



UNIVERSITE CATHOLIQUE DE LOUVAIN
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« Development of a two-stages supplier base reduction process. A practical analysis of the applicability of the model to GSK Global Operations Procurement. »

CONFIDENTIAL

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In order to attain the designation of management
sciences master

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II. ABSTRACT



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The supplier base at the Global Operations Procurement department (GOP) is composed of multiple suppliers which follow a similar Pareto distribution. Due to numbers growth factors, the base has been enlarged since a couple of years. A recent review of the GOP supplier base revealed that the current supplier base is widely spread among thousands of suppliers. As a consequence, the rise of some inefficiencies in various supplier relationships. The following thesis intends to discuss this topic.

The following thesis is based on a case study analysis (GSK Vaccines) which consists of examination of the current processes and supplier management practices. Considering this analysis, a benchmark has been conducted over several companies with several purchasing functions maturities. The methodology used to conduct this thesis is the action research, which facilitates the comprehension of supplier base management issues. The thesis strives to give insight on how GSK currently operates and tries to propose a conceptual development model of supplier base reduction subsequently. The key objective of the model is facilitate future decision-making through a comprehensive depiction of the activities to be performed and actions/roles to be endorsed by stakeholders.

The model proposal was conceived based on a triangulation approach. Firstly, developed based on prior literature research ; secondly based on the cross-industries information gathered thanks to the benchmark conduction ; and thirdly the model was tailored and reviewed to fit GSK environment. Each information gathering process was reviewed by the second stage of collection, which enabled me to ensure a coherent verification of the information. The model developed is of repeatable nature and consists of four major development stages that incorporate several sub-stages.

Beyond the model proposal, the thesis gathers relevant business intelligence information stemming from the benchmark and literature review elaboration. Finally, a discussion of impediments to implementation, potential room for improvement and other suggestions and recommendations is provided.

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V. LIST OF ACRONYMS

ACRONYMS	SIGNIFICATIONS
BP	Best Practices
GOP	Global Operations Procurement
IM	Incoming Materials
MOB	Make-or-buy
QA	Quality Assurance
QC	Quality Control
R&D	Research & Development
RA	Regulation Affairs
RFQ	Request For Quotation
RIV	Risk Index Value
SBM	Supply Base Management
SBR	Supply Base Reduction
SRM	Supplier Relationship Management
Vx	Vaccines
WH	Warehouse

TERMS	DEFINITIONS
Grades	<i>Standards of purity required for pharmaceutical purposes/ usages</i>
Spend	<i>Purchasing budget allocated to a specific supplier</i>
Supplier Base	<i>Portion of the supply network that is actively managed by the focal company through contracts and purchasing of parts, materials and services (retrieved from Choi & Krause, 2006, p. 638).</i>
Supplier network	<i>All inter-connected companies that exist upstream to any one company in the value system (retrieved from Choi & Krause, 2006, p. 638).</i>
Supply base complexity	<i>Complexity refers to how the members of a system (i.e. suppliers) are varied and interact with one another retrieved from Choi & Krause, 2006, p. 638).</i>



1. INTRODUCTION

The current section intends to present the background of the thesis with an emphasis on three minor subdivisions: firstly, *the research problem and the objectives pursued* are presented and discussed, secondly *the scope and the limitations* of the paper are examined, and finally, *the global structure* of the thesis is outlined.

1.1 Preamble

In a situation where the highly competitive business environment dictated by market imperatives, forced companies to focus on core competencies and reconsider the notable segmentation of the value chain, companies have started to outsource non-core activities to third parties. The major consequence of this business megatrend was the refocusing on supply chain management and pertaining sourcing departments. Indeed, since outsourcing mainly concerns cost-considerations (savings), procurement has started to gain credibility and triggered a major shift in the « *Porterian view* » of corporate strategy.

Hence, as a consequence of the strengthening of business environment complexity combined with the inherent nature of global competition, organizations have started « {...} *focusing on more complex approaches to supply management: TCO as opposed to Price and Long-term as opposed to Short-term opportunism deal making.* » (Cousins, 1999). Indeed, since companies were subject to increasing pressures to review their cost structures, they have realized that strategic supply management could considerably help them to mitigate their margin decreases. The latter strategic option enabled them to contribute to the development of long-term competitive advantage (Sarkar & Mohapatra, 2006). This was outlined by many researchers who stated that beyond strict supply management, a key emphasis on supplier management can significantly contribute to the overall performance of a supply chain and a company's turnover, extensively.

During the last decades, a major procurement shift was marked with regard to the supplier base management: the prior considerations were to put suppliers in competition in order to ensure cost-efficiency, as suggested by the conventional economic wisdom, as a consequence this resulted in price-based and adversarial relationships. Conversely, recent considerations consisted of fostering cooperation-based relationships. This shift was accompanied with a reduced necessity of

suppliers. Indeed, the residual suppliers were ideally engaged in privileged long-term relationships. As regards the small and unwilling suppliers, supplier base reduction strategies have started to emerge in order to reallocate their resources more efficiently and consolidate purchasing.

1.2 Research problem and objectives pursued

In line with the arguments above-mentioned, the research problem discussed in this thesis concerns supplier base reduction options.

To address the problem, a specific research methodology was developed. According to Yin (2013), the action research method support the elaboration of the thesis through a fitted combination of theory and practice. The thesis was intended to examine further supply base management strategies and gain understandings of how practitioners are currently operating, through the elaboration of a cross-industry benchmark. Besides, the benchmark conduction would support the analysis of the case study, the Global Operations Procurement (referred later as GOP) department of GSK Vaccines Wavre, and subsequently the elaboration of a Supplier Base Reduction process (referred later as SBR).

A comprehensive analysis of the supplier base allowed me to identify several challenges: *First*, while GSK's supplier base is presently constituted of approximately 1200 suppliers, the latter are not necessarily engaged in active supplier relationship (*i.e.* buyer-supplier relationship) but nonetheless are registered as suppliers. GSK effectively and actively uses approximately 60% of its base, currently. *Second*, multiple suppliers are engaged in limited supply activity, and only provide one or two products. *Third*, GSK purchase identical categories of products and commodities, repeatedly, from a large set of suppliers; for instance, many suppliers are registered to provide organic chemical materials while major key strategic players exist on the market. An effective purchasing reallocation would enable them to reduce their supplier operating costs.

At the present time, these circumstances strain GSK's purchasing budget through the spreading among the various suppliers. Nevertheless, certain suppliers prove sufficient business performance and capability and are eager to build strong relationships resulting in mutual benefits (Sarkar & Mohapatra, 2006), other suppliers may not be eager to collaborate and more compelling to deal with since

they do not have the sufficient capabilities enabling them to meet GSK's mid-term and long-term requirements (amongst others: cost, quality, delivery performance).

Practically, this signifies that small suppliers who do not account importantly to GSK, in term of purchasing budget and volumes, the latter would not be eager to build and nurture strong buyer-supplier relationship or further development and collaboration. As a consequence, the transactional nature of these relationships may lead to inadequate service levels, as the balance of power between the buyer-supplier is asymmetrical. Furthermore, the inadequateness of the service levels offered might even lead to major supply crisis. Indeed, the latter statement assumed that the supplier was accountable of non-critical, routine product supply, however if the product supplied appeared to be strategic or bottleneck in nature, supply disruptions might arise.

As previously mentioned, GSK has a large and complex supplier base, whose configuration is owed to the heterogeneity in product requirements. While some of them could be shifted towards large incumbent suppliers, some others pertain to a specific market, hence finding an alternative supplier from the actual supplier base is quite complex. Due to the supplier base configuration, operational problems may rise. Consequently, supplier base optimization (especially reduction) options would potentially benefit the company. An adequate supplier base management policy could lead to significant reductions of suppliers which could result in purchasing consolidation and efficiency gains, in turn. Pertaining to the latter statements, too large supplier bases have proved to be inefficient, the ultimate goal of this thesis aims at assisting the GOP department in the examination of a SBR program. The concrete objective is to build, based on transversal examinations, a process that would describe the activities and roles to be performed and endorsed, to facilitate the supplier base management and foster its efficiency.

1.3 Scope of the paper and limitations

As discussed above, the ultimate goal of the thesis consists of conceiving a process for the GOP department that could be examined further and potentially implemented as part of a supplier base reduction strategy. However, since the GOP department encompasses multiple divisions and streams of operations, examining the entire supplier base would be too compelling and is therefore out of scope. The main reasons lying behind this restriction are:

A. I realized my internship in the Sourcing Group Chemical, which is a subdivision of the GOP department, hence I had the opportunity to gain understanding on the operations' functioning. B. the analysis of the entire base would induce significant compelling and labour-intensive tasks owing to the large commodities' heterogeneity.

The scope of this thesis is then reduced to one subdivision of the GOP department, as it will be discussed in-depth in section 4.

Besides, it should also be noted that supplier base reduction strategies is a field of study belonging to supply management. As part of this thesis, a limited constituent of supply base management has been discussed. And lastly, since there exists various supplier base reduction approaches, I tried to develop the most appropriate one, with regards to the vaccine industry's complexity.

1.4 Structure of the paper

The current thesis is subdivided into seven sections. The section two introduces the material and research methodology utilized for the elaboration of the thesis. The third section presents the theoretical foundation pertaining the thesis' research problem. A large set of theoretical elements regarding supplier selection, supply base management and other tools are provided, supplemented by punctual best-practices learnings from practitioners. Subsequently, the fourth section examines the vaccine industry and the procurement operations at GSK Vaccines, and provides a brief analysis of the Sourcing Group Chemicals supplier base. The fifth section examines and discusses the development of the SBR process. Section six discusses and evaluates the model proposal under different aspects, some of the advantages and drawbacks are presented subsequently. And finally, the seventh section summarizes the thesis and the process developed. The limitations and suggestions of the study are then presented, thereafter some managerial implications are discussed.

2. Material and research methodology

This second section describes the materials and research methodology utilized for the conduction of the study. The subsections discussed here below have been elaborated with respect to the methodological steps built upon the works of Yin (2013). First, the methodology and the research design are discussed, second the data collection method is described, and subsequently the overview of the validation and reliability of the data is presented.

For the sake of clarity and comprehension, the elaboration and conduction of the thesis has been supported by a qualitative research. I used action research (*cf.* development *infra.*) as fundamental research approach. Indeed, the adequateness of qualitative research methodology was proven given that the research problem discussed required a deep and comprehensive understanding of the possible antecedents and links of supply base management strategies. Those results required interpretations and evaluations as well; therefore, the quantitative research option was not deemed appropriate and eligible in the framework of this master thesis since the business problem covered mainly deals with exploratory issues rather than with frequencies or incidences.

2.1 Methodology and Research Design

According to Yin (2013), an action research consists of designing a study whose findings contribute to solving a particular and acknowledged business problem (in this context). The purpose of the research consisted of solving a business problem encountered in a real professional context of a specific company department. In the present case, the key objective is to analyse the problem under different angles for ease of comprehension, and try to develop an effective way of coping with this issue for prospective usages (*cf.* **Fig. 1.** *infra.*).

To do so, an in-depth case study research was conducted to gain a greater understanding of supply base management issues and more especially supply base reduction matters (referred later as SBR). The case study has been consolidated by the aggregation of 6 interviews stemming from various organizations that recently conducted actions over their supply base (reduction, rationalization, consolidation, expansion, etc.). The underpinning idea of case study utilization was primarily exploratory in nature, pursuing the objective of consolidating the theory discussed

in the literature review section. According to Yin (2013, p. 5), « *an exploratory study is a valuable means of seeking insight and assessing a phenomenon especially when little is known about a specific phenomenon* ». Ellram and Edis (1996), corroborated this in stating that inductive research methodologies enabled researchers to support their theory with potential ways of explanatory relationships. They added that conversely to the frequent and numerous complaints made towards case studies' validity and value, the contemporary research protocols have become systematic and prescriptive in nature and consequently more reliable than a few decades ago (Ellram & Edis, 1996, p. 21). The methodological process used in this thesis is depicted hereafter:

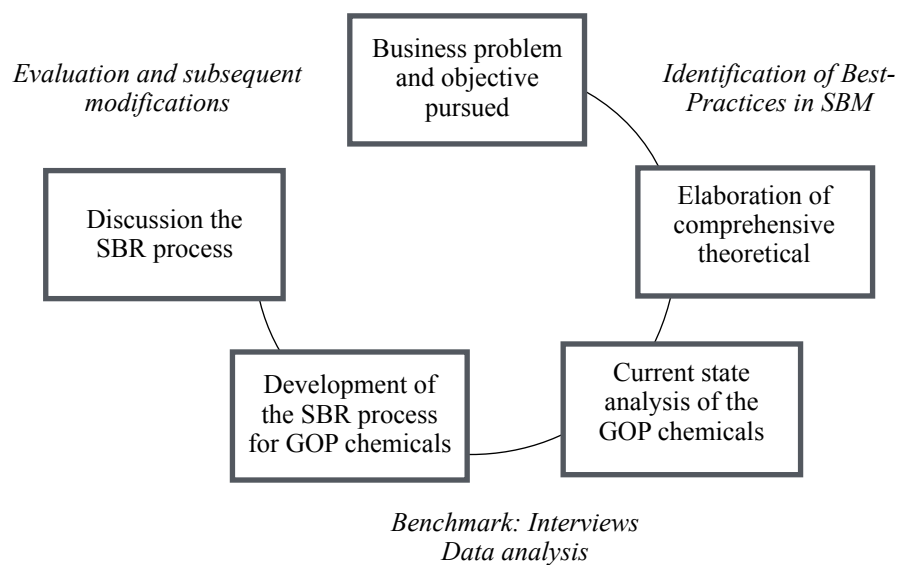


Fig. 1. Methodology guidelines

- 1) The scope of analysis is established through the definition of the business problem and the objectives pursued.
- 2) The second phase consists of gaining understanding of the business problem through the elaboration of a literature review regarding supply base management issues , and supplement the theoretical background thanks to existing empirical case studies, (e.g. supplier base management best practices). In conjunction with the elaboration of the literature review, the draft of the conceptual process is developed. The main purpose of this conceptual framework is to describe the required activities for conducting a SBR project. It also serves as strategic roadmap upon which the process proposal is builded.

- 3) The third phase consists of gathering various data (numerical internal data, findings from interviews, market & competitive intelligence) and thoroughly analyze them in order to evaluate the current state of the GOP chemicals supplier base. This third step contributes to plan further actions of the SBR project, and gives enables to gain insights on how to build an adequate process for the GOP chemicals unit.
- 4) During the fourth phase, I decided to perform a competitive intelligence work in conducting a Benchmark over « Best supply management strategies in large organizations ». The study gathered the opinion and experiences of 6 procurement practitioners stemming from distinct companies and industries (*cf. Appendix A*). The analysis of the interviews has been used to elaborate and tailor the conceptual process to the GOP chemicals' environment. The resulting outcome is the proposal of a SBR process that could potentially be implemented by the GOP department in order to reduce efficiently its supplier base.
- 5) Lastly, the process proposal is critically assessed and discussed from under practical considerations.
- 6) The sixth phase is out-of-scope and suggests the process to be developed and implemented on a pilot scale environment. Subsequently, an assessment of the results and the elaboration of strong recommendations on how to improve the effectiveness of the implemented process should be provided.

2.2 Data Collection

There exists an array of methods in which one can collect data. According to Yin (2013), the selected research methodology induces to follow the adequate data collection method. Yin states that evidence are stemming from 6 sources: documentation, archival records, interviews, direct observation, participant observation or and physical artifacts. As part of this thesis, the data have been collected through a triangulation method (*i.e.* a combination of sources are used in order to ensure a complementary cross-checking of the 3 sources):

- *Firstly*, the literature based on research papers and other empirical studies.
- *Secondly*, semi-structured interviews performed to gather information supplementing the literature.

- *Thirdly*, business-case related data (excel files, powerpoint presentation and other documents) and field observations.

2.3 Data validation and reliability

According to Yin (2013), data reliability and validity depend on the rigor used to design a research, hence the adequate research methodology must be used since it significantly influences the outcomes of the study. Beyond the appropriateness of the research methods, a thorough description of the research activities is essential, since without a defined work scheme, the study might lead to random results that would be complex to replicate, which would produce invalid and unreliable results.

Data validity must be measured both internally and externally. First, internal validity reflects the extent to which a causal relationship in a study is warranted (Yin, 2013, p. 47). Second, external validity evaluates the approximate truth (*i.e.* validity) of the results in order to involve generalizations (Yin, 2013, p. 48). In regard to this research, internal validity is not relevant since the scope of the study is exploratory by nature and does not imply any establishment of cause-effect relationships. Conversely, since the main objective pursued in this thesis consists of measuring the development and implementation of a SBR process in a given department, extending the scope of the project to other departments of GSK would be appreciated. Therefore, evaluating the external validity is coherent.

I made my internship at the case company and was responsible for conducting a small-scale SBR project, since I managed the implementation of the SBR process and measured the results obtained, reliability and validity of this study can be easily assessed. The results and evaluation of the reliability and validity are discussed in the Section 6 at the end of this Thesis. The validity and reliability of the 3 sources of data are discussed shortly hereafter:

1) Semi-structured interviews

An interview canevas was developed (*cf. Appendix B*) to supplement the theory with practical information and try to identify the key drivers of relationship development among various industries. Information on the corporate structure, the procurement function (*e.g.* organizational structure, maturity of the function) and on the supply base configuration were also requested. Since I used semi-structured interview scheme, there was no pre-determined wording or vocable used to ask

questions. Closed questions (binary questions) were avoided in order to give the interviewees the chance to present their own opinions and experiences. In line with the inductive methodology (beforehand discussed), the structure of the conversations was pre-defined but the interviews were variably conducted due to the business variety of companies interviewed. I had to ensure that all the questions on the interview guideline were addressed.

All the information requested were triangulated and complementarily cross-checked thanks to the interview canevas. Indeed, the same questions were asked to different interviewees. Generally, each interview conducted lasted anywhere from 30 min to 50 minutes, for the sake of concision and convenience. 6 organizations belonging to various industries, have been interviewed (reminder: *cf. Appendix A*). Depending on the degree of information required, repeat visits were made to finish the interview with the same person or to gather additional information. Eisenhardt (1989) identified in a seminal paper the *data-saturation point*, this means that all the information have been communicated and beyond a specific moment, the *data-saturation point*, no forthcoming information must be expected. In line with this key concept, interviews were stopped when all the information requested were communicated.

2) Documents

Whole the documents used in this thesis have been gathered as part of my internship function in the global operations procurement department. The different documents were given to me in order to correctly perform my tasks. I mainly used data stemming from the case company's internal resource planning system. Through the running of the business intelligence function of SAP, I could gather all the information required to analyze the different streams (as far as I am concerned, chemicals - *e.g.* purchase information). Every computer was connected to a shared-drive collecting all the relevant information required by the employees (*e.g.* Master supply agreements, Business strategy tools, information over commodities or supplier performance evaluations collected for all top-tier suppliers and some second-tier suppliers). All the information collected were obviously asked to be kept in confidence.

3) Observation data

The observation was made on how employees conduct projects and how do they interact with internal stakeholders (buy-in processes). The purpose of these observations was primarily to verify that the information collected from interviews

and documentation was shared among the colleagues of the department and among other ones. It enabled me to gather advice and recommendations regarding the conduction of initiatives, but also gain a broader understanding of the practical steps required to commit and imply people in a project.

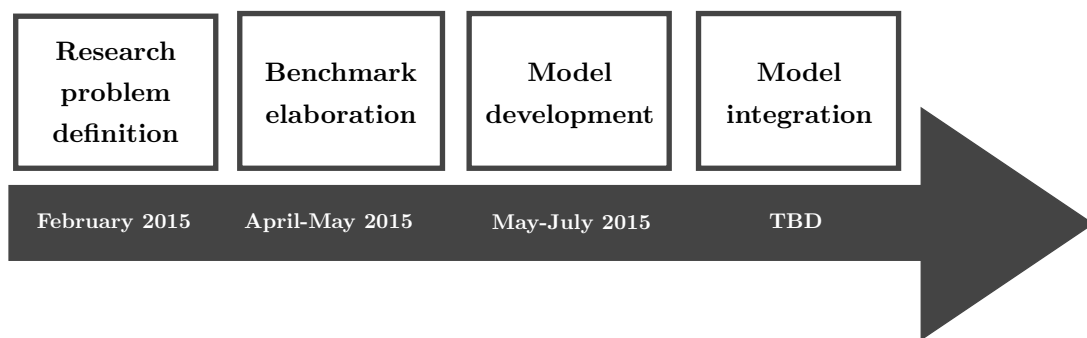
2.4 Benchmark development

The main purpose of this thesis was to conceive and develop a process, easy to use and fit-for-purpose, that could be useful for GSK in case of future SBR initiatives. Initially the idea pursued was to increase the transparency and understanding of the supplier base in classifying all the suppliers in accordance to the information available throughout the company databases, in order to facilitate the access to the information (i.e. each person belonging to the GOP could have access to the informations and thus have the capacity to conduct SBR initiatives. Nevertheless, even if the objective seems quite easy to reach, being able to apply specific selection criteria to the entire supplier base requires a thorough understanding of how operations are run and test the effectiveness of the process proposal, afterwards. Consequently, before proposing useless modifications of the actual processes, I developed a four-stage model meant to *examine* ; *segment* ; *reallocate* and *finalize* the reductions, in order to verify the validity and effectiveness of the process. Hence, this project consists of a pilot-scale process and then its potential generalization depends on the success and global acceptance of this conceptual process.

