's configuration determined in the strategic level is fixed (Chopra and Meindl, 2010). This configuration establishes constraints within which tactic must be done. The goal of tactic is to maximize the supply chain surplus that can be generated over the tactical level given the constraints established during the strategic level. Companies start the tactical level with a forecast for a coming year (or a comparable time frame) of demand in different markets (Chopra and Meindl, 2010). Tactical decisions made by mid-level management decision makers include making decisions regarding which markets will be supplied from which locations, the subcontracting of manufacturing, the inventory policies to be followed, and the timing and size of marketing and price promotions (Gunasekaran *et al*., 2004). Tactic establishes parameters within which a supply chain will function over a specified period of time. In the tactical level, companies must include uncertainty in demand, exchange rates, and competition over this time level in their decisions (Chopra and Meindl, 2007). Given a shorter time frame and better forecasts than the strategic level, companies in the tactical level try to incorporate any flexibility built into the supply chain in the strategic level and exploit it to optimize performance. As a result of the tactical level, companies define a set of operating policies that govern short-term operations (Gunasekaran *et al*., 2004).

3.3.5 Operational decision-making level

The time frame here is weekly or daily, and during this level companies make decisions regarding individual customer orders. At the operational level, supply chain configuration is considered fixed, and tactic policies are already defined (Chopra and Meindl, 2010). The goal of supply chain operations is to handle incoming customer orders in the best possible manner. During this level, operational decisions made by low level managers include allocate inventory or production to individual orders, set a date that an order is to be filled, generate pick lists at a warehouse, allocate an order to a particular shipping mode and shipment, set delivery schedules of trucks and place

replenishment orders (Gunasekaran *et al*., 2004). Because operational decisions are being made in the short term (minutes, hours, or days), there is less uncertainty about demand information (Chopra and Meindl, 2007). Given the constraints established by the configuration and tactic policies, the goal during the operational level is to exploit the reduction of uncertainty and optimize performance (Huan *et al.*, 2004).

The strategic, tactical and operational decision making levels of a supply chain have a strong impact on overall profitability and success. It is fair to state that a large part of the success of firms can be attributed to their effective supply chain strategic, tactical, and operational decision making levels (Gunasekaran and Kobu, 2007). The reason for studying the performance measurement system and performance measurement factors at the strategic, tactical, and operational levels is to make the right decisions so that they can support each other in achieving the overall goals and objectives of an organization. The success of strategy formulation depends upon the degree of alignment of strategies at different levels (Gunasekaran and Kobu, 2007).

3.4 Performance measurement

According to Nelly (1998), performance measurement is the process of quantifying the efficiency and effectiveness of past action. It is the gathering of information about the work effectiveness and productivity of individuals, groups, and larger Organizational units (Larsen & Callahan, 1990). It involves systematically collecting and strategically using information, on an ongoing basis, in an intra- and inter-organizational fashion, and for a variety of internal and external purposes (Dusenbury, 2000).

Performance measurement represents a process where the focus is on the internal process of quantifying the effectiveness and the efficiency of action with a set of metrics (Neely, Gregory and Platts, 1995). It represents management and control systems that produce information to be shared with internal and external users. Furthermore, as it encompasses all aspects of the business management cycle, it constitutes a process for developing and deploying performance direction (Nanni, Dixon and Vollmann 1992).

Performance measurement is traditionally viewed as an element of the planning and control cycle that captures performance data, enables control feedback, influences work behavior (Flamholtz, Das and Tsui 1985) and monitors strategy implementation (Simons 1990).

From the foregoing it is apparent that performance measurement is concerned with an organization/ department's efficiency and effectives. According to Nelly (1998) an organization's efficiency and effectiveness are two most fundamental dimensions of performance and hence those two must be measured.

Efficiency refers to how economically the organization's resources are utilized whereas effectiveness refers to how accurately the organization's products or services satisfy the

customer's needs. Efficiency measures how successfully the inputs have been transformed into outputs whereas Effectiveness measures how successfully the system achieves its desired outputs (Oxford Dictionary of Business, 1996).

3.5 Importance of performance measurement

Performance measurement plays a key role in the development of strategic plans and evaluating the achievement of organizational objectives (Ittner and Larcker 1998) as well as acting as a signaling and learning device (Simons 1990).

More than just being a diagnostic system, performance measurement also represents an interactive device (Simons 1990). It contributes to strategy formulation and implementation by revealing the links between goals, strategy, lag and lead indicators (Kaplan and Norton 1996) and subsequently communicates and operationalizes strategic priorities (Nanni et al. 1992).

The goal of making measurements is to permit managers to see their company more clearly - from many perspectives - and hence to make wiser long-term decisions. According to the Baldrige Award scheme (Baldrige Criteria, 1997), Modem businesses depend upon measurement and analysis of performance for it supports a variety of company purposes, such as planning, reviewing company performance, improving operations, and comparing company performance with competitors or with 'best practices' benchmarks.

Performance measures assists companies to evaluate, control and improve production processes. They are also used to compare the performance of different organizations, plants, departments, teams and individuals and also assess employees (Heim and Compton, 1992).

According to the Foundation of Manufacturing Committee of the National Academy of Engineering, world class organizations use performance metrics to define and align performance expectations for the organization (quoted in Heim and Compton, 1992 pp.6).

3.6 Performance measurement systems

According to Ljungberg (1994) a measurement system is a set of related measures described by rules and procedures for capture, compilation and combination of data- that in combination reflect key performances and characteristics of a selected process effectively enough to admit intelligent analysis leading to action if needed.

