

The School of Higher Commercial Studies

EHEC Algiers

**End of cycle thesis for the graduation of the Master's degree in
Business Sciences**

Option: Distribution and Supply Chain Management

THEME:

**THE ROLE OF PRODUCER-SUPPLIER
SCORECARDS IN RELATIONSHIP
OPTIMIZATION
CASE STUDY: SARL BOMARE COMPANY**

Elaborated by:

Abderrahim SEBA

Supervised by:

Hakima BOUDIFA

Associate Professor "A"

11th Promotion

June 2024

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DEDICATION

*I dedicate this thesis to **my beloved parents**, whose unwavering sacrifices, tireless efforts, and countless prayers have paved the way for my success. Your steadfast support and belief in me have been my greatest motivation. I hope this work makes you proud.*

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ABSTRACT

In industries reliant on advanced technologies and quality components, effective Supplier Performance Management (SPM) is essential. It ensures the seamless integration of supplier offerings, contributing significantly to operational resilience and competitive advantage. Bomare Company, known for its commitment to operational excellence through ISO 9001 certification, serves as a compelling case study. This thesis underscores the implementation of robust supplier performance evaluation systems to enhance operational efficiency. By rectifying shortcomings in the previous evaluation system and adopting new, strategically aligned scorecards, Bomare Company can optimize its supply chain dynamics and cultivate collaborative supplier relationships. Such an approach not only strengthens performance monitoring but also prepares the company to seize opportunities in a dynamic business landscape. The methodology employed in this thesis includes a mixed approach, utilizing both qualitative and quantitative methods, to provide a comprehensive analysis of supplier performance and its impact on operational success.

Keywords: Supplier Performance Evaluation Scorecards, Supplier Performance Management, Supplier Relationship Management, Procurement.

RESUME

Dans les industries dépendantes des technologies avancées et des composants de qualité, une gestion efficace de la performance des fournisseurs (SPM) est essentielle. Elle assure l'intégration harmonieuse des offres des fournisseurs, contribuant ainsi de manière significative à la résilience opérationnelle et à l'avantage concurrentiel. La société Bomare, connue pour son engagement envers l'excellence opérationnelle grâce à la certification ISO 9001, constitue une étude de cas convaincante. Cette thèse souligne la mise en œuvre de systèmes d'évaluation de la performance des fournisseurs robustes pour améliorer l'efficacité opérationnelle. En corrigeant les lacunes du système d'évaluation précédent et en adoptant de nouvelles fiches d'évaluation stratégiquement alignées, la société Bomare peut optimiser la dynamique de sa chaîne d'approvisionnement et cultiver des relations collaboratives avec ses fournisseurs. Une telle approche renforce non seulement le suivi de la performance, mais prépare également l'entreprise à saisir les opportunités dans un environnement commercial dynamique. La méthodologie employée dans cette thèse inclut une approche mixte, utilisant à la fois des méthodes qualitatives et quantitatives, pour fournir une analyse complète de la performance des fournisseurs et de son impact sur le succès opérationnel.

Mots-clés : Fiches d'évaluation de la performance des fournisseurs, Gestion de la performance des fournisseurs, Gestion des relations avec les fournisseurs, Approvisionnement.

الملخص

في الصناعات التي تعتمد على التقنيات المتقدمة والمكونات ذات الجودة العالية، تعتبر إدارة أداء الموردين الفعالة (SPM) أمرًا ضروريًا. فهي تضمن التكامل السلس لعروض الموردين، مما يسهم بشكل كبير في مرونة العمليات والميزة التنافسية. تعتبر شركة بومار كومباني، المعروفة بالتزامها بالتميز التشغيلي من خلال شهادة ISO 9001، دراسة حالة مثيرة للإعجاب. تؤكد هذه الأطروحة على إنشاء أنظمة تقييم أداء الموردين فعالة لتعزيز الكفاءة التشغيلية. من خلال تصحيح أوجه القصور في نظام التقييم السابق واعتماد بطاقات تقييم جديدة تتماشى مع الاستراتيجيات، يمكن لشركة بومار كومباني تحسين ديناميكيات سلسلة التوريد وتنمية العلاقات التعاونية مع الموردين. لا تعمل هذه المقاربة على تعزيز مراقبة الأداء فحسب، بل تعد الشركة أيضًا للاستفادة من الفرص في بيئة الأعمال الديناميكية. المنهجية المتبعة في هذه الأطروحة تشمل نهجًا مختلطًا، باستخدام كل من الأساليب النوعية والكمية، لتقديم تحليل شامل لأداء الموردين وتأثيره على النجاح التشغيلي.

الكلمات المفتاحية: بطاقات تقييم أداء الموردين، إدارة أداء الموردين، إدارة علاقات الموردين،

المشتريات.

SUMMARY

GENERAL INTRODUCTION	2
CHAPTER I: Essential concepts in supplier performance management	5
SECTION 1: Introduction to supply chain management.....	5
SECTION 2: Notions about supplier performance management	15
SECTION 3: Supplier performance scorecard design and implementation process	29
CHAPTER II: The previous supplier performance evaluation system of the company	46
SECTION 1: Presentation of Bomare Company	46
SECTION 2: Research methodology and evaluating the previous evaluation system.....	57
CHAPTER III: Design and implementation of new supplier performance scorecards	68
SECTION 1: The processes of design and implementation of new supplier performance scorecards	68
SECTION 2: Research results, limits and propositions	81
GENERAL CONCLUSION	95

LIST OF ABBREVIATIONS

AHP: Analytic Hierarchy Process

AQP: Advanced Quality Planning

B2B: Business to Business

CE: European conformity

COPQ: Cost of Poor Quality

CSCMP: Council of Supply Chain Management Professionals

EBPU: Electronic Board Production Unit

EMS: Electronics manufacturing services

EUR.1: Movement certificate

HSE: Health, Safety, and Environment

IQC: Input Quality Control

ISO: International Organization for Standardization

IT: Information Technology

KPI: key performance Indicator

LQC: Line Quality Control

MCDM: Multiple Criteria Decision-Making

OEM: Manufacturer of original equipment

OQC: Output Quality Control

PSAs: Product and Service Agreements

R&D: Research and Development

RFI: Request for Information

RoHS: Restriction of Hazardous Substances

SAP: Enterprise Application Software

SAW: Simple Additive Weighing

SCM: Supply Chain Management

SMART: Simple Multi-attribute Rating Technique

SMT: Surface-Mount Technology

SPM: Supplier Performance Management.

WPM: Weighted Product Model

WSM: Weighted Sum Model

LIST OF FIGURES

Number	Title	Page
I-1	Direct supply chain	7
I-2	Extended supply chain	7
I-3	Ultimate supply chain	8
I-4	integrating and managing business processes across the supply chain	9
I-5	Input-transformation-output added value model	18
I-6	Value creation networks in the context of supplier management	19
I-7	Value chain according to Porter	20
I-8	Transformation to supplier management as a primary function	20
I-9	Strategy deployment to the supplier performance expectation level	31
II-1	Organizational chart of Bomare Company	50
II-2	Value chain of Bomare Company	51
II-3	Local procurements department chart	55
II-4	previous supplier performance evaluation system example	63
III-1	Prodcution suppliers performance survey	76
III-2	Prodcution suppliers performance survey example	77
III-3	Performance scorecard of production suppliers	78
III-4	Non-production supplier's performance survey	79
III-5	Non-production supplier's performance survey example	80
III-6	Performance scorecard of non-production suppliers	80
III-7	Supplier performance evaluation scorecard for General Emballage	83

III-8	Supplier performance evaluation scorecard for TDI Plast	85
III-9	Supplier performance evaluation scorecard for Tashil Technology	88
III-10	Supplier performance evaluation scorecard for All Ways Travel	89

LIST OF TABLES

Number	Title	Page
I-1	Average supplier performance improvement	23
I-2	Sources and types of supplier performance information	25
I-3	Supplier evaluation factors considered by relative frequency of mention and relative importance rating	35
I-4	Why companies don't share scorecards with suppliers	42
II-1	Presentation of Bomare Company	46
II-2	Previous supplier performance evaluation system at Bomare Company	60
III-1	Criteria weights according to AHP method	75
III-2	General Emballage scores details by criterion	82
III-3	TDI-Plast scores details by criterion	84
III-4	Production suppliers ranking by may overall performance	86
III-5	Tashil Technology scores details by criterion	87
III-6	All Ways Travel scores details by criterion	89
III-7	Non-production suppliers ranking by may overall performance	90

**GENERAL
INTRODUCTION**

GENERAL INTRODUCTION

In modern business operations, the efficiency and effectiveness of supply chains are pivotal to organizational success. Supplier Performance Management (SPM) ensures that suppliers meet and exceed expectations, contributing to seamless goods and services flow. The exploration into SPM and procurement is driven by academic interest in supply chain dynamics, the strategic importance of procurement in competitive advantage, and a personal interest in the procurement domain. Moreover, Bomare Company's urgent need for a robust supplier performance evaluation system underscores the research's relevance.

In sectors like television and electronics manufacturing, innovation and value addition from suppliers are crucial. These industries thrive on integrating cutting-edge technologies and quality components from reliable partners. Bomare Company, a leader in local television manufacturing with ISO 9001 certification, exemplifies operational excellence and market leadership. Its commitment to quality management systems and continuous improvement makes it an ideal case study for implementing and assessing a refined supplier performance evaluation system.

The main question addressed in this thesis is:

How do effective supplier scorecards facilitate the identification of areas for improvement in the producer-supplier relationship?

To help answer this main question, it is important to break it down into several sub-questions:

1. How do effective supplier performance scorecards identify issues in a supplier's performance?
2. Do effective supplier performance scorecards assist in benchmarking and ranking suppliers?
3. Does the new supplier performance evaluation system address the problems of the old evaluation system used by Bomare Company?
4. Does the supplier performance scorecards impact the decision-making process regarding supplier relationships?

Based on these sub-questions, the following hypotheses can be formulated:

1. Effective supplier performance scorecards accurately identify issues in a supplier's performance.
2. Effective supplier performance scorecards facilitate the benchmarking and ranking of suppliers.
3. The new supplier performance evaluation system resolves the issues present in the old evaluation system used by Bomare Company.
4. The supplier performance scorecard positively impacts the decision-making process regarding supplier relationships.

For this research, a mixed-methods approach was employed, combining quantitative and qualitative methodologies. The qualitative tools included a literature review of scientific articles and books on procurement and supplier relationship management, as well as semi-directive interviews with key stakeholders to gather essential contextual information and insights. Additionally, performance information about suppliers was collected through qualitative observations. On the quantitative side, a structured questionnaire was used within the company's internal system to assess supplier performance.

The collected data were analyzed statistically to identify performance issues. Semi-directive interviews were meticulously reviewed to extract relevant contextual information, and the internal system analyzed questionnaire responses to calculate KPIs and scores for supplier performance. A simulation was conducted using performance data from May 2024 to evaluate the efficiency of the newly developed scorecards. This comprehensive approach ensured a thorough understanding of the context and the effectiveness of the supplier performance evaluation scorecard. Our research is divided into two parts. The first part is theoretical, where we discussed various aspects of the supply chain, procurement, and supplier relationship management, highlighting its importance. We then moved on to supplier performance management. This section concluded by describing the steps and processes involved in creating a supplier performance scorecard.

In the second part is structured into two main chapters. The first chapter examines Bomare Company and its previous supplier performance evaluation systems. It discusses challenges with the existing evaluation system, such as inconsistent criteria and data integration issues. The second chapter focuses on designing and implementing new supplier performance evaluation scorecards. It details the creation process, alignment with strategic goals, and presents the outcomes achieved.

**CHAPTER ONE:
ESSENTIAL CONCEPTS IN
SUPPLIER
PERFORMANCE
MANAGEMENT**

CHAPTER I: Essential concepts in supplier performance management

Introduction

This chapter is structured to provide a comprehensive understanding of supplier performance management, beginning with an introduction to supply chain management and procurement practices. Subsequently, it delves into the specifics of supplier management, elucidating the nuances of supplier relationship management, the role of suppliers in value creation, and the importance of supplier performance management, and after that it will describe the processes of designing and implementing a supplier scorecard.

SECTION 1: Introduction to supply chain management

To effectively approach the topic of Supplier Performance Management, it's crucial to first clarify the core concepts of supply chain management and procurement. This step is key to ensuring a clear understanding of how suppliers are evaluated and managed in the context of the overall supply chain.

1.1. Supply chain Management

In the 1990s, supply chain management gained popularity after first emerging in the late 1980s. Before then, companies would refer to it as operations management or logistics¹. But before delving into supply chain management, it is crucial to grasp the fundamental concept of the supply chain.

1.1.1. Supply chain definition

Here are a few ways to define a supply chain:

According to Chopra S, Meindl P and Kalra DV the supply chain is defined as *“A supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer request. The supply chain includes not only the manufacturer and suppliers, but also transporters, warehouses, retailers, and even customers themselves. Within each organization, such as a manufacturer, the supply chain includes all functions involved in receiving and filling a customer request. These*

¹ Hugos MH. *Essentials of supply chain management*. 4th ed. Hoboken: John Wiley & Sons; United States 2018. P1

functions include, but are not limited to, new product development, marketing, operations, distribution, finance, and customer service.”²

Lambert, Douglas M., James R. Stock, and Lisa M. Ellram, have introduced this definition for the supply chain: “*A supply chain is the alignment of firms that bring products or services to market.*”³

Another definition is “*A supply chain is that network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer or consumer.*”⁴

It seems that there is a certain consensus among authors regarding the definition of ‘supply chain,’ which is not the case for ‘supply chain management’.⁵

1.1.2. The degrees of supply chain complexity

The complexity of a supply chain can be divided into three categories: "direct," "extended," and "ultimate.”⁶

1.1.2.1. Direct supply chain

A business or supplier and a client engaged in the upstream and/or downstream flow of goods, services, money, and information make up a direct supply chain, as depicted in Figure I.1

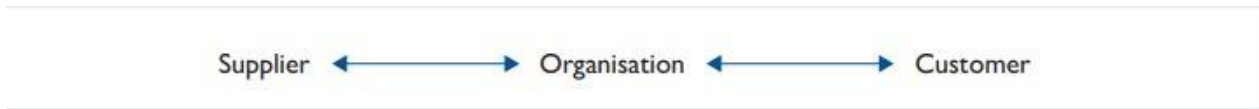
² Chopra S, Meindl P, Kalra DV. *Supply Chain Management: Strategy, Planning, and Operation*. 6th ed. Noida: Pearson India Education Services; India 2016. P1.

³ Hugos MH. Op.cit. P2

⁴ Lysons K, Farrington B. *Procurement and supply chain management*. 9th Ed. Pearson UK; United Kingdom 2016. P86.

⁵ Mentzer JT, DeWitt W, Keebler JS, Min S, Nix NW, Smith CD, Zacharia ZG. *Définir le supply chain management*. *Logistique & Management*. France 2015 Jan 1; 23(4):7-24. P10.

⁶ Lysons K, Farrington B. Op.cit. P88.

Figure I-1: Direct supply chain

Source: Lysons K, Farrington B. *Procurement and supply chain management*. 9th Ed. Pearson UK; United Kingdom 2016. P88.

This figure illustrates that in a direct supply chain, suppliers are the initial point of contact for the organization with the downstream side.

1.1.2.2. Extended supply chain

Figure I.2 illustrates an extended supply chain that consists of the immediate supplier's suppliers as well as the immediate customer's customers.

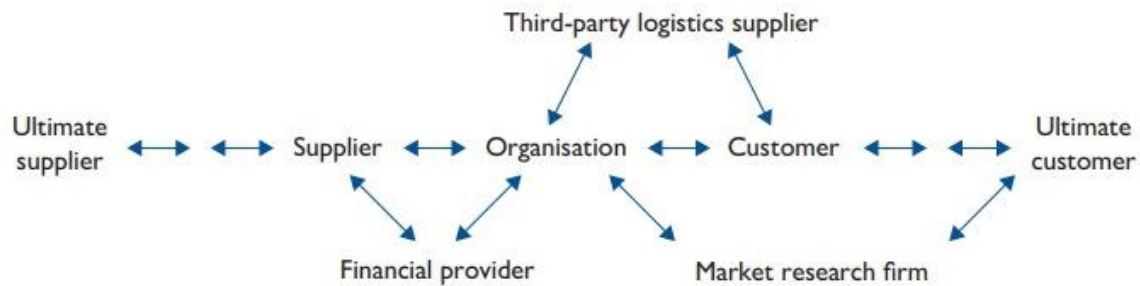
Figure I-2: Extended supply chain

Source: Lysons K, Farrington B. *Procurement and supply chain management*. 9th Ed. Pearson UK; United Kingdom 2016. P88.

This figure further demonstrates that even within the extended supply chain, suppliers retain a crucial role in the organization's overall supply chain, particularly on the downstream side.

1.1.2.3. Ultimate supply chain

Figure I.3 illustrates an ultimate supply chain, which consists of all the entities engaged in the upstream and downstream flow of goods, services, money, and information from the ultimate provider to the ultimate client.

Figure I-3: Ultimate supply chain

Source: Lysons K, Farrington B. *Procurement and supply chain management*. 9th Ed. Pearson UK; United Kingdom 2016. P88.

This figure illustrates that even within the ultimate supply chain, where numerous external stakeholders and partners are involved, suppliers remain the primary point of contact for the organization on the downstream side. This underscores the significance of suppliers for the organization.

1.1.3. Supply chain management definition

Supply chain management has been extensively studied since 1982, with over 1.7 million articles and works written. It became the most cited concept in the 2000s. Many authors continue to seek a better understanding and definition of the term. A meta-analysis by Mentzer et al. lists over a hundred different definitions, highlighting the complexity of the term. Following a survey of all those involved in this field (professionals, consultants, and researchers), the Council of Supply Chain Management Professionals (CSCMP), a North American association that unites professionals and academics originally from the logistics world, suggests in 2007 a definition that the international scientific and industrial communities will progressively adopt.⁷

For the CSCMP, “*supply chain management encompasses the planning and management of all the activities pertaining to the search for suppliers and supplies, processing and all logistical activities. It also includes coordination and collaboration between partners in the chain who may be suppliers, middlemen, logistical service providers and customers. Management of the supply chain thus involves, in essence, managing supply and demand in and between businesses*”⁸

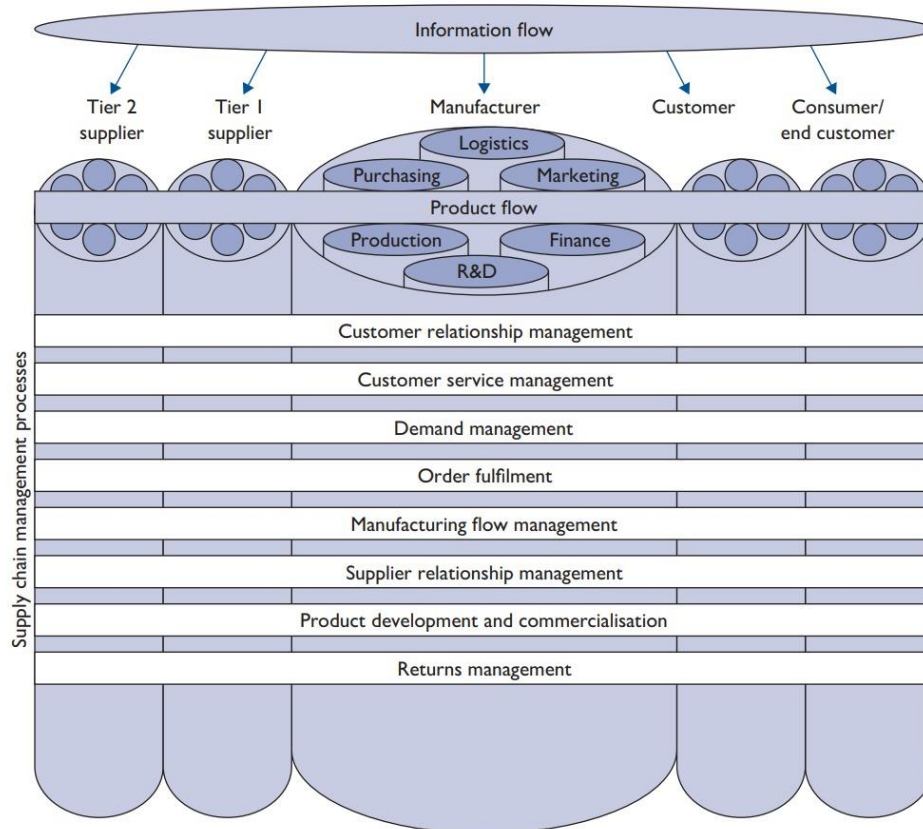
⁷ Camman C, Fiore C, Livolsi L, Querro P. *Supply chain management and business performance: the VASC model*. John Wiley & Sons; United States 2017. P82.

⁸ Camman C, Fiore C, Livolsi L, Querro P. *Ibid*. P82-83.

1.1.4. Supply chain management processes

Lambert et al. mention eight SCM procedures that were first proposed by the International Centre for Competitive Excellence, as Figure I.4 illustrates⁹.

Figure I-4: integrating and managing business processes across the supply chain



Source: Lambert DM. *Supply chain management: processes, partnerships, performance*. Supply Chain Management Inst; United States 2008.P13.

⁹ Lysons K, Farrington B. Op.cit. P90.

In this figure created by Lambert DM, it's evident that supplier relationship management is a pivotal process within the broader scope of supply chain processes.

A brief summary of each of these eight procedures is provided below¹⁰:

1.1.4.1. Customer relationship management

The framework for building and sustaining relationships with consumers is provided by the customer relationship management process. In order to fulfill the company's commercial objective, management selects its key customers and clients. By offering targeted clients personalized products and services, the objective is to boost target customer loyalty by segmenting customers depending on their value over time.

1.1.4.2. Supplier relationship management

Supplier relationship management is a structured approach to developing and maintaining relationships with suppliers, mirroring customer relationship management. Companies foster relationships with a small subset of suppliers based on their value over time, while maintaining traditional relationships with others. Partnerships are formed with a core group of suppliers, aiming for a win-win relationship benefiting both parties.

1.1.4.3. Customer service management

Customer service management is a supply chain process that manages Product and Service Agreements (PSAs) developed by customer teams. Managers monitor PSAs and intervene proactively to address issues, ensuring planned delivery of promises and collaborating with other process teams.

1.1.4.4. Demand management

Demand management is a crucial supply chain process that balances customer requirements with the supply chain's capabilities, ensuring efficient flow and minimal disruptions. It involves synchronizing supply and demand, reducing variability, and increasing flexibility, using point-of-sale and key customer data.

¹⁰ Lambert DM. *Supply chain management: processes, partnerships, performance*. Supply Chain Management Inst; United States 2008. P10-12.

1.1.4.5. Order fulfillment

The order fulfillment process involves designing a network to meet customer requests while minimizing costs. Strategic decisions include selecting countries, considering service requirements, tax rates, and import/export regulations. Implementation cross-functionally with coordination from key suppliers and customers is crucial for a seamless process from various customer segments to the organization.