As mentioned previously, benchmarking research consists of studying a competitor's product or business practice in order to gain comprehension on best practices and performances. Benchmarking enables researchers or practitioners to gain measures (*i.e.* the benchmarks) on « what » and « how » things have been performed and achieved (DeLayne Stroud, 2014). Besides, benchmark is referred as a grouping of quantitative and qualitative analysis that enable researchers and practitioners to understand how competitors manage their supplier base ; how they face business constraints (both internal and external), analyze their response mechanisms regarding business constraints ; or transpose their recommendations and strategic choices to the practitioners' own companies.

A. Research process framework

In the first time, it is important and necessary to determine the adequate approach to conduct the benchmark, in line with the data collection. Insofar as this thesis is exploratory in nature, semi-directed interviews (*i.e.* phone calls with semi-directed question canevass) were more appropriate. Since the key objective of the benchmark conducted was to perform an exploratory competitive intelligence work through the collection of qualitative and factual informations, the interviews were dynamic and flexible in nature in order to gather substantiated responses.



B. Framework development

The objective of the benchmark was to support the development of the SBR process through the identification of the antecedents and drivers of SBR¹ initiatives. Accordingly, I developed an interview canevas adapted from prior supply base management researches (Cousins, 1999; Goffin, Szwejcjewski, & New, 1997; Jeffrey a. Ogden, 2006; Jeffrey A. Ogden & Ellram, 2006; Talluri & Campos, 2013). Specific ideas have been retrieved directly from these works (*e.g.* Ogden and Ellram who performed an empirical analysis of SBR key success factors, or Cousins who conducted a comprehensive research over SBR incitants)

C. Data gathering method

In the second time, I have selected the interviewees and the organizations to which they belong based on several parameters. Indeed, according to Van Weele, Rozemeijer and Rietveld (1998), and based on the prior work of Keough (1993), pharmaceutical companies have purchasing functions that are moderately mature

¹ SBR refers to Supply Base Reduction

and should strive to learn from their predecessors (i.e. other industries and competitors located upstream of the development model). Van Weele et al. suggest that industries in between the third and fourth stage of the development model, should learn from best-in-class industries, as telecommunication, electronic parts or automobile sector. In line with this analysis, I have performed 9 interviews with purchasing practitioners belonging to various stages of the purchasing development model.

In line with the aforementioned statement, my interview canevas includes the following elements:

- Key antecedents to SBM² strategies
- Key success factors to SBM strategies
- Key steps and outcomes achieved subsequently to SBM strategies
- Key learnings

As part of this interview, thirty procurement practitioners have been solicited through two communications channels: LinkedIn and mails. Only six of them showed willingness to help me in the conduction of my research and positively answered to my request for informations. Either the confidentiality constraints pertaining the collect of information and/or the absence of SBM initiatives in some companies have significantly reduced the panel of interviewees. The interviewees were selected in accordance to two attributes: first, on their relation to the supplier base problem ; second, on their position in the organizational hierarchy. The interview details are summarized in *Appendix A*.

Data analysis

Consistently with the past qualitative researches performed (cf. Cousins, 1999; Goffin et al., 1997; Jeffrey a. Ogden, 2006; Jeffrey A. Ogden & Ellram, 2006; Talluri & Campos, 2013), my analysis was primarily concerned with the identification of common patterns among the similar organizations (*i.e.* a within-case analysis aimed at identifying commonalities in similar situations) and across the different structures (*i.e.* a cross-case analysis aimed at identifying potential polarities and/or similarities). Once these analysis have been performed I compared and contrasted the structures and networks analyzed and ultimately tried to develop a set of principles

² SBM refers to Supply Base Management

(based on commonalities and polarities) that helped me eventually in the elaboration of a SBR model.

Data validity

Given the limited number of respondents, it is therefore difficult to suppose generalizable statistical significance, nonetheless the object of this benchmark was to investigate and explore SBR initiatives and trends within a reduced sample of key companies stemming from best-in-class industries. Furthermore, since various sources of evidence and interviewees' reviews were used, a high heterogeneity among the interviewees is acknowledged. The main respondents were either knowledgeable of SBR initiatives conducted within their organization, or directly concerned by such initiatives. They were essentially belonging to large organizations with heterogeneous and complex supply bases (*cf. Appendix A*)

Interviews' canvases have been sent to respondents who were highly encouraged to submit changes to the canvases. This enables me to have an external review of the worksheet been reviewed. However, only minor changes were made to the case study structure, in accordance with the feedbacks received through my phone calls or mails exchanges.

3. LITERATURE REVIEW

This section introduces and discuss the theoretical foundation of the thesis subject. I will firstly review the literature related to the subject. Secondly, I will develop and discuss different theoretical frameworks and tools used for supplier base reduction' sake, as well as different empirical SBR processes. Lastly, I will develop the conceptual process of the supplier base reduction.

3.1 Supply base management

Businesses and operations engaged in value-added activities purchase products or services from specific identified suppliers, this hub of specific suppliers is called « supply base », the latter can be more specifically defined, according to Choi and Kraus (2006, p. 637), as the « *group of suppliers that are actively managed through contracts and the purchase of parts, materials and services* ». This notion of supply base is interconnected to another key concept; the « focal company », namely the purchasing firm that buys product and/or services from its supply base. This essential relationship is at the core of businesses activities and will be analyzed further in the following theoretical foundation. The depiction of the relationship between focal company and supply base is represented here below.

Before examining further the details of supplier selection and the subsequent criteria, one should introduce the key concept of Make-Or-Buy (referred later by MOB). MOB decisions are managerial issues that occur before buying a product or service from an specific external supplier. We will discuss later the importance of the « specificity » of the suppliers given their major contributions to the performance of operations and the resulting revenue generated.

3.1.1 Make-or-buy decision

In the last two decades, a major trend have started to appear in the corporate world. The shift from in-housing to outsourcing of competencies was initiated. Companies have started to redesign their corporate structure, remodel their activities and flexibility in striving for overall cost reduction by contracting out activities and services. According to Hendry (1995), the main drivers and rationales behind this trend were related to opportunity cost analysis. Concretely, if contracting out parts

of activities or operations is less expensive than making it in-house, the decision should be to outsource the part of activities or operations. Hendry (1995) added that this strategic decision allows companies to realize efficiency gains in focusing strictly on core competencies and activities that can be better performed in-house. This has been corroborated by Porter (1996) who stated, in his seminal article « what is strategy », that companies should not only focus on operational effectiveness but also strive to develop and improve their corporate strategy robustness. This strategic shift can either be made through outsourcing decisions or in-house making.

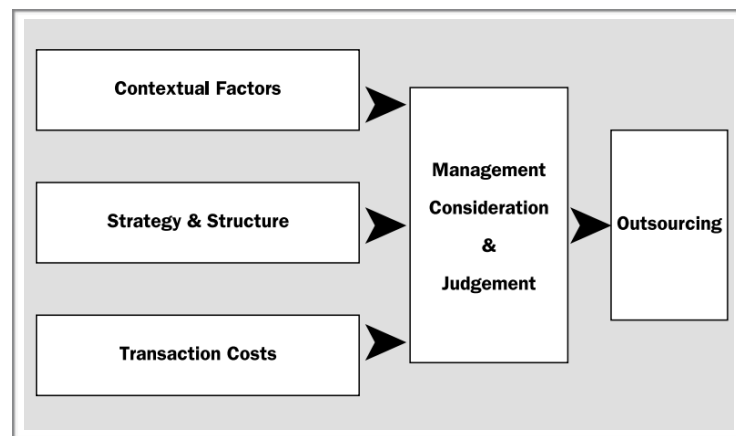


Fig. 2. Outsourcing decisional inputs (retrieved from Fill & Visser, 2000)

The strategic decision underlying MOB depends on multiple criteria that must be considered. The most frequently used criteria are: *cost, capital, innovation and capability* (Fill & Visser, 2000), Fill and Visser added that a major emphasis must be put on all the relationships developed between services or activities providers, and these dyadic relationships must be cautiously monitored and levered due to their major influence on business efficiency (*cf. Fig. 2. supra*). Mol et al. (2004) added that situational factors must be considered in presence of such strategic outsourcing decisions, and « *these environmental factors could impact upon the strategic role of outsourcing decisions and the subsequent outcomes in the framework of a company corporate strategy* (Mol et al., 2004, p. 288). Further, the authors assert that the appropriateness of outsourcing decisions, is function of multiple contingent factors (i.e. environmental factors) that must be measured and moderated in context.

Ultimately, outsourcing is still a common practice in many companies but the recent findings enabled them to highlight the impact of such strategic decisions upon

their corporate strategy. Hence, companies while having multiple strategic arrangements possible (e.g. in-house manufacturing of specific parts or activities), should not underestimate whole the contextual factors (contingent elements) and should examine them carefully in order to reach successful outcomes. Consequently, once that the strategic decision has been made, the most important step is to evaluate who is the optimal partner for each decision (activity and product) and what is the nature of the relationship we are willing to develop with these partners.

3.1.2 Supplier network development

As briefly discussed earlier, the multiple dyadic buyer-supplier relationships constitute a network of exchange between the focal company and all its suppliers (Kähkönen & Lintukangas, 2010). This unit of analysis, i.e. the supplier network, has been subject to growing attention from researchers in the last two decades. A lot of research findings, have revealed the increasing significance of supply networks. Supply base management has started to grow in concern and companies put particular extensive emphasis on supply networks analysis. Some key findings seem to converge between multiple authors (Agrawal & Nahmias, 1997; Dyer, 1996) (cited by Choi & Krause, 2006), stating that despite « *the recent trend of increasing levels of outsourcing, orchestrating activities with suppliers in the supply base from the perspective of a focal company has become a top strategic issue* », and that while simple dyadic and transactional relationships were the normative framework of operations in the last two decades, new concerns appears nowadays.

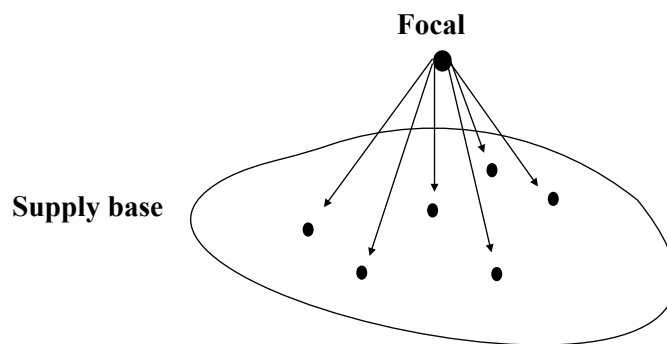


Fig. 3. Dyadic relationship (adapted from Choi & Krause, 2006)

Dobler and Burt (1996) (cited by Choi & Krause, 2006) corroborated the previous statement and asserted that « *the higher the percentage of purchased items and services to the total cost of goods sold, the higher the significance of SBM to a*

company's bottom line ». This assertion was however based on an homogeneous sectoral analysis, therefore results cannot be replicated to every single industry, contingency factors must be considered .

As previously discussed, a supplier network (*cf. Fig. 3. supra*) is a set made of dyadic relationships. Those relationships are established and developed upon various parameters and attributes (metrics and other measurement proxies). In order to significantly contribute to the company's bottom line, a supplier network must be monitored and adjusted in accordance with the pursued corporate strategy. Hence, many authors have analyzed the attributes of a good supplier selection process. The part over supplier selection will be addressed later in the related part of the thesis.

In connection with the Supplier network theory and before discussing more comprehensively the supplier selection process, the relationship development theory significantly contributes to the understanding of supply base management thematics and the underlying strategies. Accordingly, one should introduce the general relationship development process. Dwyer et Schurr (1987) have proposed and developed in the late 80's, a model explaining the buyer-supplier relationship lifecycle and all the phases through which parties must evolve. This is an evolutive model segmented into 5 stages of « maturity ». Each stage represents a relationship transition in how each party perceive the other. The discussed model is depicted *infra.* as the **Fig. 4.**

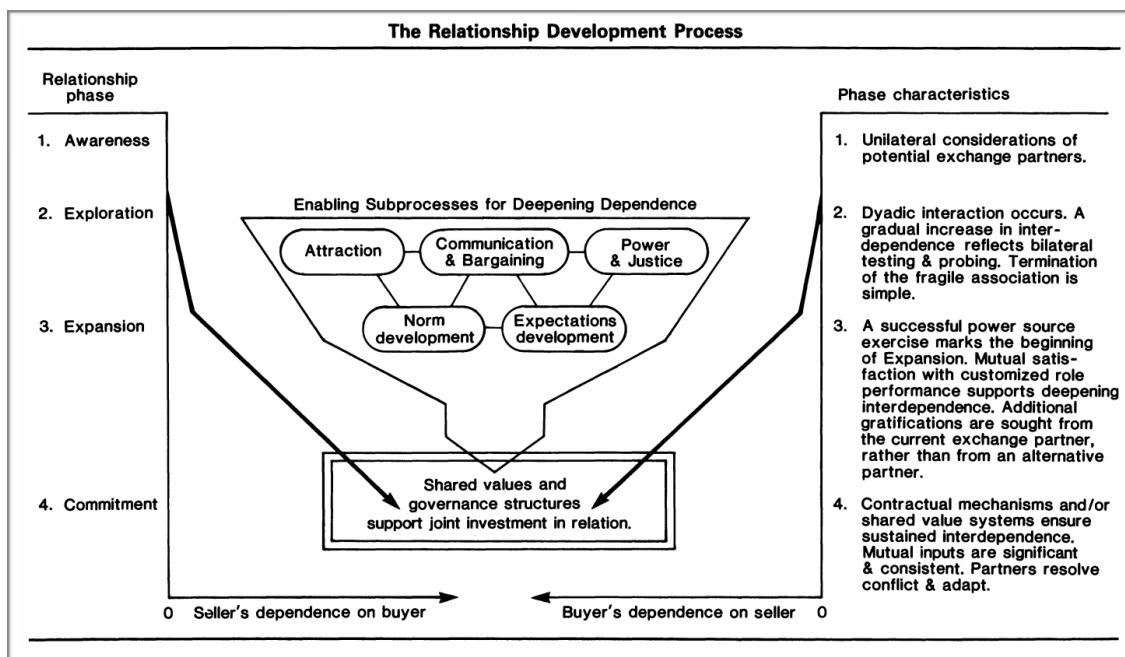


Fig. 4. The relationship development process (retrieved from Dwyer et al., 1987)

*The first stage is the **Conscience**:* one can summarize the phase as the awareness of a potential commercial partnership between the two parts. The geographical proximity is an important driver in the development of this first stage, it will influence positively the probability of commercial partnership establishment.

*The second stage is the **Exploration**:* the second phase consists of assessing the partnership establishment probability with regard to parties' liabilities and obligations. This stage aims at ensuring that reciprocity is applied between the « contracting » parties. According to Scanzoni (1979, p. 79)) « *the exploration phase is conceptualized in five subprocesses: (1) attraction, (2) communication and bargaining, (3) development and exercise of power, (4) norm development, and (5) expectation development* ».

*The third stage is the **Expansion**:* It consists of the increased frequency in transactions and mutual gains generated through the relationship. The level of interdependency among the two parties has grown as well and the mutual satisfaction withdrawn from the relationship is tangible. From this third stage, it may be noted that preferential treatment and relationship development start to emerge.

*The fourth stage is the **Commitment**:* this phase is the mature stage of the development model. Trust and solidarity are embodied by the parties and the acknowledgment of the other party as potential partner cannot be disputed. Duties and obligations are clearly defined therefore benefits and costs are analogously shared. The parties do not have to direct much efforts towards a careful definition and monitoring of the exchanged items. Thanks to contractual mechanisms and shared-value principles, the continuity and robustness of the relationship is ensured. However, in order to guarantee a sustainable strong performance and quality commitment, the relationship must be stimulated recurrently.

*And the last stage of the development model is the **Dissolution**:* this phase refers to the termination of the buyer-supplier relationship. This last life-cycle stage do not necessarily occurs after the commitment phase, disengagement can potentially occurs at any time in a relationship. Indeed, any party withdrawal from the relationship depends upon the adequate conduction of the development model stages. The later the disengagement will occur, the stronger will be the consequences.

Consequently, various authors have examined the adequate adoptable strategies in case of dissolution. Baxter (1983) (cited by Dwyer et al., 1987) stated that two dominant strategies should be conducted with respect to the situation:

Direct strategy: One of the parties formally and explicitly express its willingness and desire to terminate the collaboration.

Indirect strategy: One of the parties try to implicitly disengage from the relationship.

In accordance with the model discussed, one can notice that a genuine process exists along the life-cycle of the buyer-supplier relationship.

The relationship's length and robustness is subject to change, depending upon various factors, for instance: adequateness between the two parties in terms of expectations and business needs. The main advantage of the model is to help companies to gain understanding of the key drivers in dyadic buyer-supplier relationships. Indeed, it enables companies to develop or strengthen their competitive position vis-à-vis other companies and to improve their attraction regarding potential new suppliers. Furthermore, it helps companies to identify the maturity of their relationships through the positioning of the relation on the 'adequate life-cycle' stage. Lastly, some companies' corporate strategy aims at achieving the status of preferred supplier/seller, in such positions the model allows companies to deploy the adequate levers accordingly to the life-cycle' stage. However, the main limitation of the model is its inherent generality: it cannot be extended and generalized to multiple sectors. We can hardly consider that the strategic levers and managerial tools to deploy will be systematically the same in recurrent situation (e.g. specific supplier typology, specific purchasing group).

3.1.3 Supplier selection

As shortly discussed earlier, there is a major trend in business consisting of outsourcing components and/or services, and make-or-buy decisions are frequently disputed among companies (Mol et al., 2004). However, once the purchase decision has been made, determining the optimal partner for each purchase decision is of paramount importance (Choi & Hartley, 1996). As previously developed, there exists multiple options regarding the kind of relation desired (e.g. long term or short term, co-development relationship or not). Consequently, supplier selection appears to be a

major decision as part of the establishment of a robust supply base. Ogden and Ellram corroborated this in stating that « *without a competent supplier network, a firm's ability to compete effectively in the market can be hampered significantly* » (2006). Indeed as organisations increase their dependency towards suppliers, poor decision-making may induce severe consequences either directly or indirectly (De Boer, Labro, & Morlacchi, 2001). De Boer et al. added that successful sourcing strategies are based upon the robustness of the decision-making, but that ad-hoc contingent developments can occur and must therefore be mitigated. Indeed, « *these developments strongly urge for a more systematic and transparent approach to purchasing decision-making, especially regarding the area of supplier selection* » (2001). The latter statement significantly influenced the development of recent supplier selection methods, as discussed here below.

Indeed nowadays, many studies have been conducted about supplier selection methods and techniques, basically the main purpose of these researches was to help and support purchasing decision-making through the development of a comprehensive view of supplier selection processes. Supplier selection is a multi-objective process which consists of both quantitative and qualitative factors. Consequently, companies often have to trade-off between tangible and intangible factors with intent to pick-up the adequate supplier (De Boer et al., 2001). A notable trade-off arising in many companies is the dilemma between Quality and Cost: most of the successful decision-making must integer and conciliate those two key factors to qualify the appropriate supplier.

The key drivers and decision criteria of such decision have been frequently examined thanks to operations research. A wide range of structured methods (e.g. multi-criteria methods; mathematical programming; data mining; data envelopment analysis) and techniques have been elaborated in order to more precisely model fundamental business problems (decision situations). It appears from ex-post studies that operations research has significantly contributed to improve the effectiveness of specific purchasing decisions. Various researchers have identified and reported some benefits related to systematic approaches of supplier selection decisions (cf. Vonderembse and Tracey, 1999; Weber, 1991; De Looft, 1997). De boer et al. (2001) stated that the two main advantages of systematic approaches were:

- « *Helping the purchaser in solving the ‘right problem’, e.g. refraining from dropping a supplier when the delivery problems are actually caused by feeding the supplier with outdated information* » ;
- « *Helping the purchaser in taking more and relevant alternatives criteria into account when making purchasing decisions, e.g. more long-term considerations when deciding on make-or-buy* » ;

Since the mid-1960s, multiple notable supplier selection models have been developed. Dickson (1966) is one of the early researcher that examined the concern. He pointed-out 23 major supplier criteria that purchasers must trade-off when selecting a supplier (*cf. Appendix 3.*) He further analyzed the decision-making process in order to highlight the conflicting criteria and extensively, tried to develop a systematic approach of supplier selection. Dickson created a questionnaire in order to highlight the most recurrent decision criteria, and he sent it to 273 american procurement professionals (Canada & USA). 170 respondents took part at the survey and the subsequent results of the study enabled him to construct his model. Dickson identified the 23 most important factors and ranked them in accordance with their frequency of occurrence during the survey. Some of the findings are surprising, as for the price factor which is ranked in the 6th position. In today’s globalized economy, price ranking would be much more disputed among companies.