On his part Simons, (2000) defines Performance management systems as "the formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities". These systems focus on conveying financial and non-financial information that influence decision-making and managerial action. The recording, analyzing, and distributing of this information is embedded in the rhythm of the organization and is often based on predetermined practices at preset times in the business cycle.

A performance measurement system enables informed decisions to be made and actions to be taken because it quantifies the efficiency and effectiveness of past actions through the acquisition, collation, sorting, analysis, interpretation and dissemination of appropriate data (Nelly, 1998).

A performance measurement system operates with exhaustive and carefully selected performance indicators. Performance indicators specify the types of evidence, qualitative and quantitative, used to assess performance and results. These will include indicators of productivity, effectiveness, quality, timeliness, and responsiveness (Wholey, 1983).

3.7 Trends in performance measurement Systems

Performance measurement is not a new phenomenon. In fact, throughout history, performance

measures have been used to assess the success of organizations. For instance, the modem accounting framework dates back to the Middle Ages and since that time assessment of performance has predominantly been based on financial criteria (Bruns, 1998). Double entry accounting systems were developed to avoid disputes and settle transactions between traders (Johnson, 1983). By the start of the twentieth century, the nature of organizations had evolved and ownership and management were increasingly separated. As a result, measures of return on Investment were applied so that owners could monitor the performance that managers were achieving (Johnson, 1983). Since that time, the vast majority of performance measures used have been financial measures of this type based on financial data like return on investment, Return on sales, price variances, and sales per employee and profit per unit of production. Of these measures, productivity has been considered the primary indicator of performance, (Teague and Eilon, 1973).

By the 1980s, there was a growing realization that the traditional performance measures (measures based on accounting parameters) were no longer sufficient to manage organizations competing in modem markets (Johnson and Kaplan, 1987).

3.8 Procurement Key Performance Indicators and Metrics

A procurement KPI or metric is a measurable value that tracks all relevant aspects of obtaining or buying goods and services. These KPIs enable the procurement department to control and optimize the quantity, quality, costs, timing and sourcing of purchasing processes.

Compliance Rate

One of our compliance metrics examples represent the whole of basic agreements a company and a supplier lay down. It results in various requirements such as the maximum reaction time in case of any issue, the delivery time, special discount offers, etc. It is a key component in providing guidance and insights into processes, and participates in saving costs through better negotiations with suppliers. On our procurement KPI example aside, the compliance rate is of 68% overall, and it is broken down per type of suppliers: the highest compliance rate is with software suppliers, with 75%, while the lowest is with digital services with 9% of compliance. Is also tracked the general evolution over five years, with a pre-set target of 60% that is reached in 2016 and 2017.

Performance Indicators

For an average company that is not operating world-wide with millions of suppliers or end-users, reaching an overall of 50% of compliance is a good target to set.

Number of Suppliers

Our second procurement KPI tracks the evolution of how many suppliers the company has. Relying on too few suppliers and not diversifying your sources creates a risk of dependency, and potential further problems if one of them pulls out at the last moment. On the other hand, too many suppliers reduce the possibilities of discounts. The procurement KPI aside shows the evolution of the number suppliers over the years, divided into two categories: contracted suppliers and unlisted ones. Often enough, companies prefer contracting suppliers so that they agree with their terms of compliance – but not all suppliers agree, so they are unlisted. The contracted partners can be classified as gold, silver or bronze according to certain criteria measuring the relationship through discount, reliability, etc.

Performance Indicators

Apart from the level of dependency, the optimal number of suppliers you need should be measured using other metrics like the quantity discount they provide you with, and the defect rate of their supplies.

Purchase Order Cycle Time

The purchase order cycle time is a procurement KPI that covers the end-to-end ordering process, from the moment a purchase order is created to the order approval, receipt, invoice and finally payment of the order. It focuses on the order and does not include the creation and delivery of the product or material itself. On our illustration aside, we see that the cycle decreased to 3,9 days at its minimal in March 2017, before increasing up to 6,3 days in June. The suppliers are divided into three categories classifying their purchase cycle time: short (4 days or less), medium (5 to 8 days)

or long (over 8 days). This is a factor to take into account when purchasing: if the order is urgent, you may need to know which supplier is able to handle it quickly.

Performance Indicators

Reducing your cycle time can improve the turnaround of other key activities, and improve staff productivity and the overall cost of the procurement function.

Supplier Quality Rating

The quality rating is one of the supplier performance metrics critical in evaluating present as well future relationships with suppliers. If the designated supplier continuously delivers a lower quality score, then their status may be downgraded, or corrective measures implemented until issues in the supply chain are resolved. For example, if the supplier availability was low, and you cannot rely on their stock, your business can, consequently, suffer due to lack of products. The point is to monitor suppliers, try to reach the highest quality score (above 90%), and re-evaluate the percentage of returned items, availability, and the defect rate, in order to renegotiate future contracts and agreements.

Performance Indicators

Establish a system of evaluating the quality of your suppliers backed with data and analytics like in the example above. Set clear goals and monitor the performance of suppliers in detail.

Supplier Availability

The supplier availability is a procurement KPI that refers to the number of times goods were available on the supplier's side, or to the number of orders placed with the supplier. In an era of fast-changing consumer habits, where the lines between different channels are blurred, and where mobile-commerce, online purchases, in-store consumer-specific marketing all merge in one retail experience, it is important to manage suppliers as efficiently as possible to guarantee availability of stocks. By monitoring the evolution of your supplier's availability of stocks, you know the degree of reliability you can place in them.