1.1.4.6. Manufacturing flow management

Manufacturing flow management is a supply chain process that involves activities to achieve manufacturing flexibility, enabling timely and cost-effective production of a wide variety of products, requiring planning and execution across all supply chain members.

1.1.4.7. Product development and commercialization

Product development and commercialization is a supply chain management process that involves developing and bringing products to market jointly with customers and suppliers. It helps coordinate the efficient flow of new products, supports manufacturing, logistics, and marketing activities, and helps identify customer needs. The process team must work with customer relationship management to identify customer needs, select materials and suppliers with the supplier relationship management process teams, and with manufacturing flow management to develop production technology for the best product flow.

1.1.4.8. Returns management

Returns management is a supply chain process that manages activities related to returns, reverse logistics, gatekeeping, and avoidance. It helps manage reverse product flow efficiently, reduce unwanted returns, and control reusable assets. Better management can reduce costs and increase revenue.

1.2. Procurement management

In a simple way, procurement can be defined as the process of obtaining goods or services for business purposes, often on a large scale. It encompasses the final act of purchasing and the procurement process.

1.2.1. The scope of purchasing

Getting the appropriate item in the right quantity at the right time from the right source at the right price is one of the well-known goals of purchasing. The term "five rights" refers to this. Some people argue that this remark is overly basic and superficial. This is definitely a reasonable criticism, even though the definition offers a useful place to start the conversation. The following broad list of aims is recommended for the time being¹¹:

- To provide a constant flow of goods and services to the organization in order to meet its demands.
- To guarantee supply continuity by keeping strong contacts with current suppliers and creating new sources as backups or to fulfill anticipated or upcoming demands.
- To purchase effectively and properly, achieving the most value for each unit spent through varied, ethical, and sustainable means.
- To sustain warm and cooperative ties with other departments, offering guidance and information as needed to guarantee the smooth functioning of the organization overall.
- To develop personnel, policies, practices, and structures to guarantee the fulfillment of these goals.
- To use analytical and digital technologies to provide value.

1.2.2. Strategic roles of procurement

Certainly, procurement has operational and tactical tasks that involve negotiating prices, placing purchase orders, attending meetings, following up on late deliveries, responding to inquiries from stakeholders, and processing order acknowledgements. All of these perspectives are important, but they don't emphasize any strategic aspect¹².

1.2.2.1. Due diligence

A systematic process called "due diligence" is used to evaluate a supplier's eligibility as a partner with the purchasing organization. In takeover situations, the word "due diligence" is

¹¹ Baily P, Farmer D, Crocker B, Jessop D, Jones D. *Procurement Principles and Management in the Digital Age*. 12th ed. Pearson Education; United Kingdom 2022. P4.

¹² Lysons K, Farrington B. Op.cit. P5.

typically used in the context of financial reviews. When employed in procurement, it means taking into account the supplier's:

- Financial strength, encompassing working capital adequacy.
- The proficiency and accessibility of critical resources.
- Dependence on subcontractors and the scope of such reliance.
- Past involvement in legal disputes and litigations.
- Track record in collaborative partnerships.
- The presence of a well-structured five-year business strategy.
- Historical data on insurance claims.
- Strength and reliability of the IT systems.

1.2.2.2. Risk Management

Procurement must identify, evaluate, and mitigate risks, develop contingency plans, and establish a risk management process to monitor exposure, mitigation costs and effectiveness, ensuring it is sustained throughout supplier relationships, risks fall into the following categories¹³:

a. Operational risk

The inflow of materials and goods may be delayed or interrupted by operational supplier failure, which may result in a loss of income.

b. Quality risk

Sourcing in low-cost countries has introduced procurement to new suppliers with standards and quality perceptions may differ from those of its customers.

c. Compliance risk

As a result, procurement has a high risk of legal involvement, reputational harm, and additional expenses due to increased rules and increased awareness of social, ethical, and sustainability standards.

¹³ Baily P, Farmer D, Crocker B, Jessop D, Jones D. Op.cit. P5.

d. Strategic risk

This type of risk results from a company's exposure to intellectual property theft or loss, endangering its position and market share.

1.2.2.3. Relationship management

The adversarial approach to business is outdated and should be replaced by a more collaborative approach. This includes regular contract performance reviews, joint commitment to improvement, sharing long-term goals, active involvement of senior people, genuine negotiations, and provision of accurate data.

1.2.2.4. Continuous improvement of supplier performance

Every industry faces competition, occasionally from foreign companies. The procurement community plays a critical role in encouraging suppliers to keep up their performance improvement. Long-term contract performance can be rewarded for the supplier's effort and investment through incentives. The contract may include an obligation for ongoing improvement.

SECTION 2: Notions about supplier performance management

2.1. Supplier relationship management

Relationships refer to connections or associations between individuals, organizations, and groups within or outside an enterprise. They are studied in industrial sociology and business relationships, with the concept of relationship marketing being the first application¹⁴.

2.1.1. Definition

Supplier Relationship Management (SRM) is an approach used by two entities to work toward the integration of their organizations, which will help both parties achieve their strategic goals and provide the customer with better value for their money and the supplier with increased margin. It is an agreement to combine aspects of the two organizations for mutual advantage rather than to outsource to a supplier or act as a lone source. These advantages can't be just relationship indicators; they have to be real and evident¹⁵.

The most effective relationships are those in which suppliers and customers build mutual trust, a mutual understanding of their needs and goals, and an ambition to both learn from and support each other. When these circumstances are met, the goal should be to develop trustworthy and long-lasting partnerships between suppliers and buyers. These connections serve as the foundation of networks and give both sides a competitive edge¹⁶.

2.1.2. Performance on buyer-supplier relationships

Since the definition of "performance" varies widely in the literature, several further distinctions must be noted before delving into the topic of supplier performance management.

As a result, there are two primary categories of performance that can be distinguished: the first one is relationship-focused and addresses relational activities including responsiveness of buyers, quality of coordination between organizations, and delivery reliability. This type of performance is referred to as "interface-performance" since it involves the inter-organizational interface between purchasing and providing organizations. The second one, which is completely company-specific, illustrates how such relational performance indirectly affects the intra-firm performance of

¹⁴ Lysons K, Farrington B. Op.cit. P194.

¹⁵ Lysons K, Farrington B. Ibid.

¹⁶ Lysons K, Farrington B. Ibid.

both partners. Typically, it focuses on evaluating how relational processes' efficacy and efficiency affect firm-specific outcomes like market share, profitability, and sales volume. Consequently, the term "relational firm-performance" is used to describe this second kind of performance¹⁷.

2.1.3. The supply base

2.1.3.1. Definition

Supply base refers to the number, variety, location, and characteristics of the suppliers that provide the buyer with supplies. Different types of supply bases exist, such as broad, lean, narrow, local, national, international, diverse, or specialized. They can also be single-sourced. These could be connected to a product or supplier "family," or they could be the entirety of the suppliers a buyer works with¹⁸.

2.1.3.2. Supply base optimization

The goal of supply base optimization, also known as rationalization, is to develop an approach that would determine the ideal number of suppliers needed to satisfy the needs for supplying each and every procurement category. An excessive number of suppliers are given business in many organizations on an as-needed basis. The following are some of the reasons rationalization is necessary¹⁹:

- concentrating purchases on a small group of reliable, affordable providers;
- necessity of cost and procurement process control;
- build trust in suppliers so they will commit to long-term investments;
- encourage innovation and continuous improvement;
- increase the accessibility of insightful management data;
- Reduce risks in the chain of supply.

Supply base optimization can be attained by a variety of strategies, such as²⁰:

- choosing between two or one supply sources;
- a list of preferred or approved suppliers;

¹⁷ Geber, Konstantin. *Performance control in buyer-supplier-relationships—the design and use of formal management control systems*. Springer Gabler, St. Gallen: Switzerland. 2012. P35.

¹⁸ Lysons K, Farrington B. Op.cit. P360.

¹⁹ Lysons K, Farrington B. Ibid. P360 – 361.

²⁰ Lysons K, Farrington B. Ibid.

- outsourcing a number of services to get rid of different service providers;
- a product's redesign to reduce its dependency on entities who have prior intellectual property;
- Combining purchases with other customers to enable larger suppliers to accept a higher order quantity.

2.1.3.3. Risks of a reduced supplier base

There are risks associated with decreasing the supply base, which include²¹:

- complacency that prevents innovation by causing repetitious behaviour;
- reduction in available capacity due to the elimination of a marginal supplier;
- supply risks resulting from force majeure situations;
- Ignorance of supply market trends and market intelligence.

2.2. Suppliers and value creation

2.2.1. Importance of supply and value chains

The Covid 19 crisis, globalization, digitization, and innovation drive are causing companies to change their strategies and principles. The increasing digital networking of customers, manufacturers, suppliers, and stakeholders raises the question of competitive advantages for manufacturing, trading, and service companies. Supplier management, which controls the entire value chain, is becoming more important than ever. An integrative approach from customer order to planning, procurement, production, logistics, and returns provides companies with the necessary decision-making basis for their future actions. Tasks in supplier management have evolved from purely procurement to a value-shaping, leading, and creating function²².

²¹ Lysons K, Farrington B. Op.cit. P361.

²² Helmold M. *Innovative Supplier Management: Value Creation in Global Supply Chains*. Springer Fachmedien Wiesbaden: Germany 2023. Germany P1.

Figure I-5: Input-transformation-output added value model

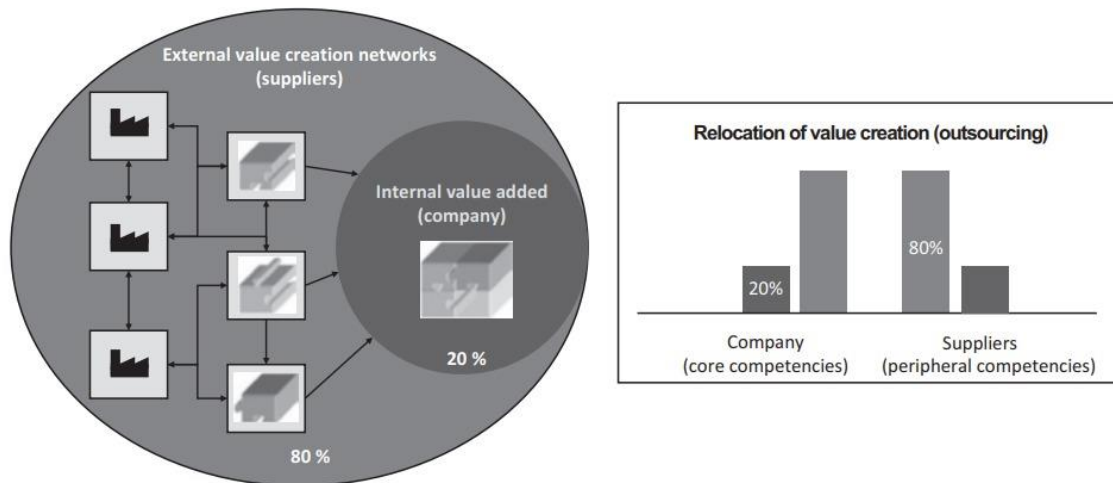
Source: Helmold M. *Innovative Supplier Management: Value Creation in Global Supply Chains*. Springer Fachmedien Wiesbaden: Germany 2023. P2.

This figure illustrates the value creation process, beginning with inputs primarily obtained from suppliers. Following this, there is the transformation phase, an internal component of value creation. Ultimately, the process culminates in the production of outputs—products and services—wherein the final value added becomes apparent.

2.2.2. Supplier management and value creation

Supplier management is becoming a central role for companies as companies focus on core competencies and shift services to competitive supplier networks. The future is not just about raising internal cost advantages but also about exchanging information and exploiting global cross-company potentials. Companies must rely on innovative, efficient, and flexible supplier structures to manage value added scopes. Increasing competition, global trends, the COVID-19 pandemic, sustainability elements, technological change, and shortened product life cycles are placing greater demands on companies and their suppliers in various industries. Managing value networks becomes more complex due to increasing product diversity, shorter innovation cycles, and digital business processes. Planning, control, and monitoring of upstream value creation networks are becoming more difficult, necessitating holistic, standardized, and innovative supplier management. Risk prevention in the supply chain plays a central role in every company. Figure I.6 shows that the proportion of peripheral competencies outsourced to external suppliers has increased to over 80%, while in-house core competencies remain at about 20%²³.

²³ Helmold M. Op.cit. P2.

Figure I-6: Value creation networks in the context of supplier management

Source: Helmold M. *Innovative Supplier Management: Value Creation in Global Supply Chains*. Springer Fachmedien Wiesbaden: Germany 2023. P3.

This illustration depicts the concept previously described, where 80% of the value creation is allocated to suppliers, while the remaining 20% is generated through the internal processes of the company.

2.2.1. Value chain according to porter

The value chain, first introduced by Michael E. Porter in 1985, is a sequence of activities that create value and consume resources. It comprises five primary activities: internal logistics, production, external logistics, marketing & sales, and service, and four support activities: Enterprise Infrastructure, Human Resources, Technology Development, and Procurement. Each activity contributes to a company's competitive cost position²⁴.

Figure I.8 shows Porter's value chain with supplier management as the central function for managing and controlling supplier networks.

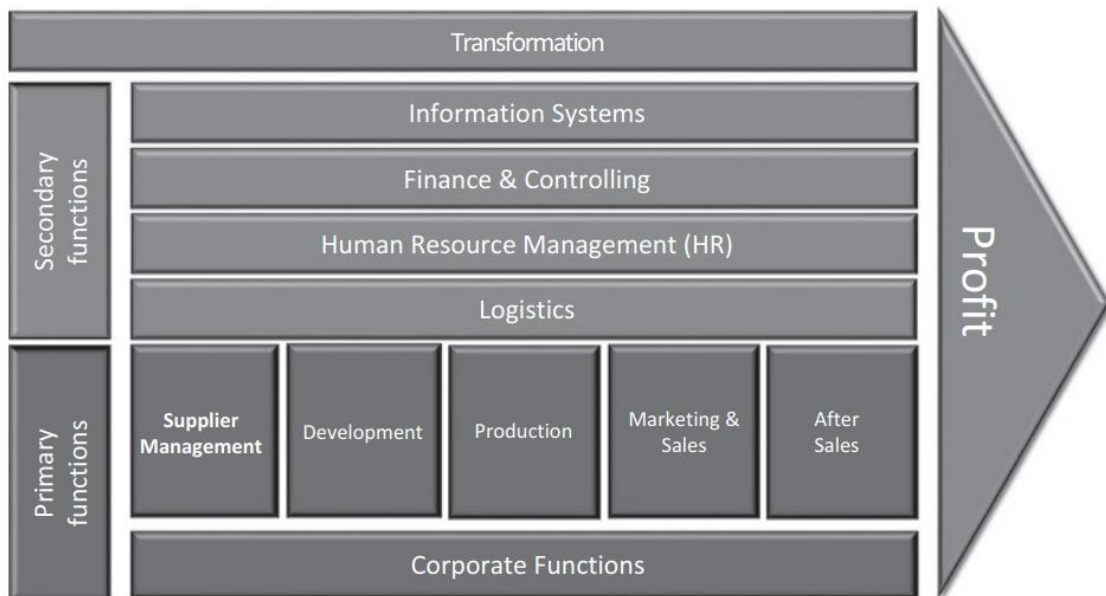
²⁴ Helmold M. Op.cit. P4.

Figure I-7: Value chain according to Porter



Source: Helmold M. *Innovative Supplier Management: Value Creation in Global Supply Chains*. Springer Fachmedien Wiesbaden: Germany 2023. P4.

Figure I-8: Transformation to supplier management as a primary function



Source: Helmold M. *Innovative Supplier Management: Value Creation in Global Supply Chains*. Springer Fachmedien Wiesbaden: Germany 2023. P5.

These two figures depict the value chain. The first illustrates Porter's model, where supplier management and procurement are considered secondary functions. In contrast, the second figure presents an enhanced model, elevating supplier management to a primary function due to its

significant role in value creation for the company. This adjustment reflects the understanding that suppliers contribute 80% to the value creation process.

2.2.2. Supplier waste and cost of poor quality (COPQ)

Four categories are used by the traditional view of cost of poor quality (COPQ) to group costs²⁵:

- The cost of prevention: What steps, such as developing policies and procedures, making plans, and providing training, are necessary to prevent subpar service or product quality?
- The cost of appraisals: The amount of money used to review, evaluate, or test the quality of the products or services.
- The cost of internal failure: The cost of reworking to address quality issues.
- The cost of external failures: Expense of handling customer service, complaints from customers, lost revenue, and other issues.

These cost factors may have an effect on the operations of both the supplier and the client. In other words, waste and inefficiencies at the supplier may result in waste and inefficiencies at the client. Customer complaints, warranty returns, quality issues, excess inventory, service outages, lengthy cycle times, and other problems are what contribute to supplier costs associated with subpar quality. The cost of low quality, and its subgroup, the cost of low supplier quality, can be measured using a variety of general guidelines. Poor quality has been calculated to cost between 10% and 25% of sales. Furthermore, low supplier quality can cost anywhere from 25% to 70% of COPQ²⁶.

2.3. Supplier Importance and Supplier Performance Management

2.3.1. Definition of SPM

Gordon SR defined supplier performance management as: *“The process of evaluating, measuring, and monitoring supplier performance and suppliers’ business processes and practices for the purposes of reducing costs, mitigating risk, and driving continuous improvement.”*²⁷

An essential component of supplier management is supplier performance management, which includes ongoing supplier performance metrics measurement, assessment, and analysis. To

²⁵ Gordon SR. *Supplier evaluation and performance excellence: a guide to meaningful metrics and successful results*. J. Ross publishing; United States 2008. P10.

²⁶ Gordon SR. Ibid.

²⁷ Gordon SR. Ibid. P4.

monitor the success of its supplier base, an organization has to have the right instruments in place. How can buyers truly know how effectively suppliers are meeting contractual commitments in the absence of an efficient measuring mechanism to document and assess supply base performance? The necessary procedures and frameworks for gathering and delivering data in order to continuously score, rank, and assess supplier performance are included in supplier performance measurement. The supplier measurement system, which functions as a supplier report card in basic terms, is an integral component of the sourcing process. Keep in mind that supplier performance monitoring is a continual process rather than a singular, one-time occurrence, which makes it different from the original evaluation and selection process.²⁸

2.3.2. The importance of SPM

The Aberdeen Group's Supplier Performance Benchmark Report, published in 2002 and updated in 2005, supports the business case for measuring supplier performance. The report found that suppliers of companies with an SPM program, particularly in price, on-time delivery, and quality, performed better than those without such programs. The report also found that suppliers perform better when measured, which is the idea behind "you manage what you measure." Simple metrics can have an impact, but more formal, system-based, and enterprise-wide measurement systems can lead to even greater improvements in supplier performance²⁹.

²⁸ Monczka RM, Handfield RB, Giunipero LC, Patterson JL. *Purchasing & supply chain management*. 6th edition. Cengage Learning; United States 2014. P324.

²⁹ Gordon SR. Op.cit. P14.

Table I-1: Average supplier performance improvement

/	Price	On-Time Delivery	Quality	Service
SPM Program	23%	23%	21%	21%
No Program	13%	11%	5%	17%

Source: Aberdeen Group, Supplier Performance Benchmarking Report, September 2005.

This table outlines the critical role and the beneficial impact of supplier performance management programs on supplier management, particularly focusing on price, on-time delivery, quality, and service.

2.3.3. Measurement and reporting frequency

The regularity of measurement is influenced by two key factors: the frequency of reporting to the supplier and the purchaser. A daily report that summarizes the operations of the previous day should be sent to a purchaser (or to someone in charge of managing suppliers on a daily basis). The purchaser may scan incoming receipt activity in this report, which also should indicate any past-due supplier receipts. If further information is required, a buyer can additionally obtain reports summarizing supplier performance on a weekly, monthly, quarterly, or yearly basis³⁰.

Monthly or quarterly reporting on supplier performance in relation to pre-established goals and objectives should be standard procedure. Additionally, buyers have to schedule at least yearly meetings with their principal suppliers to discuss real performance outcomes and pinpoint areas for growth. Keep in mind that buyers and more important suppliers have to get together more frequently. But a buyer should never wait to highlight up a supplier's poor performance, especially if it has a negative impact on regular business operations. As soon as low performance is identified, it has to be corrected to prevent or lessen negative effects on finances or operations³¹.

2.3.4. Leveraging supplier measurement data

Data from the company's supplier measurement system can be utilized by a supply management in a variety of ways³²:

³⁰ Monczka RM, Handfield RB, Giunipero LC, Patterson JL. Op.cit. P326.

³¹ Monczka RM, Handfield RB, Giunipero LC, Patterson JL Ibid.

³² Monczka RM, Handfield RB, Giunipero LC, Patterson JL. Ibid. P326 - 327.

2.3.4.1. Identifying Underperforming Suppliers

This information may be used to identify suppliers who are not meeting expectations so that corrective or developmental measures can be implemented to bring their performance up to standard or, in the event that it becomes necessary, to find alternative suppliers.

2.3.4.2. Recognizing highly capable suppliers

The measuring data also assists in identifying those very competent suppliers who, due to their exceptional performance, may be eligible for consideration for longer-term collaborations or classification as preferred suppliers.

2.3.4.3. Supply base rationalization and optimization

Measurement data are also helpful for supply base optimization and rationalization. Suppliers are unlikely to be in the supply base for very long if their performance does not meet minimal acceptable standards. Determining a supplier's projected buy volume based on its previous performance ratings is another application of supplier performance data. Certain organizations make periodic adjustments to the number of purchases they make and provide bigger shares of upcoming buy requirements to suppliers that perform better. Suppliers are financially motivated to achieve or surpass the buyer's performance goals when quantities are adjusted among them.

2.3.4.4. Improving operational areas

One of the main advantages of supplier measurement is that performance statistics help the purchasing organization discover the areas of its operations that need to be improved. The information may be used by buyers to guide their sourcing choices. When a buyer has access to an accurate measurement system that regularly compares a supplier's performance to that of other suppliers or predetermined performance criteria, these variations in supplier performance become more apparent.

2.3.5. Supplier performance data sources

Internal business systems, supplier input, internal stakeholder input, supplier site visits or audits, and third-party information sources (such as third-party evaluations, ISO 9001, and other outside party certifications) are examples of sources of performance information. Examples of information

sources, information forms that can be obtained from such sources, and methods and procedures for gathering data or information are compiled in Table 4.8³³.