Thereafter, numerous conceptual and empirical working papers on supplier selection have been published. Verma and Pullman (1998) reviewed 74 articles published between 1966 and 1990 and assessed the frequency of occurrence of the criteria identified in 1966 by Dickson. Verma and Pullman found out that the 23 attributes were still debated in the literature. Nevertheless, they noticed that the prior ranking of the criteria has changed due contemporary situational factors (*i.e.* modifications of the business environment and other new intellectual currents). Their research’s findings also shown that the QDC tryptic (*i.e.* price, delivery time, and quality) represents the 3 most discussed criteria of supplier selection. Similarly, the geographical factor has also known a major upstream shift; this can be attributed to the fact that new managerial practices appeared, as the Just-In-Time concept. The latter has tremendously changed the functioning of manufacturing companies (and the buyers’ expectations in turn), straining them to reorder the list of criteria by which suppliers are selected (Weber, Current, & Benton, 1991). Weber et al. added that companies governed under the JIT concept put a priority emphasis on Quality

criterion rather than on Cost criterion given that the buyer-supplier relationships are not rarely cost-adversarial, but are rather partnership-based. (Weber et al., 1991).

During the last decade, noticeable changes in the way companies approach their suppliers have been noticed. Companies have started to realize that buyer-supplier relationships mainly based on costs significantly contribute to the creation of adversarial transactional relationships and hinder potential developments of suppliers (Lamming, 1993). Researchers (Albronda, Gelderman, Gelderman, & Albronda, 2004; Goffin et al., 1997; Nam, Vitton, & Kurata, 2011) argued that as part of a partnership-based relationships (*i.e.* trust, reliability, long-term agreement), the overall benefits generated surpass the savings related to cost-based relationships. Consequently and in line with the latter statement, various selection criteria such as co-operation capacity, effectiveness of the communication system, supplier commitment, and flexibility should be taken into consideration while initiating a selection process.

Since the mid-1960s, numerous supplier selection criteria were discussed in the literature., and while some attributes appeared to be more static, others are much more dynamic and continue to evolve over time and upon new situational factors (*e.g.* business environment). Obviously, I should remind that relevancy and adequateness of selection criteria is highly dynamic and must only be considered for a given company.

3.1.4 Supplier base management strategies

As a key strategic function today, purchasing and supply management constantly deal with fundamental concern regarding supply base management and development. According to Choi and Krause, supply base management consists of planning, organizing, leading and controlling a specific set of suppliers (2006). It differs from supply network management insofar as it is much more complex to organize, lead and plan a network composed of dyadic relationships, beyond the managerial reach of the focal company. During the last decades, the supply base management practices and strategies were quite constant; mainly focused on the definition of the adequate number of suppliers. Researchers and practitioners were trying to develop methods and practices of « supply base optimization » or « supply base rationalization » ; namely increasing or decreasing the number of suppliers of the focal company's supply base. The conduction of such strategies is

frequently driven by cost considerations but not exclusively: reduce the administrative and transaction costs incurred by the company but also realize costs savings in consolidating larger purchase volumes with a smaller set of suppliers (Monczka, Trent, & Callahan, 1993; Tan, Handfield, & Krause, 1998)(cited by Choi & Krause, 2006). Choi and Krause, asserted that a major global consideration should be mitigating the « *supply base complexity* » (Choi & Krause, 2006, p.643), this key concept is discussed in-depth in the **section 5** of the thesis. Dealing with complexity primarily consists of mitigating smartly the catalysts of supply base management issues, namely:

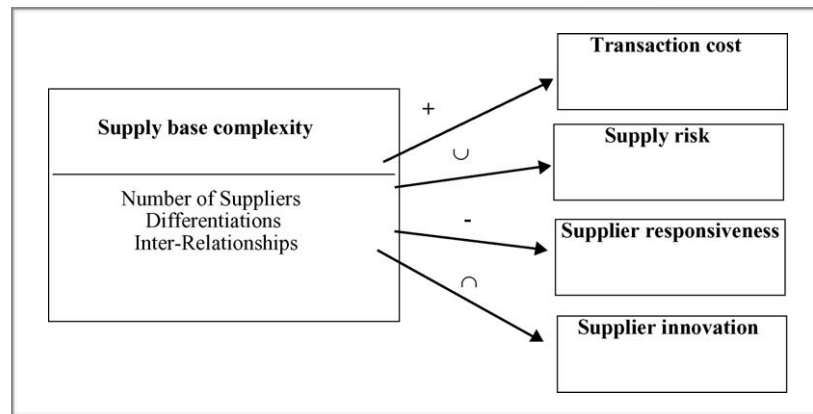


Fig. 5. Impact of the supply base complexity on a company

Various antecedents of supply base reduction, consolidation or rationalization will be explained hereafter.

As a consequence of supply base reduction or rationalization strategies, the many companies that experienced similar strategies saved significant amount of expenditures in reallocating their spent towards fewer suppliers. Indeed, typical bargaining process with large base of suppliers for delivery, quality or price concerns, account for significant amount of expenditures in a company's budget. This has led companies to redefine their sourcing strategies and favor single or dual sourcing strategies. This kind of strategies contribute more importantly to the development of favorable relationships with suppliers. Therefore, companies can reallocate their « saved spent » to co-development or knowledge sharing.

Multiple supply base management options exist, either Expansion, Reduction or Retention. Differences are significative and I will cautiously describe them. Firstly, supply base *reduction* has to be distinguished from supply base *rationalization*.

Supply base reduction is a one-step process presupposing the existence of a large supply base composed of heterogeneous suppliers with various performance and capability levels. It consists of retaining the best-in class suppliers while phasing-out the bad performers. Generally, such strategies are intended to achieve specific downsizing objectives and tighten up the supply base.

Supply base rationalization is a two-step process, based on the same assumption as aforementioned, which consists in the first time of determining the optimum and desired size of supply base. In the second time, it consists of determining the suppliers that should constitute the supply base effectively. While supply base reduction intend to downsize the base, rationalization echoes the determination of an optimum which may result in an expansion of the base.

In the present thesis, the term Supply Base Reduction (SBR) has been referred as the main designation of strategies intending to reduce the base on the basis of specific decisional criteria. While reduction issues seem evident to tackle, few literature has been published regarding the antecedents and drivers of supply base reduction. One of the biggest problem relies in the complexity of determining the optimum number of suppliers. According to practitioners, determining the « correct number » of suppliers cannot arbitrarily be decided upon. Necessarily, firms are required to develop formal processes to achieve their ideal supplier base number (Sarkar & Mohapatra, 2006). However, it should be noted that supply base reductions have as direct result an increase of focal company's dependency towards its downsized base. Consequently, those processes must be developed in line with the company's business strategy and the underlying company's structure, and should be implemented into the purchasing strategy (Choi & Krause, 2006).

Supply base expansion: There are multiple ways of expanding a company's supplier base, some manners might be intentional and some other might be the consequences of specific management decisions. Indeed, a base expansion can be part of a rationalization strategy; after the determination of the optimum number of suppliers to compose the base, business practitioners may want to extend their base to reach a predetermined number. However, researchers have shown that mainly two those strategies are the most adequate for business purposes:

- *Increase and ensure competitiveness among suppliers*
- *Mergers and acquisitions operations*

During the last decades, cost reduction was the main driver of competitiveness, Ogden and Carter (2008) stated that adversarial model of buyer-supplier relationships were frequent. This kind of practice means that the buyer-supplier relationships composing the supply base, engage noncooperative behavior in the relationship development. Basically, the key objective of firms pursuing such supply management strategies consists of « maintaining a large vendor base, both to ensure supply continuity and to increase buyer leverage while limiting supplier power. It is also referred as making frequent shifts in the mix of suppliers » (Shapiro, 1985, p. 1). Nowadays, there has been a major shift in this trend and companies do not directly compete, they rather put their supply chains in competition against each other. The key is being responsive to external environment and changing demand patterns (Mitra & Anshul, 2012, p. 64). This major shift is much more cooperative and enables both parties to reduce their costs through reduced operating costs due to cooperation.

The other frequent business practice that may result in an expansion of the supplier base, is Mergers and Acquisitions processes. Between the 1980s and the end of the 2000s, the global economical and financial environment was favorable for companies to diversify their activities through M&A processes (Weston, 2001). Multiple antecedents of M&A can be pointed out: large organizations want to develop new opportunities for investments, reallocate their capital through a risk reduction policy (diversification and spreading across various industries). According to Weston (2001), environmental factors have significantly influenced this trend in creating forces producing M&A activities. Furthermore, Weston added that multiple other reasons for acquisitions exist, as synergy gains, reinforcing the shareholder value, maintaining a high level of competitiveness, and obviously the fundamental pillar of M&A activities, enhancing the competitive position of the group through growth and expansion.

As mentioned earlier, in case of M&A multiple adjustments must be operated within the united venture, each company will not change automatically to match the new organization culture or supplier base policy. Consequently, from a purchasing point of view, this practice induces an overlapping of the supplier base in the new organization, as depicted in the **fig. 6. *infra***. Indeed, M&A can lead to various outcomes, as depicted here above, the supply base can be expanded but can also be widely overlapped and consequently must be reduced (master agreements must be renegotiated or key suppliers have to be phased-out). Beyond strictly dealing with

rationalization matters, synergies must be identified and measures must be taken to act accordingly (e.g. standardize systems and databases; unify working modus operandi). Supplier base reduction might be highly relevant when the unified organization constitutes a large portfolio which incurs unnecessary indirect costs. Monitoring carefully the new supplier base constituted allows companies to avoid resources wasting, and besides manufacturers can benefit from close relationships / partnering with their supplier (e.g. for common cost reduction issues).

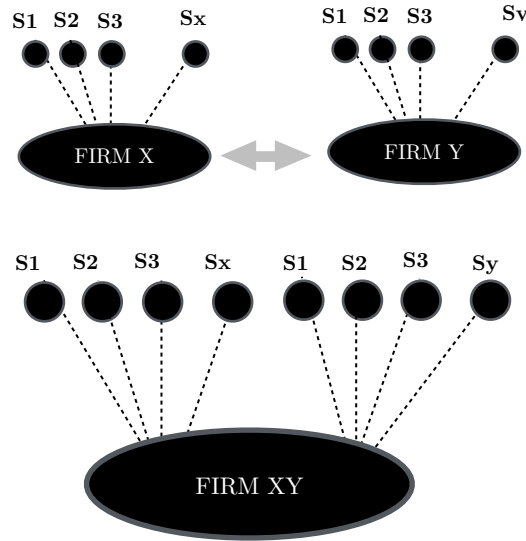


Fig. 6. M&A impact over the unified company's supply base

Ogden and Ellram (2006) have conducted studies over best-practices and examined multiple paper related to supplier base management strategies and highlighted 12 key antecedents to SBR. Those attributes are basic in nature (*e.g.* purchasing spend, supply risk, type of product supplied, supplier financial health) but however, will be taken into consideration for the development of the conceptual model and for the benchmark conduction as well. Supply base management strategies being introduced, it is important to understand what are the key tools and methods available to practitioners.

3.2 Tools and practices

3.2.1 Pareto analysis

The notable *Pareto principle*, also called the *80/20 rule*, describes the frequent pattern of purchasing concentration (spend allocation). Indeed the principle

stipulates that for many events, nearly 80% of the effects come from 20% of the causes. By extension, it states that a small proportion (e.g. 20%) of purchases often induce large proportion (e.g. 80%) of spend. The latter statement relies on the fact that Pareto analysis are based upon purchase volume by supplier. Consequently one can easily split whole the spend allocated to our suppliers, accordingly. The basic methodology of Pareto principle consists of segmenting the spend volumes into various categories (n.b. the number of categories vary upon multiple factors as, the complexity of the purchasing portfolio, or the sourcing strategy). Consistently with the latter statement, an effective Pareto analysis will reveal that roughly 20% of suppliers (within the supplier base) provide commodities, parts or services accounting for 80% of total spend.

The Pareto principle has also served as baseline for the Activity-based costing theory, also known as *ABC costing* (cf. **Fig. 7. *infra.***). Indeed, Steele (1996) (cited by Ivančić, 2014) stated that, once the Pareto analysis has been correctly executed and the different categories are identified, logically the first category of spend volume, known as « *A-class* », will be a particular area of focus for companies. The « *C-class* », given its marginal importance in terms of spend volume, will not be given a primary attention. Indeed, the set of « *B-class* » and « *C-class* » components approximately constitute 80% of purchase volume whereas they scarcely account for 20% of total cumulated spend. As a result, for those categories (i.e. *B-C-classes*), a 10% price decrease would barely represent a 2% saving over total spend. Correspondingly, a 10% price decrease over « *A-class* » components would lead to a 8% saving over total spend. In other words, first class components contribute more significantly to purchase-related savings (i.e. 2% versus 8%)

The Pareto principle is a common rule of thumb in procurement and has multiple managerial implications. Indeed, it allows companies to clearly prioritize their suppliers in function of their purchase volume contribution, and enables the company to develop differentiated strategies for their suppliers as well. Thereafter, companies can focus their attention and efforts on purchasing groups enabling the biggest returns in terms of performance continuous improvement or efficiency gains enhancement (Moore, Grammich, & Bickel, 2007).

Consequently, many companies use the *ABC costing method* (and preliminary Pareto analysis) in order to increase significantly their profit through an adequate focus on most efficient zones (whether products or services). Correspondingly,

redirecting efforts and focus on specific parts and activities of the portfolio implies counteractions as, for instance, elimination or delegation of the pertaining non-efficient zones. Indeed, ABC costing method must be supplemented by logical and effective counteractions. As part of a supplier base rationalisation, Pareto is used in order to categorize suppliers according to the three classes aforementioned.

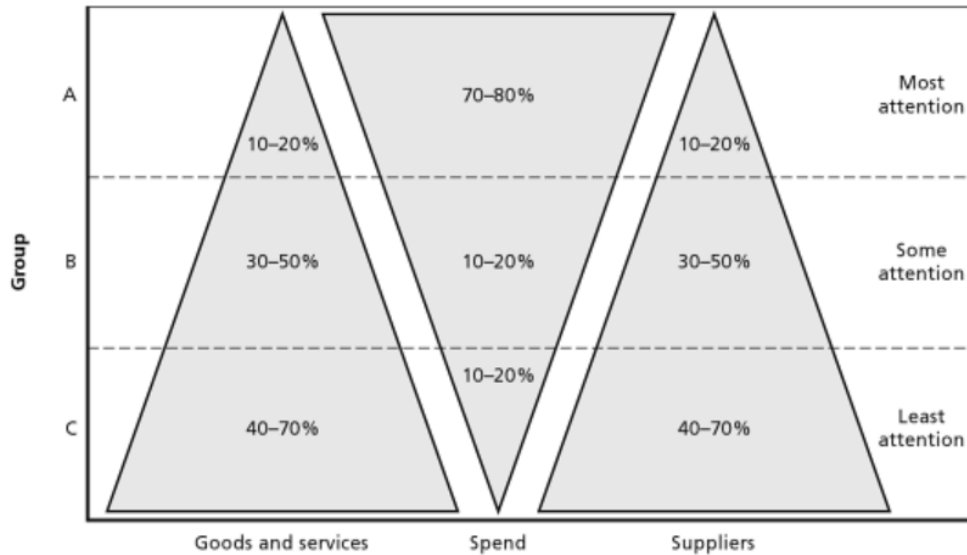


Fig. 7. Activity-based costing segmentation (retrieved from Moore et al., 2007)

- *A-Class*: 10-20% of the suppliers of the panel require close attention and efforts
- *B-Class*: 30-50% of the suppliers of the panel require attention
- *C-Class*: 40-70% of the suppliers of the panel require least attention and management efforts. Regarding the articles supplied by those segmented suppliers, they will be subject to another segmentation tool. Given the important purchase heterogeneity in product and service, they will be segmented according to purchase matrices like the **Kraljic** purchasing portfolio matrix that will be discussed in an upcoming section of the thesis.

3.2.2 Purchasing portfolio

The Pareto analysis is a preliminary study enabling to focus the buyer work on the most important purchasing segments. Research findings converge in indicating that a « *successful supply chain management requires to build an effective and efficient relationships portfolio management* » (Bensaou, 1999, pp. 7-8). However, as mentioned here above, multiple segmentation tools exist and their appropriateness and accuracy varies upon the unit of analysis (suppliers, commodities, purchasing

groups...). Indeed, multiple purchasing matrices establish that purchases can be segmented according to various specific categories, the usage of those tools is acknowledged and companies tend to normalize these tools in accordance with their corporate environment. Bensaou added that « *firms must match the optimal type of relationship to the various product, market, and supplier conditions; and second, they must adopt the appropriate management approach for each type of relationship. Supply-chain management failure is the result of a mismatched relational design or a poorly managed appropriate design* » (1999, p. 36).

A basic matrix is composed of two principle axes - simple (e.g. cost, value, volume) or complex (data aggregation or proxies: CQD - cost/quality/delivery time, Performance,...). The literature has been nurtured since many years and consequently many different tools exist even if their similarities are important, their usages vary from sectors to other. As introduced *supra.*, the most notable purchasing portfolio matrix is the Kraljic. Kraljic (1983, p. 1) defined its purchasing tool as follows: « *pragmatic device on how top management can recognize the extent of its own supply weakness and treat it with a comprehensive strategy to manage supply* ». The matrix importantly influenced purchasing research and the professional world through a consequent revolution of the procurement function processes (A. J. Van Weele, 2005). The matrix attributes are depicted in *Appendix 4*.

3.2.3 Kraljic purchasing portfolio matrix

Nowadays, companies are paying growing attention to their purchasing function since their role in business has been highly discussed in the recent literature and has proved to be of significant support in contributing to companies' value-creation. Furthermore, purchasing is frequently considered as a function that can help companies to strengthen their competitive advantage (Kraljic, 1983; McGinnis & Vallopra, 1999; A. Van Weele et al., 1998). Furthermore, according to Zolkiewsky and Turnbull (2002), « *the identification of key buyer-supplier relationships helps an organisation to allocate its resources for building and developing such relationships* » (cited by Sarkar & Mohapatra, 2006, p. 150). In line with the latter statement, Olsen and Ellram (1997), reviewed and criticized (cf. **Fig. 8. *infra.***) the most notable purchasing portfolio; the Kraljic matrix (Kraljic, 1983) (cf. *Appendix X.*), a conceptual tool enabling companies to get better insights regarding supplier relationship development and management.

Olsen & Ellram (1997) conducted a comprehensive cross-industry benchmark in order to identify the best-practices in term of purchasing portfolio management, they reviewed the model through a minor but impactful modification of the 2 axes: they approximated the supply risk by the purchase complexity (similarly to Choi and Krause, 2006) and the profit impact by the strategic importance of the product.

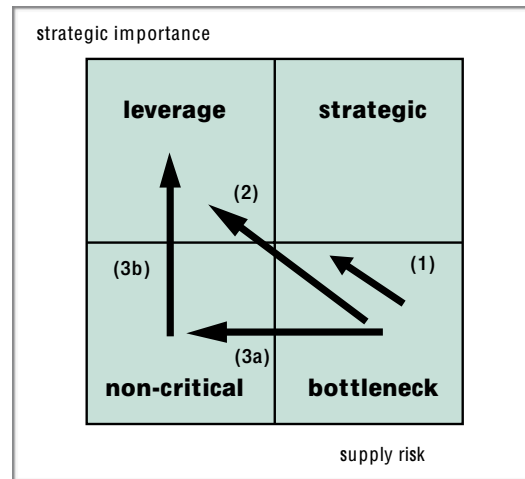


Fig. 8. Purchasing portfolio update: depiction of potential strategic directions in regard of commodities segmentations (Olsen & Ellram, 1997)

The **Fig. 8.** depicts the key modifications operated by Olsen & Ellram regarding the purchasing segmentation. They suggested that bottlenecks items, non-strategic by nature should be targeted by effective purchasing consolidation policies. while the non-critical ones should either be shifted towards preferred suppliers (consolidation) or eliminated by new ones. As a consequence of this statement, an adequate commodity segmentation would enable practitioners to gain better understanding of their portfolio and the supply base management strategies to be performed accordingly.

As regards the case study, non-critical bottlenecks items could not be targeted since the vaccines industry is highly complex in nature and regulated. The materials are much more difficult to source which impedes the sourcing ease. Consequently, the major materials concerned by tail management policies should be located in the bottom left part of the matrix.