Performance Indicators

Maintaining your supplier's availability over 90% ensures a good functioning of your supply chain and a greater level of efficiency.

Supplier Defect Rate

This is a procurement KPI that is crucial when it comes to determining the final quality of a product. It measures the percentage of products received from suppliers that do not meet the compliance specifications and quality requirements. The supplier defect rate is more critical in some industries that have high-risks and multi-tiered supplier bases like the aerospace and defense or the automotive. Tracking your different suppliers' defect rates and break it down into defect type will provide you insights on which supplier is more performant and reliable than other, and what type of errors are done. On our example aside, it is obvious that the first supplier is more reliable than any of the five others: within the 1% of defective goods supplier 1 has, 80% of them still have no impact.

Performance Indicators

Measure and track the different defect rates amongst your suppliers and identify the ones that are performing best and that are the most reliable.

Vendor Rejection Rate & Costs

To ensure sustainable development of your business, vendor performance metrics such as the rejection rate and costs should be monitored regularly. The correlation between the two will let you know whether there are issues on a more serious note such as increment in both measures, and if the buyer can seek replacement goods or damages in a short time frame. Communication here is also important to avoid further bottlenecks. It's important to find common grounds and try to negotiate possible solutions to ensure that the future relationship doesn't suffer because of possible lawsuits for damages or claims against guarantees.

Performance Indicators

Monitor the rejection rate and return to vendor costs in order to identify what causes these issues and how you can improve in the future.

Lead Time

Our next procurement KPI measures the interval of time between the initiation of a procurement action, and the receipt of the production model into the supply system, purchased as a result of such action. In other words, it is the latency between the initiation and the execution of a process. It is composed of production lead time and administrative lead time. For instance, the lead time between the placement of an order and the delivery of printed circuit boards from a manufacturer can span from 2 weeks to 3 months, or sometimes more. Lead time is different from purchase order cycle time as it starts when the request is made till the final delivery and testing, while cycle time ends at the confirmation of the order. Set a target amount of days under which the lead time should stay; if you see that it repeatedly fails it over time, measures should be taken.

Performance Indicators

The idea is to reduce lead time as much as you can while keeping a good quality level.

Emergency Purchase Ratio

The emergency purchase ratio is a purchasing KPI focused on unplanned orders. These orders are usually done when there are indication of product shortages and is measured over a period of time, and expressed as a percentage between emergency purchases and total purchases. The visual we have created expresses also the quarterly average by project, which gives you additional details about emergencies occurred. In essence, if this metric is lower, the organization has a chance to save costs, improve planning processes, and reduce supply risks, among other important impacts. These indications will, consequently, show you how effective your planning is, and whether you need to adjust future strategies.

Performance Indicators

The goal is to keep the ratio as low as possible in order to avoid bottlenecks and shortage within your products portfolio.

Purchases in Time & Budget

Tracking the budget and time are critical elements in the procurement department. Managing the budget but also keeping a healthy amount of flexibility needs to be taken into account when analyzing procurement performance metrics. As you can see in our visual example, the average percentage of purchases in time and budget is 81%, which is a quite good result, although, in a perfect world, it would be 100%. Therefore, to further optimize this metric, it makes sense to look into different categories and identify areas where the values are (significantly) lower.

Performance Indicators

The goal is, of course, to stay on budget and time. If you don't manage to achieve your goal, it's time to dig deeper and find out why.

Cost of Purchase Order

The cost of purchase order is one of the disputed procurement KPIs, as the definition and application vary. In theory, this metric represents the average costs of processing an order, from purchase creation to invoice closure. In practice, the costs to process internally the purchase order can include a staggering list of variables, and depending on studies, can range from $1,34 to $437... So, when measuring this metric, it comes down to what you decide to consider: what is the average cost to process a purchase order, based on how long it takes to do so, by the staff directly or indirectly involved. On our example aside, we have an average of (13,144/804) €16.34, which is within the studies' range.

Performance Indicators

The idea is to improve the efficiency of the procure-to-pay cycle, so as to prevent errors and reduce costs.

Procurement Cost Reduction

Cost reduction is central amongst the procurement KPIs of our cost management dashboard. It wants to measure the tangible "hard savings", that you have performed in terms of cost management over the years. You can easily measure them by comparing directly the old costs versus the new ones for the same good or service. On our illustration aside, we see that it went from €260k up to €480k five years later. It also breaks down the cost reduction by supplier category (switches, battery, display, etc.) and we see that the transistors' section has the highest savings. There are a lot of best practices to adopt to reduce the costs: you can streamline your supplier lifecycle management, increase efficiency by leveraging supply chain analytics, or train your staff on how to save costs. It is a key metric for top management as it has direct influence on the income statement.

Performance Indicators

Monitor your costs reduction over time in order to increase it in the long-term.

Procurement Cost Avoidance

The second last of our procurement metrics focuses on the actions undertaken to reduce potential future costs, like replacing parts before they fail, and inevitably damage other parts. It is sometimes referred to as "soft savings" by opposition to the "hard" ones, since they do not directly appear on the bottom line in a quantifiable way, but can still have a positive impact. It can be neglected by the top management since it doesn't directly affect the income statement. Cost avoidance creates important strategic value as it often targets strategic spend like new investments or technologies that have no comparable purchase for instance. As you can see on our example, it is calculated as a percentage that can be broken down into the different categories of suppliers, that you can track alongside the cost savings performed, to better measure the impact of your efforts.

Performance Indicators

Develop a strategy to map your cost avoidance internally and combine it with the cost reduction in order to avoid future extra costs.