Table I-2: Sources and types of supplier performance information

Source	Examples of Information	Collection Mechanisms
Internal systems and sources (ERP, financial systems)	<ul style="list-style-type: none"> ▪ On-time delivery ▪ Call center data on customer complaints ▪ Incoming quality ▪ In-process quality 	<ul style="list-style-type: none"> ▪ Database ▪ Spreadsheets ▪ Scorecard programs
Internal stakeholders	<ul style="list-style-type: none"> ▪ Supplier responsiveness ▪ Service quality ▪ Ease of doing business with supplier 	<ul style="list-style-type: none"> ▪ Spreadsheets ▪ Surveys ▪ Data-gathering mechanisms
Suppliers	<ul style="list-style-type: none"> ▪ Inventory turns ▪ Business processes and practices information 	<ul style="list-style-type: none"> ▪ Surveys ▪ Spreadsheets ▪ Self-assessments ▪ Supplier portals
Site visits	<ul style="list-style-type: none"> ▪ Business processes and practices ▪ Specific performance information 	<ul style="list-style-type: none"> ▪ Site visit team ▪ Assessment software for virtual site visit
Third parties	<ul style="list-style-type: none"> ▪ Source inspection and supplier quality inspection services ▪ Certifications (such as ISO, CSR) 	<ul style="list-style-type: none"> ▪ Third-party databases ▪ Third-party service companies ▪ Outside certifications
SPM or SRM software solutions	<ul style="list-style-type: none"> ▪ Supplier scorecards ▪ Detailed business assessments 	<ul style="list-style-type: none"> ▪ Enterprise supply management software solutions and tools ▪ Supplier evaluation software

Source: Gordon SR. Supplier evaluation and performance excellence: a guide to meaningful metrics and successful results. J. Ross publishing; United States 2008. P10.

This table underscores the concept that each information source offers multiple data examples and employs various collection mechanisms.

³³ Gordon SR. Op.cit. P73.

2.3.6. Measurement methodologies

We went over possible sources of information for supplier performance management. Next, we will talk about several methods of measurement that make use of these sources³⁴.

2.3.6.1. Surveys or questionnaires

One of the most common ways to find out about suppliers and their performance has always been through surveys. Surveys of suppliers may be used to find solutions for problems that arise between customers and suppliers as well as to detect possible or existing performance issues. They give clients a methodical approach to obtain qualitative and quantitative feedback free from conflicting personalities or defensive behaviors. Additionally, surveys may be used to find modifications that will present chances to enhance important business factors like cycle times and quality. Among the survey types are the following:

a. Request for Information (RFI) surveys

Sent with the intention of qualifying potential suppliers; may include performance metrics inquiries. These can be completed over the phone, via mail, or online;

b. Quality surveys

Sent to suppliers to collect data about their third-party certification, tooling, test equipment, cost of quality, quality outcomes, and other topics related to their quality planning systems and procedures;

c. Supplier questionnaires

Sent to obtain detailed supplier information. They can be done over the phone, by mail, online, or through in-person interviews.

Surveys are a popular and useful tool for learning about supplier performance, but they also have a number of drawbacks. These are some essential components that will affect the quality of the output:

- Deployment methods;
- Clarity of purpose;

³⁴ Gordon SR. Op.cit. P103 – 113.

- Clarity of the survey instrument;
- Clarity of the questions;
- Time to complete;
- Timing of deployment;
- Survey length;
- Confidentiality;
- Team experience and capabilities;
- Communication strategy;
- Budget;
- Language of the survey or questionnaire;
- Cultural background.

2.3.6.2. Site visits

Site visits are surveys conducted at suppliers, especially those with critical or strategic products, high spend levels, or high switching costs. They can be brief, lasting several hours, or comprehensive, lasting several days. Evaluation approaches, conducted by a cross-functional team, can also be used. Another approach is a supplier audit, a quality-oriented review of the supplier's operations. This involves a set of standards or specifications, inspection, interviews, and review of objective evidence such as documentation, analytical data, records, and samples. Both methods help verify business requirements on-site and ensure the supplier's continued success.

2.3.6.3. Scorecards

Scorecards are a widely used method for collecting and displaying supplier performance information, providing a quick and easy way to focus on facts for decision making. They help organize evaluation data, are quick and easy to use, and can be a powerful tool when displayed as graphs and charts to show time-based trends and comparisons with previous scores and other suppliers. Scorecards are particularly useful for gaining insights into and managing supplier performance.

The use of scorecards presents numerous challenges, with the most significant being:

- Data collection can take more time and resources;
- Relevance of the scorecard data collected;

- Data integrity;
- Data feeds from disparate systems;
- Disputes with suppliers over data integrity;
- Punitive use of scorecards;
- Scorecards don't tell the whole story.

SECTION 3: Supplier performance scorecard design and implementation process

Manufacturing procurement today focuses on building long-term relationships with suppliers and downstream customers to improve supply chain performance. Performance evaluation of suppliers is crucial for production planning and control, integrating stakeholders and capitalizing potential opportunities. However, 60% of enterprises struggle with consistently measuring and managing supplier performance. An effective supplier performance measurement framework is needed, which should be easily adoptable, efficient, reliable, flexible, and compatible with other organizational systems³⁵.

Enhancing supplier performance helps achieve overall organizational excellence, as procurement costs comprise 60-80% of production costs. Implementing complex and cumbersome improvement measures is critical to success. Improved communication channels with suppliers are also needed to meet manufacturing objectives³⁶.

3.1. Align performance goals

It is impractical to decide what level of performance the company needs from its supply chain in a vacuum. It is essential to initially establish a supplier strategy that aligns with the general goals and objectives of the company. Organizations are increasingly adopting continuous improvement programs like Six Sigma, lean enterprise, lean sigma, operational excellence, and total quality management. To achieve excellence, key suppliers must align with the company's direction. Companies committed to Six Sigma and a fact-based culture require similar performance improvement approaches from their suppliers. However, if an enterprise improvement strategy is not articulated, the drive to measure and improve supplier performance may be less strong. Additionally, if continuous improvement is not valued within the culture, commitment from upper management may be difficult³⁷.

³⁵ Dey PK, Bhattacharya A, Ho W, Clegg B. *Strategic supplier performance evaluation: A case-based action research of a UK manufacturing organisation*. International journal of production economics. Netherlands 2015 Aug 1;166:192-214. P192.

³⁶ Dey PK, Bhattacharya A, Ho W, Clegg B. *Ibid*.

³⁷ Gordon S. *Seven steps to measure supplier performance*. Quality progress. United States 2005 Aug 1;38(8):20-5.

Expectations for supplier performance can be developed by cascading corporate goals down the company. A performance expectation is a clear declaration of a procedure, policy, or business practice, as well as the outcomes expected or necessary from the actions or performance of a supplier in connection to the client. Expectations for performance need to be³⁸:

- Measurable
- Appropriate to the suppliers being measured
- Communicated
- Actionable
- Attainable

The link between corporate and procurement strategies and performance expectations is illustrated in Figure I.5. The corporate goal of improving customer satisfaction by 10% is translated into a strategy using Six Sigma to identify customer complaints' causes. The procurement strategy addresses supplier quality escapes, leading to supplier performance expectations of corrective action. The objective is to align supplier performance expectations with the procurement strategy and overall company strategy, ensuring alignment with corporate goals³⁹.

³⁸ Gordon SR. Op.cit. P83.

³⁹ Gordon SR. Ibid. P84.

Figure I-9: Strategy deployment to the supplier performance expectation level

Source: Gordon SR. *Supplier evaluation and performance excellence: a guide to meaningful metrics and successful results*. J. Ross publishing; United States 2008. P85.

This figure illustrates the progression from corporate goals to supplier performance expectations, transitioning through corporate strategy and procurement strategy.

3.2. Develop information collection method

Choosing how to use available resources to gather any performance data for a significant portion of the supplier base is a difficulty. Techniques include site visits, web-based and paper-based surveys, system extracts, third-party standard certification, and extracts from existing systems. Table I-2 presents these techniques along with a few mechanisms in the previous section⁴⁰.

3.3. Identify key performance measures (KPIs)

In determining how to track supplier performance, many companies face uncertainty regarding the metrics to use. While some opt to emulate what other businesses are measuring—a valid method for gathering insights—it may not always align with their own strategies and objectives. Additionally, the information collected by others might not be pertinent to their industry, culture, or company size, nor address the specific supplier challenges they encounter. Alternatively, some

⁴⁰ Gordon S. Op.cit. P23.

companies evaluate readily available data within their own organization to devise suitable measurements for supplier evaluation⁴¹.

3.3.1. Characteristics of good measurements

Good metrics for supplier performance must include the following characteristics⁴²:

3.3.1.1. Meaningful and valuable

Measures should directly relate to the buying organization's strategies and goals, as they are impacted by supplier performance. They measure important activities of the supplier, considering customer requirements and business success factors.

3.3.1.2. Balanced

Measurements of suppliers need to provide an overview of their performance across many categories, taking into account both their historical and future performance potential. Not just lagging but also leading indications must to be included.

3.3.1.3. Practical and simple

Data must be easily and affordably obtained and/or captured, without requiring significant pre-processing or data cleaning. Simple to calculate as well as understand.

3.3.1.4. Credible and up-to-dated

To the supplier, the measurements must be backed up by precise and trustworthy data that is also used and reported on within an appropriate timeframe. So by the time the supplier views it, it hasn't become obsolete.

3.3.1.5. Reasonable number of metrics

Evaluating performance elements realistically and avoiding evaluating an excessive number of things that are difficult to manage or address.

⁴¹ Gordon SR. Op.cit. P79.

⁴² Gordon SR. Ibid. P81.

3.3.2. Types of measurements

There are two categories of measurements: quantitative measurements and qualitative measurements⁴³:

3.3.2.1. Quantitative measurements

They are empirical performance indicators, quantitative metrics are derived from what is known as "hard" data and can be extracted from internal systems. On-time delivery, scrap and rework, and transportation expenses are a few examples of objective or quantitative indicators.

3.3.2.2. Qualitative measurements

Opinion and perception serve as the foundation for qualitative metrics. Examples include complaints from customers and the implementation of business processes (such proactive rather than reactive quality procedures) that customer companies might observe directly, discover through internal stakeholders, or acquire from the supplier through site visits and supplier business evaluations. Just like objective measurements, subjective measurements may also be quantified into KPIs.

Objective and subjective KPIs can be used in the same scorecard to provide information on performance aspects. However, objective measurements can be inaccurate or misrepresent performance, they are not always scientifically precise, since deriving them is dependent on so many factors. Working with suppliers involves a human relationship and perceptions, which influence customer firms' perceptions of reality. Qualitative metrics like customer satisfaction ratings and supplier perceptions play a crucial role in understanding supplier performance, but should not be considered inferior to quantitative metrics or hard data. A balanced supplier performance scorecard should include both types of KPIs for a more accurate and useful understanding⁴⁴.

⁴³ Gordon SR. Op.cit. P82.

⁴⁴ Gordon SR. Ibid. P82-83.

3.3.3. Supplier key performance indicators

Classifying different criteria into a comprehensive and mutually exclusive list of categories is the first step towards developing a set of metrics, organizations frequently depend on the traditional metrics of delivery, quality, and pricing⁴⁵:

3.3.3.1. Delivery performance

A supplier receives purchase orders or material releases with a quantity and a delivery deadline. As a result, a customer may easily evaluate how effectively a supplier fulfills its promises about quantity and delivery deadlines. A supplier's total delivery performance includes quantity, lead time specifications, and compliance with deadlines.

3.3.3.2. Quality performance

A crucial element of almost all supplier measurement systems is quality performance. A buyer has the ability to compare similar providers, monitor trends and improvement rates, and assess a supplier's quality performance in relation to predetermined goals. A well-designed measurement system also helps define a buyer's quality requirements and more effectively communicate them to its suppliers.

3.3.3.3. Cost and financial performance

Suppliers are often relied upon by buyers to help reduce costs, which may be quantified in a variety of ways. Following a supplier's actual cost after accounting for inflation is one such technique. Comparing a supplier's cost to that of other suppliers in the same industry, as well as to a baseline or goal price, are additional recognized methods. Some of the top businesses base their comparative prices for the next year on the final amount paid in the current year.

Even while these are still fundamental to supplier assessment, advancements like Just-In-Time (JIT), lean manufacturing, integrated supply chains, and e-procurement have made it necessary to take supplier relationships into consideration more deeply⁴⁶.

⁴⁵ Monczka RM, Handfield RB, Giunipero LC, Patterson JL. Op.cit. P325.

⁴⁶ Lysons K, Farrington B. Op.cit. P357.

There are essentially an infinite amount of KPIs that may be used. Simpson et al.'s survey conducted in the USA revealed 142 assessment items, they were categorized into 19 categories of criteria⁴⁷, and they are shown in able1.

The authors analyzed 2,278 items on firm evaluation forms, categorizing them into 19 categories. The ratio of items per category to total items indicates the importance of each category in the evaluation process. Table 1 shows categories, number of items, and percentage of items to total items, with frequency of appearance used as a proxy for importance since key factors appearing more frequently on evaluation forms⁴⁸.

Table I-3: Supplier evaluation factors considered by relative frequency of mention and relative importance rating

Evaluative Criteria	Number of items by category	Percentage mentioning	Relative importance rating
Quality and Process Control	566	24.9%	1
Continuous Improvement	210	9.2%	2
Facility / Environment	188	8.2%	2
Customer Relationship	187	8.2%	2
Delivery	185	8.1%	2
Inventory and Warehousing	158	7.0%	2
Ordering	132	5.8%	2
Financial Conditions	126	5.5%	2
Certifications	81	3.6%	3
Price	81	3.6%	3
Staff/Customer Service	81	3.6%	3
Leadership/Management	70	3.1%	3

⁴⁷ Lysons K, Farrington B. Op.cit. P 357.

⁴⁸ Simpson PM, Siguaw JA, White SC. Measuring the performance of suppliers: an analysis of evaluation processes. Journal of Supply Chain Management. United States 2002 Dec;38(4):29-41. P32.

Technology	63	2.8%	3
Education/Training	46	2.0%	3
Invoicing	38	1.7%	3
Packaging	30	1.3%	3
Employees	24	1.1%	3
Warranty	8	0.4%	4
Location	4	0.2%	4

Source: Simpson PM, Siguaw JA, White SC. Measuring the performance of suppliers: an analysis of evaluation processes. Journal of Supply Chain Management. United States 2002 Dec;38(4):29-41. P34.

The most popular supplier evaluation category is Quality and Process Control, accounting for 24.8% of all items evaluated. Other popular categories include Continuous Improvement /Innovation/R&D, Facility Environment, Customer Relationship and Communication, Delivery, Inventory and Warehousing, Ordering, and Financial Condition and Size. Other categories like Certifications, Invoicing, Packaging, Price, Technology, Employees, Sales/Customer Service, and Education/Training were less than 5% of the total items evaluated, with the Warranty (0.4 percent) and Location (0.2 percent) categories receiving the fewest mentions on evaluation forms⁴⁹.

Therefore, based on these standards, suppliers should prioritize quality-related concerns, particularly the capacity to fulfill customer orders, before focusing on ongoing innovation and development projects. Crucially, suppliers could be interested in reducing their emphasis on price in their efforts to draw in and keep clients, even though they don't want to ignore pricing concerns entirely⁵⁰.

3.4. Identify score calculation method and criteria weights

Using multiple criteria decision-making methods (MCDM) enables a decision-maker to arrange the alternatives in order of importance for the stated objective or select the best option from a range of options A_1, A_2, \dots, A_n . The MCDM techniques rely on the use of a decision-making matrix

⁴⁹ Simpson PM, Siguaw JA, White SC. Op.cit. P32-33.

⁵⁰ Lysons K, Farrington B. Op.cit. P357.

$R = |r_{ij}|$ of the values r_{ij} of the criteria $K_1, K_2... K_m$, which describe the process under consideration, and the vector $\Omega = (\omega_j)$ of the weightings of these criteria, that is, where $i = 1, 2... n; j = 1, 2, ..., m$; m is the number of criteria and n is the number of alternatives that are then considered (i.e., suppliers). The statistical information, expert estimations, and the technological or technical features of what is under consideration can all be used to express the values of the r_{ij} criterion. There are some differences in how the criteria impact the process and how important they are. But the fundamental notion behind criteria weight evaluation is that, in reality, the method employed for criterion weight evaluation always gives the most weight to the most important criterion, typically, the weights that are obtained are normalized in this way⁵¹:

$$\sum_{j=1}^m \omega_j = 1$$

3.4.1. Choosing the score calculation method

3.4.1.1. Simple Additive Weighing (SAW)

The MCDM approaches rely on integrating the criteria values (r_{ij}) and their weights (ω_j) to determine the evaluation score. The successful method to implement this idea is SAW (Simple Additive Weighing) method, also referred to as the weighted sum model (WSM), is the simplest method for solving a multi-criteria decision problem⁵².

In the supplier performance evaluation process, SAW follows the following steps⁵³:

Step 1: Definition of decision criteria $k = K_1, K_2... K_m$;

Step 2: Definition of relative criteria weights w_j with $w_j = \frac{\omega_j}{\sum_{j=1}^m \omega_j} = 1$;

Step 3: Definition of an evaluation scale (e.g., a 5-point scale);

Step 4: Definition of criteria values r_{ij} per supplier $i = 1, 2... n$;

Step 5: Calculation of supplier scores

⁵¹ Vinogradova I, Podvezko V, Zavadskas EK. *The recalculation of the weights of criteria in MCDM methods using the bayes approach*. Symmetry. Switzerland 2018 Jun 7;10(6):205. P2.

⁵² Vinogradova I, Podvezko V, Zavadskas EK. Ibid.

⁵³ Mandl C. *Procurement Analytics: Data-Driven Decision-Making in Procurement and Supply Management*. Springer Nature; Deggendorf: Germany. 2023. P139.

$$S_i = \sum_{j=1}^m \omega_j \cdot r_{ij}$$

3.4.1.2. Weighted Product Model (WPM):

An expansion of the weighted sum model that emphasizes multiplication over summation is the weighted product model (WPM). The process is the same as steps 1 through 5 of WPM, with the small exception that step 5's score S_i is determined differently⁵⁴:

$$S_i = \prod_{j=1}^m r_{ij}^{(\omega_j)}$$

3.4.2. Identify relative criteria weights

When evaluating the alternatives, the actual values of the criteria weights play a significant role. As a result, problems related to their estimations are extensively studied in both theory and practical MCDM technique applications. Criteria weights can be subjective or objective, with subjective weights often used by specialists for practical problem-solving. Methods like the Delphi method, expert evaluation method, and Analytic Hierarchy Process (AHP) have been developed to determine these weights based on expert evaluation of their significance. These weights are crucial for assessing results as they express the opinions of highly qualified experts⁵⁵.

Let's now examine a few of the most popular subjective weighting techniques⁵⁶:

3.4.2.1. The point allocation method

The point allocation method is a simple method for determining criteria weights based on their priority. A decision-maker assigns points to each criterion, with more points indicating greater importance. In this scenario, 100 points are allocated across the criteria, resulting in a total of 100 weights. This method is easy to normalize but has less precise weights and becomes more challenging as the number of criteria increases to six or more;

⁵⁴ Mandl C. Op.cit. P140.

⁵⁵ Vinogradova I, Podvezko V, Zavadskas EK. Op.cit. P2.

⁵⁶ Odu GO. *Weighting methods for multi-criteria decision making technique*. Journal of Applied Sciences and Environmental Management. Nigeria 2019 Sep 11;23(8):1449-57. P1451-1455.

3.4.2.2. Ranking method

This is among the most straightforward methods for allocating weights to criteria. Typically, the criteria are arranged in order of most important to least important. There are three methods for using the ranking method to weight calculations, they include rank sum, the rank exponent and rank reciprocal;

3.4.2.3. Ratio weighting method

One of the subjective weighting techniques is the ratio method, which asks decision-makers to rank the criteria in order of importance. In this case, the least important criterion is given the value of 10, and the other criteria are assigned multiples of 10. After that, the weights are normalized so that they add up to one.

3.4.2.4. Simple Multi-attribute Rating Technique (SMART)

The SMART technique is a compensatory decision-making method developed by Edward in 1971. It involves rating alternatives and weighting criteria based on their importance. The least important criterion is assigned 10 points, while the most important criterion is assigned 100 points. With an increasing number of points are assigned to the other criteria according to their importance. The weight of the criteria is calculated by normalizing the sum of the points to one.

3.4.2.5. The pairwise comparisons

Analytical Hierarchy Process (AHP) approach is one of the most often used pairwise comparison based methods. Through pairwise comparisons, AHP employs a more structured method as opposed to simply assigning criteria weights. As a result, all criteria are evaluated one-on-one to determine which criterion is more crucial and by how much. To assist in comparing the preference value of one criterion to another, the ordinal scale (1–9) is used⁵⁷ ⁵⁸. The procedure for determining the criteria weights based on pairwise comparisons can be carried out in the following three steps, the initial step is to create a matrix by comparing the criteria; the matrix is then filled in using intensity values, the criteria weight calculation is the second stage, a final step is typically to check consistency of the pairwise comparisons.

⁵⁷Odu GO. Op.cit. P1451.

⁵⁸Mandl C. Op.cit. P141.

The criteria weights in the objective weighing techniques are determined by using mathematical models to gather information for each criterion, without taking the decision maker's input into account. Compared to their subjective equivalents, the objective weights are less frequently employed in practical applications. There is also the integrated weighting approach is a method that combines subjective and objective weighting methods, combining expert opinions and mathematical data from criteria data to provide a comprehensive and accurate weighting system⁵⁹.

3.5. Conduct a Pilot

SPM should be implemented gradually, starting with a few small successes or failures to recover from. It's an iterative, continuous process, and not all surveys, metrics, and vendors should be in place from the first day. The pilot serves as a microcosm of the entire project. It should involve testing all aspects, including data collection methods, new KPIs, scorecards, and supplier communications. The project team should identify any imperfections and test new or untested internal software features. A clear start and finish should be established, and the pilot's scope can be as small as distributing a single scorecard or survey to five suppliers. The goal is to improve the entire process⁶¹.

Selecting pilot suppliers is a crucial step. Selecting a reasonable yet sufficient number will allow you to test the method and the tools. It also allows for training the final users. Training may include new processes, reporting, software, site visits, performance feedback, and supplier development⁶².

After a designated period of pilot deployment, review the pilot against original goals and critical success factors to identify areas for improvement. Feedback from all stakeholders, including suppliers, should be collected using a pilot feedback questionnaire. Listen to the feedback and use it to improve the process, even if it may not be immediately applicable or impractical⁶³.

⁵⁹ Vinogradova I, Podvezko V, Zavadskas EK. Op.cit. P2.

⁶⁰ Odu GO. Op.cit. P1451.

⁶¹ Gordon SR. Op.cit. P51.

⁶² Gordon SR. Ibid. P51 - 53.

⁶³ Gordon SR. Ibid. P54.

3.6. Deploy the system

One of the biggest difficulties in assessment systems is deployment, which should have been defined and refined through the pilot. Effective communication is crucial, both internally and externally. Suppliers must understand the implications of the evaluation process on their status and the methods their customers plan to use for feedback. Internal stakeholders must understand their roles and responsibilities, and the impact of the new process on them. Adoption planning, tracking, and follow-up are essential. Inertia and resistance to change can lead to failure in initiatives requiring organizational change. For instance, soliciting internal stakeholder feedback on suppliers requires a clear understanding of the process and expectation. Obtaining support from stakeholders is essential for the new process⁶⁴.