4. Business case: *Glaxo Smith Kline Vaccines Wavre* and Global chemical purchasing operations

4.1 Introduction to *Glaxo Smith Kline Vaccines Wavre* and Global chemical purchasing operations

4.1.1 Preliminary analysis of the pharmaceutical industry

The pharmaceutical industry encompasses whole the activities related to the medicinal products, it is to say: from research & development to drugs manufacturing and the subsequent distribution and marketing stage. This industry face significant challenges (i.e. economic risks, health and safety hazards, societal risks,...) insofar as medicine products are strictly regulated and all the incoming substances and materials related to the manufacturing process must be identified and controlled. Pursuant to article 1 of the *Belgian public health code*, and with respect to the definition of medicinal products, a medicine is defined as « *a substance or aggregate of substances (composition) possessing curative or preventive properties regarding human or animal diseases [...]* ». By its very specific nature, there are inherent barriers to this industry in comparison to many others.

Multiple factors have contributed to place pharmaceutical in the economical upper class of worldwide industries. Indeed, according to MarketLine (2014) the global pharmaceutical market has generated a total revenue of €608.4 Bn in 2013 and 4.6% of compound annual growth rate is expected from 2014 to 2019. These positive indicators act as strong signals of market robustness and can be attributed, amongst others, to the aging population, sustained R&D investments and subsequent technological progresses or improvement in health care access.

Nevertheless, as mentioned here above, the pharmaceutical industry is facing significant problems nowadays. In particular regarding the restricted allocations to research & development, the complexity to formulate new and more efficient medicines, or the heightened and reinforced monitoring of health authorities. To illustrate further research limitations; a group of authors (Grabowski, Vernon, & DiMasi, 2002) have conducted extensive analysis of R&D investment returns, they stated that on the basis of a thorough laboratory analysis of 10.000 molecules, only 10 out of 10.000 molecules will allow the laboratory to elaborate a medicine and only

1 out of 10 will be authorized by regulatory authorities to become a marketable product. On top of this, most of the medicines are subject to long time periods of amortizations.

The key success factor to efficiently tackle these challenges is to improve the productivity gap in reducing as much as possible the time-to-market while avoiding fast-to-market phenomenons which tend to alter product quality. Furthermore, according to Gassmann, Reepmeyer et al. (2008) in order to reduce the productivity gap (R&D phases) and to meet the high revenue growth of the industry, the blockbuster strategy has remained an imperative to pursue such revenue growth rates.

4.1.2 Analysis of the vaccines industry

Although vaccines belong to the pharmaceutical industry, its industry must be differentiated and examined separately, insofar as vaccines industry possesses specific inherent particularities. Until the mid-1980s, vaccines were representing a marginal activity in the global pharmaceutical industry, accounting for less than 5% of global pharmaceutical turnover, most of the countries owned their respective production units to respond to the specific needs of their territory. In the early 90's, we reached a turning point and the vaccines industry became more attractive to industrials. The arrival on the market of new, more efficient and more expensive vaccines has act as key drivers for change. This turning point has led the market, according to Statista (2015), to a global revenue of \$10 Bn in 2005 to \$42 Bn expected in 2015 which significantly underlines the forecasted market growth in the next 5 years.

Since the recent joint venture between Novartis' oncology unit and GSK (this will be discussed later) the vaccines market has been segmented and shared between 4 key leaders: the laboratories *Pfizer*, *GlaxoSmithKline*, *Sanofi-Aventis* and *Merck*, these 4 competitors constitute 80% of the worldwide sales (Statista, 2015). Furthermore, 90% of global vaccines are produced by european manufacturing units and 84% are exported. Namely, this means that Europe is a key player in the vaccine industry and this is due to its R&D investment strategy in comparison to the other continents (Gassmann et al., 2008).

Quality controls

In most frequent usages, vaccines are inoculated into the final patient's blood, therefore caution and safety are of paramount importance and must be ensured. Their usage being also a public health issue, a comprehensive assessment of the benefits and risks generated regarding their quality, safety and efficiency, must be conducted as well. Quality standards constantly evolve and become more accurate and straining, as for the technological advances. This context has been formatted by health authorities being increasingly vigilant about therapeutic advances and the subsequent side-effects. This assertion has been previously discussed and can be corroborated by Grabowski et al. (2002) who stated that only 1% of substances researched can lead to authorizations from regulation organisms.

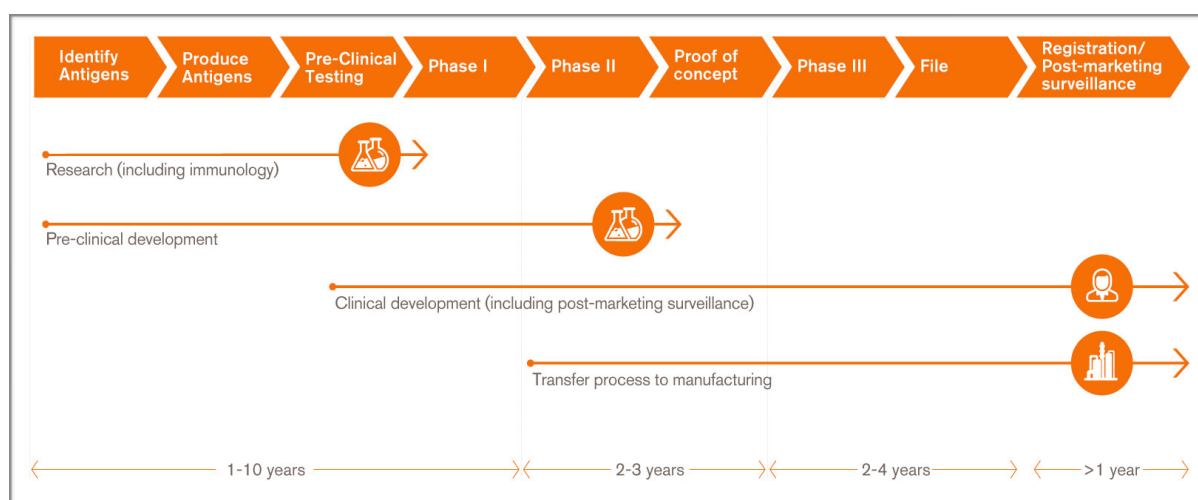


Fig. 9. Vaccine development-cycle

As depicted *supra.* in **Fig. 9.**, the « vaccine life-cycle » is very long and compelling, multiple stages must be successfully crossed before a vaccine is made marketable by the regulation authorities. This long time period is legitimated by safety and efficiency requirements, but it can significantly affect business operations. Consequently, companies must integer this time parameter in order to adapt their research & manufacturing process.

According to internal GSK data, quality controls account for 60-70% of vaccines production processes, indeed examinations are operated upstream and downstream the manufacturing process, either by suppliers or selling and buying countries. Which increase significantly the strategic importance of the materials sourced.

High market concentration

As noticed earlier, the vaccines market is highly concentrated and shared among 4 key incumbents (reminder: 80% of the market is shared between those 4 key players). This typical market feature can be explained by various facts:

Regulatory and legal frameworks can tremendously affect the ease of market entry in multiple ways. Indeed, a company willing to launch its product on the market must prove to the authorities that the composition and subsequent formulation of its drugs are effective and safe. Furthermore, as stated earlier, only 1% of the total substances examined are made marketable (Grabowski et al., 2002).

Developing a new mixture and substance, all along the stages, requires tremendous up-front investments. Indeed, according to Gassmann et al. (2008), more than 20% of vaccines companies' turnover is dedicated to R&D, while only 5% is dedicated on average by all other sectors taken into consideration. Besides, considering that all stages combined can lead to 10-18 years of development, the company must be able to nurture the research with significant financial and time resources.

Another identifiable regulatory barrier to entry is the use of restrictive formularies: for specific medical usages, only certain drugs can be listed as preferred. This means that non-formulary variants can only be prescribed in specific circumstances with a prior approval from the responsible authority.

4.1.3 Analysis of the external environment

This short section outlines, through a synthetic Pestel and Porter analysis, the environmental framework where vaccines are operating. Opportunities, threats and various residual influencing forces are identified

Pestel analysis

The Pestel analysis enables to gain a comprehensive understanding of the way external factors impact and influence pharmaceutical and vaccines micro-environment. After a global snapshot of the two sectors, pharmaceutical and vaccines, all the information gathered will be consolidated into a matrix of opportunities/threats. Furthermore, the Pestel analysis serves to highlight the key success factors and the focal points of the sector, that must be considered during the development.

Porter analysis

The Porter analysis enables to assess the attraction of a specific sector and analyse its related competitive environment. Here below is depicted the 5(+1) Porter forces acting on the pharmaceutical sector.

The analysis showed that the main constraints faced by the vaccine industrie are due to health regulation organisms, as previously discussed. However, competition also appears to be a key impediment to industry development. The sector is highly concentrated with a strong internal rivalry that has been compounded by major mergers & acquisitions or mutations. Consequently, the key success factors reside in innovation capacity and products portfolio management (build strong and diversified products portfolio). It should also be noted that most of the companies operate in mono-sourcing situations due to a high level of complexity in validation and qualification of new suppliers.

The concept of *complexity* can be explained as « *the degree of of formal structural differentiation within an organization*» (Price & Mueller, 1986, p. 100) (cited by Choi & Krause, 2006). Choi and Krause, transposed the concept to supply bases and stated that « *complexity is associated with the number of elements within a given system (i.e. the supply base) and the degree to which these elements are differentiated (i.e. the suppliers)*» (2006, p. 641). They added that an emphasis on inter-relationship among the elements should be put, because inter-relationship results in significantly more complexity within the supply base. Hence, from the perspective of the focal company, Choi and Krause stated that the most immediate area of supply base complexity is the degree of heterogeneity coupled with the amount of suppliers.

Regarding the qualification of a new supplier, it requires an adequate analysis of its capabilities and willingness to build a robust relationship since the qualification process is highly stringent. Another reason is that, beyond the mono-sourcing situation, some products purchased do not sufficiently account for the suppliers. Various products are purchased in very small quantities which impact negatively the attraction of the industry to suppliers. In extenso, this tends to significantly reduce the bargaining power of practitioners towards suppliers. Concerning the existing substitution products, the Porter force is low, indeed despite the increasing campaigns against vaccination and the enhancement of medicinal products, vaccines

are still very good means to prevent specific diseases. Consequently, vaccinology therapies still act as a major operator in its application range. Regarding the threat of new entrants, the straining features of the market act as a key impediment to the entry of potential players (*cf.* **Fig. 9.** of vaccine development *supra.*), hence a low and marginal Porter force.

4.2 Global Operations Procurement

4.2.1 Mission and strategic direction

Prior to this subsection, I introduced the external environment of GSK Vx Wavre, the current subsection intends to provide a comprehensive analysis of global purchasing operations at GSK Vx Wavre and develop further the operating environment.

To understand the functioning and issues of a procurement department, it is important to note and specify the corporate vision and missions pursued as part of the operations. The key characteristic of the GOP department at GSK Vx is that, beyond the fact that they provide a wide procurement expertise to all business units worldwide, they want to be, internally, perceived and linked in equality and reciprocity to all other departments. This is a typical « business partner » approach that enables the operations to be continuously aligned and coordinated with the internal customers. This vision also allows the department to gain legitimacy, coherence and effectiveness as part of its operations. As it will be explored in a next section, the department undergoes a procurement model transition (*cf.* purchasing development model) since a few years, and the configuration of the department significantly evolves as do the buyers' roles and functions.

The fundamental function of the department is managing both internal and external risk; *i.e.* dealing with punctual disruption events (*e.g.* supply risks, supplier disruptive behaviors). In conjunction with this, the department also try to challenge the stakeholders with regard to product qualities and functionalities (*e.g.* they try to maintain a good product quality level that guarantees a good product development, without compromising the financial results with extra costs induced by over specification of products and requirements). Indeed, the department is viewed as a key savings contributor and generator since its activities significantly impact the company's bottom line. Indeed, an analysis of the cost structure of a company can

importantly demonstrate the influence of purchasing department in companies. Van Weele (2010), has highlighted this; the « savings-generator » nature of procurement; thanks to the prior works of the company DuPont. Back in the 1970s, the company DuPont de Nemours, a key chemical company, developed a financial model demonstrating the origin of a company's profitability: in breaking down into 3 distinct aggregates the return on investment generated (*cf. Fig. 10. infra.*), one can remark that purchasing can significantly contribute to the improvement of a company's Return On Net Asset through various ways (A. Van Weele, 2010)

- *Firstly*, thanks to a reduction of direct materials costs, which induces an immediate enhancement of the company's sales margin (affecting positively RONA).
- *Second*, thanks to a reduction of the net working capital used by the company, which will affect positively the company's capital turnover ratio.
- *Lastly*, thanks to the improvement of the company's revenue generating potential. In challenging suppliers for product development and ideas, new customer value propositions emerged which facilitates the increase of new products' margins, in turn.

Van Weele, inferred based on a concrete application over the Heineken company (A. Van Weele, 2010, pp. 12-13), that purchasing policies basically contribute to companies' performance. Besides, practitioners should put an emphasis on cost structures and key constituents aggregates.

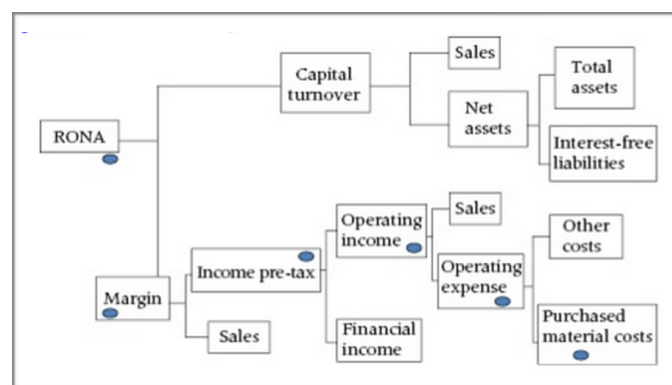


Fig. 10. Impact of purchasing policies over company's RONA

In line with the discussion aforementioned, GSK strives to develop a procurement function whose position is required to ensure a successful evolution and continuity within the company. From a more micro-centered view, GSK tries to develop robust

relationships with key suppliers through a strong supplier relationship management policy.

4.2.2 Organizational structure

The procurement organizational structure is segmented into multiple hierarchical levels: in line with the *Appendix 5.*, each group division is led by a procurement director (*e.g.* vaccines, consumer healthcare, global manufacturing supply). For the sake of clarity and concision, this section is mainly concentrated on the vaccines branch of the GSK group and more particularly on the Global Operations Procurement³ branch (*cf. Appendix 6.*) with a focus on the chemical part of the operations (*i.e.* chemical components, mixtures and materials).

It should be noted that the organizational structure is potentially subject to changes in the coming years. Indeed, as previously mentioned, GSK Vaccines and the oncology branch of Novartis have recently merged in one business unit⁴, since then multiple reorganizations have been planned and must be executed accordingly. Currently, a significant reorganization of the R&D procurement operations is to come, which suggests latent organizational changes within the GOP department.

The vaccines procurement division gathers approximately a hundred buyers who work on specific missions (*i.e.* specific parts of the operations and specific suppliers). In order to facilitate the communication among the buyers and across whole the procurement division, facilities have been organized smartly in open-spaces with free-access workstations. Every stream composing the procurement operations (*e.g.* R&D, CapEx, OpEx) is constituted of approximately 30 specialists-buyers with various level of responsibilities. Cross-communication among teams is highly encouraged in order to foster knowledge and information transfers.

Every Monday, divisions directors hold a meeting with their respective teams (called VPM for *Vaccine Project Management*) in order to give the main week directives and ensure a total cohesion and alignment between the procurement streams (*e.g.* VPM Team GOP). In conjunction to this, meetings are hold every two weeks by each purchasing family owner with their respective teams, once again (*i.e.*

³ Global Operations Procurement will be referred later as GOP

⁴ Business Unit will be referred later as BU

commodities managers). Each member of a team has to present the progress made in its work and its current projects. This also enables the team to be strategically aligned and aware of the direction pursued (*e.g.* Team meeting Bioprocess and Chemical)

4.2.3 Purchasing nature

The total purchasing amount accounts for £12 Bn, which represents 52% of the total turnover (*i.e.* £12 Bn over £23 Bn) generated by GSK. In comparison to this, the total purchasing spent regarding the vaccines division amounts for £1.6 Bn (with approximately £1 Bn for the operations and the rest is dedicated to production), which represents approximately 50% of the Vaccines turnover (£1.6 Bn over £3.2 Bn). As discussed *supra.*, a particular emphasis is put on chemical spent, which accounts for approximately €42 M (note that barely the half is allocated to Bioprocess spent). I previously mentioned the different divisions constituting the procurement department, here are the three incumbent divisions:

R&D expenditures ; Operating expenditures (i.e. OPEX) ; Capital expenditures (i.e. CAPEX)

Those divisions, as depicted in the *Appendix 7*, are then segmented into purchasing groups and sub-groups, each buyer-specialist being in charge of a dedicated sub-family (or sub-group).

4.2.4 Procurement coordination

GSK is a decentralized company that operates on a worldwide scale, however as far as the Vaccines division is concerned, the procurement function is centralized in Wavre (Belgium). This configuration is supplemented with a robust underpinning buying system composed of three channels actively managed by the centralized Wavre functions (*cf.* **Fig. 11. *infra.***):

	Lead Buying	Main Buying	Local Buying
Purchases for	All BUs	A single BU	A local Plant unit
Kraljic segmentation	Strategic / Leverage	Strategic / Leverage	Bottleneck / routine
Features of the purchasing category	Critical materials required in all plants or in large batch and volumes	Critical materials required in a particular BU and large batch or volumes	undifferentiated materials required in small volumes
Centralized / Decentralized	Centralized (Wavre)	Centralized (Wavre and key facilities)	Decentralized / local units

Fig. 11. GSK Vx buying system

- *The lead buying system* consists of buyer-specialists in charge of the procurement of critical materials and key materials for multiple BUs. They are responsible for the definition of the purchasing strategy (declined into procurement streams and commodity strategies). The leader buyer ensure the adequate contract coverage in drawing up the central contract, dealing with the price negotiations and managing key supplier relationship management.
- The *main buying system* consists of a single-BU approach whose main buyer is in charge of the procurement of a purchasing group (various commodities) within (a) specific(s) BU(s). At GSK Vx, lead buying and main buying have been brought together and the distinction is only operated in function of the commodity or purchasing group. This twofold system is supported by the aggregation of global BUs purchasing requirements through the enterprise resources planning system, SAP.
- Lastly, the *local buying system* exists in response to the routine activities of the production operations. In other words, local plants deal their non-critical commodities and products in contracting with local suppliers. The ERP system is made available to all the local buyers so that they have the ability to access all the required purchasing informations regarding their commodities.

As aforementioned, Wavre being the headquarter of the procurement global operations, all the coordination issues regarding the business units (intern and extern business units) are managed and lead by Wavre through this efficient buying system. Hence, strategic axes pursued are defined in Wavre and communicated through the

buying system, afterwards. However, even if the centralization of the operations allows a close proximity between the buyers, very few synergies between the procurement streams are generated from this configuration, despite the frequency of meetings. In response to this, the department is willing to develop a strategic framework based on close coordination and cooperation among the streams (e.g. identify a common purchasing strategy between the groups ; OPEX/CAPEX). This action will enable buyers to gain a comprehensive view of the expenditures and therefore improve the embeddedness of a TCO approach into the global purchasing strategy.

4.2.5 Purchasing operations

The global operations procurement division consists of OPEX operations, this denomination means the whole ongoing costs incurred for running, either directly or indirectly, business operations (*i.e.* vaccines production). Risk identification and mitigation are key constituting elements, as part of the GOP activities, since each procurement division are interrelated and can significantly impact other streams. So far, the GOP department has identified several challenges they want to overachieved: the coverage of purchasing activities by the dedicated department is not sufficiently efficient, thus the GOP is currently trying to increase the purchasing coverage ratio (*i.e.* the amount of purchases executed by the dedicated department in comparison to the total amount of purchases, all departments included) in order to reach a ratio of 70-80%. Besides, they also want to foster synergies' creation among divisions and streams through a smart grouping of purchasing volumes, and lastly they want to tackle the increasing trend of product « over-specification ». In response to these challenges, specific fit-for-purpose strategies have been defined, as for instance: a sustained quality and risk management ; smart inventory policies or close monitoring of SRM policies. Another key element has also influenced the definition of these strategies, indeed GSK gathers approximately 80 000 suppliers within its supply base ; almost 10 000 suppliers as part of the purchasing operations ; and roughly 500 suppliers strictly for production purchasing.

4.2.6 Purchasing complexity within vaccines industry

In comparison to the pharmaceutical market, the vaccine market is relatively small and concentrated from both a demand and a supply sides. While both market are regulated, vaccines are fiercely controlled since they are inoculated in patients'

body, and that they are widely reliant on public tenders and state policies. The vaccine market is constituted of specific attributes that increase the complexity of evaluating pricing and procurement strategies.