Spend Under Management

Spend under management is one of the procurement cost savings strategy that falls under management. In essence, it includes strategically managed spend that covers established rates with your preferred suppliers, spend under contract to get the contracts into a procurement system, and control systems to make sure people are actually using negotiated prices. When you consider all these elements when evaluating this metric, you will uncover extreme potential for unrealized savings. It's critical to perform regular spend analyses, evaluation of suppliers, and reviewing contracts in order to identify operational and strategic savings. Modern tools such as datapine can certainly help.

Performance Indicators

Make sure that similar $200 products aren't being purchased 200 times per year but consolidate them, negotiate a volume discount and save countless dollars.

Procurement ROI

Last of our procurement metrics, Procurement ROI is however not the least. The Procurement ROI differs from the regular ROI usually calculated with the formula ROI = (gain from investment – cost of investment) / cost of investment. For many professionals of the sector, it is the most important of all procurement KPIs, but it is not the single best and should be analyzed alongside other metrics to have the big picture. To calculate the procurement ROI, you need to divide the annual cost savings by the annual internal cost of procurement, and express it as a ratio. It is a good single metric but of course does not speak for the broader "scorecard of supply", and does not include cost avoidance. Besides, if the procurement investments are too low, you are more likely to measure the hard cost savings mainly, without the avoidance and other value chain improvements.

Performance Indicators

Procurement ROI should have a massive payback, and setting it 10 times higher than the internal investments for the procurement department is a good target.

3.9 Procurement performance measurement

According to the Council of Logistics Management (1995), Procurement has been one function whose performance is crucial in the procurement. The council also recognizes performance measurement as one of the four key competences in the World class Logistics Model. Others are: positioning, integration and agility. According to findings of a study done by the same council, most managers of purchasing departments have no or little information about their own department's performance.

For a business or government to be successful, all its individual parts (departments, divisions or sections) must be successful. It is impossible for any manufacturing or business organization to

achieve full potential without a successful procurement activity. In the long run, the success of a business enterprise or government depends on every bit as much on the purchasing executive as it does on the executives who administer the other functions of the business (Dobler et al, 1990).

Scheuing (1989) likens purchasing to management in general. That it consists of the activities of: planning, decision- making, control and feedback. Scheuing further argues that purchasing activities form a sequence that occurs in repetitive and cyclical manner. He names those activities as analysis, planning, implementation and control. Just like in the Demming's Quality cycle, all these activities have some kind of control or feedback information, so that an analysis of previous decisions can be made and, in the end, better decisions can be taken (Knudsen 1999). By measuring the performance of procurement, one can therefore be able to improve the conditions for better decision-making and most certainly, make better decisions.

Procurement performance measurement could be having various definitions but the definition given by Lysons is quite satisfying. Lysons (1996, pp.395), defines it as: the qualitative or quantitative assessment of the degree to which the purchasing function and those employed therein achieve the general or specific objectives assigned to them.

3.10 Importance of measuring purchasing performance

Purchasing performance and productivity measurement in the procurement have not been widely practiced in some organizations and purchasing Productivity, for a long time, has been ignored (Msimangira 2001). In addition, Msimangira says that the drive for economic recovery and restructuring of the organizations needs the purchasing function to be streamlined in order to improve purchasing productivity. Msimangira suggests that Purchasing productivity must be measured to avoid unwise purchasing and misuse of an organization's funds.

Appraisal and control of purchasing and supply performance has always been important in a well managed firm, but in today's environment it is more important than ever. Such market factors as increasing stringent global competition, the extreme emphasis on quality, and the push to bring products to the market faster all exert legitimate pressure on a firm's purchasing and supply operation (Dobler and Burt, 1996).

Performance measurement improves buyer supplier relationships (Knudesen, 1999, pp41). Knudsen argues that procurement is very much about having the right kind of relations with suppliers. He further says that it is not sufficient enough to choose a supplier just because he/she has the right kind of product or service to offer. The reporter further argues that the relation between the customer and the supplier is as important as the product or service itself. So therefore the buyer and supplier must work together in a closer collaborative mode, sometimes in alliance relationships- and this produces an increasing interdependence between the firms. This coupled

with the drive for continuous improvement mandates the development of effective performance measures that can be used as a basis for proactive assessment and control of operations.