3.7. Give performance feedback

To achieve consistent results in evaluating supplier performance, a framework and process for communication and feedback about performance is necessary. Performance feedback should be a two-way flow between customer and supplier considering that numerous problems with supplier performance might be caused by consumers. This ensures continuous improvement and avoids customers dropping the ball without dialogue^{65 66}.

3.7.1. Formal Performance Feedback

3.7.1.1. KPI and scorecard distribution

Suppliers should be able to view their scorecard results regularly, with key or critical suppliers seeing their metrics at least monthly. A supplier portal or electronic access to scorecards can help share metrics. If a company doesn't have this capability, scorecards can be sent electronically via email. It's crucial to share the results regularly, as some companies spend more effort generating data than sharing it. Table 2 explains why some companies aren't sharing their scorecards with suppliers and suggests possible solutions⁶⁷.

⁶⁴ Gordon SR. Op.cit. P55.

⁶⁵ Gordon S. Op.cit. P24.

⁶⁶ Gordon SR. Op.cit. P161.

⁶⁷ Gordon SR. Ibid. P162 - 163.

Table I-4: Why companies don't share scorecards with suppliers

Issue	Possible Action
Concern that the data on the scorecards are not accurate or defensible	Review data sources. Develop means to cleanse data.
Unsure whether the metrics on the scorecards are really relevant	Review metrics in relation to performance expectations and goals.
Too many supplier scorecards. The customer is concerned that there is insufficient time or resources to speak with supplier about scorecards.	<ul style="list-style-type: none"> - Review if the right suppliers are being measured or if too many are being measured. - Systematize the feedback process.
Too many metrics on the scorecards and not enough meaningful ones	Look at reducing the number of metrics to the most relevant or important ones.
No policies or actions developed for using scorecard results, so sharing seems futile	<ul style="list-style-type: none"> - Develop baselines, goals, and actions - Share results even before actions are developed, but pursue a better process.
Unclear about how to use the scorecards	<ul style="list-style-type: none"> - Rethink metrics. - Training

Source: Gordon SR. Supplier evaluation and performance excellence: a guide to meaningful metrics and successful results. J. Ross publishing; United States 2008. P163.

3.7.1.2. Supplier performance or business review meetings

Formal performance or business review meetings are held for key, strategic, and critical suppliers. These meetings differ from routine performance discussions and may be expanded to include partners, product development, or alliance suppliers. They cover more topics, align current business priorities, discuss technology trends, share new opportunities, and discuss future trends, needs, goals, and overall business strategies⁶⁸.

3.7.2. Informal performance feedback

Informal feedback can be a valuable tool for valuing and recognizing a supplier's efforts to improve. While not all feedback is positive, it is essential to address potential issues and focus on preventing recurring issues. Many supplier problems stem from the customer, and offering to remove obstacles to help them is a constructive approach. The expectation is that the supplier will

⁶⁸ Gordon SR. Op.cit. P163.

solve their problem, but sometimes circumstances may prevent a supplier from meeting the metric. By addressing these issues, the relationship between the supplier and the company can be strengthened, ultimately leading to better performance⁶⁹.

3.8. Produce Results

Understanding, sharing, and ultimately enhancing supplier performance are the goals of supplier performance measurement. The suppliers can proceed to enhance their performance if all the necessary elements of an effective supplier assessment system are in place and the customer and his supplier are receiving pertinent, actionable results. Improvements in supplier performance have the potential to have a financial and competitive influence on the customer, and supplier development can result from supplier performance monitoring⁷⁰.

One illustration would be lead times for purchased parts, which frequently account for a sizable amount of total lead times. More agility on the side of suppliers can result in consumers responding to end users more quickly. Costs are eliminated from the supply chain when time is eliminated⁷¹.

After assessments, companies and suppliers must collaborate to create action plans. To complete the circle and get the most out of the supplier performance measurement process, they should then monitor performance in relation to these plans⁷².

Conclusion

In conclusion, this chapter has explored several key ideas central to supply chain management. The first chapter began with an introduction to supply chain management, emphasizing the crucial role suppliers play within the supply chain. The second section focused on supplier management. It started with supplier relationship management, highlighting its importance and defining its key concepts. Following this, the discussion moved to supplier value creation, demonstrating how suppliers contribute to value and its impact on the company. This section also covered the significance of supplier performance management, including its importance and fundamental information.

⁶⁹ Gordon SR. Op.cit. P166 – 167.

⁷⁰ Gordon S. Op.cit. P24.

⁷¹ Gordon S. Ibid.

⁷² Gordon S. Ibid.

The third section delved into the specifics of creating a supplier performance scorecard. It began by explaining how to align performance goals and develop information sources. This was followed by identifying key performance indicators (KPIs), calculation methods, and criteria weights. The process continued with conducting a pilot, deploying the system, providing performance feedback, and producing results.

Overall, this chapter provides a comprehensive overview of supply chain management, supplier management, and the development and implementation of a supplier performance scorecard, highlighting their interconnectedness and importance in the supply chain.

**CHAPTER TWO:
THE PREVIOUS SUPPLIER
PERFORMANCE
EVALUATION SYSTEM OF
THE COMPANY**

CHAPTER II: The previous supplier performance evaluation system of the company

Introduction

This chapter delves into the details of the case study. In the first section, we will present the company involved in the case study, outlining its objectives, business areas, certifications, and production units, and concluding with the company's value chain. After that and in the second section, we will discuss the research methods, evaluate the current supplier performance evaluation system.

SECTION 1: Presentation of Bomare Company

Bomare Company is a young and dynamic company. It was founded in 2001 by its founder and current CEO Mr. Ali BOUMEDIENE, with the current capital of DZD 1.023.000.000. The mission of Bomare Company is to develop the electronic industry sector in Algeria, develop its positions in Europe and expand its activity to other European and African countries. Customer satisfaction is a strategic obligation for Bomare Company.

Since its creation, Bomare Company has always been very active in the search for opportunities that enable it to preserve its comfortable position on the electronic chain at the national level, and to maintain all its export performance.

Table II-1: Presentation of Bomare Company

Company name	BOMARE COMPANY
The trademark	STREAM
Legal form	SARL
Sector of activity	The electronic sector
Capital	1 023 000 000,00 DA
Sales	110 Million \$ (2023)
foundation date	04 February 2001
Founder	Mr. Ali BOUMEDIENE
Employees	+620

Headquarter	MOHAMED OUIDIR AMELLAL STREET N26, EL BIAR, Algiers 16030
Partners	LG, KTC, ALSTOM
Production unit	Ilot 21, Section 02, Ouled Chbel, Birtouta
Factory area	15 000m ²
Export	Europe, Africa
Certification	CE, RoHS, ISO 9001 version 2015, EUR 1
Contact	e-mail : info@bomarecompany.com
	Fax : +213 (0) 23 05 06 02
	Phone Number : +213 (0) 23 05 06 19
	Website : https://bomarecompany.com/

Source: Data from BOMARE COMPANY

1.1. The objectives of Bomare Company

The company's objectives include:

- Customer satisfaction and loyalty, which is the company's main objective;
- Increase market share by attracting new customers;
- Maintain and develop the Stream brand presence nationally and internationally;
- Offer attractive offers corresponding to market requirements and needs;
- Develop professionalism and internal communication by involving staff in business development;
- Developing technology in Algeria by encouraging R&D;
- Develop the product range;
- Creation and innovation.

1.2. Business areas

In addition to the production of TVs, BOMARE COMPANY is active in several areas such as:

- Electronics manufacturing services (EMS);
- Manufacturer of original equipment (OEM);

- Own Brand Manufacturing;
- Industrial subcontractors;
- Industrial electronic cards (Engineering and Manufacturing);
- After-sales services;
- Display and camera solutions for B2B (Hardware and Software).

1.3. Certifications

BOMARE COMPAGNY has the following certifications:

CE: Product complies with EU standards for health, safety, and environmental protection.

RoHS: Restriction of the use of certain hazardous substances.

ISO 9001 Version 2015: Quality management.

EUR.1: Goods movement certificate

The company holds RoHS compliance, CE certification, and ISO 9001:2015 certification, ensuring its products meet high standards for safety, quality, and environmental protection. These certifications reflect the company's commitment to excellence, regulatory compliance, and continuous improvement.

1.4. Production units

The production site located in Birtouta (Algiers) is divided between two production units.

1.4.1. Electronic Board Production Unit (EBPU)

Equipped with new equipment at the cutting edge of technology, Bomare Company is now able to produce all types of electronic cards in different fields: broadcasting, telecommunications, medical equipment, mobile phones, computers...etc. This unit consists of automatic equipment from global manufacturers, all leading in their respective fields such as, the American UNIVERSAL INSTRUMENTS, the European DEK and the Japanese SAKI.

The EBPU consists of different production lines:

- 02 high speed SMT lines composed of "UNIVERSAL INSTRUMENTS" insertion machines and "SAKI" professional 3D quality control equipment;
- Two functional test lines;

- A manual insertion line with wave welding process.

1.4.2. TV Assembly Unit

This unit is the most important structure of the company, it is where the TV are assembled, and controlled. There are two production lines, the major difference between the two is that one is larger and newer, but they serve the same purpose, there are in each line posts, where technicians are posted with specifications document and each has one or more tasks depending on the difficulty.

The TV panels are placed on a conveyer belt and each technician follows the instructions of his specifications document. After each work station there is a control station to check that there are no defects on the parts placed by the previous technicians.

The tasks of the technicians include place some screws, place the plastic covers, the control stations ensure that everything works correctly (that the ports work well, that the pixels have no defects, that the speakers work and that everything is well connected).

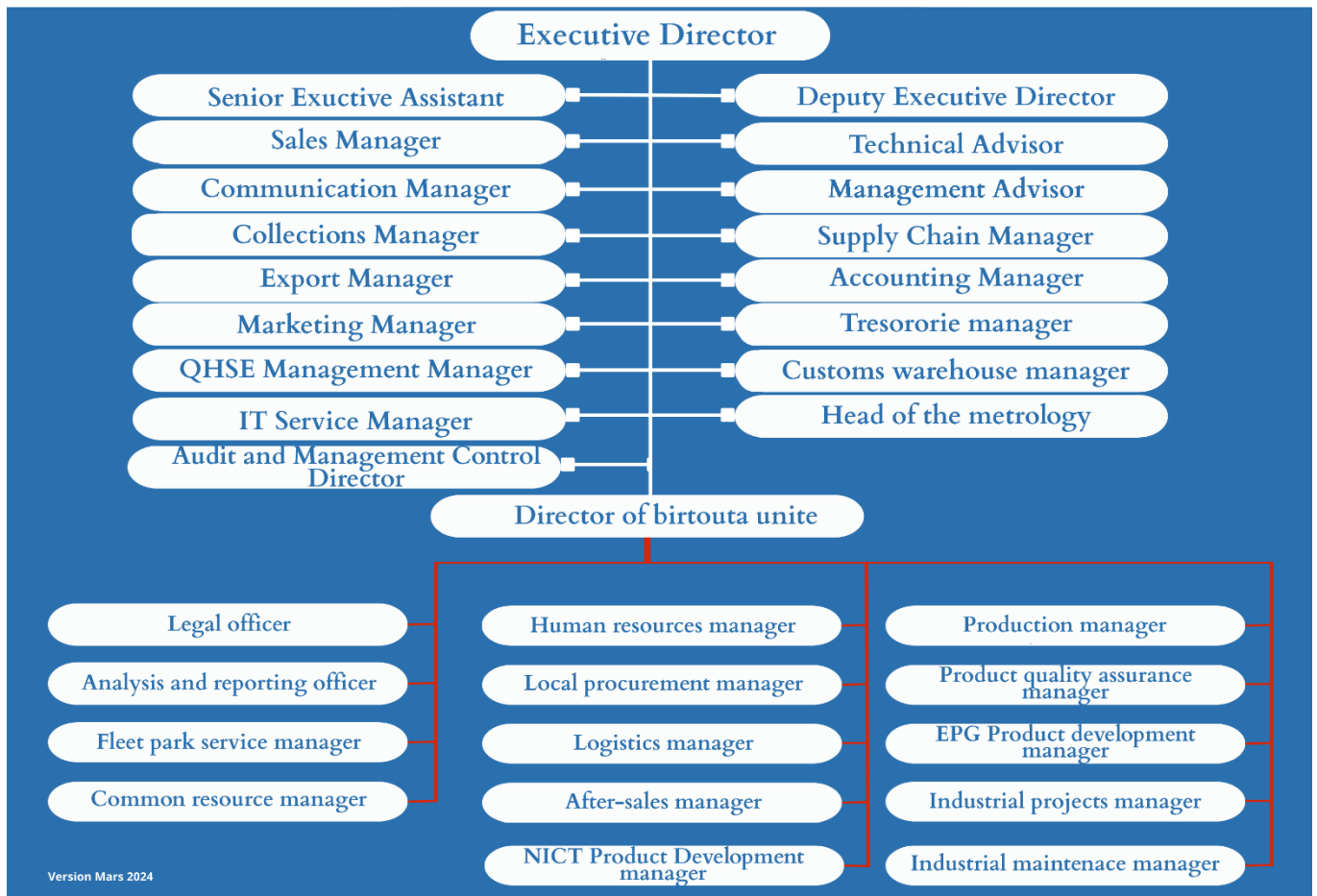
A TV stays in a station for about 30 seconds, the time depends on each type of TV and this time is chosen by the engineers who create the specifications. When the assembly of a TV is completed, it is weighed to be compared with other televisions to ensure that all the components are inside, then it is put in a carton with its remote control and the carton is closed and wrapped in a plastic bag with other TV.

This assembly unit can produce more than 2000 TVs per day, the number depends on the demand and the TV model, some being easier to assemble than others.

1.5. Bomare Company structure

The company has an organization adapted to its functional activities, with a general management and an industrial management (Birtouta) based on operational structures, see Figure II.3.

Figure II-1: Organizational chart of Bomare Company



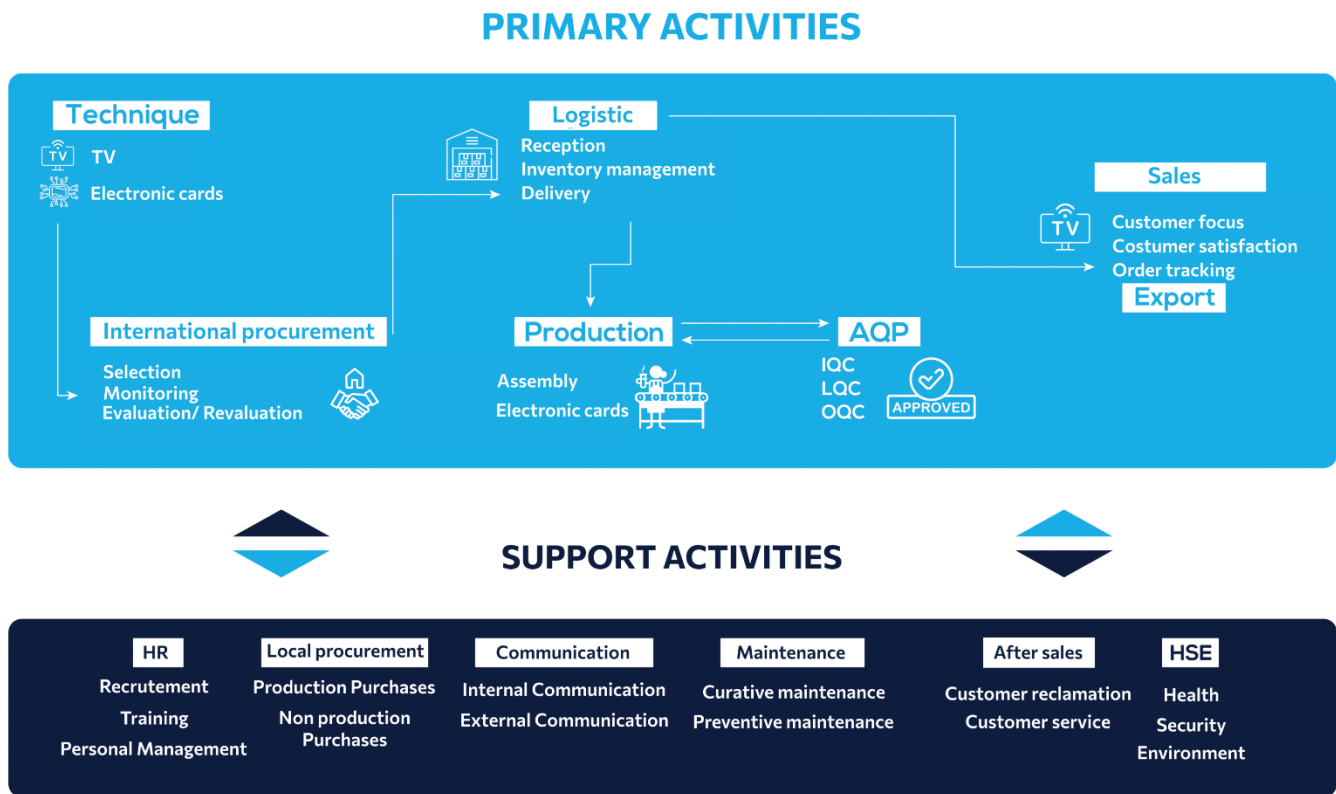
Source: Internal document of QHSE department.

This illustration shows that the production unit and top management make up the two primary components of the organizational chart, which ensures operational effectiveness and governance.

1.6. Value chain of Bomare Company

The value chain describes the different stages allowing an organization to generate value for its customers. Below we will present the value chain of Bomare Company. It describes the different stages that determine the company's ability to obtain a competitive advantage by offering an offer valued by its customers.

Figure II-2: Value chain of Bomare Company



Source: Based on Internal document of QHSE department.

This illustration highlights that Bomare Company prioritizes technological expertise and in-depth Know-How in its activities, and also gives a significant importance to the final customer.

1.6.1. Primary activities

1.6.1.1. Technique

This is where there is the development of concepts and ideas of future products of the company, engineers are looking for it to be the current trends to include them in TV as the new option in their new TV that sends directly to the Netflix app, and they are also looking to give the best experience to users.

1.6.1.2. International procurement

The main role of this activity is the selection of the best suppliers of advanced electronic components, the monitoring and evaluation of their performance, as well as ensuring the availability of components for production units in the right quantities, quality and cost.

1.6.1.3. Logistic

This activity includes upstream logistics, whose objective is to receive the components and store them in the Birtouta warehouse, as well as downstream logistic, which consists of transporting the finished products from the production unit to the Blida warehouse for storage, and then ensuring delivery to Bomare Company customers.

1.6.1.4. Production

The organization of BOMARE COMPANY is structured around its fundamental production mission by seeking to meet large-scale objectives in terms of quantities produced, quality, cost and flexibility. The production function must enable the company to meet the demand addressed to it, which presupposes that the company adjusts its production capacity to the volume of sales. In its factory, BOMARE COMPANY has two production units. Assembly unit, electronic card production unit.

1.6.1.5. AQP

This department is located in the assembly unit, and ensures everything that enters as a product, and makes sure that all the processes are properly applied and also that the quality of the final product is impeccable, this department consists of 3 parts:

d. IQC

It is the quality control engineers who ensure the quality of the raw material that enters the factory, they ensure their quantitative quality and also the reference of the products, we can cite as examples the TV panel, the dimensions of the plastic that covered the TVs, as well as the cartons and other packaging.

e. LQC

It is the technicians who are called control agents, they are placed in the production unit, after each workstation there is a control or test station, examples: Test of the screen (to see if the pixels work), or also the test of the ports and a shock test.

f. OQC

After assembly, some units of the finished product are randomly selected from the lot to be tested according to the standards imposed from the packaging accessories, to the TV by checking

the display, sound etc... , In case of defect a product interval will be reported and revised before being handed over.

1.6.1.6. Sales and Export

The main role of this activity is to sell the products. It has several objectives, such as listening to customers to understand their needs, analyzing market trends, customer satisfaction, as well as tracking orders to ensure optimal delivery. The other axis, export, aims to meet the needs of customers abroad, in countries such as Portugal, Spain, Germany and Gabon.

1.6.2. Support activities

1.6.2.1. Industrial maintenance

This department takes care of the maintenance of all the machinery of the plant in order to remedy the failures which can be very expensive, the maintenance includes curative maintenance and the preventive maintenance, This activity ensures the proper feeding and also the proper functioning of all machines in the SMT chain as well as the assembly line.

1.6.2.2. Local procurement

The role of this activity is to meet all the needs of the company. It has two main axes. The first axis is production. This department ensures the availability of products and negotiates with suppliers to obtain products made in Algeria, such as packaging, manuals, and everything that can be produced locally. The second area concerns miscellaneous purchases. In this context, the company purchases various products necessary for its operation.

1.6.2.3. Communication

This activity encompasses both external and internal communication. External communication focuses on marketing, aiming to promote products and strengthen the brand image with customers and partners. At the same time, internal communication is essential to ensure a good flow of information between employees, foster collaboration and maintain a harmonious and productive work environment.

1.6.2.4. Human resources

Le rôle de cette activité est de développer le capital humain de l'entreprise par le recrutement de nouveaux salariés, l'amélioration des compétences du personnel grâce à des formations, et l'augmentation de la motivation ainsi que la qualité de l'environnement de travail.

1.6.2.5. After sales

The role of the after-sales service is to manage the goods and orders after the purchase by the customer, in case of errors or questions. It also includes the repair and maintenance of products, the exchange of defective items and the management of returns, thus ensuring customer satisfaction and loyalty.

1.6.2.6. HSE

It focuses on ensuring the health, safety, and environmental well-being of employees and the workplace. It involves identifying potential hazards, assessing risks, and implementing measures to prevent accidents and injuries.

1.7. Local procurements department

This department has the role of organizing, planning and following the procurement schedule to achieve the defined objectives. It contributes to the improvement of local purchasing processes in order to meet internal and external requirements in terms of quality and conformity of locally produced supplies. Also the process of local procurement contributes to the realization of a product in accordance with customer and interested parties requirements.

1.7.1. Roles in the local procurements structure

The main objective of this department is to satisfy the needs of the internal customers, especially in terms of quality, quantity, and time.