As preliminary discussed in the early sections of this chapter, each vaccine must go through a long and complex development process. This process includes multiple buys-in stages (*i.e.* tests and acceptance phases from regulatory organisms) which considerably impedes vaccines producers to modify the formulation of their products, in particular when the modification is in direct relationship with the final product. Procurement divisions that deal with incoming mixtures, components or materials related to the direct or indirect production, are particularly sensitive to this market feature; complexity. The early development of a new product requires a tremendous administrative burden, as files describing the selected production process, or provide the complete list of all the supply chain links, this means all the suppliers incoming into the production process (from A to Z). This administrative burden requires an enormous commitment of time, money and people.

These particular market features, have strongly determined the current procurement practices at GSK Vx, and a common purchasing trend is acknowledged: **mono-sourcing**. Indeed, very few multiple sourcing practices and situations are known due to the complexity of validating and qualifying a new supplier. Some of the products purchased by the GOP department are also stemming from sole suppliers (*i.e.* sole sourcing situations where the company has barely no bargaining power towards supplier). For instance, GSK sources a specific vegetal substance from a south-american SME. The company produces limited quantities and has a hegemonic position in the vaccines industry since they supply many other competitors, Hence GSK has to deal with dependency issues.

Similarly, innovation is also impeded by administrative burden; indeed in case of any process change or product content, potential modifications will also imply strong time and money commitments. Regarding process and content changes, a long run of validation phases is triggered by health and regulation organisms in order to ensure consistency in the quality of the products and the processes.

Another element demonstrating the inherent procurement complexity of vaccines industry is the low weighting of GSK in their suppliers' turnover. Indeed, most of the materials purchased by GSK to their suppliers are limited in quantity,

which negatively affects the attraction position of GSK towards whole the suppliers available on the market. Some production processes require tiny quantities of specific products while being highly critical to ensure continuity in operational matters (*e.g.* sometimes, 1L of chemical agent enables the company to produce large batches of finished products). In conjunction to this, barely all the key players of the vaccines industry, also supply competitors and other much more attractive industries. Beyond the quantitative factor, GSK is not perceived as a best-in-class customer since their quality requirements strongly affect and strain their relationships with suppliers. Many suppliers are more inclined to work with flexible customers whose quality requirements and standards are not constantly being reviewed upward. This statement has been corroborated by *Arnaud Florentin*, sourcing specialist responsible for the chemical stream, who stated that most of the suppliers perceive GSK Vaccines as an unattractive and non-suitable supplier in reason of the numerous requirements imposed by GSK to their suppliers.

As stated, GSK frequently faces situations of power asymmetry due to its inherent unattractive status towards suppliers. This feature tends to complexify negotiations and establishment of robust supplier relationships. In line with this, some suppliers decide to end up the production of specific materials that are not sufficiently profitable (*cf.* small batch of product, limited quantities and high quality standards and requirements). A similar critical situation recently occurred at GSK⁵, and while in response to this extended production shut-down, they could have qualified a new source, they decided to acquire the production facility, through a vertical integration, in order to ensure the business continuity and prevent any further disruptions.

All the arguments mentioned *supra.* strongly demonstrate the complex nature of this industry. Besides, the nature of the industry frequently influences the overall performance of the company's procurement function and its subsequent maturity. The following section intends to examine the position of GSK Vx on the Van Weele's procurement model of development.

⁵ Aluminium chloride case: critically strategic element essential to the production of all the vaccines (total year spent accounting for €2.5 M)

4.3 Purchasing development model

According to Van Weele et al. (2014), procurement functions tremendously vary accros industries and sectors of activities and depend on multiple factors determining their maturity, responsiveness and performance levels. Before presenting this section of the thesis, it is important to clarify some terms that will facilitate the comprehension of the analysis. The 3 terms described *infra.* are the key constituents of a robust analysis of purchasing development model.

*First, the concept of **Purchasing maturity** is defined by Rozemeijer et al. (2003) as follow: “purchasing development / maturity is related (amongst others) to the level of professionalism in the purchasing function as expressed in status of the function, role and organizational status of the purchasing department, availability of purchasing information systems, quality of the people involved in purchasing, and the level of collaboration with suppliers” (Rozemeijer et al., 2003, p. 10).*

*Second, the concept of **Purchasing performance** has been defined by Van Weele as “the extent to which the purchasing function is able to realize its predetermined goals at the sacrifice of a minimum of the company’s resources” (A. Van Weele, 2010, p. 60). Purchasing performance is of paramount importance since it may lead to, for instance, better decision-making, better buyer motivation or even operating cost reductions (A. Van Weele et al., 1998)*

*Lastly, a final concept concerns **Purchasing categories** which refer to the segments of organizational spend on bought-in goods and services (O'Brien, 2009).*

Since the mid-1980s, there has been a continuous flow of ideas regarding the development of purchasing. This traduces the fact that models have received growing attention from researchers and professionals for the integration of purchasing and supply management in the extended framework of business strategic plans (A. Van Weele et al., 1998). As previously discussed, research supports the role of purchasing in business since it is considered as a significant contributive function of competitive advantage (Kraljic, 1983; McGinnis & Vallopra, 1999). Traditionally, purchasing was considered as an operative and supportive function at the service of other departments, whose nature was to proceed to purchase orders for the other departments constituting the company, purchasing was, at best, viewed as a savings generator as they attempted to realize saving through their price negotiations. In line

with this outdated view, purchasing was considered as a background and accessory activity for the company. It displayed little consideration in comparison to other areas of business.

Keough (1993), stated that purchasing was supposed to be responsive to companies' internal requests but, nonetheless, it had low perceived value for executives and managers. At the beginning of the 1990s, some companies began to acknowledge the importance and the contribution of purchasing departments as a key lever for enhancing overall performance; namely the following positive spillovers, amongst others, as *cost savings, high quality, and improved delivery times*. Accordingly, Van Weele et al. (Van Poucke et al., 2014) stated that since purchases in manufacturing and more generally industrials companies reached consequent amount (up to 60-70% of the company's sales since the last decade), effective purchasing management practices should be implemented and executed insofar as it could lead to significant improvements in results.

Nowadays the purchasing status has been extended from a functional role to a strategical one that significantly contributes to the strategic orientations, plans and subsequent implementations. According to Van weele, its current mission evolved and intends leveraging external resources in order to obtain goods, services, knowledge, and innovation necessary to build and strengthen the company's competitive advantages (2014). The current purchasing approach is thus mainly focused on managing external suppliers and resources.

Development of purchasing functions is however not uniform and generalized to all industries and activities since their role are very distinct. Indeed, a strategic purchasing department will engage resources, methods or approach which are very different than those engaged in a non-strategic one (McGinnis & Vallopra, 1999). Multiple theoretical development models have been elaborated during the last decades, however, for the sake of comprehension and clarity, I considered that the approach⁶ developed by Van Weele et al. (1998) was the most appropriate since their development is based on a limited but relevant and measurable set of parameters. They decided to consolidate the model preliminary developed by Keough (1993), which identified 5 stages of development and assumed a causal relationship directly between the industry in which a company operates, and the stage of purchasing development

⁶ See **Fig. 12.** *supra*.

(i.e. maturity). Therefore, based upon the seminal article of Keough, Van Weele et al. (1998) identified a sixth stage and completed the five first. The following model selected presumes that the stronger the maturity in the purchasing model, the better the practices developed, which induces better results for the company, in turn (*see. Appendix 7.* for stages discussion)

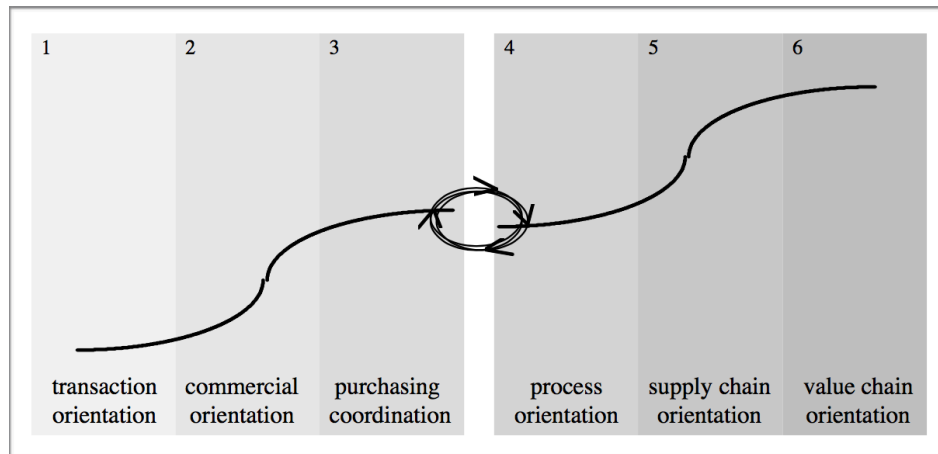


Fig. 12. purchasing development model elaborated upon the model of Keough (1993; retrieved from A. Van Weele et al., 1998)

Analysis

In line with the theory background (Van Poucke et al., 2014) and subsequent stages presented in *Appendix 8.*, the Global Operations Procurement department of GSK Vaccines should be located between the *coordinated purchasing* and the *internal integration* stages. This statement will be discussed in-depth here below:

GSK Vaccines is currently located in the *Internal Integration* stage of the model. This is generalizable to all the pharmaceutical sector, indeed Vaccines is more agile and responsive; there are fewer purchasers and fewer sites to purchase for. Even in sheer revenue this can be seen, the revenue is a good marker for the size of Vaccines within GSK, and its agility. This allows GSK Vaccines to move towards a more integrated procurement model with cross-functional buying teams and a clear focus on not only materials, but services as well. Lastly, a large focus is laid on the internal customer satisfaction and the overall purchasing performance. Dashboards are ubiquitous in procurement, KPIs measurements are strongly recommended, aiming to improve year-on-year operations and performance.

Besides, some hints of *External integration* are noticeable. Vaccines as a whole is restructuring itself around an end-to-end supply chain, linking all departments to a

lean supply chain, aligning all departments more than ever before. This process however is still in its infancy, but it shows the will of GSK Vaccines to move towards a more integrated and leaner procurement model.

Traditionally, procurement functions in pharmaceutical industry were tremendously price and cost-oriented. Indeed, TCO approaches are frequently discussed, however the vaccines industry stands a little bit out from the pharmaceutical industry insofar as they are striving for improving continuously their operations and more specially the maturity of the procurement function. The key objective intended lies in extending the TCO approach towards a Total Quality Management environment with continuous value creation, which is currently in good development.

4.4 Sourcing group chemical analysis

As introduced earlier, the *Global Operations Procurement* department (GOP) is divided into 3 purchasing divisions, these divisions are also subject to internal segmentation which consists of various sourcing streams:

*Primary & Secondary Pack & Cold Chain ; Incoming materials ; **Bioprocess & Chemical***

This thesis pays attention to the last purchasing division; *Bioprocess and chemical*. Indeed, the set of data communicated in the following section mainly concerns the chemical stream, nevertheless the conceptual process developed at the end of the section will be general in nature and potentially expandable to other streams and divisions of the GOP department. The chemical stream is composed of multiple material group families:

Inorganic chemical - Life sciences chemical - Organic chemical - References materials

These 4 key materials groups are themselves constituted of various aggregates, (*i.e.* scientific designations) that have been internally elaborated by researchers. This designation mechanism is intended for internal uses since the wording is not commonly shared among the industry. This facilitates both the procurement department and the production operations (from R&D to Quality Controls).

Currently, the range of chemical products includes over 1200 items. Since the sourcing group chemical deals with Materials Incoming to the production process, either directly or indirectly, purchased products are commonly used for production purposes or quality controls. In line with this, chemical specialists must support operations by supplying materials efficiently, compliantly to the quality requirements and price competitively. Since production are time dependent and cannot tolerate supply disruptions situations, or non-respect of delivery agreements, a failure in fulfilling this mission directly affects production operations. Accordingly, the GOP contribution to GSK's production business is highly critical and influenced by various factors; for instance supplier base effectiveness is a key determinant.

4.4.1 Chemical portfolio analysis

The chemical supplier portfolio is probably the most complicated to deal with, within the GOP department, a thorough spend analysis will be conducted in the following subsection. Subsequently, the key drivers and explanatory factors behind the Sourcing Group Chemical' large supplier base are analyzed. Lastly, the present supplier selection process is reviewed in order to provide a base of analysis to my conceptual supply base reduction process.

Spend Analysis

As discussed in the material and methodology section, all the information gathered in the current section are confidential and have been collected for analysis purposes. The information regarding chemical spend data and supplier information records have been collected thank to the GOP database.

According to Greenfield (2005), spend data management is an entire study field of strategic procurement management and consequently a caution approach is required since it can significantly help practitioners to gain understanding of their respective portfolios. Greenfield identified five attributes of effective spend data management and more particularly spend analysis initiatives:

*Extraction of data ; Validation of data (reliability and validation assurance) ;
Classification and cleansing ; Enhancement of information ; Analysis.*

In accordance with these attributes, after having collected, cleansed and classified spend data, I identified chemical spend with particular regard on products and suppliers. Thereafter, the results of the analysis will be depicted in a global snapshot. It should also be reminded that these spend data have been collected for the last time at the end of may 2015, and consequently some recent changes might have impacted the presented results.

At the present time, the chemical portfolio (*cf.* OPEX - incoming materials) amounts approximately 210 suppliers registered in the database, and a specific product portfolio of 1850 products. However, these amounts should be adjusted, owing to dormant suppliers which are recorded in the supplier base even if they are inactive, and due to products purchased on periodically (depending on their consumption rhythm). The common purchasing approach consists of buying materials either « directly », from the original material manufacturer, or « indirectly » from vendors or distributors, and contract manufacturers. In particular cases, the GOP can leverage the three-stages buying system, and purchase products from other business units around the globe. This prevents GSK to shut-down production in case of supply disruptions. The buying system passes via local units, as middlemen between the GOP department and local suppliers. As stated *supra.*, a global overview of the historical suppliers activity state can rapidly demonstrate the existence of « dormant suppliers », that no longer are active and therefore that are not engaged in a business relationship with the GOP department⁷. Furthermore, if we refer to the global overview depicted *infra.*, only 60% of the suppliers of the chemical portfolio were actively engaged in a relationship in 2014; these suppliers have, at least, been contracted for one purchasing order (referred later as PO) during the past two years. Nonetheless, by reason of the procurement function of the GOP department, some products are only purchased periodically, depending on the consumption levels and rhythms. For instance, in 2013 the number of suppliers actively engaged amounted 136 suppliers. From an historical perspective, one can notice the rationalization trend that has been conducted, as depicted in **Fig. 13. *infra.***

Conversely, in regards to the dormant suppliers, the latter are still registered into the base without being actively engaged in a transactional exchange, therefore it

⁷ The spend analysis concerns the chemical sourcing group, consequently some suppliers might not be active in this stream while they are actively engaged in a relationship in providing distinct materials from chemical

is important to reconsider their contribution to the company's supply since they incur extra administrative costs related to their maintenance into the database. This assertion frequently appeared during the interviews, respondents told me that inactive and dormant suppliers must be phased-out since they complexify the management of the supplier base. *John Matthews*, VP S&PM Volvo Construction Equipment, stated that it is important to specify clearly and classify each supplier relationship in order to facilitate and foster virtuous exchanges. The question raised was « how adequately select the supplier »; Matthews said that multiple unknown suppliers are registered in their base without contributing to the effectiveness of the operations. They have used them in the past but the period is over, they must consequently be phased-out from the base.

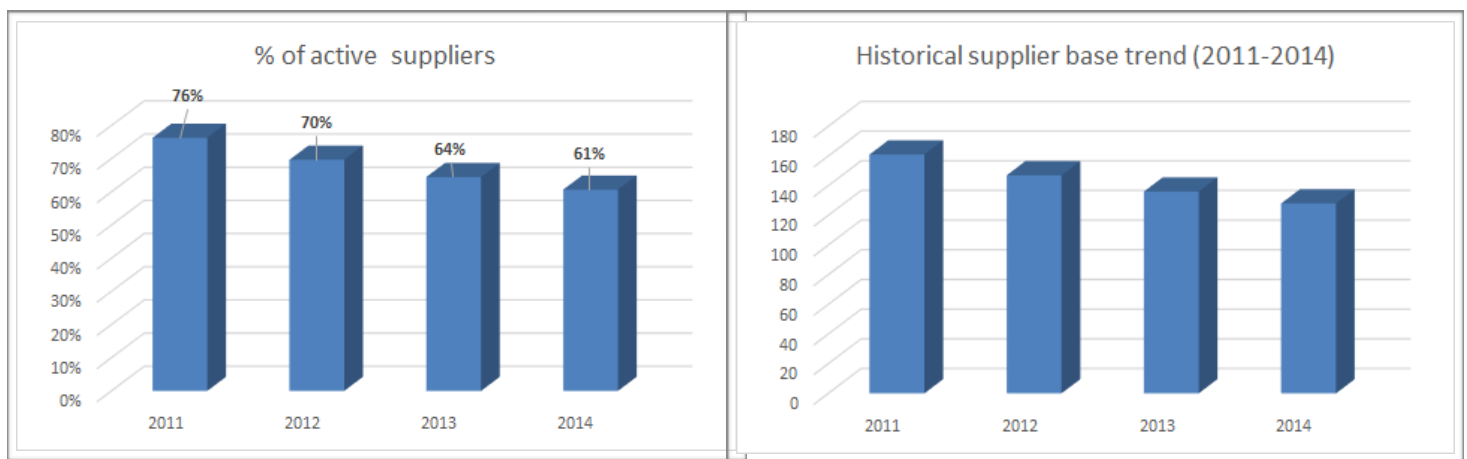
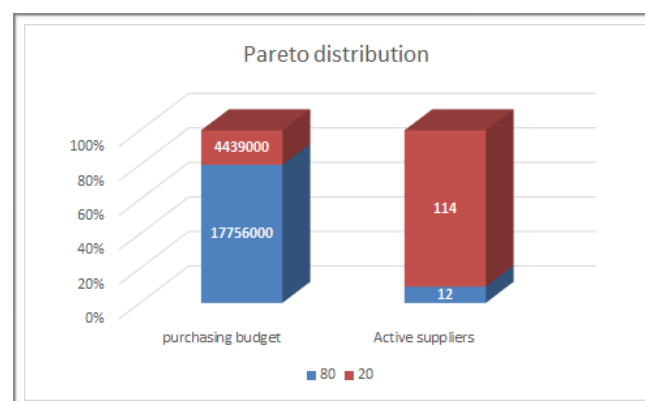


Fig. 13. Depiction of the occurring rationalization trend (from 2011-2014)

If we refer to the records, the actual Chemical spend is quite segmented. Indeed, when we look at the total purchasing valorisation by supplier, it can be noted that most of the purchases are supplied by a very limited number of suppliers (*i.e.* approximately 20% of the supplier base supply 80% of the products), while the residual purchases are accountable to a more consequent number of suppliers (roughly 80% of the suppliers account for 20% of the supplied products). This situation known as the Pareto distribution, has been discussed earlier in the literature review and is depicted *infra.* in **Fig. 14.**



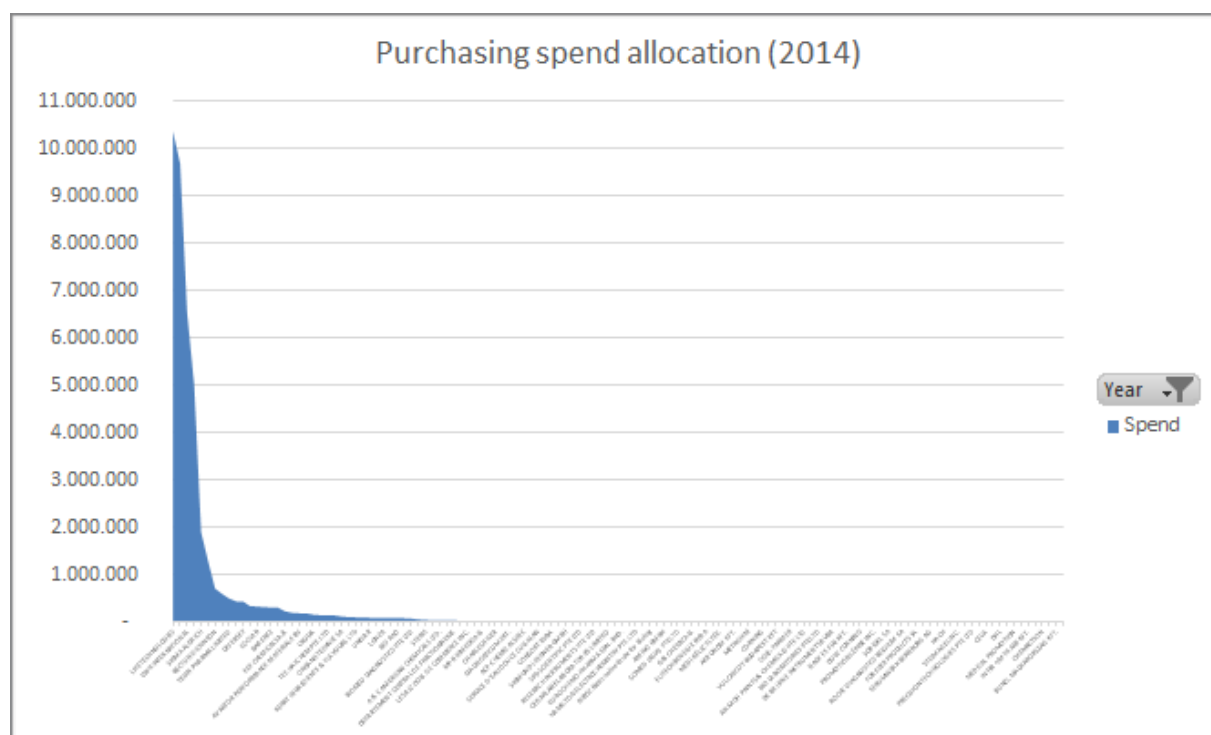


Fig. 15. Pareto distribution of the Bioprocess and chemical purchasing spend (2014)

The phenomena explicated *supra.* has become a major concern as part of the GOP since it significantly demonstrates the existence of incurred extra costs. The remaining extended number of suppliers accounting for a limited business activity, are most of the time engaged in transactional relationships in nature, hence no proffered relationship and adequate relationship management is developed. As a consequence, the department purchases very few products per supplier whereas they could potentially consolidate their purchasing portfolio with a reduced number of key suppliers. This would subsequently allow the GOP to achieve a better cost efficiency, and reduce the operational workload related to purchasing management. The **Fig. 15.**, presented here above, demonstrates further the major gap between active suppliers and marginal ones.