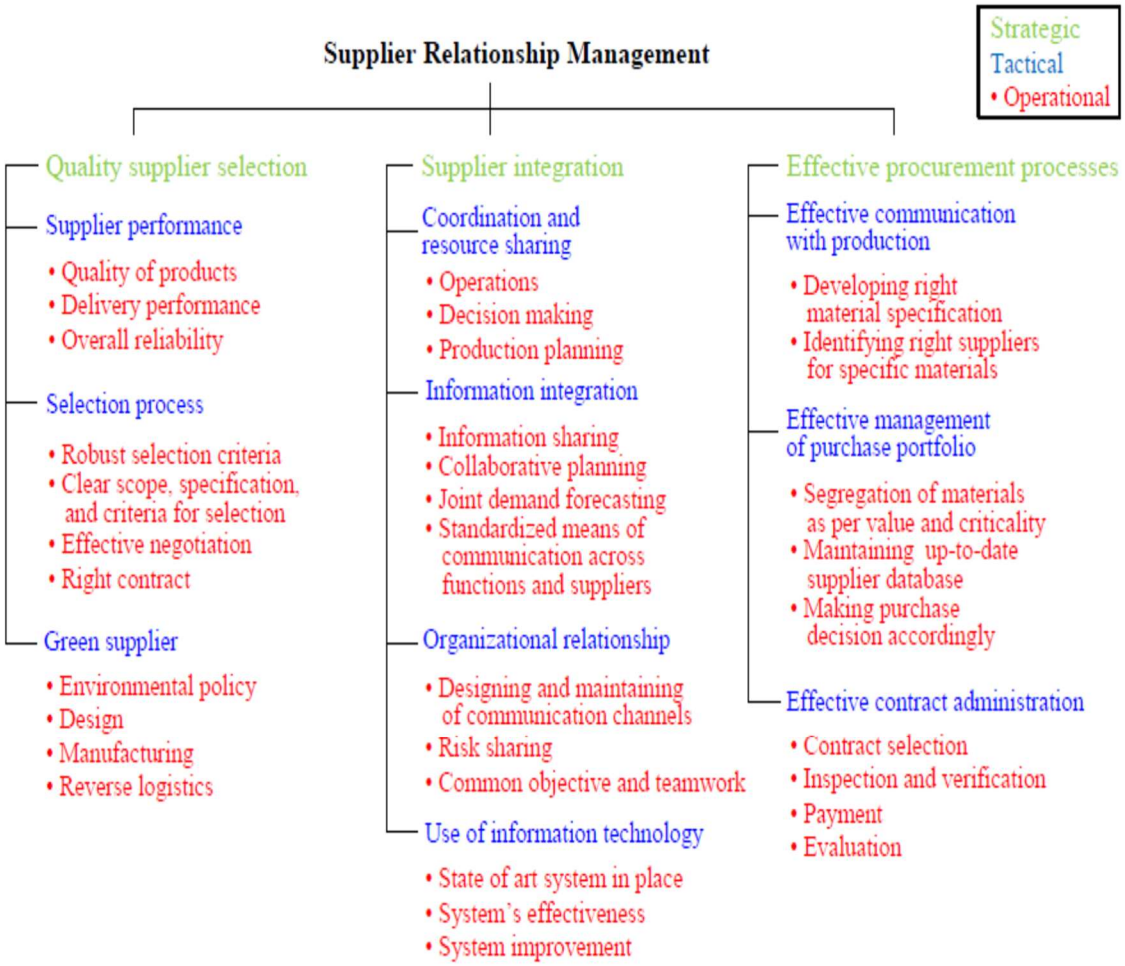
Measuring organizational performance improves stock prices (Gates, 1999). The same view is shared by Lingle and Schiemann (1996), who adds that companies that are managed using integrated balanced performance measurement systems outperform and have superior stock prices than those that are not.

Table 2-5 The POA Metrics board (Chan & Qi, 2003).

Performance metrics		Description
1	Cost	The financial expense to carry out one event or activity
2	Time	The time between the beginning and completion of ne specific event or activity
3	Capacity	The ability of one specific activity to fulfil a task or perform a required function
4	Capability	A talent or ability of one activity to be used, treated, or developed for the specific purposes and required functions
	Effectiveness	The ability of one specific event or activity to achieve an intended or desired effect in performing the functions or taking the responsibilities
	Reliability	The ability to perform a required function under stated conditions for a stated period time.
	Availability	The ability to bring about effective or beneficial results or the degree to which one specific functional activity is ready when needed
	Flexibility	The ability of one specific Activity to adapt to the varying functional requirements or respond to the changes
5	Productivity	The rate at which one specific event or activity adds value at the cost of resources
6	Utilisation	The utilising rate of the resources to carry out one specific activity
7	Outcome	The results or value added of one specific activity and event

In order to help managers get a collected and easily managed view of what to measure Chan and Qi (2003) proposes the 'Performance of activity' (POA) concept and as a visual aide they use the 'metrics board'. Each metric represents one dimension of activity or process performance. The metrics. The metrics can be inputs and outcomes, as well as tangible and intangible. The purpose of the metrics board is to help management categorise existing measures, as well as to work as a reference when creating new measures. Chan and Qi (2003) emphasises that not all measures have to be used on all processes, the choice of measurements should be based on the actual needs.

Figure 4.2: The performance measurement factors in supplier relationship management



Analysis & Finding

Historically, cost savings was considered the only reliable measure of procurement performance. But spend savings can only go so far — at some point, it's simply not possible to reduce costs further, so procurement professionals need to reaffirm their value to the organization in other ways. Here we look at five proven ways to measure procurement performance of DBL Group, along with a few tips for improving the metrics.

4.1.1 Procurement Cycle Time

We define the procurement cycle time as the time elapsed from placing creating a requisition to receiving the goods. Decreasing the cycle times associated with procuring materials and services is an effective way to cut procurement costs. Report from the American Productivity & Quality Center's (APQC) found that top performers in procurement take fewer hours to place a purchase order and wait fewer days to receive materials from suppliers.

Automating the procurement process with suppliers can significantly reduce the time it takes to receive the ordered product. According to APQC's report, e-commerce/e-procurement software can cut an organization's cycle time from seven days to two. Not only does this mean you receive products needed for key projects sooner, but it can also help increase procure-to-pay efficiency.

Some ways to reduce procurement cycle time include:

- Minimize the time it takes to produce and approve a requisition
- Get approved purchase orders (PO) into the hands of vendors more quickly
- Proactively monitor open orders
- Provide vendor self-service portals empower vendors to enter their own invoices

4.1.2 Vendor performance

Vendor performance management refers to the monitoring and analyzing of the reliability, quality, and performance of your company's vendors. Monitoring vendors can help your company boost efficiency and profits, reduce stock levels and inventory costs, and improve (both internal and external) customer satisfaction.