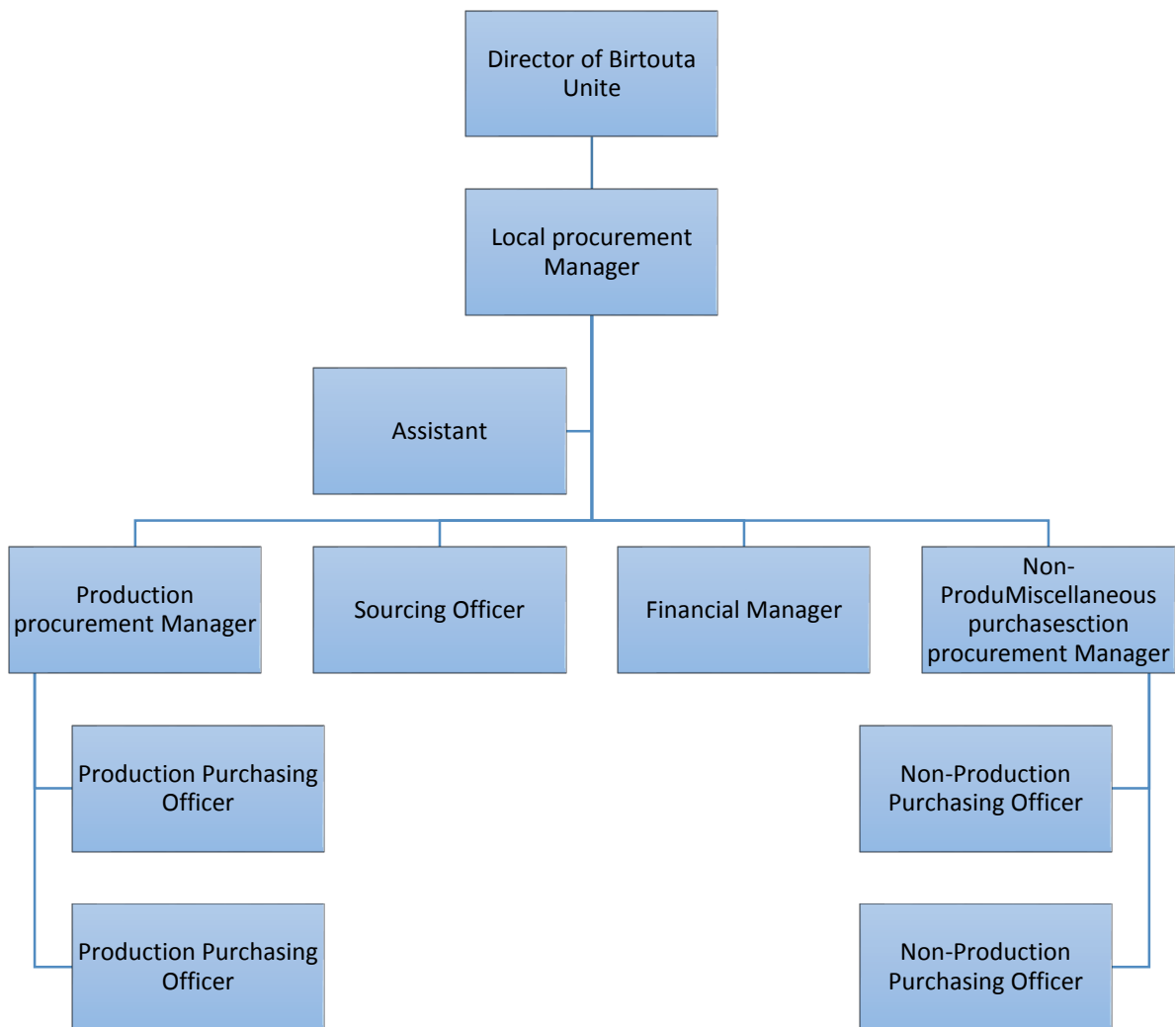
The roles of this department include:

- Planning procurement non production and production needs;
- Prospecting for products and suppliers;
- Negotiation of purchase conditions (Price, payment terms);
- Selection and qualification of suppliers;

- Ordering of goods and services;
- Monitoring and evaluation of supplier performance;
- Tracking payments and consolidations of purchasing costs;
- Plan deliveries in collaboration with logistics;
- Ensure communications with other company structures.

1.7.2. Local procurement department structure

Figure II-3: Local procurements department chart



Source: Local Procurement Department Management Manual.

This illustration shows that the structure of this department is well adapted to its main roles. We have two sub-departments responsible for planning procurement, non-production and production needs, placing and tracking orders, and planning deliveries. Another sub-department is

allocated to prospecting for products and suppliers, and the last one is for tracking payments and consolidating purchasing costs.

1.7.3. Goals of local procurements department

The local procurement department's strategies are centered around four main goals:

- Satisfying production client needs: Ensuring product availability and quality to prevent production stoppages, which can result in significant cost losses.
- Guaranteeing product quality and variety: Maintaining high standards and diverse sources of supply to ensure the final product's quality and customer satisfaction. Poor-quality materials can halt production, causing delays and inefficiencies.
- Minimizing costs: Reducing procurement costs to improve overall financial efficiency.
- Integrating local products: Enhancing the use of locally sourced products in the final production process.

1.7.4. Key clients of the local procurement department

- Production department: The primary and most important client, relying heavily on timely and quality supplies to keep production running.
- IT department: Supports the technological needs of the entire company, ensuring efficient operations across all departments.

Industrial maintenance: Supports production by addressing any operational issues, especially machine-related problems, ensuring smooth and continuous production.

SECTION 2: Research methodology and evaluating the previous evaluation system

2.1. Research methodology

In this part, we will outline the reasons that led to the selection of this topic, following this, we will present the specific objectives of the thesis, detailing the key goals and the expected outcomes, and finally, we will describe the tools and methodologies employed for data collection, providing an overview of the techniques and instruments used to gather relevant and accurate information for the study.

2.1.1. Choice of research topic

The choice of this topic was determined after a discussion with the local procurement department manager in Bomare Company and my supervisor. The choice was based on the following reasons:

- The important role of supplier's performance in the customer's business performance;
- The need for a new and more effective supplier evaluation system in the local procurements department of Bomare Company to help in the robust supplier performance evaluation;
- The local procurements department faced a non-conformity issue regarding supplier evaluation and monitoring in its latest quality management audit for ISO 9001:2015 certification.
- The aim to study how supplier assessment systems help in the identification of problems and opportunities in supplier performance.

For these reasons, we have decided to take on the challenge of assisting the company in enhancing its supplier evaluation system. By doing so, we aim to create added value both in the professional realm, by improving the efficiency and effectiveness of the procurement process, and in the academic field, by contributing to the body of knowledge surrounding supplier performance evaluation systems. This endeavor not only aligns with my personal and professional goals but also presents an opportunity to make a tangible impact on the operational excellence of Bomare Company while advancing research and understanding in the field of procurement and supply chain management.

2.1.2. The research objectives

The research is guided by several fundamental objectives that are crucial in addressing the initial problem. Key objectives of the study include:

- Evaluating the effectiveness of the previous supplier performance evaluation system.
- Designing a new evaluation system tailored to the specific needs and capabilities of the local procurement department.
- Implementing the new system within the department.
- Assessing the impact of the newly implemented system in identifying supplier performance issues.
- Identifying the role of the new system in supplier ranking and benchmarking.
- Examining the significance of Key Performance Indicators (KPIs) in decision-making processes related to supplier relationships.

2.1.3. Data collection methods

When conducting research, there are two commonly accepted types of analysis for gathering trustworthy data: qualitative analysis and quantitative analysis. It was crucial to use these two complimentary methodologies in a mixed strategy in this investigation.

2.1.3.1. Qualitative tools

We adopted a qualitative approach to gather information for the most of the study, with a focus on using semi-directive interviews as the primary tool for data collection from the company.

This method is well-suited for this case due to its usefulness for gaining a deeper understanding of the interviewee's context and experiences, interviews allow for in-depth and rich data collection. They provide an opportunity to gather detailed information and insights that may not be captured through other data collection methods.

The semi-directive interviews were conducted in French, reflecting the use of French in the professional world of the country. The interview guide was subsequently translated into English and can be found in Appendices 1 to 6.

The semi directive interviews are flexibility in the questioning approach. The questions can be adapted based on the interviewee's responses, enabling a deeper exploration of topics.

During the first phase, aimed to evaluate the previous supplier performance evaluation system employed by the company, we conducted semi-directive interviews to understand its efficiency, the usage practices of the local procurements department, and the challenges they encounter. This phase also identified the areas requiring improvement.

In the second phase, which includes the design and implementation of a new system, we expanded the semi-directive interviews to include a diverse group of stakeholders, such as personnel from the IT and quality management departments. This broader scope was crucial to gather detailed information on system capabilities and quality management requirements necessary for the new design.

Finally, in the third phase, we continued using semi-directive interviews to assess the newly implemented system, ensuring that comprehensive feedback was obtained to evaluate its effectiveness and identify any further improvements needed.

2.1.3.2. Quantitative tools

We also used quantitative approaches to collect data, although not as extensively as the qualitative approach for the reasons mentioned earlier. However, when it came to the supplier evaluation process, surveys were the most suitable data collection method to gather feedback.

Surveys are quick and require less time compared to other research methods. They are an efficient way to gather information from multiple sources, or stakeholders in this case, especially when integrated with programs and applications they already use, allowing for automation.

The surveys are the most appropriate tool because they provide well-structured data, and their biggest advantage is that they yield measurable data that is relatively easy to analyze.

2.2. The evaluation of the previous supplier performance evaluation system

In this evaluation, we will assess the previous supplier performance evaluation system at Bomare Company. The objective is to identify its problems and weaknesses to better understand the areas that need improvement. To achieve this, we conducted a semi directive interview with the department manager detailed in Appendix 1 and leveraged my previous knowledge to pinpoint issues within the system.

2.2.1. Previous supplier performance evaluation system presentation

2.2.1.1. The description of the system

First, in presenting the previous evaluation system at Bomare Company, we'll introduce a table utilized by the company, detailing criteria and notes, along with the relevant departments involved in the evaluation.

However, before delving into that, it's important to outline the structure preceding the evaluation table. This structure includes sections dedicated to organizing all supplier information, such as their name, their code in the internal system, address, contact details, and the evaluation period, which corresponds to either the first or second semester of the year.

Now, we'll proceed to present this evaluation system within the table. For a comprehensive view, the entire evaluation document can be found in Appendix 7.

Table II-2: Previous supplier performance evaluation system at Bomare Company

Department criteria	Local procurement	Department 1	Department 2	Department 3	Department N
Product quality	N/A				
Meeting deadlines		N/A	N/A	N/A	N/A
Product availability		N/A	N/A	N/A	N/A
Adaptation to specific orders		N/A	N/A	N/A	N/A
Relational / complaint handling		N/A	N/A	N/A	N/A
payment method		N/A	N/A	N/A	N/A
warranty		N/A	N/A	N/A	N/A
Total sum					
NOTE /07				

Source: Supplier performance evaluation sheet of Bomare Company Locale procurement department.

This table, have illustrated the assessment system used by the company, which utilizes seven criteria to evaluate our suppliers. These criteria include product quality which assesses the quality

of the products delivered by the supplier, while deadline meeting evaluates whether the supplier meets delivery deadlines. Product availability checks if the products are consistently available when requested by the company. Adaptation to specific orders measures the supplier's ability to handle special or urgent orders. Relational and complaints handling assess the supplier's attitude and effectiveness in managing complaints. Payment methods review the payment conditions and methods provided by the supplier, and warranty evaluates the duration of the warranty period offered.

It is important to note that for the product quality criterion, the local department does not have the right to assess the supplier. This assessment is the responsibility of the department that requested the product. The other six criteria are assessed by the local department.

2.2.1.2. Data collection

The process starts with the local procurement department, which is responsible for evaluating suppliers.

a. Selection of suppliers

The local procurement personnel select all the suppliers that the company has worked with during the evaluation period.

b. Categorization by department

Suppliers are categorized by the department that requested their products. Each department receives a list of suppliers whose product quality they need to assess.

c. Feedback collection

The departments provide their feedback on the product quality of the suppliers. This feedback is by attribute ratings. The rating scale ranges from 0 (very unsatisfactory) to 1 (very satisfactory), with intermediary points at 0.25 and 0.75.

d. Submission to procurements department

The completed assessments are sent back to the local procurements department.

2.2.1.3. Use of data to calculate supplier assessment

Once the feedback is collected, the local procurements department assesses the suppliers based on six additional criteria.

a. Calculation of final score

The local procurements personnel sum the notes for each criterion to determine the supplier's final score, because each criterion has an equal weight of one.

b. Action based on scores

- If the quality note is below 0.25, the proposition is to eliminate the supplier.
- If the overall performance score is below 2, the proposition is to eliminate the supplier.
- If the overall performance score is between 2 and 4, the proposition is to work with the supplier to improve quality.
- If the overall performance score is above 4, the proposition is that the supplier meets the company's expectations.

2.2.1.4. Example about using the previous supplier performance evaluation system

We will now illustrate an example of supplier performance evaluation using the previous system. This example is based on information gathered through a semi-structured interview with the local procurement department regarding their use of the previous evaluation system.

Figure II-4: previous supplier performance evaluation system example

Supplier Code	FLS00020	Supplier	SPA General Emballage					
Supplier Designation	Box packaging	Address	Industrial zone Tahraht Akbou, Wilaya of Bejaia, 06200 Algeria					
Tel	*****	Contact person	*****					
Period concerned	01st semester							

Department	Local procurement	Maintenance	Quality Assurance	Communication	Technical	HSE	Logistics	Commercial
Product quality	N/A	N/A	0.75	N/A	N/A	N/A	N/A	N/A
Meeting deadlines	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Product availability	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Adaptation to specific orders	0.75	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Relational / complaint handling	0.75	N/A	N/A	N/A	N/A	N/A	N/A	N/A
payment method	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
warranty	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total sum	6.25	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NOTE	6.25 /07							

NB:

- 1- The score of ≤ 0.25 obtained on the quality of the product, will be considered as elimination.
- 2- Departments not involved in a supplier evaluation will be identified by "N.A": Not Applicable.

Supplier weighting:

(01) Satisfactory results (meets our expectations)
(0.75) Acceptable Results (Still Improving)
(0.25) Unsatisfactory results (significant deficiencies)
(00) Unacceptable results (too many failures)

Note: score obtained:

De 00 To 02: supplier to be eliminated
> 02 to 04: requires ongoing monitoring and support
> 04 to 07: meets our expectations and can improve continuously

Source: Elaborated by us.

This example highlights several issues with the performance evaluation system. The rating scale is uniform, applying the same scale to all criteria. Additionally, all criteria are weighted equally, which may not accurately reflect their relative importance. By addressing these problems, the performance evaluation system can become more accurate and effective.

2.2.2. Previous supplier performance evaluation system problems

Drawing upon a combination of our background knowledge and theoretical expertise, as well as insights gathered from the interview with the local procurements department manager, we have identified several key problems in the evaluation of supplier performance system within the company.

2.2.2.1. Time consumption

The evaluation process demands considerable time due to delays from interdepartmental coordination and waiting for evaluations. These delays limit efficiency and responsiveness.

2.2.2.2. Manual processes

The reliance on manual methods for evaluation tasks introduces inefficiencies and consumes valuable resources. Data entry and processing, often conducted through paper-based documentation, require labor-intensive efforts and increase the likelihood of errors.

2.2.2.3. Inability to use the data

Evaluation data, primarily stored in paper-based formats due to manual processes, presents challenges in terms of usability. Converting this data into a digital format compatible with analytical tools requires significant time and effort. Moreover, the manual nature of data entry and conversion introduces the potential for errors and inconsistencies.

2.2.2.4. Invalid data

Prolonged intervals between product purchases and supplier evaluations result in outdated and invalid data. Subjective assessments, influenced by personal biases and departmental perspectives, further compromise the integrity of the data, hindering its reliability for decision-making purposes.

2.2.2.5. Uniform rating scale

The uniform rating scale used for evaluating suppliers lacks flexibility and fails to accommodate the diverse range of evaluation criteria applicable to different suppliers and contexts. This one-size-fits-all approach oversimplifies the evaluation process.

2.2.2.6. Uniform weighting

Assigning equal weight to all evaluation criteria disregards the varying importance of different factors in determining supplier performance. Some criteria may have a more significant impact on overall performance or align more closely with organizational objectives, yet they are treated equally under the current weighting system, leading to imbalanced and potentially misleading assessments.

2.2.2.7. Misalignment with business objectives

The criteria used for evaluating supplier performance may not be directly aligned with the strategic goals and priorities of the organization. As a result, evaluations may fail to capture aspects of supplier performance that are critical to achieving business objectives.

2.2.2.8. Infrequent evaluation

The biannual evaluation schedule adopted by the company results in evaluations being conducted only twice a year, leading to a narrow focus on recent performance trends and overlooking broader patterns of supplier performance. This infrequency may prevent timely identification of emerging issues or trends and hinder proactive supplier management efforts aimed at improving overall performance and fostering strategic supplier relationships.

2.2.3. Improvement propositions

Enhancing the supplier performance evaluation system is critical for ensuring efficiency, accuracy, and alignment with business objectives. Several key improvements can be implemented to optimize this process, making it more effective and resource-efficient.

2.2.3.1. Automation

Automation will significantly reduce the time and labor required to collect, analyze, and report data, allowing for more timely and resource-efficient evaluations. This shift will enable the system to handle large volumes of data with minimal human intervention, thus freeing up personnel to focus on more strategic tasks.

2.2.3.2. Regular data collection

Collecting data regularly, rather than semi-annually, ensures up-to-date and accurate insights into supplier performance, allowing for timely identification and response to trends and issues.

2.2.3.3. Adapted rating scales

Customizing rating scales for each criterion ensures precise measurement, reflecting the specific characteristics and importance of each performance aspect.

2.2.3.4. Appropriate weighting of criteria

Assigning proper weights to criteria based on their importance ensures that evaluations accurately reflect business priorities, leading to better decision-making.

2.2.3.5. Alignment with business objectives

Ensuring that the evaluation process aligns with the overall business objectives and goals supports the company's strategic aims. This alignment ensures that supplier performance assessments drive business success and contribute positively to the company's strategy.

Conclusion

This chapter provided an overview of the company, its business area, certifications, and value chain, followed by an analysis of the local procurement department's structure. Additionally, we explored the research methodology and critically evaluated the previous supplier performance evaluation systems, identifying key issues and highlighting areas for improvement

CHAPTER THREE:

DESIGN AND

IMPLEMENTATION OF

NEW SUPPLIER

PERFORMANCE

SCORECARDS

CHAPTER III: Design and implementation of new supplier performance scorecards

Introduction

The development and deployment of the new supplier performance scorecards were guided by a structured process, as outlined in the first chapter. The information for creating these scorecards was gathered through semi-directive interviews with key stakeholders, including the local procurements department manager, the internal system officer from the IT department, and the quality management officer from the quality management department as shown in Appendix 1 to Appendix 6. Additionally, our own observations within the company played a crucial role in shaping these tools.

It is essential to understand that the local procurements department handles two main types of purchases—production and non-production. Given this distinction, we have developed two tailored scorecards. The first is designed for production suppliers, ensuring their alignment with our manufacturing needs. The second scorecard addresses non-production suppliers, encompassing service providers and other non-manufacturing-related vendors.

SECTION 1: The processes of design and implementation of new supplier performance scorecards

1.1. Align performance goals

Based on the strategies and insights from interviews, we identified key categories crucial for the company's success:

- Product quality: Ensuring high standards in materials and supplies.
- Logistics and delivery: Guaranteeing timely and reliable delivery of products.

Suppliers are evaluated and expected to meet high performance standards in the key areas of quality and delivery, aligning with the main objectives of the local procurement department. High scores in these areas are critical for maintaining efficient and uninterrupted production.

1.2. Information collection method and sources

For the supplier performance evaluation process, we have decided to automate the process for various reasons previously outlined. We have chosen to use the internal system, SAP Business One, as the hub for this automation. SAP Business One is a comprehensive solution designed for small and medium-sized companies.

1.2.1. Capacities and limitations

The following documents and processes related to the local procurements department's workflow are available in SAP Business One:

- The request for quote
- The purchase request
- The purchase order
- Reception ticket: Limited only to production goods
- Invoice

These are the documents and processes currently integrated into the internal system.

This version of SAP Business One available within the company has several limitations:

1.2.1.1. Lack of integration

Not all company processes are integrated into the internal system. Many processes occur without any traceability or data being captured within SAP Business One. Specifically, only certain procurement processes have traceability in the internal system.

1.2.1.2. System limitations

The internal system does not allow the addition of new documents or database tables, making it impossible to create a new model specifically for supplier performance evaluation. Consequently, we had to use existing documents for data gathering.

1.2.1.3. Access Restrictions

Not all departments have access to all documents, and access varies by document type:

- The purchase request: This document is closed upon validation, preventing any further changes.

- The purchase order: Modification access is restricted to the local procurement department.
- Reception ticket: Access is provided to the logistics, IQC, and local procurement departments.
- Invoice: Access is granted only to the accounting department.

1.2.1.4. Absence of Evaluation Model

The current version of SAP Business One does not include a supplier performance evaluation model.

1.2.2. Information source choice

Based on the limitations described and considering the local procurements department's method of work, which distinguishes between production and non-production purchases, we have made the following choices:

1.2.2.1. Production purchases

We opted to create survey within the reception ticket document. This survey will be shown to the stakeholders to evaluate the performance of suppliers after each reception of the orders.

1.2.2.2. Non-production purchases

Survey is created within the purchase order document. This survey will also be presented to stakeholders to evaluate the performance of suppliers after the purchase and consumption of a service.

This approach was selected to align with the existing workflows and to ensure that data collection for supplier performance evaluation is feasible within the constraints of the current internal system.

1.3. Identify key performance measures

As previously mentioned, we've developed two scorecards tailored to the structure and workflow of the local procurements department. The first one assesses production suppliers, while the second focuses on non-production suppliers. It's important to highlight that we drew inspiration from the company's previous evaluation system when selecting the key performance indicators (KPIs).

1.3.1. Performance evaluation scorecard for production suppliers

The first scorecard, dedicated to evaluating the performance of production suppliers, includes a set of chosen metrics:

1.3.1.1. Quality

The first KPI in the Supplier Performance Evaluation Scorecard for production suppliers is Quality. Given its importance, we have divided it into two sub-KPIs. The data for these KPIs will be gathered from a question in the reception document survey. This question will be directed to the IQC department, requiring them to include the total number of non-conforming quantity in each delivery.

a. Quality conformity rate

This KPI measures the conformity rate of products received from suppliers. By using this KPI, we can determine the percentage of received products that meet the company's quality standards. Additionally, it can indicate the defect rate when viewed inversely.

The calculation formula:

$$\left(1 - \frac{\textit{The number of non - conforming quantity received in the period}}{\textit{The total quantity received in the period}}\right) * 100$$

b. Conformity frequency rate

This KPI highlights the percentage of deliveries without any confirmed quality issues, reflecting the total quality conformity. It helps the local procurements department understand how often a supplier meets quality standards without any issues.

The calculation formula:

$$\left(1 - \frac{\textit{The number of deliveries without quality issues in the period}}{\textit{The total number of deliveries in the period}}\right) * 100$$

To calculate the main score of this KPI, it's necessary to compute the average of the two sub-KPIs. This process consolidates the performance across quality conformity rate and quality frequency rate. By averaging these metrics, we achieve a comprehensive evaluation of supplier quality performance.