Practically, this lack of purchasing consolidation is a fundamental concern for the GOP department, indeed in regard to the supplier base structure and the pertaining product allocations (purchasing volumes), GSK is perceived as a non-suitable customer which does not possess sufficiently bargaining power towards its suppliers. The latter assertion has been corroborated, during the interviews, when *Julien Kroll*, purchasing specialist from *Sanofi-Pasteur*⁸ told me that their large

⁸ Key player in the vaccines industry in direct competition of GSK Vx

supplier base strain them to focus on practical issues as the creation of new PO and ensure an adequate follow-up of the PO status. He added that it was undeniably a key antecedent to the SBR initiatives he conducted in the past. He was seeking for more purchasing consolidation in order to « *decomplexify* » the operations and minimize the extra management efforts incurred.

In regard to the facts aforementioned, and in conjunction with the spend analysis, I have examined further the extent to which a SBR process could be developed: identify the antecedents of SBR, the key success factors and the required activities pertaining to a robust SBR project.

Supplier base growth drivers

Multiple factors are responsible for the large chemical supplier base:

- First, some external factors can interfere with the stream's activities, as a result the sourcing group might be sometimes strained to the expansion of its supplier base. For argument's sake: the production requiring a specifically critical chemical material, the curative action in case of supply disruption would be to source the product to an alternative supplier. On the other hand, the preventive one would be, beforehand to a supply crisis, to identify several potential suppliers.
- Second, some internal factors resulting from specific strategic choices or from particular purchasing practices might interfere with the GOP as well. A notable example currently experienced, is the joint venture between GSK Vx and the Novartis' oncology branch. Indeed, M&A are famous example of supply base expansion.

However, the result of M&A process implies, in the first time, an expansion of the number of suppliers insofar as the two merging units combine their respective product portfolios, hence the expansion of the unified supplier base. Most of the time, suppliers of the absorbed company are also added to the acquiring company's supplier base in order to avoid discontinuity in the supply of inherited products, and thus ensure a consistent service level to the end-customers. Nonetheless, in the second time, the merging process can potentially induce a reduction of the base since some overlaps might raise in the unified base.

The factors above-mentioned are not exclusive, it encompasses some major causal factors of large supplier bases. Frequent factors acknowledged by practitioners encompass *M&A processes* ; *Scarcity in supply markets* ; *specific definition of*

strategic goals ; and weak information systems. Some of these determinants are examined further in the following subsection.

As cited in the preceding paragraph, chemical is an industry that offers and encompasses multiple and distinct products and activities. On the one hand, some chemical materials are basic in nature and numerous suppliers are active on the segment, while on the other hand some chemical materials are patented and complex in nature. In the latter case, the material appears to be much more scarce than the first one and therefore the supply market for this product is very limited. GSK Vx develops a wide range of products with various levels of complexity: some production processes (both upward and downward) require basic chemical whilst others require rare and expensive products. The heterogeneous nature of the chemical needs, is a key determinant of operations complexity. As preliminarily discussed in the literature review, every practitioners should develop a comprehensive understanding of its purchasing group's supply base and the pertaining complexity.

Practically, the notion of supply base complexity can be demonstrated within the GOP department. According to Choi and Krause (2006), 3 main dimensions of complexity should be assessed:

1. *The number of suppliers constituting the base.*
2. *The degree of differentiation of the suppliers constituting the base.*
3. *The level of inter-relationships among the suppliers of the base.*

In regard to these attributes of supply base complexity, one can easily conceptualize a model facilitating the « *decomplexification* » of the base. In streamlining the base adequately one can affect significantly the 3 dimensions above-mentioned. This discussion will be held in an upcoming section.

As a consequence, the limited supply markets for critical, specific materials represents another key factor to the over-expansion of the base. On top of this, similar market conditions can imply significant strategic exposure costs insofar as « *by mono-sourcing (sole-sourcing in some cases) or delegating the supply authority to one supplier, the state of dependence is increased, hence the risk to the organization may be increased* »

A second key antecedent to large supply bases is induced by sustained strategic goals. Basically, GSK continuously strives to develop new products responding to the patients' needs. Indeed, GSK strongly and continuously invests in R&D programs. The product offering is then sometimes reviewed upward. Product specifications are elaborated and the GOP department is in charge of defining the new sourcing tactic: it means that the newly requested chemical materials are usually preliminary compared with the actual chemical products composing the portfolio, for availability check, and in case of total new product, they are added to the requirements. The suppliers are then asked information over the material, through request for information, and if no preferred supplier can meet the specifications established by GSK, they have to find an alternative source. Besides, as mentioned earlier, some products are specific to certain business units (*i.e.* stemming from different countries), and sourcing them globally is too complex. Consequently, to overcome this impediment, the GOP department is strained to engage new suppliers in order to purchase the products. This statement was captured during the interview with *Alain Marcel*, sourcing manager at Siemens France, the interviewee asserted that:

« Sometimes, materials requirements are overwhelming and over specified, this contributes to increase the sourcing complexity. Indeed, it is important to satisfy the internal customers, nonetheless satisfy these stakeholders comes sometimes at the expense of the operations efficiency. Specific parts should not be sourced in addition to the actual product portfolio, or if they are necessary, large volumes should be ordered to gain from economies of scales and attraction power. »

Another reason would be due to a lack of data and material management coordination between the different department. Normally, material data affects buyer's behavior, and the consistence and the quality of data contributes to the decision making process as well. Conversely, a poor product data would lead to a poor product management. Similarly, poor coordination among the department implied the decision process, would also lead to inefficient information sharing, which would cause undesirable outcomes as well:

Existence of duplicates and overlapping in products natures (i.e. multiple suppliers for similar commodities) ; Engagement of suppliers in distinct department (e.g. R&D and IM chemical) while purchasing consolidation would be possible.

The above mentioned factors can be described further as follow; for each material a list of specifications is forwarded, based on research/production requirements, by the Quality Assurance department (referred later as QA). The vaccines industry is highly controlled by authorities therefore the products used must be compliant to a set of measures, the specifications of the material take into considerations part of these measures and product features. However, this tends to increase the purchasing complexity, since the quality attributes required frequently exceed those of the chemical industry. It sometimes strains the GOP department to find alternative suppliers who can provide custom grades and respond to the requirements. This over specification is sometimes an impediment to efficient purchasing operations and consequently leads to an oversized supplier base (for only a custom product).

Besides, due to the ineffective data management, similar suppliers are engaged in purchasing relationships for offering similar products whereas purchasing consolidation would be possible and preferable. Unfortunately, the lacks of inter-connection and information sharing between the divisions and department make the operations efficiency more rigid.

To summarize, the brief analysis of the actual situation in the GOP department and the IM chemical, attests of an improvable data management and a weak cross-transfer of information, which tends to increase the number of suppliers present in the base.

4.4.2 Supplier selection

With regards to the analysis of the supplier selection process, the GOP department has developed a uniform process which consists mainly in a global guideline including the key steps to follow. It is a macro-view which lets the flexibility and expertise of each buyer-specialist to develop and assess further the supplier selection criteria. Basically, most of the the selection criteria vary depending on the category of product and its specific usage. Supplier's capabilities, supplier's performance, price and quality are the most important criteria assessed beforehand in the selection process. For example: depending on the commodity, some chemical may be subject to a comprehensive assessment of the supplier capability and performance; while for other generic chemical materials the assessment may be prompt and mainly based on cost-performance. Concretely, the selection process depends upon the commodity sourced, its nature and usage, and subsequently, the

nature of the relationship developed with the supplier: transactional, strategic, partnership. The selection considerations will thus vary depending on these factors, and as a result, suppliers could be engaged, shifted or phased-out for a particular product depending on the nature of the relationship.

Practically, the sourcing process implies: firstly checking inside the supplier base at the existing suppliers that could potentially offer the product looked after. After the screening phase completed, RFQ are sent and subsequently the proposals are compared with each other. In most circumstances, cost and quality considerations prevail, therefore suppliers are frequently selected with few considerations of its capabilities and performance. According to Nafie (2012), « *little attention is given to consolidation of purchasing volumes with key and strategic suppliers or to reduce overall process costs through an adequate effort optimization* », he added that it could facilitate the sourcing process and reduce the base significantly.

As part of the GOP department, a consistent *Integrated Sourcing Process* (referred as ISP) guideline has been developed and a subsequent supplier selection process was conceived as well. These two tools are strategic in nature but do not provide sufficient tactical guidelines and consequently no strict criteria have been highlighted. In combination of this, a constant flow of products and suppliers is generated, therefore suppliers are selected punctually in line with the contextual factors.

To sum up, the actual supplier selection practices (tactical operations) do not seem to be standardized among the procurement divisions (except for strategic and critical purchases whose information is transversally communicated) which does not contribute to the optimization of the base. Finally, it seems that the process of selection follow randomly the sourcing initiatives driven by punctual and case-by-case considerations.

4.4.3 Supplier Relation Management

Similarly to the supplier selection process, strategic guidelines have been developed with regards to supplier relationship management. Indeed, a governance model establishes the key objectives of SRM practices, and enables a coherent segmentation of suppliers according to their engagement vis-à-vis the company. Indeed, since suppliers constitute one of the key assets for the company, developing a

robust and strategic relationship with them is a key enabler for a sustainable and profitable business. The ultimate goal of SRM defined by the GOP department is value creation, they support this goal through a 3-stages model: 1) **Strategic alignment** - *Align with the suppliers* ; 2) **Performance management** - *Engage and monitor suppliers performance* ; 3) **Continuous improvement** - *Act and adjust the suppliers' performance metrics and behaviors*.

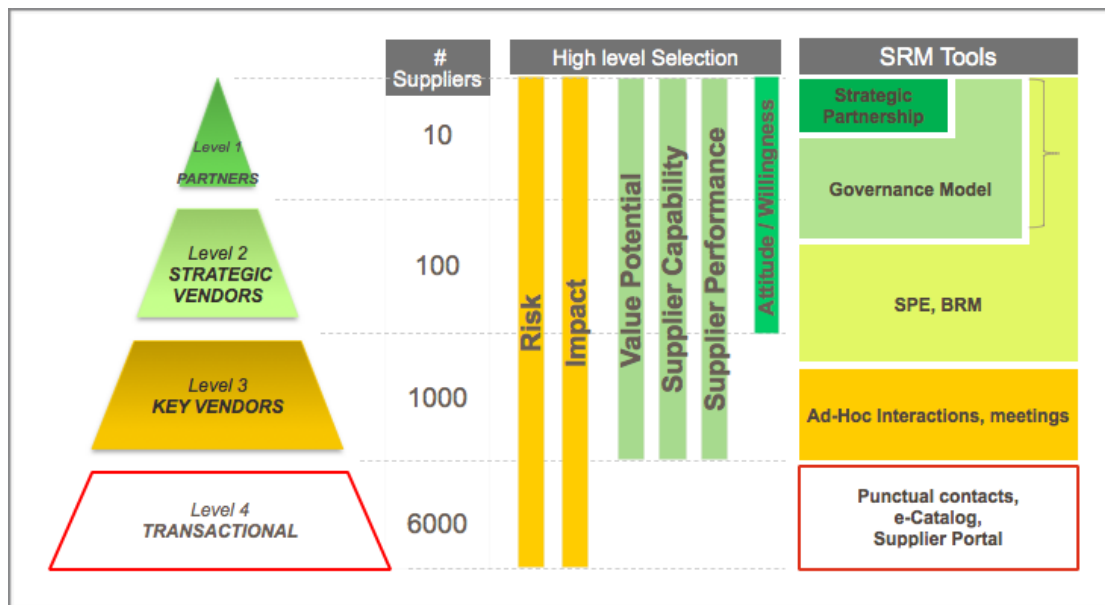


Fig. 16. Actual SRM governance model utilized by the GOP department

The governance model depicted supra. in the **Fig. 16.**, demonstrates the pyramid segmental approach selected by GSK to develop SRM strategies. The segmentation is based on various criteria; both quantitative and qualitative. The rough depiction of each supplier type in the pyramid is representative of the purchasing maturity explained supra. in the Van Weele's development model. The majority of suppliers are engaged in transactional relationships while very few are considered as preferred ones. The KPI's will also vary depending on the robustness and maturity of the relationship, as represented on the graph.

Regarding the first type of relationship engaged between GSK and small suppliers, these are of transactional nature and are, to a certain extent, based on price considerations and frequently marked by weak engagement levels. This first segment represents approximately 6000 suppliers, all GOP commodity groups combined. The particularity of the relationship is its transitory nature; indeed the relationships is maintained as long as the transactions are sustained, but once the

the transactions between a supplier and GSK are ended up, the relationship is ended-up as well. In most cases, the products and commodities involved are routine, standard or at least non critical, hence the prices and terms of contract are strict. Little regard is taken for the development of the buyer-supplier relationship, and few consideration is shown to enhance the collaboration through a extensive integration of the supplier into other processes.

To some extent, the collaboration between the GOP and these suppliers is weak and, as discussed earlier, no initiatives of purchasing consolidation are undertaken hence the purchasing volumes are widely spread among the large supplier base. This consequently explains the lack of partnership development within this relationship segment, since very few leverages are available to develop the buyer-supplier relationship. Furthermore, almost none of these suppliers are engaged in a Master Supply Agreement (referred later as MSA), since the nature of the relationship is transactional, they strive to mitigate any price escalation or hedge against punctual price climbings. Indeed, this is probably one of the major pertaining drawbacks of these relationships; prices are frequently upward reviewed without any appropriate justification and sometimes without prior notification. In the first instance of the relationship, quotations and price offerings are competitive, owing to a large and fierce rivalry amongst the market players, but in the second part the purchasing volumes required by GSK are not sufficiently attractive and therefore the interests of the suppliers are reduced. This can lead to prices increases which subsequently result in relationships degradations.

This phenomenon was captured during the interviews; *Philippe Colombat, senior supplier development engineer from John Deere*, stated that « *It is complex to rely on suppliers whose purchasing volumes and spend are limited. Most of the time they cannot guarantee (i.e. they are not willing to engage sufficient resources) sufficiently high quality standards and will not pay tremendous attention to our requirements, as part of a transactional relationship. Price increases are frequent and unnoticed, as regards their customer service they clearly lack of responsiveness and efficiency. Besides, they take long time to provide product informations and other feedbacks.* ». Similarly to this statement, this situation is well known as part of GOP. Due to stringent quality requirements, strong specifications, numerous quotations requests and limited purchasing volumes, some suppliers do not pay sufficient attention to GSK.

Regarding the three others types of relationships; relationships based on partnerships; the suppliers engaged are supplying more consequent purchasing volumes and spend, or strategic and critical products. In most cases, the relationship is contractually settled and based on sustained engagement and on trust. As depicted *supra.*, the SRM governance model establishes different monitoring and coordination tools enabling a virtuous and continuous improvement of the relationship. The majority of these suppliers have robust processes, and the subsequent allocation of resources and capabilities to deliver products compliant to GSK requirements, in general.

Practically, supplier performance measures are defined by the governance model which suggests the close control of quality attributes (*i.e.* various KPIs) and the subsequent award logic of good players (best practices). This enables GSK to ensure strong quality and supply continuity. The structure of buyer-supplier interaction is depicted *infra.* in **Fig. 17**.

Concretely, a restricted number of suppliers are subject to evaluation each year, the evaluation consists of assessing their *performance, quality, capabilities (improvement abilities)*, as above-mentioned the objectives are communicated beforehand to strategic suppliers, and KPIs are set year-on-year.

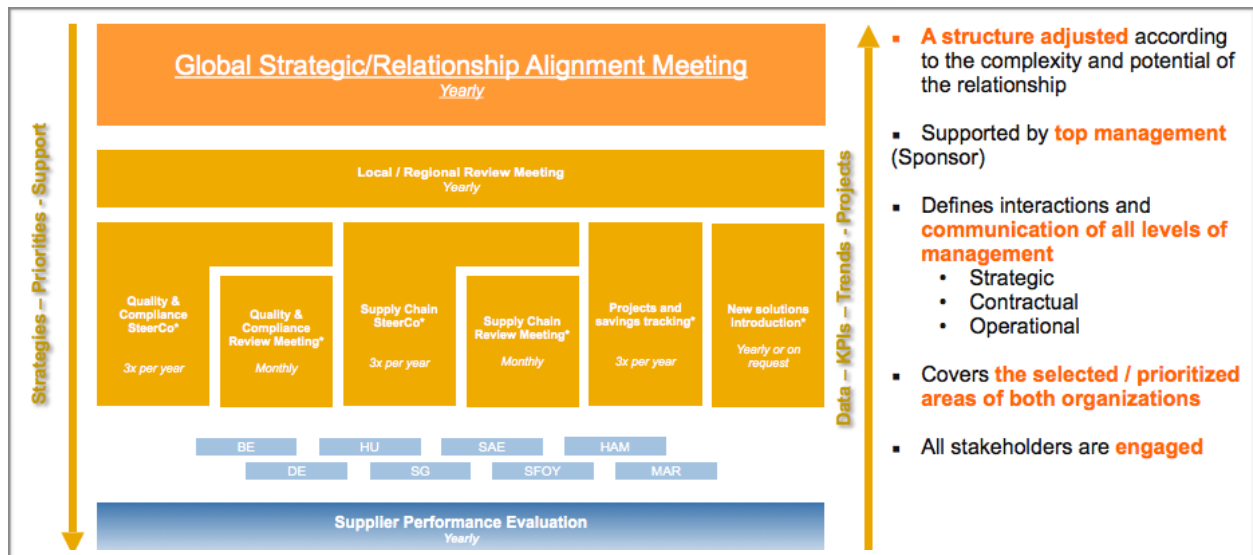


Fig. 17. Structure of interactions defined by the SRM governance model

Through these Supplier performance Evaluation programs (referred later as SPE), the ultimate goal of the GOP department is creating value in leveraging

suppliers' capabilities. They intend to develop and push forward reactive-transactional supplier relations, towards proactive-strategic relationships. Nonetheless, it should be noted that the vaccines industry is highly quality-focused and therefore the GOP department really strives to foster an advanced quality management environment. The suppliers who cannot meet the set of GSK requirements will be notified of their bad or improvable performance. This allows them to recover from their status of bad performer, however if the event is renewed the suppliers could potentially be considered for elimination and then phased-out.

This SRM model is a useful tool for the suppliers who experience the evaluation, however its fundamental efficiency can be disputed insofar as only a small portion of suppliers are subject to this program... This can be explained by the lack of time and resources available to assess further the suppliers. Besides, only the key and strategic suppliers are targeted by the program, which undermines the potential development of smaller but good performing-suppliers

The last idea discussed above was captured during my internship, when a procurement specialist told me that, small suppliers are sometimes not totally knowledgeable and aware of our exact quality requirements (specifications, grades and standards), this can induce deviations and weak service levels. The fundamental issue, in response to the latter statement, is the absence of a supplier development program adapted to all suppliers (potentially good performers). Indeed, so far the program targets only the most important suppliers and reward them accordingly but no such program for learner performers. The adequate solution would be to allocate sufficient resources to the development of such program, and therefore nurture the culture of improvement and close-collaboration.

A first conclusion to the section discussed *supra.* can be drawn; indeed a comprehensive spend and portfolio analysis would show the lack of purchasing consolidation along the different purchasing groups and streams. In response to this, effective supply base rationalization might truly help the department to develop constructive collaborations and improved buyer-supplier relationships.