Some vendor performance metrics to monitor are:

- Delivery lead times
- Communication time lags
- Quality of the products supplied
- Pricing competitiveness
- The frequency of price changes
- Compliance with negotiated terms
- Substitutions made
- Number of back orders

4.1.3 Spend under management

Spend under management refers to the percentage of your organization's total spend that the procurement department manages. It is a common metric of performance and can easily and uniformly be applied to organizations across all industries and sizes. For every dollar that placed under management, the average enterprise sees a benefit of between 6% and 12%.

Targeting areas of unmanaged spending is a key way procurement professionals can deliver value and maximize savings for their organizations. We highlighted five ways to reduce unmanaged spend here.

4.1.4 Cost savings

Cost savings remains a fundamental, pivotal metric to measure the success of the procurement function. In a recent analysis, The DBL Group found that world-class procurement organizations spend 21% less (up to $6 million in cost savings for the typical large company) and have 29% fewer full-time-equivalents while generating more than double the purchased cost savings of typical procurement organizations.

Cost savings sounds simple enough, but how are companies successfully reducing costs? One direct way is to reduce the cost per purchase order, using techniques including:

- Investing in digital technology and process automation
- Incorporating vendor self-service
- Adding mobile requisition and approval capabilities
- Using guided buying catalogs and PunchOut tools

4.1.5 Percentage of POs that are catalog-based

This metric doesn't make everyone's list, but when used as a proxy to measure compliance with negotiated contracts and pricing it provides valuable insight. When a majority of routine purchases are made through approved vendors through which you have pricing agreements, prices are typically lower, service is generally higher, and errors are less frequent. In addition, by using guided buying catalogs or PunchOut catalogs, organizations decentralize the requisition process, empowering individual users to initiate the process, freeing the procurement department to negotiate even better deals.

It's only when you begin to measure the performance of your procurement activities that you can begin demonstrating the value the procurement department and its personnel bring to an organization. An easy way to start is by using our Procure-To-Pay Calculator, that will help you determine what procurement is costing you currently, and how you begin to save.

4.2 Procurement KPIs

As mentioned before, the KPIs tracked by a business varies with the type and size of the business and the overall business strategy. Businesses need to choose baseline KPIs that enable effective evaluation of the performance of the procurement function. The chosen procurement KPIs need to be relevant, realistic and enable efficient management of supplier, staff, and organizational performance.

Given below is the categorization of procurement KPIs:

Supplier KPIs	Staff KPIs	Organizational KPIs
Number of suppliers	Spend-per employee	Spend under management
Delivery time of suppliers	Cost savings or avoidance	Inventory accuracy
Supplier Spend	Spend under contract	The ratio of spending to sales revenue
Quality performance rating	Purchase order cycle time	Inventory turnover
Procurement risk	Training and development time	Procurement ROI
Compliance rate	Lead time	

Supplier quality rating	Emergency purchase ratio	
Supplier availability	Purchases in time and budget	
Supplier defect rate	Cost of purchase order	
Supplier rejection rate and cost		

Apart from the above categories, KPIs may be assigned for other procurement processes like tendering, sourcing, inspection, etc. Key performance indicators for tendering may be the average time to complete tendering or bidding, the average cost of a tender or bid, the percentage of bids that comply with policies, and the difference in the bid price and actual price. Based on the procurement plan and overall business strategy, the key performance indicators may be chosen to assess the performance of the procurement function.

4.3 Supplier and Vendor Assessment Framework

A vendor or supplier assessment framework supports an organized approach to vet and rank potential vendors. The framework is based on a set of standard criteria to determine prospective vendors' suitability and any risks they may pose to your company.