1.3.1.2. Delivery

The second KPI focuses on delivery performance, which is crucial as discussed previously. This KPI is segmented into three sub-KPIs:

a. On-time delivery rate

This metric calculates the percentage of deliveries that arrive on time, without any delays. Data to compute this KPI is gathered through a question embedded in the internal system, specifically within the reception ticket document. The question asks whether the delivery was made on time, with responses being 'yes' or 'no.' For computation purposes, 'yes' is assigned a value of 1 and 'no' a value of 0, and the average of all responses is calculated by the local procurement department multiply by 100.

b. Deliveries with the right quantity rate

This KPI assesses the percentage of deliveries that match the ordered quantity. To collect this data, a similar question is included in the reception ticket document within the internal system, it asks whether the delivery was made with the right quantity. Responses to this question are also 'yes' or 'no,' and they are provided by the local procurement department, and the average of all responses is calculated by the local procurement department multiply by 100.

c. Deliveries with the right quantity and on-time rate

This metric calculates the percentage of deliveries that meet both the time and quantity requirements. Its aim is to highlight the supplier's ability to consistently fulfill company expectations without any issues.

$$\left(\frac{\textit{The number of deliveries with the right quantity and on time in the period}}{\textit{The total number of deliveries in the period}} \right) * 100$$

To derive the overall score for this KPI, it's essential to compute the average of the three sub-KPIs mentioned earlier. This calculation consolidates the performance across on-time delivery, deliveries with the correct quantity, and deliveries meeting both quantity and timeliness standards.

1.3.1.3. Communication rate

The third key performance indicator (KPI) prioritizes communication quality, a critical aspect in evaluating supplier performance. Communication encompasses all interactions with the supplier, spanning from initial inquiries to order processing, receipt, and post-sale communication, data for this KPI is gathered from a question posed to the local procurement department, utilizing a response scale ranging from 1 to 5, where 1 signifies very bad, 2 for bad, 3 for medium, 4 for good, and 5 for excellent.

Calculating this KPI involves computing the average of all responses received from each reception in the period.

1.3.1.4. Reactivity rate

The fourth KPI we've identified is reactivity, which is crucial for measuring the supplier's responsiveness to unexpected orders or any unforeseen circumstances that may arise in the business relationship between the company and its suppliers. To assess this, we've opted for a similar approach as the previous KPI, using a scale from 1 to 5 to gather data about supplier reactivity.

Calculating the final result entails averaging all the responses obtained within a given period multiply by 100, providing insight into the overall level of supplier reactivity.

1.3.1.5. Invoice accuracy rate

The last KPI is Invoice accuracy, which is crucial for the business. Incorrect invoices from suppliers result in additional work and delays in processing, payment, and the documentation necessary to complete the order cycle. Therefore, this KPI is vital for the department.

To collect data for this KPI, we have devised a simple yes/no question. The score for this KPI is calculated by averaging the responses over a given period multiply by 100.

1.3.2. Performance evaluation scorecard for non-production suppliers

For evaluating non-production suppliers, we have chosen to use the same criteria: quality, delivery, communication, reactivity, and invoice accuracy. The last three criteria—reactivity, communication, and invoice accuracy—remain the same as those on the scorecard for production suppliers. However, we have made some changes to the first two KPIs, which are quality and delivery.

1.3.2.1. Quality rate

To evaluate the quality of a product or service provided by a supplier, it is important to consult the department that requested and used the service or product. This ensures an accurate assessment from the end-user's perspective. To gather this information, we have included a question in the purchase order document within our internal system. This question asks for a rating on a scale from 1 (bad) to 5 (excellent).

This rating is recorded in a document created by the requester, known as the Service Done. This document confirms that the service or product has been delivered by the supplier. We have updated this document to require the requester to include an evaluation score for the service or product, using the same 1 to 5 scale.

The local procurement department is responsible for entering this rating into the internal system, as they are the only department with access to the purchase order document in the internal system.

The final score for this KPI will be calculated by averaging the responses and multiplying the result by 100.

1.3.2.2. Delivery rate

To assess the delivery performance of a supplier, we have included another question in the same document. This question asks the local procurement department to indicate whether the supplier delivered the product or service on time, with a simple yes or no response. The aim of this KPI is to understand the supplier's delivery rate and their ability to deliver products and services on time.

The final score for this KPI will be calculated by averaging the responses and multiplying the result by 100.

1.4. Identify score calculation method and criteria weights

1.4.1. Calculation method

For calculating the final score, we have opted for the Sample Adaptive Weighting Method. This method involves multiplying for every criterion, its weight by its value. Finally, calculate the

sum of all these products to obtain the final score. This provides the final score. We chose this method because it is both simple and highly practical.

1.4.2. Criteria weights

For calculating the relative criteria weights, we have chosen the pairwise comparison or Analytical Hierarchy Process (AHP) approach. This method is practical, easy to use, and time-efficient. Additionally, it offers greater accuracy and a higher degree of objectivity compared to other methods like the ranking method or point allocation method.

To implement this approach, we conducted a directive interview with the local procurement department manager. After describing and explaining the AHP pairwise comparison method, we asked him a series of questions regarding the pairwise comparison of criteria to obtain the necessary data. The answers from this interview can be found in Appendix 5. Using the data obtained, we calculated the final weights of the criteria, which are presented in the table below.

Table III-1: Criteria weights according to AHP method

Criterion	Weight	Rank
Quality	39.5%	1
Delivery	23.4%	2
Communication	12.4%	3
Reactivity	12.4%	3
Invoice Accuracy	12.4%	3

Source: Elaborated by us based on interview with local procurement department manager

From this table, it is evident that this method has provided reliable data. We observe that quality carries significant weight, followed by delivery, which also holds importance but to a lesser extent than quality. These two criteria rank first and second, respectively. This reflects the goals and objectives of the local procurement department and their expectations from suppliers.

1.5. Conducting a Pilot

After selecting the key performance indicators and determining the calculation methods and weightings for each criterion, it is now time to conduct a pilot to identify potential improvements and issues with the chosen system.

Firstly, it is important to note that the company's internal system has two versions: the official version, which is used company-wide, and a test version, which is used by the IT department to trial new features. This separation ensures that any issues encountered during testing do not impact the official system.

For the pilot, we decided to use the test version. This allows us to make adjustments and identify any issues without affecting the official system. During the pilot, we selected one supplier from each category and evaluated them based on specific deliveries. This testing was focused on evaluating all the technical aspects of the new system.

Throughout the test process, me and the IT officer encountered and resolved several minor technical issues. Having addressed these issues, we can now consider the system ready for deployment.

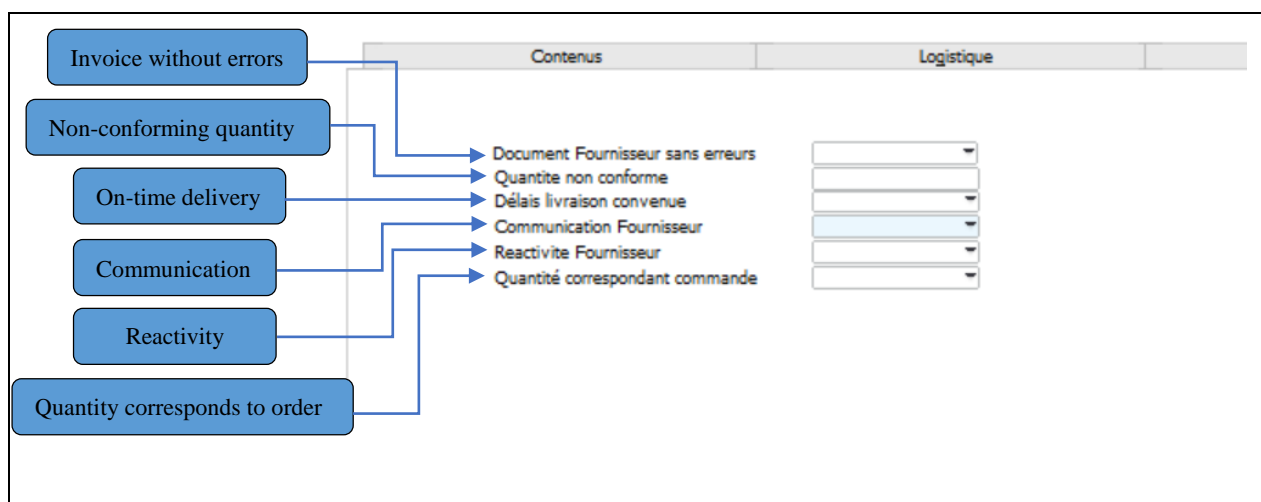
1.6. Scorecards deployment

The deployment of the two scorecards in the official version is detailed below.

1.6.1. Performance scorecard for production suppliers

Before describing and presenting the scorecard, it is important to show the surveys and demonstrate how internal stakeholders should complete them. I will now present both the survey and an example for it.

Figure III-1: Production suppliers performance survey



Source: Internal system of Bomare Company.

This figure shows that the survey is straightforward for personnel to complete. It includes a detailed list of possible responses, making it easy to provide answers.

Figure III-2: Production suppliers performance survey example

	Contenus	Logistique	
Invoice without errors	Document Fournisseur sans erreurs	Oui	Yes
Non-conforming quantity	Quantite non conforme	10	Yes
On-time delivery	Délais livraison convenue	Oui	Medium
Communication	Communication Fournisseur	Moyen	Good
Reactivity	Reactivite Fournisseur	Bon	No
Quantity corresponds to order	Quantité correspondant commande	Non	

Source: Internal system of Bomare Company.

This example clearly demonstrates that the fulfillment process was straightforward. There are three questions that require a yes or no response: "Invoice without errors," "On-time delivery," and "Quantity corresponds to order." Additionally, two questions— "Communication" and "Reactivity"—use a rating scale from 1 to 5. In the figure, numerical values are not displayed; instead, descriptive terms such as "medium" for 3 and "good" for 4 are used to indicate performance levels. There is also a section for entering numerical inputs regarding non-conforming quantities, which is specific to this question.

Figure III-3: Performance scorecard of production suppliers

Supplier code		Supplier	
Designation		Address	
Phone Number		Person to contact	
Period concerned			

Turnover	
Number of receptions	

Criteria		Note
Quality	Total Quality Score	../100
	Conformity rate	../100
	Conformity frequency rate	../100
Delivery	Delivery Total Score	../100
	On-time delivery rate	../100
	Delivery Rate of Right Quantity/Order	../100
	Order on time and with the right quantity rate	../100
Communication	Total Communication Score	../100
Reactivity	Total Reactivity Score	../100
Finance	Invoice accuracy rate	../100
The overall rating	../100	

NB:
1- The score of ≤ 0.25 obtained on quality will be considered eliminatory.
Note: grade obtained:
From 0% to 25%: suppliers to eliminate
<25% \leq 75%: requires ongoing monitoring and support
<75% to 100%: in line with our expectations and capable of continuous improvement

Source: Document created by local procurement department.

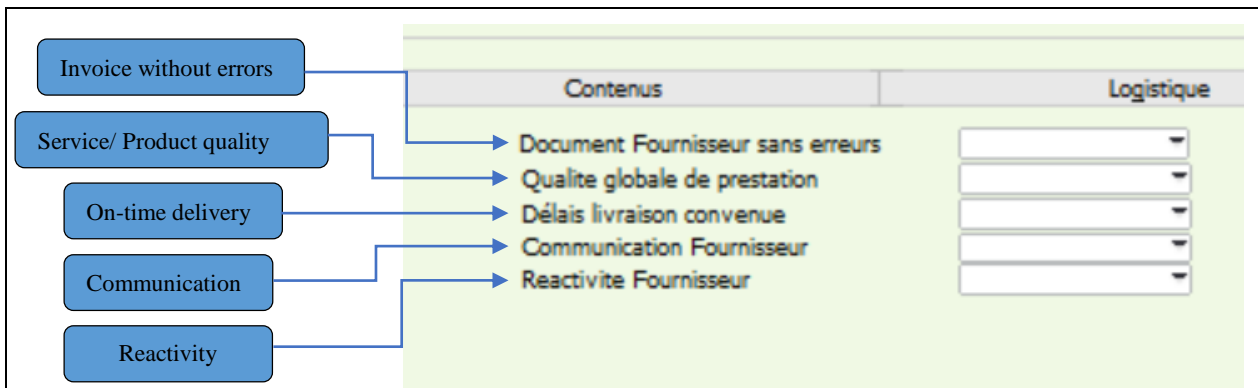
This final scorecard will be generated automatically from the internal system. It is a document created collaboratively by us, the local procurement department manager, and the quality management department. In this document, we have included two pieces of information above the scorecard: turnover, which indicates the financial value of all transactions during the period, and the number of receptions or deliveries.

Additionally, there is some guided information above the scorecard to assist the local procurement department in making decisions. Some of this information is mandatory, while other parts serve as guidelines to aid in decision-making.

1.6.2. Performance scorecard for non-production suppliers

Similar to the performance scorecard for production suppliers, the survey we have implemented in the local system for non-production suppliers shares the same characteristics. The survey features straightforward questions with predefined answer choices, making the process of evaluating suppliers easier. Additionally, this survey does not include any questions requiring numerical input; all answers are selected from a provided list.

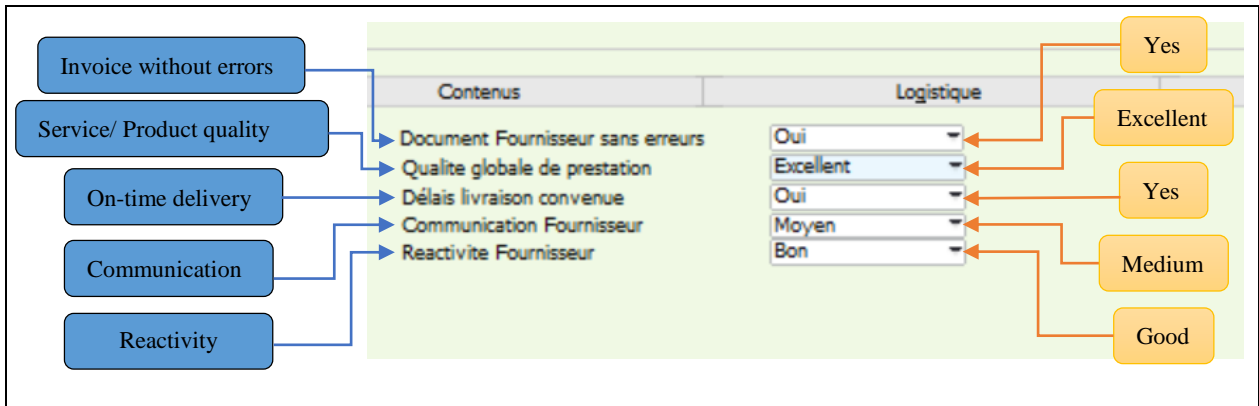
Figure III-4: Non-production supplier's performance survey



Source: Internal system of Bomare Company.

The following example illustrates how to evaluate a non-production supplier using the internal system.

Figure III-5: Non-production supplier’s performance survey example



Source: Internal system of Bomare Company.

This example demonstrates that the process is as easy and practical as the one used for evaluating production suppliers. The evaluation includes two questions with yes or no answers, while the remaining questions use a scale from 1 to 5 to rate the supplier.

Figure III-6: Performance scorecard of non-production suppliers

Supplier code		Supplier	
Designation		Address	
Phone number		Person to contact	
Period concerned			

Turnover	
Number of Orders Delivered	

Criteria	Note
Quality of services/ Products	../100
On-time delivery rate	../100
Communication	../100
Reactivity	../100
Invoice accuracy rate	../100
The overall rating	../100

NB:
 1- The score of ≤ 0.25 obtained on quality will be considered eliminatory.
Note: grade obtained:
From 0% to 25%: suppliers to eliminate
<25% \leq 75%: requires ongoing monitoring and support
<75% to 100%: in line with our expectations and capable of continuous improvement

Source: Document created by local procurement department.

The final performance scorecard for non-production suppliers contains relatively fewer KPIs compared to the scorecard for production suppliers. This difference is due to the reasons previously mentioned, such as the greater importance of production-related purchases.

The scorecard begins with the turnover and the number of services, providing insight into the volume of work and transactions between the supplier and the company. Following this, there are five criteria used to assess the supplier, each presented with its respective percentage score. Finally, the scorecard concludes with guided information to aid in decision-making.

SECTION 2: Research results, limits and propositions

In this final section, we will present the evaluation scorecard results for four suppliers, based on the simulation assessments conducted on deliveries of May 2024, this simulation was conducted on the test version of the internal system. Two of these suppliers are production suppliers, and the other two are non-production suppliers. After presenting the results, we will compare the previous evaluation system with the new evaluation scorecards for both production and non-production suppliers. Finally, we will outline our improvement proposals and discuss the limitations identified in the study.

2.1. Results of supplier's performance

In the results, we are going to present the performance of suppliers in the month of May using the new Supplier Performance Evaluation Scorecard. We will begin with the production suppliers and then move on to the non-production suppliers.

2.1.1. Evaluation of production supplier's performance

To assess the efficiency of the supplier performance scorecard for production suppliers, we have chosen two suppliers: General Emballage and TDI Plast. These suppliers were selected due to their high number of transactions in May 2024 and their importance to the business.

The evaluation will be based on multiple receptions of goods. We will begin by reviewing the evaluation details, including the notes and scores provided by stakeholders for each transaction during the month. Following this, we will present the final scorecard for each supplier. Finally, we will compare the overall performance of General Emballage and TDI Plast.

2.1.1.1. Performance evaluation of General Emballage

Before presenting the evaluation results, it is important to first show the details. In the details table, we will present the notes attributed to each supplier for every reception and criterion. From this data, the final performance results will be calculated and presented.

Before describing these details, it is important to note that for the criteria of on-time delivery, quantity matching the order, and error-free invoicing, each is assessed with a yes or no question. A response of "yes" is recorded as 1, while a response of "no" is recorded as 0. This binary scoring is used for efficient data processing.

Table III-2: General Emballage scores details by criterion

Document number	Non-conforming quantity	On-time delivery	Quantity corresponds to order	Invoice without errors	Communication	Reactivity
1	500	1	1	0	4	4
2	200	0	1	1	3	4
3	70	1	1	1	3	4

Source: The internal system of Bomare Company.

From this table, we notice that this supplier has some quality issues, as there are non-conformities in every reception. However, there is a decline in these issues from the first to the last reception. On-time delivery, quantity, and invoicing show good performance but still need some improvements. In terms of communication and responsiveness, this supplier received positive feedback from the stakeholders.

After presenting the evaluation details, we will now present the final scorecard for the supplier performance evaluation for the month of May.

Figure III-7: Supplier performance evaluation scorecard for General Emballage

Supplier code	FLS00020	Supplier	SPA General Emballage
Designation	Box packaging	Address	Industrial zone Tahracht Akbou, Wilaya of Bejaia, 06200 Algeria
Phone Number	*****	Person to contact	*****
Period concerned	01/05/2024 to 31/05/2024		

Turnover	6 028 865.36 DZD
Number of receptions	3

Criteria		Note
Quality	Total Quality Score	45.67/100
	Conformity rate	91.34/100
	Conformity frequency rate	00/100
Delivery	Delivery Total Score	77.78/100
	On-time delivery rate	66.67/100
	Delivery Rate of Right Quantity/Order	100/100
	Order on time and with the right quantity rate	66.67/100
Communication	Total Communication Score	80/100
Reactivity	Total Reactivity Score	66.67/100
Finance	Invoice accuracy rate	66.67/100
The overall rating	62.69/100	

NB:
1- The score of ≤ 0.25 obtained on quality will be considered eliminatory.
Note: grade obtained:
From 0% to 25%: suppliers to eliminate
<25% \leq 75%: requires ongoing monitoring and support
<75% to 100%: in line with our expectations and capable of continuous improvement

Source: The internal system of Bomare Company.

This supplier evaluation scorecard highlights significant issues in quality, with a total quality score of 45.67%. The conformity frequency rate is 0%, indicating quality issues in all three receptions, as noted by the scorecard.

For delivery, the results align with the company's expectations, but there are areas needing improvement, particularly the on-time delivery rate and order on time and with the right quantity rate. In terms of communication, the supplier performs well, which may aid in addressing these

problems in the future. For reactivity and finance, the invoice accuracy rate shows relatively good results but still requires improvement.

Overall, the supplier's rating is 62.69%, which is low compared to the scores for delivery, communication, reactivity, and finance. This underscores the critical importance of quality in the evaluation system, as it significantly impacts the overall score, even when other criteria are rated higher.

2.1.1.2. Performance evaluation of TDI Plast

After reviewing the results of General Emballage Supplier, now we will present the detailed scores and scorecard for the second supplier, TDI Plast.

Table III-3: TDI Plast scores details by criterion

Document number	Non-conforming quantity	On-time delivery	Quantity corresponds to order	Invoice without errors	Communication	Reactivity
1	5	1	1	1	4	5
2	10	1	0	1	3	4
3	0	1	1	1	3	4
4	30	0	0	0	4	3
5	0	1	1	1	5	5

Source: The internal system of Bomare Company.

From this table, we can see that this supplier has minimal quality conformity issues, which can be attributed to occasional delivery or maintenance problems. The supplier performs well in on-time delivery and error-free invoicing. However, there is room for improvement in ensuring that the delivered quantity matches the order. The supplier received excellent scores from stakeholders for communication and responsiveness.

After presenting the evaluation details, we will now present the final scorecard for the supplier performance evaluation for the month of May.

Figure III-8: Supplier performance evaluation scorecard for TDI Plast

Supplier code	FLS00016	Supplier	SARL TDI Plast
Designation	Manufacture of plastic articles	Address	59 avenue Haouari Boumediane, Bordj bou arreridj, 34000 Bordj bou arreridj
Phone Number	*****	Person to contact	*****
Period concerned	01/05/2024 to 31/05/2024		

Turnover	1 425 381.45 DZD
Number of receptions	5

Criteria		Note
Quality	Total Quality Score	69.28/100
	Conformity rate	98.57/100
	Conformity frequency rate	40/100
Delivery	Delivery Total Score	66.67/100
	On-time delivery rate	80/100
	Delivery Rate of Right Quantity/Order	60/100
	Order on time and with the right quantity rate	60/100
Communication	Total Communication Score	84/100
Reactivity	Total Reactivity Score	76/100
Finance	Invoice accuracy rate	80/100
The overall rating	72.73/100	

NB:
1- The score of ≤ 0.25 obtained on quality will be considered eliminatory.
Note: grade obtained:
From 0% to 25%: suppliers to eliminate
<25% \leq 75%: requires ongoing monitoring and support
<75% to 100%: in line with our expectations and capable of continuous improvement

Source: The internal system of Bomare Company.

This scorecard indicates that this supplier's quality score is close to the company's expectations. However, there are notable issues with the conformity frequency rate due to some deliveries having quality problems. Despite this, the supplier maintains a high conformity rate overall, suggesting that the quality issues are limited to specific items.