Furthermore, one can reconsider the first type of relationship discussed in the segmented model; *transactional suppliers*. As discussed in the literature review, most of these suppliers are illustrated by the notable *Pareto Law*, given that they represent the largest share of the supplier base while they marginally contribute to

purchasing volumes and spend. The development of adequate tail management tactics would be appropriate since roughly 20% of purchasing volumes are located in the tail of the distribution, while these 20% are realized by 80% of the supplier base.

As a consequence, one can infer that an appropriate response would consists of:

- 1) On the one hand, developing a systematic tail spend management program (guideline).
- 2) On the other hand the tail spend analysis should support a SBR program enabling the relief of the base.

5. Discussion and development of a conceptual SBR process

The objective of the following section is to present the results obtained at the end of the SBR project led in the chemical stream. Subsequently to this analysis, a new two-stages conceptual framework of SBR is examined in order to substantiate the latter one. To do so, a multiple-steps approach was conceived to conduct the project. The following is depicted *infra.* in **Fig. 18**. The model has been developed as a decision tree which encompasses all the strategic nodes through which the decision-maker must arbitrate.

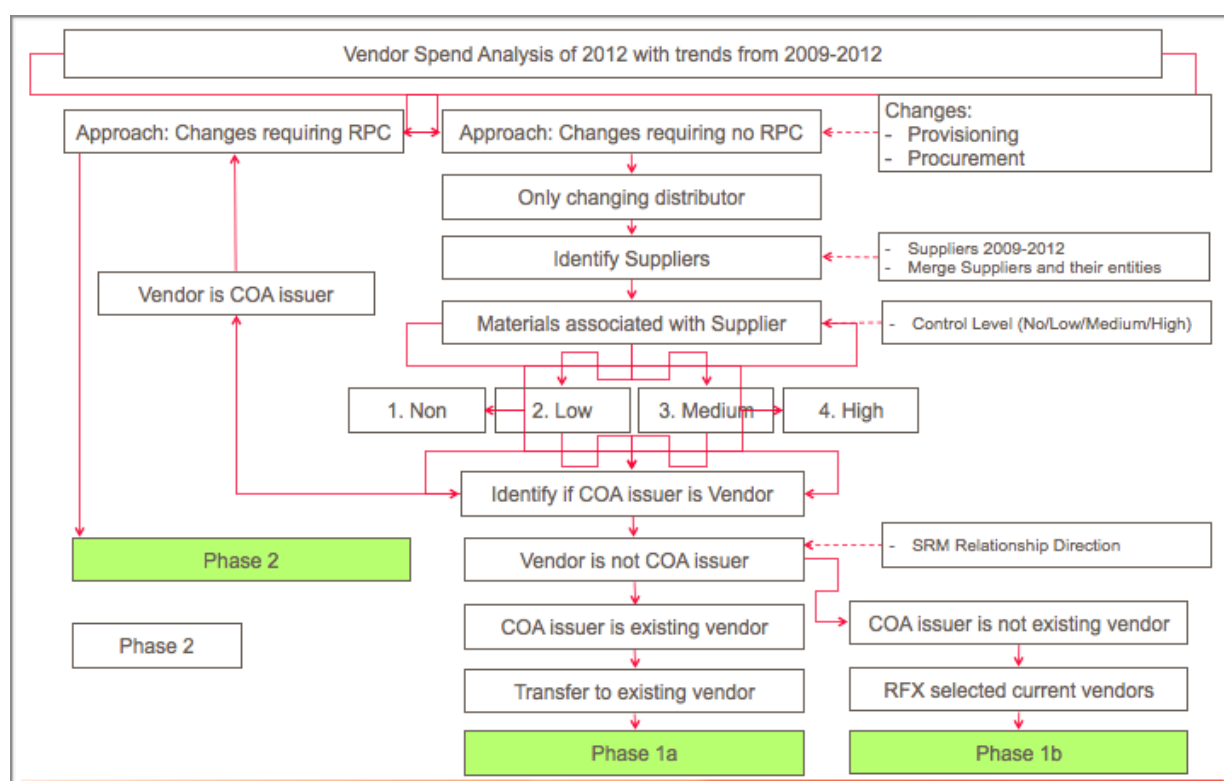


Fig. 18. Decision tree of SBR process

The premises of the project distribution⁹ have been set up in the early 2012s. The key objective was to reduce the complexity of the supply base through an efficient shift of specific materials provided by small suppliers (low purchasing volumes and spend) to a preferred supplier engaged in a partner-relationship approach (*i.e.* VWR). The decision tree developed in 2012 was intended to serve as a

⁹ In reference to the underlying objective which consisted of shifting a specific number of materials to a renowned distributor - VWR - in order to consolidate the purchasing groups more efficiently.

strategic guideline to any future SBR initiatives. Practically, only one key distribution project has been conducted as part of the chemical stream, so far.

During my internship, one of my mission consisted of conducting, finalize and implement the project. The project was scheduled to « go-live » in the mid of April but I went through a significant set of impediments, debates and negotiations which strained the project conduction and management. The delays were mainly caused by the long stakeholders buys-in processes, which are obviously necessary as part of this kind of project. In reason of the inherent « supporting nature » of the procurement function, numerous internal customers were required to be consulted as part of the decision-making process. Indeed, since procurement mainly supports the global company's operations, every decision-making has a significant influence on other department, as for Quality Assurance department (QA), Quality Control (QC), Provisioning or Regulatory Affairs (RA). Consequently, shifting a number of products to a key supplier must be carefully considered under different angles.

The main lesson learned is the importance of stakeholders mapping and the subsequent roles of those agents. This is of paramount importance since sourcing policies are strongly oriented by those agents through different influences (*e.g.* the QA defines the product specifications, which can influence the purchasing decision). In regards to the elements aforementioned, the decision tree presented *supra.* should be modified in order to simplify the conduction of future SBR initiatives. The main obstacles encountered during the examination of potential shiftable materials, concern the quality requirements imposed by the QA department over the products.

Quality requirements

If we refer to the existing chemical material groups, a great number of products sourced are either direct or indirect ingredients to the final product manufacturing. Most of those products are subject to quality controls in order to prevent material variability (*i.e.* the variability degree to which the inherent properties of a material could affect the robustness of a specific process, *QA definition*). In material variability prevention, the QA has developed a control level decision tree, which basically consists of assessing the « criticality » of the material and define its management level accordingly. Practically, the « criticality » of the material is defined by different quality and process attributes. As a consequence of this assessment, each material is given a control level (CL) which defines the lot of measures and controls to be conducted over the material, this CL can significantly

complexify the conduction of a SBR project since sourcing an alternative product could potentially results in an increased material variability.

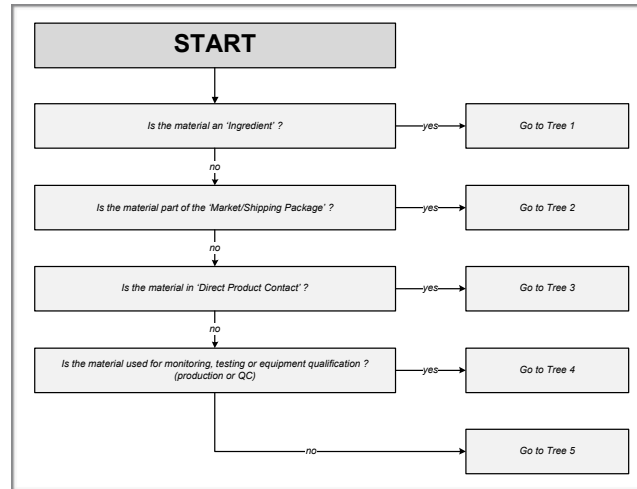


Fig. 19. Control levels: decision tree rules (GSK, quality assurance department)

Another key element that impeded the conduction of the project, still in regard to quality assurance activities, concerns the set of documents required when we source a new material. For instance, the certificate of analysis (CoA) is a key elements required by the QA in order to ensure appropriateness in the quality controls effectuated by the supplier on the product (*i.e.* the certificate confirms that the regulated product meets all the product specifications). Each material requires a CoA, and unless that the supplier shift consists of sourcing the exact same product to an alternative supplier, each shift implying minor product modifications will trigger a request of process change (RPC). The RPC is a declarative monitoring document whose function is to call for a system, process, product adjustment. It is purely administrative but nonetheless requires consideration.

Concretely, the elements above-mentioned are not key impediments in the conduction of generic SBR initiatives, they only require anticipation and cautious project management since these QA, QC and provisioning requirements are time-consuming and can potentially delay the implementation of such projects.

Finally, another key decisional factor that must be cautiously considered is the Risk Index Value (RIV). The RIV is a composite risk index obtained upon the computation of a material risk assessment. The assessment aims at identifying, evaluating and prioritize the material sourcing risk. The assessment intends to attribute a composite risk value to each material type. The main determining

attributes, weighted in function of their degree of importance and potential occurrence, are listed in *Appendix 9*. The RIV attributed to each materials will act as contributive factors as part of the SBR decision. Indeed, since the underlying parent risks listed can affect either supply continuity or quality variability, the risk index should be carefully taken into account during the elaboration of SBR projects, as well.

Considering the elements discussed in the above-section, the strategic SBR model developed in 2012 could be, in the first time substantiated and in the second time made more convenient. Besides, based on the literature review and the interviews conducted, the selection criteria and key success factors will also be weighted and considered for the discussion of potential managerial implications. The conceptual framework will enables to serve as a generic SBR project roadmap.

5.1 Elaboration of the conceptual framework

1. The conceptual generic roadmap consists of a four-stages model depicted *infra.* in **Fig. 20**. This first model intends to guide future project leaders who are willing to achieve strategic objectives of supplier base rationalization.
2. Subsequently, the convenient elimination model tailored for the chemical commodity is developed. The latter one will enables future project leaders to conduct practically a SBR project.

The foundation of the model developed *infra.*, seems relevant since it has been supplemented by the results of the benchmark conducted. Besides according to Ogden (2006), who conducted a more consequent study over key antecedents and factors to SBR initiatives, the most mentioned KSF contributing to the robustness of an SBR project, appeared to be:

Good and efficient information system ; Cross-functional team ; Selection of the right supplier ; Good project communication ; Definition of a win-win relationship ; key management support

Regarding the practical model of development, I identified numerous selection and elimination criteria that must be considered when conducting such projects. The latter criteria are based on the benchmark conducted, the practitioners experiences, and on common criteria identified in notable literature (Agrawal & Nahmias, 1997;

De Boer et al., 2001; Ellram, 1990; Jeffrey a. Ogden, 2006; Jeffrey A Ogden & Carter, 2008; Verma & Pullman, 1998).

Since Europe highly regulates and strain manufacturing companies at various levels (*e.g.* REACH over the notification of hazardous chemical components and ingredients, Eudralex over supply chain traceability and transparency), multiple external forces must also be considered when selecting a new supplier. As regards the elimination process, the key is ensuring continuity in supply operations and quality stability. The main selection considerations have been highlighted in the *Appendix 10., amongst others*:

Purchasing spend and volumes ; Delivery performance ; Availability of the information ; Production configuration and supply chain capability ; Service level and supplier performance ; Price performance ; Quality performance ; Improvement potential

These have been supported by the definition of measurement proxies, hence we can introduce different dimensions of analysis to each main criterion. The following criteria are slightly different from those cited by practitioners since each company's model differs, from an industry to another procurement functions will vary significantly and selection criteria likewise (cf. A. Van Weele et al., 1998).

The selection framework is composed of 8 criteria organized and approximated by different segmental attributes (5 major segments). This methodology intends to facilitate the segmentation of the supply base through a comprehensive analysis of the products supplied and a subsequent categorization. The application of this decision tree enables to filter the panel into various suppliers subsets. According to the model, a focus category of commodities should be highlighted and a more in-depth analysis, based on cross-coordination between stakeholders, should be conducted in order to define the strategic options to follow (*e.g.* which supplier should be shifted, phased-out, consolidated).

KEY ANTECEDENTS TO SBR PROJECTS

Conduct cross-organizational spend data management

Act in support and alignment with the commodity strategy

Identify strategic objectives (Reduction, expansion,...)

KEY STAGES

EXPLORATION

Specify a target commodity

Build a cross-functional team (*cf.* TLCT configuration)

Analyze the commodity spend data

Stakeholders mapping and endorsement

DEVELOPMENT

Define a practical action log

Definition of selection and elimination criteria

List small suppliers in accordance with beforehand defined criteria

IMPLEMENTATION

Supplier portfolio analysis in accordance with defined criteria

Based on spend analysis highlight potential alternative sources

RFx to alternative suppliers and engagement

Elimination of prior supplier

EVALUATION

Analyze the results and stakeholders feedbacks

Fig. 20. Conceptual SBR framework

5.2 Development of the generic SBR process

It appears from the interviews collected thanks to the benchmark, that the average cost incurred in managing a generic¹⁰ supplier is approximately €11K. This amount is obviously function of the procurement and department maturity, but nonetheless is of indicative nature. *Julien Kroll*, buying specialist from *Sanofi-Pasteur* stated that their « {...} supply base reduction strategy was mainly intended to automatically shift all the minor suppliers whose management costs largely outweighed their added-value ». He told me that they sometimes engage in relationship with small suppliers for specific materials, and if the latter are not willing to upgrade the nature of the relationship from a transactional one to a more collaborative-oriented one, they trigger the elimination process and phase them out of the supplier base. *Alain Marcel* from Siemens, confessed that they identified internally a large set of cost drivers which helped them to cut down all the costs related to supplier management through effective cost management policies (TCO approach). He added that their cost examination was based on a comprehensive competitive intelligence that enabled them to gain insight on best-competitors practices.

In line with this, Ferrin and Plank (2002) examined further TCO approaches in companies through the conduction of a large cross-industries benchmark. They identified subsequently a comprehensive set of costs drivers that influence significantly supplier management costs. In line with the results of the benchmark conducted, it can be pointed out that the €11K pertaining to supplier management were relevant and established.

Suppliers management costs have not explicitly been measured in the GOP department, therefore such strategic option might potentially contribute to the improvement of the supplier base performance. Indeed, it requires limited resources (reduced people commitment) and generate significant advantages (cost reduction, purchasing consolidation, reduced supplier base). As a reason, tail management is undeniably the ideal start of a SBR project. In line with this section's preface, multiple focal points should be considered since chemical materials encompass large varieties of products with different level of complexities (cf. CL, RIV). In view of the

¹⁰ 5 interviewees out of 6 have conducted an internal cost analysis of supplier management, this concerned exclusively basic dyadic buyer-supplier relationships.

Pareto distribution depicted in **Fig. 15.** *supra.*, the model developed in this thesis was primarily intended to deal with tail spend.

A comprehensive flowchart depicting the entire process can be developed. The development of the latter will facilitate the visualization of the operations to be performed and key steps to be achieved. The flowchart depicts the four-stages model including the sub-steps described beforehand. Similarly as its first conception, the model developed aims at facilitating the conduction of the project for neophytes. This means that the information to be gathered are included in the flowchart, likewise are the actions and roles to be endorsed by project stakeholders.

As depicted on the **Fig. 21.**¹¹ *infra.*, the four stages of the model have been distinguished by node frontiers. The initial conception of the model was intended to support me in keeping track of the stages discussed and see the interconnections with the other subdivisions. All in all, its initial function evolved and moved toward a detail mapping of the activities and roles.

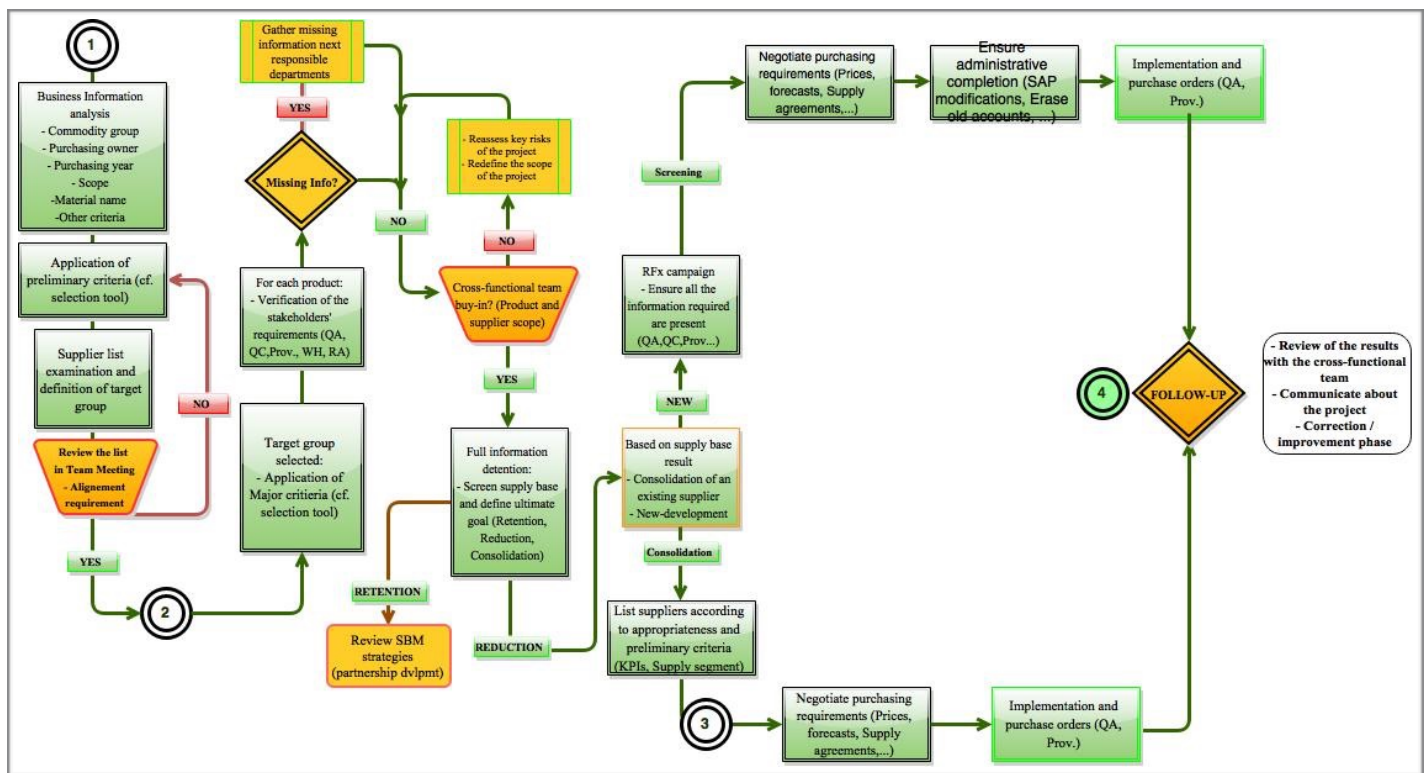


Fig. 21. SBR flowchart developed upon the 4-stages conceptual model

¹¹ Also depicted in *Appendix 10.* for larger size

6. Evaluation, reliability and validation test of the process submitted

The present section was intended to assess the practicability and the coherence of the model proposal conceived in section 5.

6.1 Key antecedents to SBR projects

As discussed in the benchmark, developing a SBR process entails multiple key antecedents to ensure the adequate conduction of the project. According to the practitioners, three main antecedents seem to be of paramount importance: *the conduction of cross-organizational spend data management ; the preliminary definition of a robust and differentiated commodity strategy ; identify the strategic objectives pursued, in line with the commodity strategy defined beforehand.*

The first antecedent concerns the improvement of the information transfer process. Presently specific information, tasks and projects are discussed through the organization of Total Life Cycle Team (TLCT) meetings. The latter consist of gathering transversal teams composed of multidisciplinary members with respective experience. In line with this antecedent, building a cross-functional team to conduct SBR projects was initiated during the Distribution project, however the comprehension and interests of the project was not shared among the members. The constitution of a multidisciplinary team enables to gain a wider understanding on what processes are made of and how they are performed (*e.g.* technical specifications checking, supplier evaluation and selection, spend analysis, proposal for supplier or product phasing out or expansion)

Secondly, the preliminary identification of strategic goals pursued by the commodity manager (in line with the commodity strategy implemented beforehand). This step is of paramount importance given that the strategic goal must be aligned and supporting the global commodity strategy pursued. The opposite would not be consistent and would not provide sustained benefits.

The practical development and application of the model entails 4 key steps:

6.2 Preliminary phase (Exploration)

Exploration consists of the examination of the supplier base and the subsequent definition of a target commodity group of suppliers and products. The exhaustive mapping of all the stakeholders concerned by the project. The *Exploration phase* will ensure the conduction of a comprehensive analysis of the supplier base and product portfolio with key focuses on number of suppliers, purchasing amounts per capita, status of suppliers (Active, inactive, dormant, duplicate, phased-out). Thereafter, supplier and spend data analysis, combined., will ensure the depiction of the potential base weaknesses. Voices from the practitioners converged and stated that most of the time, the first focal points are the duplicate suppliers, the latter are made redundant due to larger incumbent suppliers active on the same market segment, more competitive and capable, willing to develop sustained relationships. Similarly, since the buying systems allows minor decentralization, specific suppliers can be contracted and engaged locally, as a consequence overlapping between suppliers may rise.