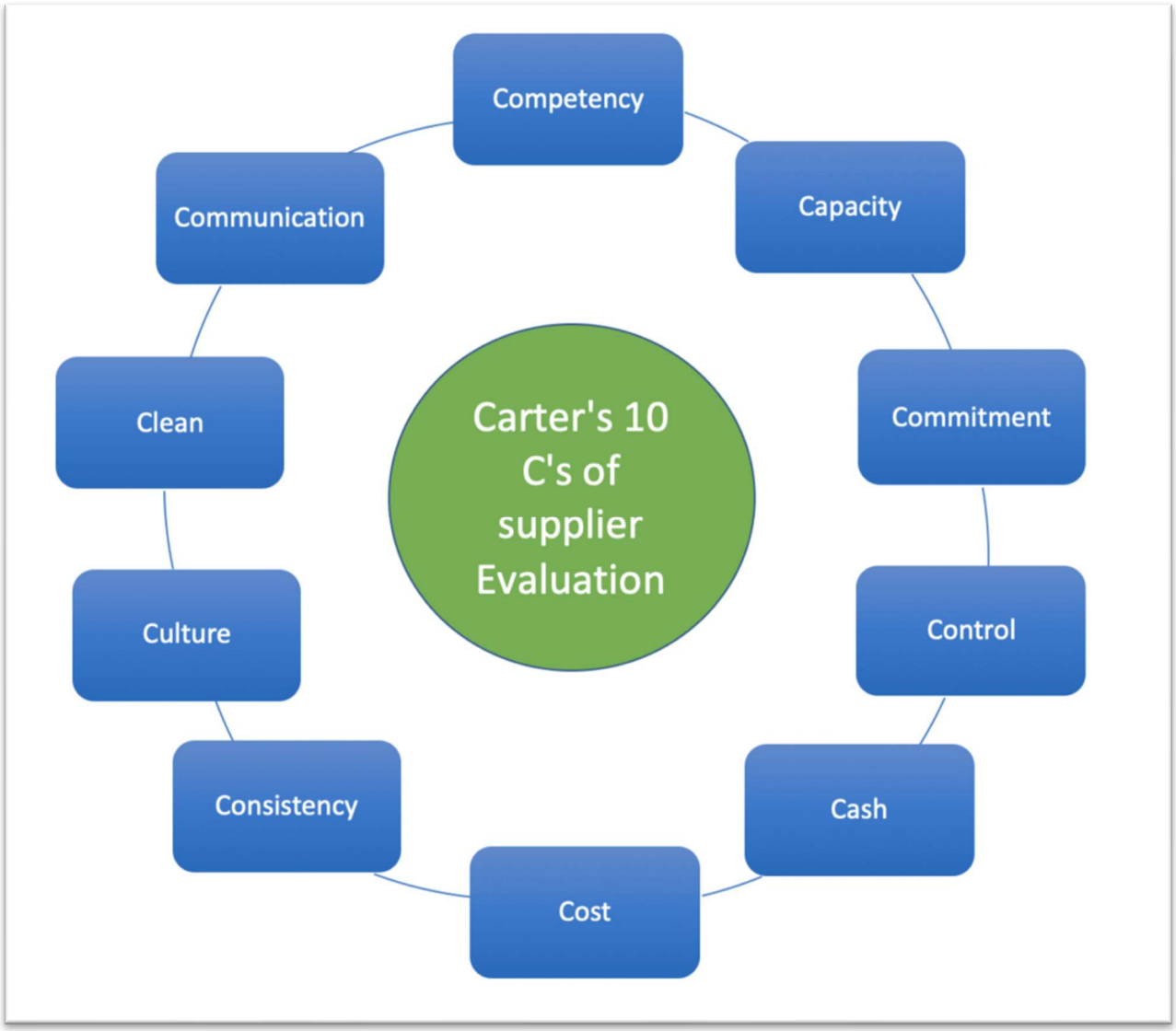
You can use an assessment framework to determine the best vendor or supplier based not only on price, but also on a full spectrum of concerns that Dr. Carter of DPSS Consultants delineates in his 10C Model of Supplier Evaluation.

Dr. Carter created his model because he saw that poor supplier selection causes business breakdowns. "I developed my framework to provide a simple and systematic process of investigating, analyzing, and verifying the resources and capabilities of potential suppliers (the extent of which is dependent upon the risk and value of the contract) leading to the appointment of an effective and sustainable source."

Vendor and supplier assessment occurs most often within purchasing departments. It also forms part of the pre-qualification step within the purchasing area, although it usually includes the participation and input of other departments and stakeholders.

The 10C Model of Supplier Evaluation allows sufficient space for you to fill in the blanks with criteria in each category that applies to your specific business, business model, and goods and services needs.

- Competency: Ask vendors to provide evidence of proven quality with other customers, and review their training and development procedures, qualification records, essential personnel background and abilities, and recruitment methods.
- Cost: Review whether the product or service can be delivered at a reasonable price and keep your vendor or supplier in business.



- Capacity: Look into prospective partners' current and forecasted orders and customers, along with how that impacts the ability to meet your current and projected requirements.

Ask for operational statistics around quality- or service-level challenges, which should be readily available if the supplier is ISO 9000 accredited.

- Commitment to Quality: Review the policies and procedures the company uses on an ongoing basis to monitor and manage quality and adherence to industry standards, such as ISO 9000 and HIPAA.
- Consistency of Performance: Ensure that your future partner will be able to deliver consistently high levels of quality and service throughout the life of the contract. For example, look for a vendor that assigns an account manager as a single point of contact dedicated to quality control and oversight; this indicates the vendor's commitment to high performance.
- Cash and Finance: Of course, you want to work with a financially stable entity. Request the most recent fixed and current asset lists, profit and loss (P&L) statements, and credit rating documentation.
- Communication: Ensure that your vendor or supplier will set up and manage (or conform to your existing) communications channels, whether in person with your account manager and other key personnel, via virtual meetings, or with collaboration software.
- Control of Internal Processes: Ask for evidence of how the company manages inventory, quality control operations procurement, marketing, distribution and health, and safety.
- Clear (Corporate Social Responsibility): Vendor and supplier services and products should conform to legal and environmental standards and requirements.
- Culture: Determine if you and your potential partner share values and working philosophies before you enter into a contract. A similar outlook makes for smoother work relationships and helps you establish long-term partnerships.

4.4 Finding of the Study

In order to further summarize the findings, the following list of most important challenges found in the study was developed. The list includes a ranking beginning with the most important challenge:

01. Communication: The most important challenge for a supply performance measurement system is communication. Initially and especially during the implementation phase everything depends on how advantages and disadvantages are communicated. Communication and the transparent presentation of a procurement performance measurement system are the keys to success. Communication also establishes trust and supports other elements, such as commitment, requested by the procurement participants. The problem with communication is that it often fails due to lack of skills and interest of the participants in a procurement.

02. Strong cost focus: The study showed that almost all the decisions of the companies were taken from cost aspects. Whenever a company makes an investment, it wants to know directly what the expected utilities are and how long it takes to generate them. For a procurement

performance measurement system in particular, this is a tremendous challenge, since it can not be directly identified where and how much savings can be made.