In terms of delivery, the overall score is relatively good. However, the delivery rate of the correct quantity is close to average and needs improvement. The third KPI has been impacted by

the second KPI, which is the delivery rate of the right quantity, because during the fourth reception, the on-time delivery KPI had a poor result, scoring zero. In the same reception, the second KPI, which measures the quantity corresponding to the order, also scored zero. Consequently, the third KPI was affected by the poor performance of the second KPI.

Regarding communication reactivity and finance, the supplier has performed exceptionally well, exceeding company expectations. The overall rating is 72.73%, which is relatively good and close to the company's target. Nevertheless, minor issues in quality and delivery have affected the final score. Improved communication and collaboration with the supplier on these aspects could lead to significantly higher performance.

2.1.1.3. Ranking and comparing suppliers by their performance

After calculating the final performance results of these suppliers, we will rank them and compare their performances.

Table III-4: Production suppliers ranking by may overall performance

Rank	Supplier	Conformity rate	Conformity frequency rate	Total Quality Score	On-time delivery rate	Delivery Rate of Right Quantity/Order	Order on time and with the right quantity rate	Delivery Total Score	Communication	Reactivity	Finance	The overall rating
1	TDI Plast	98.57%	40%	69.28%	80%	60%	60%	66.67%	84%	76%	80%	72.73%
2	General Emballage	91.34%	00%	45.67%	66.67%	100%	66.67%	77.78%	80%	66.67%	66.67%	62.67%

Source: The internal system of Bomare Company.

From this table, it is evident that the first supplier has better results in the majority of KPIs, which explains their lead in the overall results. However, the delivery KPI and its sub-KPIs are areas where the first supplier does not perform as well. This comparison table also effectively

highlights the strengths and weaknesses of each supplier, providing valuable insights for performance improvement.

Ranking suppliers based on their performance makes it easy to identify the best performers and use them as benchmarks for other suppliers in the system.

2.1.2. Evaluation of non-production supplier's performance

For evaluating the performance of non-production suppliers, we will use the same methodology that was applied in the previous evaluation.

2.1.2.1. Performance evaluation of Tashil Technology

When evaluating the performance of Tashil Technology, it is important to start with the detailed scores of each order and criterion.

Table III-5: Tashil Technology scores details by criterion

Document number	Service/Product quality	On-time delivery	Invoice without errors	Communication	Reactivity
1	5	1	1	3	4
2	4	0	1	5	4

Source: The internal system of Bomare Company.

From this detailed table of scores, we can conclude that this supplier received very positive feedback from internal stakeholders during May. This supplier had only one issue with delivering the service on time, noted in the second document.

We will now present the final scorecard for the supplier performance evaluation for the month of May.

Figure III-9: Supplier performance evaluation scorecard for Tashil Technology

Supplier code	FLP00428	Supplier	Tashil Technology
Designation	Services and Computer Engineering	Address	Hammouche Noureddine, Reghaia, Algiers 16108
Phone number	*****	Person to contact	*****
Period concerned	01/05/2024 to 31/05/2024		

Turnover	204 204.00 DZD
Number of Orders Delivered	2

Criteria	Note
Quality of services/ Products	90/100
On-time delivery rate	50/100
Communication	80/100
Reactivity	80/100
Invoice accuracy rate	100/100
The overall rating	79.4/100

NB:
1- The score of ≤ 0.25 obtained on quality will be considered eliminatory.
Note: grade obtained:
From 0% to 25%: suppliers to eliminate
<25% \leq 75%: requires ongoing monitoring and support
<75% to 100%: in line with our expectations and capable of continuous improvement

Source: The internal system of Bomare Company.

This scorecard highlights the supplier's overall performance in May. Quality, communication, reactivity, and invoice accuracy rates met the expectations. However, the delivery rate was 50%, mainly due one of the two orders not being delivered on time. Overall, the supplier's performance is close to excellence, with the exception of delivery issues that can be addressed in the future.

2.1.2.2. Performance evaluation of All Ways Travel

The same methodology will be used to evaluate the performance of this supplier.

Table III-6: All Ways Travel scores details by criterion

Document number	Service/Product quality	On-time delivery	Invoice without errors	Communication	Reactivity
1	3	1	0	3	4
2	2	0	1	4	3
3	4	1	1	3	3

Source: The internal system of Bomare Company.

This table highlights some of the supplier's performance this month. The quality during the second delivery was bad, and the delivery was not on time. Additionally, communication and reactivity showed moderate ratings.

Figure III-10: Supplier performance evaluation scorecard for All Ways Travel

Supplier code	FLP00494	Supplier	All Ways Travel														
Designation	Travel agency	Address	212 Bois Des Cars II, Dely Brahim, Algiers 16047														
Phone number	*****	Person to contact	*****														
Period concerned	01/05/2024 to 31/05/2024																
<table border="1" style="margin: 10px auto;"> <tbody> <tr> <td>Turnover</td> <td>1 337 815.10 DZD</td> </tr> <tr> <td>Number of Orders Delivered</td> <td>3</td> </tr> </tbody> </table>				Turnover	1 337 815.10 DZD	Number of Orders Delivered	3										
Turnover	1 337 815.10 DZD																
Number of Orders Delivered	3																
<table border="1" style="margin: 10px auto;"> <thead> <tr> <th>Criteria</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>Quality of services/ Products</td> <td>60/100</td> </tr> <tr> <td>On-time delivery rate</td> <td>66.67/100</td> </tr> <tr> <td>Communication</td> <td>66.67/100</td> </tr> <tr> <td>Reactivity</td> <td>66.67/100</td> </tr> <tr> <td>Invoice accuracy rate</td> <td>66.67/100</td> </tr> <tr> <td>The overall rating</td> <td>64.04/100</td> </tr> </tbody> </table>				Criteria	Note	Quality of services/ Products	60/100	On-time delivery rate	66.67/100	Communication	66.67/100	Reactivity	66.67/100	Invoice accuracy rate	66.67/100	The overall rating	64.04/100
Criteria	Note																
Quality of services/ Products	60/100																
On-time delivery rate	66.67/100																
Communication	66.67/100																
Reactivity	66.67/100																
Invoice accuracy rate	66.67/100																
The overall rating	64.04/100																
<p>NB: 1- The score of ≤ 0.25 obtained on quality will be considered eliminatory. <u>Note: grade obtained:</u> From 0% to 25%: suppliers to eliminate <25% \leq 75%: requires ongoing monitoring and support <75% to 100%: in line with our expectations and capable of continuous improvement</p>																	

Source: The internal system of Bomare Company.

This scorecard reveals consistent scores across all criteria, reflecting some issues in each area. These issues have influenced the ratings across the board for this supplier, highlighting multiple areas for improvement. On a positive side, the scores are above average and not far from meeting the company's expectations. By enhancing communication and collaborating more closely with this supplier, particularly focusing on improving quality, significant improvements can be achieved.

2.1.2.3. Ranking and comparing suppliers by their performance

Now, similar to our approach with production suppliers, we will rank non-production suppliers based on their performance this month. This comparison will help us identify both strengths and weaknesses among each supplier.

Table III-7: Non-production suppliers ranking by may overall performance

Rank	Supplier	Quality of services/ Products	On-time delivery rate	Communication	Reactivity	Invoice accuracy rate	The overall rating
1	Tashil Technology	90%	50%	80%	80%	100%	79.4%
2	All Ways Travel	60%	66.67%	66.67%	66.67%	66.67%	64.04%

Source: The internal system of Bomare Company.

Like the previous comparison, this analysis highlights the performance differences between the two suppliers and helps identify the best-performing suppliers for each service category. However, it is important to note that in this comparison, the two suppliers do not provide the same service, which can impact the benchmarking process. To ensure an effective comparison, it is crucial to compare suppliers that provide the same or similar categories and types of services and products.

2.2. The differences between the previous evaluation system and the new one

Using the new performance supply evaluation system, Scorecard, has addressed many issues the previous evaluation system faced:

2.2.1.1. Time consumption and manual processing

The new system is digitalized, automating processes and reducing time. Additionally, the evaluation process is more frequent, based on reception and order deliveries.

2.2.1.2. Data validity

The data in the new system is more reliable due to the short time between purchases and evaluation. This allows the system to use the data to generate accurate results.

2.2.1.3. Rating scale and criteria weighting

The new system features different rating scales adopted for each criterion. Furthermore, criteria are weighted differently based on their importance.

2.2.1.4. Alignment with business objectives

The system is aligned with business and performance objectives, ensuring that it supports overall local procurements department goals.

2.3. The impact of KPIs on the decision making process

From a semi-interactive interview with the local procurement department manager, we have gathered insights on the impact of KPIs on the decision-making process.

First, the system hasn't been in use for a sufficient amount of time to make fully informed decisions. However, the manager indicated that, based on the results from May and the available KPIs, suppliers with very high scores, especially in delivery and quality, will be favored in future purchases and are likely to win a significant amount of business with the company. Conversely, suppliers that have issues with quality and delivery and cannot rectify these problems may find themselves losing business with the company.

Based on this information, it is evident that the system needs more time to generate extensive data on supplier performance over a longer period. This will enable the local procurement department to make more informed decisions based on the system's insights. Nevertheless, it is clear from the outset that this system already impacts the decision-making process regarding the relationship with some suppliers.

2.4. Research limits and propositions

We will present some limitations we encountered during this project and, in conclusion, offer several proposals to the company to enhance the overall supplier performance evaluation process.

2.4.1.1. Limits of the research

In the process of developing a new evaluation system, we encountered several limitations that influenced the overall results:

a. Lack of data in the internal system

The company hasn't integrated many of its processes into the system, resulting in a lot of operations being performed outside the system. Consequently, when attempting to digitalize and automate the evaluation process, we found limited information on supplier performance.

b. System limitations

The system has constraints when it comes to creating new processes and documents, which impacted the final result, the choice of KPIs, and the process of gathering and processing data.

c. Time constraints

We did not have enough time to efficiently assess the performance of some suppliers over at least three months and to observe the system's impact on the decision-making process within the company.

2.4.1.2. Propositions for the company

After discussing the limitations we faced, we now propose several improvements to enhance the overall process of evaluating supplier performance:

a. Integrate more operations into the internal system

Develop the integration of as many operations as possible into the internal system. This will enhance the transparency and traceability of all operations, facilitating the collection of data that can be used in the supplier evaluation process and for analyzing and improving various business aspects.

b. Adopt supplier relationship management software

Invest in new models or software specifically designed for supplier relationship management. These systems encompass all the tools needed to manage supplier relationships, including supplier performance management.

c. Upgrade the current internal system

Improve or replace the current internal system, as it currently does not meet all the company's needs. This upgrade should not be limited to the local procurement department but should extend to all areas of the company. Acquiring a more sophisticated version of the software can support the company's growth ambitions.

d. Integrate environmental and social goals

Incorporate environmental and social aspects into the overall business and local procurement department objectives. As an ISO 9001 certified company, there will be future obligations and norms related to these aspects. Additionally, since the company exports to Europe, a market where environmental and social issues are crucial, aligning with these goals is essential.

Conclusion

In this chapter, we detailed the design and implementation of the new supplier performance scorecards, explaining the development process, criteria selection, and integration into the company's procurement system. This comprehensive approach involved collaboration with key stakeholders and alignment with organizational goals to ensure the scorecards effectively measure supplier performance. By establishing a robust framework for supplier evaluation, we laid the groundwork for more strategic supplier management and continuous improvement within the procurement department.

**GENERAL
CONCLUSION**

GENERAL CONCLUSION

This thesis delves into Supplier Performance Management within supply chain operations, emphasizing the design and implementation of performance evaluation scorecards. It explores the role of Supplier Relationship Management in creating value and improving supply chain efficiency, using Bomare Company as a case study to evaluate previous supplier performance systems. The thesis details the development of new scorecards, highlighting processes such as aligning performance goals, identifying key performance measures (KPIs), and assessing their impact on decision-making processes. Overall, it contributes insights into enhancing Supplier Performance Management practices for optimizing supply chain performance.

The central question addressed by this research—how effective supplier scorecards facilitate the identification of areas for improvement in the producer-supplier relationship—was explored through a mixed-methods approach. This approach encompassed both qualitative and quantitative methodologies, including literature reviews, semi-structured interviews, and performance data analysis. The study was divided into a theoretical exploration of procurement and supplier management, and a practical case study involving the development and implementation of new supplier performance scorecards at Bomare Company.

The results of this research are as follows:

1. The first hypothesis is confirmed: Effective supplier performance scorecards accurately identify issues in a supplier's performance. These scorecards provide detailed insights into various performance metrics, enabling the identification of specific areas where suppliers may be underperforming.
2. The second hypothesis is confirmed: Effective supplier performance scorecards facilitate the benchmarking and ranking of suppliers. This allows for a clear comparison of performance across different suppliers and fosters a competitive environment that can drive improvements.
3. The third hypothesis is confirmed: The new supplier performance evaluation system addressed and resolved the issues present in the old evaluation system used by Bomare Company. The new system provided a more comprehensive and accurate assessment of supplier performance.

4. The fourth hypothesis is not confirmed: The hypothesis that the supplier performance scorecard positively impacts the decision-making process regarding supplier relationships was not confirmed due to a lack of time. While preliminary indications suggest that the scorecards could indeed influence decision-making by providing valuable performance data, there was insufficient time within the scope of this research to fully evaluate the long-term impact on decision-making processes.

The limitations of this research include the absence of previous data on supplier performance and constraints within the company's current system, which lacks dedicated models for supplier relationship and performance management and is not adaptable. Another limitation is time constraints. Moving forward, proposed solutions involve acquiring new models for supplier relationship management, integrating additional operations into the internal system, and enhancing the contract management system to support company growth. Future research perspectives include studying the impact of the supplier performance scorecard on decision-making processes and addressing any operational challenges that may arise over time.

In conclusion, this thesis underscores the critical importance of robust supplier performance evaluation systems in procurement. By effectively identifying performance issues, facilitating benchmarking, and addressing previous evaluation system shortcomings, supplier scorecards play a vital role in enhancing the producer-supplier relationship. Although the full impact on decision-making processes remains to be seen, the findings highlight the potential of these scorecards to foster continuous improvement and proactive problem-solving within the supply chain, ultimately contributing to the overall performance and competitive advantage of the organization.

LIST OF APPENDICES

Number	Title
Appendix 1	Semi-directive interview guide for evaluating the previous supplier performance evaluation system
Appendix 2	Semi-directive interview guide to understand internal system capabilities and limits
Appendix 3	Semi-directive interview guide to understand quality management standards and requirements
Appendix 4	Semi-directive interview guide to understand the local procurement department's strategy and select KPIs
Appendix 5	AHP directive Interview
Appendix 6	Semi-directive interview guide on the impact of new supplier performance evaluation scorecards
Appendix 7	Previous supplier performance evaluation sheet for Bomare Company
Appendix 8	Survey for the performance evaluation of production suppliers
Appendix 9	Survey for the performance evaluation of non-production suppliers
Appendix 10	Organization chart of Bomare Company
Appendix 11	Mapping of Bomare Company processes
Appendix 12	Organization chart of local procurements department
Appendix 13	Bomare Company certifications
Appendix 14	Bomare Company TV assembly line

APPENDICES

Appendix 1: Semi-directive interview guide for evaluating the previous supplier performance evaluation system

Interviewed: The manager of local procurements department

Question 1: Can you introduce yourself?

Question 2: Can you describe the role of this department?

Question 3: Do you think that supplier performance evaluation has an impact or importance for the activity of your department or the company?

Question 4: Do you already have a supplier performance evaluation system in this department?

Question 5: Sir, could you describe the supplier evaluation process in your department?

Question 6: Regarding the calculation of the supplier performance score, do all the criteria have the same weight?

Question 7: Do you think this process takes an excessive amount of time, or is it within the norm?

Question 8: You have already mentioned that this system needs to be renewed. Why do you think it is not able to meet your needs?

Question 9: Why do you think other departments sometimes provide less reliable responses?

Question 10: What improvements would you like to see in a new evaluation form?

Thank you very much for your responses.

Appendix 2: Semi-directive interview guide to understand internal system capabilities and limits

Interviewed: The internal system officer from the IT department

Question 1: Hello, can you please introduce yourself?

Question 2: What is your role in the company?

Question 3: What internal system does the company use?

Question 4: You mentioned that the internal system is SAP Business One. Which version is it, and where does this product stand in the SAP suite?

Question 5: In this version of SAP Business One, is there a module for supplier relationship management or supplier performance management?

Question 6: Since you mentioned there is no such module available in this version, can any documents be added to the existing version to evaluate supplier performance?

Question 7: If adding documents is not an option, what other choices are available to assess supplier performance?

Question 8: What documents are available for use by the local procurement department, as well as other departments like IQC and logistics?

Question 9: Can questions and surveys be added to these documents so they can be answered by other stakeholders in the company? Which documents can be used for this purpose, ensuring that access isn't limited to just one department?

Question 10: In adding these surveys, can the data generated from them be used to perform calculations to determine the final scores of suppliers over a period of time?

Thank you very much for your responses.

Appendix 3: Semi-directive interview guide to understand quality management standards and requirements

Interviewed: Quality management officer

Question 1: Hello, can you present yourself, please?

Question 2: What is the role of your department?

Question 3: Is evaluating supplier performance a requirement for obtaining the ISO 9001:2015 certification?

Question 4: If it is a requirement, which suppliers do we need to assess?

Question 5: Does the company have the right to choose the aspects it wants to evaluate, or are these aspects determined by the ISO 9001:2015 standards?

Question 6: Is there any obligation to evaluate suppliers based on their environmental performance?

Question 7: How frequently is it required to assess supplier performance within a year?

Question 8: In the process of creating new supplier performance scorecards, are there any documents that need to be eliminated, created, or modified?

Thank you for your time and valuable insights.

Appendix 4: Semi-directive interview guide to understand the local procurement department's strategy and select KPIs

Interviewed: The manager of local procurements department

Question 1: What are the main strategies and objectives of the local procurement department?

Question 2: What are the most significant challenges that the local procurement department needs to address?

Question 3: Who are the primary internal customers of the local procurement department?

Question 4: What are the most important aspects of supplier performance for the local procurement department of Bomare Company?

Question 5: Regarding delivery and quality KPIs, which specific sub-KPIs from this list are most relevant to the department's and company's needs?

Question 6: Can you suggest any additional KPIs that you consider important for the department's activities?

Question 7: Why is the quality frequency rate crucial to your decision-making process?

Thank you very much for your time and insights.

Appendix 5: AHP directive Interview

Interviewed: The manager of local procurements department

	A - wrt AHP priorities - or B?		Equal	How much more?
1	<input checked="" type="radio"/> Quality	<input type="radio"/> Delivery	<input type="radio"/> 1	<input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9
2	<input checked="" type="radio"/> Quality	<input type="radio"/> Communication	<input type="radio"/> 1	<input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9
3	<input checked="" type="radio"/> Quality	<input type="radio"/> reactivity	<input type="radio"/> 1	<input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9
4	<input checked="" type="radio"/> Quality	<input type="radio"/> Invoice accuracy	<input type="radio"/> 1	<input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9
5	<input checked="" type="radio"/> Delivery	<input type="radio"/> Communication	<input type="radio"/> 1	<input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9
6	<input checked="" type="radio"/> Delivery	<input type="radio"/> reactivity	<input type="radio"/> 1	<input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9
7	<input checked="" type="radio"/> Delivery	<input type="radio"/> Invoice accuracy	<input type="radio"/> 1	<input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9
8	<input checked="" type="radio"/> Communication	<input type="radio"/> reactivity	<input checked="" type="radio"/> 1	<input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9
9	<input checked="" type="radio"/> Communication	<input type="radio"/> Invoice accuracy	<input checked="" type="radio"/> 1	<input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9
10	<input checked="" type="radio"/> reactivity	<input type="radio"/> Invoice accuracy	<input checked="" type="radio"/> 1	<input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9

Appendix 6: Semi-directive interview guide on the impact of new supplier performance evaluation scorecards

Interviewed: The manager of local procurements department

Question 1: Based on the supplier performance results from May, are you planning to make any decisions?

Question 2: Can you explain why you've chosen not to make any decisions based on these results at this time?

Question 3: In your opinion, what is the minimum duration for using this evaluation system to inform decisions?

Question 4: When you do decide to use this evaluation system for decision-making, what are the key performance indicators (KPIs) you will prioritize for assessing supplier relationships?

Question 5: Aside from performance metrics, what other factors will influence your decisions regarding supplier relationships?

Question 6: Do you anticipate that these evaluation scorecards will play a significant role in future decision-making processes regarding supplier relationships?

Thank you for your time and assistance with this interview.

Appendix 7: Previous supplier performance evaluation sheet for Bomare Company



Local Procurement supplier Evaluation

Supplier Code		Supplier	
Supplier Designation		Address	
Tel		Contact person	
Period concerned	01st semester		02nd semester

Department	Local procurement	Maintenance	Quality Assurance	Communication	Technical	HSE	Logistics	Commercial
criteria								
Product quality								
Meeting deadlines								
Product availability								
Adaptation to specific orders								
Relational / complaint handling								
payment method								
warranty								
Total sum								
NOTE /07							

NB:

- 1- The score of ≤ 0.25 obtained on the quality of the product, will be considered as elimination.
- 2- Departments not involved in a supplier evaluation will be identified by "N.A": Not Applicable.

Supplier weighting:

- (01) Satisfactory results (meets our expectations)
- (0.75) Acceptable Results (Still Improving)
- (0.25) Unsatisfactory results (significant deficiencies)
- (00) Unacceptable results (too many failures)

Note: score obtained:

- De 00 To 02: supplier to be eliminated
- > 02 to 04: requires ongoing monitoring and support
- > 04 to 07: meets our expectations and can improve continuously

General appreciation:

Appendix 8: Survey for the performance evaluation of production suppliers

Fichier Edition Affichage Données Aller à Modules Outils Fenêtre Aide

Réception de marchandises

Fournisseur:
 Nom:
 Contact:
 Numéro réf. fournisseur:
 Devise interne:

Numéro RM: 2024 - 277
 Statut: En attente
 Date comptable: 06.06.2024
 Date d'échéance: 06.06.2024
 Date du document: 06.06.2024

Acheteur:
 Gestionnaire:

Remarque:

Total avant remise: %
 Remise:
 Fret:
 Arrondi
 TVA/Taxes: 0.0000 DZD
 Total paiement échu: 0.0000 DZD

Contenu:
 Logistique:
 Documents comptables:
 Pièces jointes:
 Evaluation Fournisseur:

Document Fournisseur sans erreurs
 Quantité non conforme
 Délais livraison convenue
 Communication Fournisseur
 Réactivité Fournisseur
 Quantités correspondant commande

- Aucun commercial -
 06.06.2024 10:37

SAP One Business

Appendix 9: Survey for the performance evaluation of non-production suppliers

Fichier Edition Affichage Données Aller à Modules Outils Fenêtre Aide

Commande fournisseur

Fournisseur
 Nom
 Contact
 Numéro réf. fournisseur
 Devise interne

Numéro CA2024 623
 Statut En attente
 Date comptable 06.06.2024
 Date de livraison
 Date du document 06.06.2024

Contenus
 Document Fournisseur sans erreurs
 Qualité globale de prestation
 Délais livraison convenus
 Communication Fournisseur
 Réactivité Fournisseur

Logistique

Documents comptables

Pièces jointes

Evaluation Fournisseur

Acheteur
 Gestionnaire

Remarques

Total avant remise
 Remise %
 Fret
 TVA/Taxes
 Total paiement échu

0.0000 DZD
 0.0000 DZD

06.06.2024 10:35

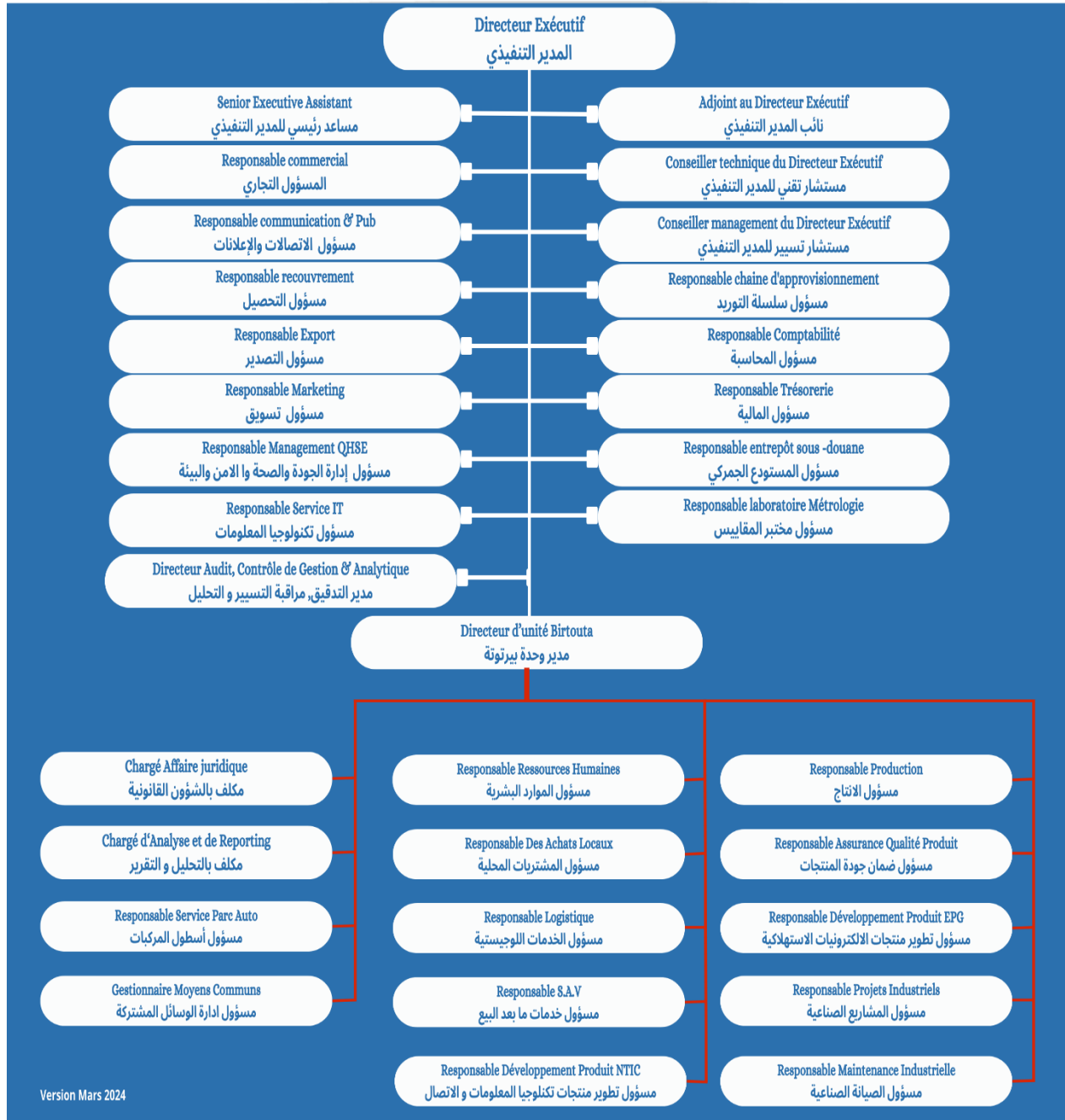
SAP One

Appendix 10: Organization chart of Bomare Company

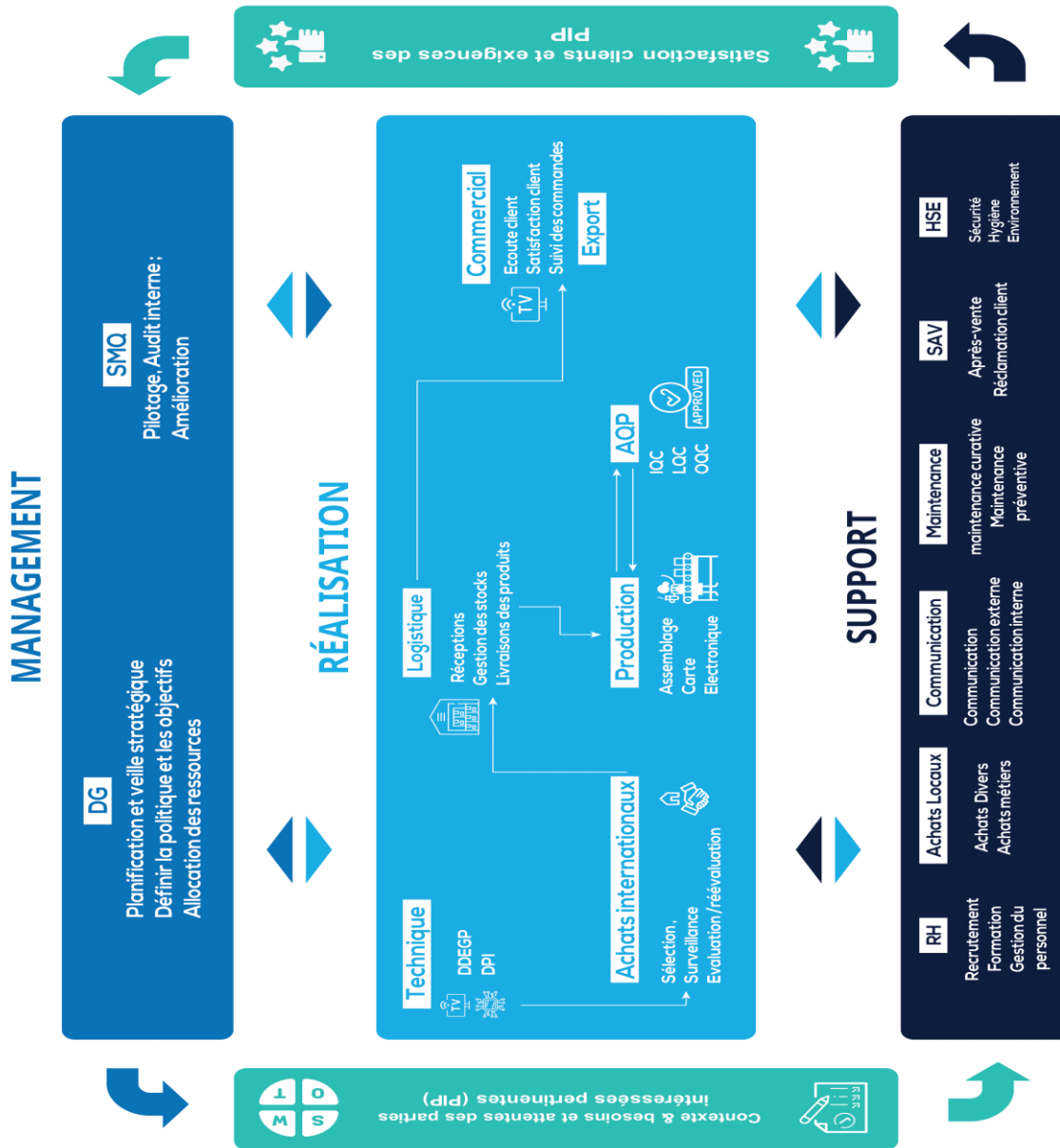


ORGANIGRAMME DE L'ENTREPRISE

الهيكل التنظيمي للمؤسسة



Appendix 11: Mapping of Bomare Company processes



MANAGEMENT

DG

Planification et veille stratégique
Définir la politique et les objectifs
Allocation des ressources



SMO

Pilotage, Audit interne
Amélioration

Contexte & besoins et attentes des parties Intéressées pertinentes (PI)

RÉALISATION

Technique

DDEGP
DPI

Achats internationaux
Sélection,
Surveillance
Evaluation/réévaluation

Logistique

Réceptions
Gestion des stocks
Livraisons des produits

Production
Assemblage
Carte
Electronique

AQP
IOC
LOC
OCC

Commercial
Ecoute client
Satisfaction client
Suivi des commandes

Export

Satisfaction clients et exigences des PIP

SUPPORT

RH

Recrutement
Formation
Gestion du personnel

Achats Locaux

Achats Divers
Achats métiers

Communication

Communication
Communication externe
Communication interne

Maintenance

maintenance curative
Maintenance préventive

SAV

Après-vente
Réclamation client

HSE

Sécurité
Hygiène
Environnement

Appendix 12: Organization chart of local procurements department

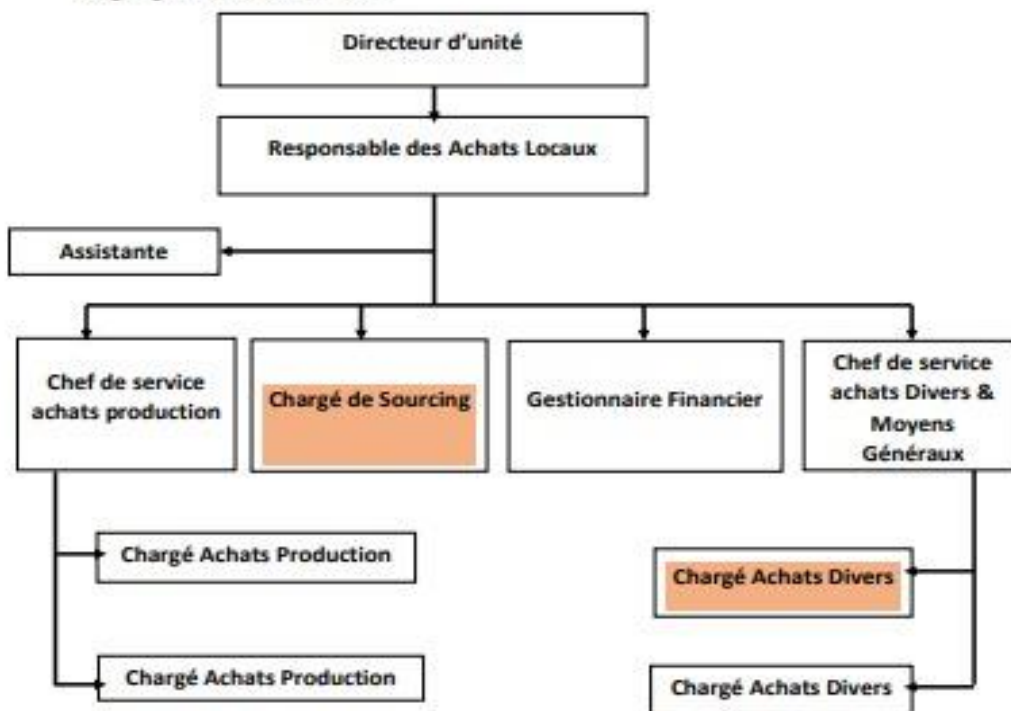


DESIGN THE FUTURE

Manuel Gestion « ACHATS LOCAUX »

MA-F-01-V00
Date : _____
Page : 6/43

Organigramme achats locaux :





RC: 0814198001
SIF: 0001100014100402
RIS: 0801151301981004
A: 00487964001
CO: 1.823.000.00000 DA

STREAM le Partenaire de référence en Europe



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Appendix 13: Bomare Company certifications



Appendix 14: Bomare Company TV assembly line



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TABLE OF CONTENT

ABSTRACT	iii
SUMMARY	I
LIST OF ABBREVIATIONS	II
LIST OF FIGURES.....	IV
LIST OF TABLES.....	VI
GENERAL INTRODUCTION	2
CHAPTER I: Essential concepts in supplier performance management	5
SECTION 1: Introduction to supply chain management.....	5
1.1. Supply chain Management	5
1.1.1. Supply chain definition.....	5
1.1.2. The degrees of supply chain complexity	6
1.1.2.1. Direct supply chain	6
1.1.2.2. Extended supply chain	7
1.1.2.3. Ultimate supply chain	7
1.1.3. Supply chain management definition	8
1.1.4. Supply chain management processes.....	9
1.1.4.1. Customer relationship management.....	10
1.1.4.2. Supplier relationship management.....	10
1.1.4.3. Customer service management	10
1.1.4.4. Demand management	10
1.1.4.5. Order fulfillment	11
1.1.4.6. Manufacturing flow management.....	11
1.1.4.7. Product development and commercialization.....	11
1.1.4.8. Returns management.....	11

1.2.	Procurement management	11
1.2.1.	The scope of purchasing	12
1.2.2.	Strategic roles of procurement	12
1.2.2.1.	Due diligence	12
1.2.2.2.	Risk Management	13
a.	Operational risk	13
b.	Quality risk	13
c.	Compliance risk	13
d.	Strategic risk	14
1.2.2.3.	Relationship management	14
1.2.2.4.	Continuous improvement of supplier performance	14
SECTION 2: Notions about supplier performance management		15
2.1.	Supplier relationship management	15
2.1.1.	Definition	15
2.1.2.	Performance on buyer-supplier relationships	15
2.1.3.	The supply base	16
2.1.3.1.	Definition	16
2.1.3.2.	Supply base optimization	16
2.1.3.3.	Risks of a reduced supplier base	17
2.2.	Suppliers and value creation	17
2.2.1.	Importance of supply and value chains	17
2.2.2.	Supplier management and value creation	18
2.2.1.	Value chain according to porter	19
2.2.2.	Supplier waste and cost of poor quality (COPQ)	21

- 2.3. Supplier Importance and Supplier Performance Management..... 21
 - 2.3.1. Definition of SPM..... 21
 - 2.3.2. The importance of SPM 22
 - 2.3.3. Measurement and reporting frequency 23
 - 2.3.4. Leveraging supplier measurement data 23
 - 2.3.4.1. Identifying Underperforming Suppliers..... 24
 - 2.3.4.2. Recognizing highly capable suppliers 24
 - 2.3.4.3. Supply base rationalization and optimization 24
 - 2.3.4.4. Improving operational areas 24
 - 2.3.5. Supplier performance data sources 24
 - 2.3.6. Measurement methodologies 26
 - 2.3.6.1. Surveys or questionnaires 26
 - a. Request for Information (RFI) surveys 26
 - b. Quality surveys..... 26
 - c. Supplier questionnaires 26
 - 2.3.6.2. Site visits..... 27
 - 2.3.6.3. Scorecards..... 27
- SECTION 3: Supplier performance scorecard design and implementation process 29
 - 3.1. Align performance goals 29
 - 3.2. Develop information collection method 31
 - 3.3. Identify key performance measures (KPIs) 31
 - 3.3.1. Characteristics of good measurements 32
 - 3.3.1.1. Meaningful and valuable 32
 - 3.3.1.2. Balanced..... 32

3.3.1.3. Practical and simple	32
3.3.1.4. Credible and up-to-dated	32
3.3.1.5. Reasonable number of metrics.....	32
3.3.2. Types of measurements	33
3.3.2.1. Quantitative measurements.....	33
3.3.2.2. Qualitative measurements.....	33
3.3.3. Supplier key performance indicators	34
3.3.3.1. Delivery performance	34
3.3.3.2. Quality performance	34
3.3.3.3. Cost and financial performance	34
3.4. Identify score calculation method and criteria weights	36
3.4.1. Choosing the score calculation method	37
3.4.1.1. Simple Additive Weighing (SAW).....	37
3.4.1.2. Weighted Product Model (WPM):.....	38
3.4.2. Identify relative criteria weights	38
3.4.2.1. The point allocation method	38
3.4.2.2. Ranking method	39
3.4.2.3. Ratio weighting method.....	39
3.4.2.4. Simple Multi-attribut Rating Technique (SMART)	39
3.4.2.5. The pairwise comparisons	39
3.5. Conduct a Pilot	40
3.6. Deploy the system	41
3.7. Give performance feedback.....	41
3.7.1. Formal Performance Feedback	41

3.7.1.1. KPI and scorecard distribution	41
3.7.1.2. Supplier performance or business review meetings.....	42
3.7.2. Informal performance feedback.....	42
3.8. Produce Results	43
CHAPTER II: The previous supplier performance evaluation system of the company	46
SECTION 1: Presentation of Bomare Company.....	46
1.1. The objectives of Bomare Company	47
1.2. Business areas.....	47
1.3. Certifications	48
1.4. Production units.....	48
1.4.1. Electronic Board Production Unit (EBPU).....	48
1.4.2. TV Assembly Unit.....	49
1.5. Bomare Company structure.....	49
1.6. Value chain of Bomare Company	50
1.6.1. Primary activities	51
1.6.1.1. Technique.....	51
1.6.1.2. International procurement.....	51
1.6.1.3. Logistic	52
1.6.1.4. Production.....	52
1.6.1.5. AQP	52
d. IQC.....	52
e. LQC.....	52
f. OQC	52
1.6.1.6. Sales and Export	53

1.6.2. Support activities	53
1.6.2.1. Industrial maintenance	53
1.6.2.2. Local procurement	53
1.6.2.3. Communication.....	53
1.6.2.4. Human resources.....	54
1.6.2.5. After sales	54
1.6.2.6. HSE.....	54
1.7. Local procurements department	54
1.7.1. Roles in the local procurements structure.....	54
1.7.2. Local procurement department structure	55
1.7.3. Goals of local procurements department	56
1.7.4. Key clients of the local procurement department	56
SECTION 2: Research methodology and evaluating the previous evaluation system.....	57
2.1. Research methodology	57
2.1.1. Choice of research topic	57
2.1.2. The research objectives.....	58
2.1.3. Data collection methods.....	58
2.1.3.1. Qualitative tools	58
2.1.3.2. Quantitative tools	59
2.2. The evaluation of the previous supplier performance evaluation system	59
2.2.1. Previous supplier performance evaluation system presentation	60
2.2.1.1. The description of the system	60
2.2.1.2. Data collection	61
a. Selection of suppliers	61

b.	Categorization by department	61
c.	Feedback collection.....	61
d.	Submission to procurements department	61
2.2.1.3.	Use of data to calculate supplier assessment	62
a.	Calculation of final score	62
b.	Action based on scores	62
2.2.1.4.	Example about using the previous supplier performance evaluation system	62
2.2.2.	Previous supplier performance evaluation system problems.....	64
2.2.2.1.	Time consumption	64
2.2.2.2.	Manual processes	64
2.2.2.3.	Inability to use the data	64
2.2.2.4.	Invalid data	64
2.2.2.5.	Uniform rating scale	64
2.2.2.6.	Uniform weighting.....	65
2.2.2.7.	Misalignment with business objectives	65
2.2.2.8.	Infrequent evaluation	65
2.2.3.	Improvement propositions	65
2.2.3.1.	Automation	65
2.2.3.2.	Regular data collection	66
2.2.3.3.	Adapted rating scales	66
2.2.3.4.	Appropriate weighting of criteria.....	66
2.2.3.5.	Alignment with business objectives	66

CHAPTER III: Design and implementation of new supplier performance scorecards 68

SECTION 1: The processes of design and implementation of new supplier performance scorecards	68
--	----

1.1.	Align performance goals	68
1.2.	Information collection method and sources	69
1.2.1.	Capacities and limitations	69
1.2.1.1.	Lack of integration	69
1.2.1.2.	System limitations	69
1.2.1.3.	Access Restrictions	69
1.2.1.4.	Absence of Evaluation Model	70
1.2.2.	Information source choice	70
1.2.2.1.	Production purchases	70
1.2.2.2.	Non-production purchases	70
1.3.	Identify key performance measures	70
1.3.1.	Performance evaluation scorecard for production suppliers	71
1.3.1.1.	Quality	71
a.	Quality conformity rate	71
b.	Conformity frequency rate	71
1.3.1.2.	Delivery	72
a.	On-time delivery rate	72
b.	Deliveries with the right quantity rate	72
c.	Deliveries with the right quantity and on-time rate	72
1.3.1.3.	Communication rate	73
1.3.1.4.	Reactivity rate	73
1.3.1.5.	Invoice accuracy rate	73
1.3.2.	Performance evaluation scorecard for non-production suppliers	73
1.3.2.1.	Quality rate	74

1.3.2.2. Delivery rate	74
1.4. Identify score calculation method and criteria weights	74
1.4.1. Calculation method	74
1.4.2. Criteria weights.....	75
1.5. Conducting a Pilot	75
1.6. Scorecards deployment.....	76
1.6.1. Performance scorecard for production suppliers	76
1.6.2. Performance scorecard for non-production suppliers	79
SECTION 2: Research results, limits and propositions	81
2.1. Results of supplier's performance	81
2.1.1. Evaluation of production supplier's performance	81
2.1.1.1. Performance evaluation of General Emballage	82
2.1.1.2. Performance evaluation of TDI Plast.....	84
2.1.1.3. Ranking and comparing suppliers by their performance	86
2.1.2. Evaluation of non-production supplier's performance	87
2.1.2.1. Performance evaluation of Tashil Technology	87
2.1.2.2. Performance evaluation of All Ways Travel	88
2.1.2.3. Ranking and comparing suppliers by their performance	90
2.2. The differences between the previous evaluation system and the new one	90
2.2.1.1. Time consumption and manual processing.....	91
2.2.1.2. Data validity.....	91
2.2.1.3. Rating scale and criteria weighting.....	91
2.2.1.4. Alignment with business objectives	91
2.3. The impact of KPIs on the decision making process	91

2.4. Research limits and propositions..... 92

2.4.1.1. Limits of the research 92

 a. Lack of data in the internal system..... 92

 b. System limitations 92

 c. Time constraints 92

2.4.1.2. Propositions for the company 92

 a. Integrate more operations into the internal system 92

 b. Adopt supplier relationship management software 93

 c. Upgrade the current internal system..... 93

 d. Integrate environmental and social goals 93

GENERAL CONCLUSION 95

LIST OF APPENDICES 97

APPENDICES..... 98

REFERENCES 112

TABLE OF CONTENT 114