03. Common language: Since communication is evaluated as the most important challenge, it is also important to speak the same professional language. For procurement management in particular, the different understandings of procurements can endanger the success of procurement performance measurement systems. It is therefore necessary to ensure that all procurement participants talk about the same thing when they work together.

04. Trust: An excellent and open communication will lead to trust, which also has enormous importance for successful relationships between the procurement participants. These relationships are the basis for the implementation of a performance measurement system and need to function properly. Trust is seen as an essential element for working together in a team or procurement.

05. Willingness to share sensitive data: Without sharing sensitive data and the willingness to do so on an extensive basis, a procurement performance measurement system will not function. Sharing the information and passing it on to third parties is a key for improvement, but in many cases the companies refuse to do so because they fear disadvantages in negotiations with their suppliers and customers. Therefore it is again essential to clearly communicate between the involved parties.

06. Present advantages, disadvantages and utilization: Knowing the advantages and disadvantages, as well as the workload with the connected utilization, was a major concern for all the participants of the study. Therefore it is important to present and communicate these elements in a clear way in order to increase the willingness to actively contribute to and to participate in a performance measurement system.

07. Education and willingness to learn from others: Education and the willingness to constantly learn from other procurement participants is essential to improve the performance of a procurement. To ensure a common understanding and an improved performance of the procurement it is necessary to implement a culture of learning in the procurement.

08. Overcome resistance towards new approaches: A culture of learning can furthermore help to reduce the resistance of change and allow for easier implementation of new management approaches, such as procurement performance measurement. It is very important that all the participants of the procurement react flexibly to changes and are willing to adapt to new environmental settings. This does not only include managers in single firms of a procurement, it especially includes those employees which would actually have to work with a performance measurement system on an operational level.

The important elements found in the study of procurement performance measurement problems and challenges indicate that the implementation of such measurement system will face many challenges. The most relevant skill for a successful implementation is communication. Communication and detailed presentation of advantages and disadvantages are key to convince others to participate in a performance measurement system. Besides, many other challenges can be overcome with excellent communication, since it can, for example, facilitate trust, which then allows sharing of sensitive data. The key finding is that communication is the glue between the participants of procurement performance measurement systems and needs to be maintained throughout the entire system to guarantee successful measurement results and performance improvements.

Recommendation & Conclusion

5.1 Recommendation

Future report on Procurement performance measurement factors and framework could benefit from the following ideas, which are based on practical experience in the field. First, future report might focus on a comparative study of this topic by applying the conceptual framework to different business sectors, to other developing countries, or to developed countries. Thus, the differences which may exist from region to region and country to country could be identified, and there could be an assessment of the value of the framework in different cultures and contexts. Another recommendation is that future report might include more respondents who are the suppliers and customers of the case study company in order to gather more information on their interest in, or lack of interest in, diversifying into participating company's Procurement performance. Furthermore, future report might include respondents who are the next tier or initial suppliers (supplier of supplier) and next tier or ultimate customers (client of customer) of the case study company. During the fieldwork, the respondents from purchasing department declined to appoint their suppliers to attend the interviews because they did not want their suppliers to get involve with their information. The respondents from marketing department also rejected to invite their customers to join the interviews too. If the interviews can cover to the suppliers and customers of the case study company, it might be interesting to explore the barriers they may have confronted in their Procurement system.

5.2 Final remarks

This chapter has provided a final critical analysis of the report. The main objectives and the key findings were revisited as well as the main contributions of the conceptual framework, and the strengths of the study were discussed. Limitations and suggestions for future report were also identified. The report on procurement performance measurement factors and framework provided new insights on approaches and concepts that are undeveloped in the procurement performance measurement literature. The decision-making levels and procurement macro processes approach were critically reviewed after they had been combined to provide the basis for the empirical work. The results offered new perspectives and insights for the study of procurement performance measurement in relation to performance measurement factors.

5.3 Conclusion

This chapter has explained the purpose and the development of the conceptual framework, as well as the application of the conceptual framework to this study. The conceptual framework was developed to explore and to understand the performance of procurement management in a developing world context. The framework was influenced by several concepts from a developed world context. However, it also considered the practices and realities of developing world contexts. The framework worked as a guide and it directed the literature reviews, the interview questions, and the data analysis.

The framework was developed from concepts in two fields of study: decision making levels and procurement macro processes for measuring the holistic performance of procurement system. In each concept, it comprises three themes of study. Decision making levels divide into strategic, tactical and operational; depending on the authority decision level, the frequency of each decision and the time frame which a decision level has an impact. On other hand, procurement macro processes classify into supplier relationship management (from upstream supplier), internal procurement management (within company) and customer relationship management (from downstream customer).

The three macro processes manage the flow of information, product, and funds required to generate, receive, and fulfil a customer request. The concept of decision-making levels and procurement macro processes was related to the various performance measurement factors through their interactions. These performance measurement factors were identified in the six key themes to complete the proposed framework of this study. Each performance measurement factor represented in the conceptual framework was categorized hierarchically in three decision making levels for each procurement macro process. Therefore, the performance measurement factors that have been outlined in conceptual framework help to connect both decision making levels and procurement macro processes for measuring the holistic performance of procurement system.

From the idea of integrated way for the conceptual framework, the proposed model of this study has been developed from the review of literature concentrated on the issues surrounding procurement performance measurement and involving the variety of frameworks and performance measurement factors. As a result, the initial model was created. Then, the multidisciplinary panel of experts from both academic and industrial aspects was set up for examining and validating set of performance measurement factors. After all, the conceptual framework that comprises a suitable set of performance measurement factors is presented and applied to DBL Group.

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