This stage is of paramount importance insofar as it defines the strategic guidelines to follow. It also ensure that the SBR process will be comprehensive in its development and conduction since it gathers multidisciplinary stakeholders for the decision-making process. Higher management must be aligned with the initiative's objectives in order to provide support and feedbacks.

6.3 Integration phase: implementation of the process (Development)

Secondly, the *Development phase* consists of defining the concrete action plan of SBR project. The cross-functional team must develop a practical action log with key milestones to be reached and actions to be endorsed. The examination phase discussed during the exploratory phase must result in the definition of elimination and selection criteria. Thereafter, a list of supplier and products must be dressed in line with the criteria defined beforehand. Some of the supplier selection criteria have been highlighted in the fifth section, and a criteria arborescence is represented in *Appendix 9*. This arborescence is not exhaustive but, on the contrary, must be reviewed by the cross-functional team members. This guarantees the constant alignment of the members regarding the foundation and scope of the project. Furthermore, the multidisciplinary enables to point out sub-criteria that would have probably been more compelling to list individually. As depicted in **Fig. 22**. (adapted from Nafie, 2012), the elimination of some commodities and suppliers is much more

facilitated since they are already inactive and/or their inherent attributes make them unattractive and offer relatively low added value. Consequently, one can define sub-criteria more easily in accordance to the situational factors (*i.e.* vis-à-vis the company and the products supplied).

Supplier selection/elimination criteria	Segmental sub-criteria	
- Purchasing impact	Lower than €10K	Bigger than €10K
- # Products supplied	Inferior or equal to 1	Superior or equal to 2
- Supply risk	Check RIV breakdown	Check RIV breakdown
- Nature of the product	Routine and non-strategic	Strategic or bottleneck
- Existence of alternative sources	YES	NO
- CQD performance	Bad	Average and Good

Fig. 22. Example of simplified segmental decision tool

Practically, in the current stage the supplier selection criteria definition enables the cross-functional to highlight the key determinants of shiftable suppliers. Once all the criteria and sub criteria have been endorsed, the segmentation can start and a shiftable supplier list will be obtained accordingly. Multiple degree of criteria precision can be developed and used, it gathers more comprehensive information regarding suppliers and classes them thereafter. However, the main drawback is the complexity of usage, indeed gathering the information is labour-intensive and compelling, it can then complexify the initial objective of the project. Some atypic suppliers can be pointed out thanks to this examination phase:

After having cautiously examined the supplier base on a four-years basis, one can notice that some suppliers are registered in the data base whilst they are not actively supplying GSK nor dormant. This can be explained by an extensive analysis of the historical purchases: the latter have been contracted to supply product at a specific moment but the purchase did not effectively happen. Or even, the supplier responsible for the supply of a specific material stopped the production and has been considered as inactive since then. This example depicts the existence of suppliers that should be systematically shifted once the specific statut of inactive or dormant is noticed (for precise reasons only). The residual suppliers can be subject to

elimination and consolidation of spend. Basically, the latter example is depicted *infra.* in **Fig. 23**.

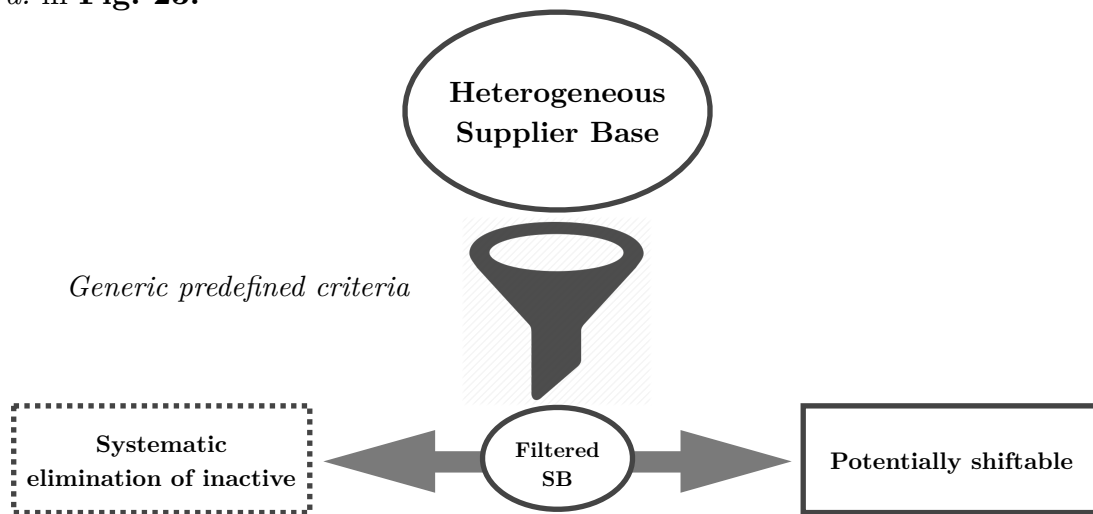


Fig. 23. Depiction of the first step of the elimination process

The third stage marks the turning point between the examination of the base potentialities and the effective elimination (and resourcing) of suppliers (and products). Since the GOP department acts as the lead buyer of the global purchasing operations, and by reason of the vaccine industry nature, sufficient buffer stocks must be constituted before implementing such strategies. The implementation phase should take into consideration the potential disruptions that may arise as part of the supplier shift. The integration phase is depicted *infra.* in **Fig. 24**.

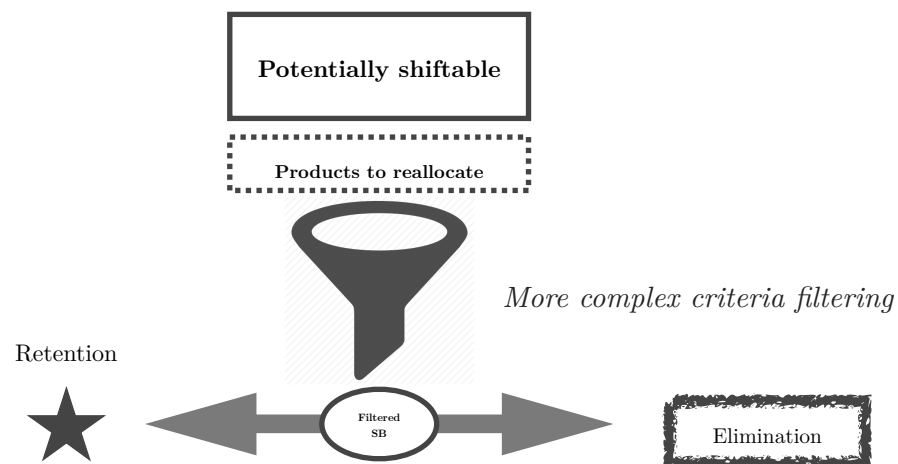


Fig. 24. Depiction of the second step of the Elimination process

Lastly, it should be noted that the integration stage might be complicated by additional intervening stakeholders at various sub-stages. This was the case for the distribution project, led in cooperation with various changing stakeholders. The scope of the project was frequently repeated and due to my lack of practical knowledge, the project management was frequently delayed and impeded.

6.4 Critical review and evaluation of the model

As depicted in the section 4, **Fig. 15.**, the rationalization trend has been launched since a couple of years and multiple divisions of procurement currently operate similar panel reductions. This is obviously not systematic and most of the time, is due to consolidation of key relationships with major suppliers. Therefore rooms for improvements exists and would consist of targeting the tail of the supplier base. Beyond this statement, each stream should tailor the process to their own requirements and objectives.

A major critic of the model development lies in the fundamental research methodology conducted: since only a limited number of practitioners have been interviewed, the information gathered is only indicative and exploratory in nature, therefore the key antecedents highlighted; even if based on a prior comprehensive benchmark conducted by Ogden; cannot depict correctly the best-practices and antecedents to all industries. As regards the project distribution, the limited and pre-established scope of the project (*i.e.* the materials had already been screened and the alternative supplier as well - the only phase remaining was the conduction of the integration) undermined the analysis of the results and subsequent extension phases. Furthermore, the evaluation stage was not conducted and no feedbacks regarding the effective implementation was provided.

During the conduction of the pilot, a few challenges arose. The first issue was the lack of comprehension and endorsement from the stakeholders, some conflict of interests among the teams have impacted the final outcome. The lack of cross-sharing information delayed significantly the project as well. Therefore, similar situation could be prevented or at least mitigated with a stronger management commitment and an adequate communication around the project. This would ensure the alignment between the cross-functional team members but also foster a strong collaborative environment among the stakeholders involved. Lastly, it should be emphasized that such projects require time and commitment, hence a prior

assessment of the project management costs could help to define the adequate and realizable scope of the project.

As regards the risk of SBR projects, an arbitrage between the advantages and drawbacks must be performed. Since the supplier base is inherently dynamic, there is an important need to balance between the conflicting forces: for instance developing long-term and stable supplier base can be supported by consequent rationalization projects, which offers a cooperative environment; greater supplier performance ; a better understanding of the buyer-supplier needs. On the both hand, these advantages can be offset by the significant hidden costs related to develop a strong and stable supplier base, or the reduced cross-innovation context. Consequently, SBR cross-functional team must assess all the underlying risks of similar projects, and trade-off between them in accordance with the global objectives pursued. This recommendation has previously been highlighted by Choi and Krause (2006), who stated that practitioners should absolutely understand and be aware of their supply base complexity: what are the inherent attributes of their base and products portfolio, but likewise what are the determinants of transaction cost, supply risk, supplier responsiveness, supplier innovation.

Regarding the main lessons learnt during the pilot elaboration and conduction, a key learning can be pointed out. In line with the latter statement, the dynamic nature of the supply base can significantly influence the conduction of such project, each step should be performed under the time scope predefined. Any delay could lead to major modifications of the final outcomes, which could potentially undermine the cross-functional team's efforts.

And last but not least, based on the practitioners opinions and the evaluation phase, some KSF could be highlighted for the sake of effective project management:

A good information and communication system will ensure an adequate knowledge transfer throughout the project conduction ; Robust and reliable material and data management will contribute to the decision-making process ; Elaboration of cross-functional team eager and committed to develop a SBR process ; A subsequent definition of roles and responsibilities is also of paramount importance ; Dedication of enough resources (financial, time, people, management) ; Develop the project in line with the sourcing strategy predefined; Act accordingly ; Respect milestones.

7. Discussion and Conclusions

The seventh and last section of this thesis summarizes the addressed research problems with regard to its initial objective. Thereafter, it provides a set of suggestions and introduces some managerial implications. Lastly, the limitations and area of improvements are discussed.

7.1 Summary

The literature reviewed as part of this thesis, mainly concerned supplier base management practices and issues. Pointing out the need of reduced and manageable supplier bases, various concepts regarding SBM were provided and discussed in order to supplement the subsequent analysis of the case company, GSK Vaccines. It appeared from research and voices of practitioners that significant benefits can be generated thanks to strategic reductions. Apart from the old conventional wisdom underlined by Alijan (1984), who stated that purchasing function was intended to obtain the right material at the right quantity, quality, price, time, place and from the right source, the latter statement predominantly regarded the function as operational in nature, while nowadays it has been proved that this function can leverage the company's business capabilities and contribute significantly to its performance.

The ultimate goal of this thesis consisted of examining and conceiving a potential SBR development model, in order to assist further the case company department (GOP) in more effectively apprehending and managing supplier base management. The objective aimed at gaining understanding on how to process SBR projects with all the encompassed activities of supply base management.

A generic two-stages model was examined, which describes the pertaining activities leading to a SBR. The model proposed is not generalizable to all procurement streams since its adaptability is limited by its inherent conception's attributes. However, it points out the complexity of dealing with a large and heterogeneous supply base and enables to gain insight on how to lead SBR projects. More generally, the nature of the GOP supply base constitutes a promising start for larger and cross-managed SBR projects.

In addition to the examination of a conceptual SBR model, another benefit of this thesis lies in the identification of potential root causes of the research problem, in other words the large and heterogeneous supplier base. Some factors, quite apparent such as business information management, need to be enhanced and leveraged since they could significantly benefit the company if better managed. In addition to this, the case company analysis also highlighted the need of transversal support management as part of decision-making processes. Indeed, GSK is highly stakeholders-oriented and consequently stakeholders should be involved earlier in the decision process. Some of these actions could potentially be corrected or improved in order to efficiently contribute to better supplier management practices.

7.2 Suggestions and managerial implications

Various managerial considerations can be identified and discussed following the completion of the thesis:

First, after having thoroughly examined the sourcing group chemicals' supplier base, some sourcing practices shall be subject to tiny reviews, indeed the depiction of SRM practices, in **Fig. 16.**, seems to lack of clear sub-strategies designated for transactional suppliers. A consistent additional SRM segmentation designated to the tail of the Pareto distribution (as depicted in **Fig. 15.**) would facilitate the development of adequate strategies regarding these suppliers. Currently, the GOP department mainly focuses its core activities on the definition of strong relationships with key suppliers, which is fundamental and of paramount importance. However, no strategy and tactics have been developed regarding the 80% of the supplier base. This could probably improve the overall performance of the operations, as John Matthews from Volvo Construction equipment suggested it. At Volvo, multiple suppliers were originally contracted as part of transactional relationships, in order to foster a more cooperative environment, they develop the *9+1 scorecard* (depicted in *Appendix 12.*) which enabled them to segment further their actual supplier categorization.

Even if GSK Vx is outperforming the pharmaceutical industry as regards the maturity of their respective purchasing function, it appears that some sourcing practices are randomly managed and often without long-term considerations of TCO impacts, strictly driven by cost reduction. In order to gain control on their costs, GSK might systematically look inside of its supply base and identify potential savings. A major cost savings tool is the supply base reduction process: up to now,

the concept was not considered strategically and was taking the track of punctual activities. As a consequence, an adequate review of the sourcing strategy, toward a more comprehensive sourcing model would be appreciable (e.g. definition of supplier selection/elimination criteria, in line with internal customers and business requirements). Currently, the process is functioning backward since the GOP department develop the strategy and then submit it to stakeholders. Obviously, they should keep the lead, however, the existing cross-functional teams (Total life cycle team meetings) could be leveraged further and based on a more coordination-oriented approach.

Lastly, supply base reductions strategies are not simplistic by nature, they should cautiously be considered: it does not only regards how to retain or eliminate suppliers, a differentiation should be operated between those classes of suppliers, as discussed above, and to mitigate any increased in power asymmetry between the buyer-supplier (dependency) a special focus on suppliers' needs and requirements should be put. This would contribute to the development of strong buyer-supplier business relationships.

7.3 Limits and areas of improvements

During the conception of this thesis, several limitations have been encountered, the latter are described *infra*. First, since GSK is a major agent in the vaccine industry, the organizational configuration of such corporate structures is highly stakeholder-oriented with a key focus on network coordination. Event if this aspect has been highlighted as potential area of improvement in the previous section, the contextual forces were impeding the conduction of the project. This can be explained by the lack of stakeholders commitment and coordination. This is highly paradoxal, in view of the numerous stakeholders interactions existing at GSK. Low priority and endorsement were given to cross-department projects. The disruptive aspect of the project: « *rethink the operations and streamline a dated supplier base* » was misconceived. Besides, the weak and improvable usage of material and data management somehow acts as a key operations inefficiency.

A second argument regarding the conduction of the distribution project was the complexity of the organization, since many stakeholders must be consulted for specific tasks, it is sometimes very compelling to identify the exact or adequate internal customer, to provide the information. Consequently, the process for gathering the information is very long and frequently impedes the conduction of

project. And lastly, one final weak practical consideration faced was the long stakeholder buy-in process: which required to consult all the stakeholders, and wait for their approval to go further in the project. As above-mentioned, this significantly delays the conduction of the project and consists in an operation inefficiency.

As regards the theoretical considerations, multiple limitations can be pointed out as well: firstly, the benchmark conducted could have been further leveraged and either extended toward a more consequent cross-industry examination or toward a specific vaccine industry analysis, which could have increased the significance of the information gathered. Secondly and in line with the latter argument, neither the criteria utilized for the development of model were tested in practice and statistically established, besides owing to its conceptual nature, the model has not been proved and reviewed by peers and practitioners. Therefore, generalizing the results and findings to extended areas should be cautiously considered. More generally, the applicability and generalization of the key learnings and findings highlighted, should be made prudently, as the conceptual model proposed in this paper is exploratory for a specific GSK stream.

However, many rooms for further development exist since the current subject is recent in the literature and very few discussed. There is no academic consensus on the adequate way of measuring the performance and capabilities of a supplier, some researchers use analytical tools while other qualitative ones: it would be very interesting to establish a relationship between a qualitative decision tree and an analytical tool based on multiple quantifiable and optimizable KPIs. Furthermore, as the inherent nature of supplier bases is dynamic, owing to multiple contextual factors, purchasing structures in large organizations will keep on evolving; in view of this, Gottinger stated in 1983 that « *the more we are able to describe the complexity of an object, the more we are able to learn from it* » (Gottinger, 1983, p.4). This statement exactly depicts the strategic orientation toward which companies should converge. This would enable them to facilitate the elaboration of strong mechanisms of continual supplier performance and capabilities evaluation (no more restricted to key suppliers) and ensure a strong supplier base knowledge. This would probably mark a major shift in the Vaccine purchasing development path. Lastly, as Cousins suggested, the key antecedent to effective supplier base management strategies, is a robust and streamlined inter-organizational process. Further research could examine this problem and try to foster a more cooperative work-environment.

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APPENDIX 1

« Summary of interviewees backgrounds »

COMPANY	INTERVIEWEE	FUNCTION	PURCHASING SCOPE	LOCATION	DATE OF INTERVIEW
Sanofi	<i>Julien Kroll</i>	Project buyer	Transport	<i>London, UK</i>	11/05/15
Volvo Contruction Equipment	<i>John Matthews</i>	VP purchasing & supplier management Europe	All commodities	<i>Brussels, Belgium</i>	07/05/15
John Deere	<i>Philippe Colombat</i>	Senior Supplier Development Engineer	Diesel engines	<i>Angers, France</i>	15/06/15
Renault Nissan	<i>David Bechu</i>	Supplier Account Manager Europe Braking - Purchasing Organisation	Brake systems	<i>Saint Quentin en Yvelines, France</i>	22/07/15
Renault	<i>Valérie Bara</i>	Engineer director	Engineering services	<i>Paris, France</i>	17/07/15
Siemens	<i>Alain Marcel</i>	Sourcing manager	Electronic parts	<i>Grenoble, France</i>	13/07/15

APPENDIX 2

« *Canevas based on Ogden, Ellram and Van Weele's papers* »

A. ANTECEDENTS OF SBM STRATEGY - 15 minutes

1. Background information on the company

Main activities

Principal products and markets Organizational structure (business units) Company's strategic focus

Annual sales

Number of employees

2. Background information on purchasing

Annual purchase spend

Main purchasing categories

Purchase spend, divided according to purchasing categories Centralized and/or decentralized purchasing

Development of the purchasing function (cf. Van weele)

Position and perceived importance of purchasing (ibidem)

3. Purchasing and supply strategies

Main objectives of purchasing (cf. Van weele)

Buyer-supplier relationship strategies

Connection between purchasing and business strategy Development of purchasing plans and strategies

4. Purchasing portfolio analysis

Main purposes and use

Occasions, frequency, situations, and timing

Kraljic-based or otherwise?

Choice of dimensions and selection criteria, factors per dimension, labels for quadrants

Generic strategic recommendations per category

Measurement of dimensions/variables (establishing positions in the matrix) Attributed results

B. KEY STEPS AND OUTCOMES ACHIEVED OF SUBSEQUENT SBM STRATEGY - 10 minutes

5. SBM strategies developed?

Main purposes and use, rationales behind those strategies

Frequency, situations, and timing

Selection criteria

Scope of the strategy

Measurement of variables and subsequent interpretation and decision-making process

C. KEY SUCCESS FACTORS OF SUBSEQUENT SBM STRATEGY - 5 minutes

6. KSF identified for elaborating the strategy

Main success factors and demonstration of their importance
Interdependence with other factors and corporate context



D. KEY LEARNINGS - 5 minutes

7. Key learnings of SBM projects/strategies

List KL and room for improvement identified: point out reasons

A. KEY prerequisite and contextual success factors for an effective SBR

DASHBOARD

Prerequisite to supply base reduction	A	B	C	D	E	F
Good information system	☐	☐	☐	☐	☐	☐
Cross-functional team	☐	☐	☐	☐	☐	☐
Choosing the right supplier	☐	☐	☐	☐	☐	☐
Good communication during the project	☐	☐	☐	☐	☐	☐
Win-win relationships	☐	☐	☐	☐	☐	☐
Key management support	☐	☐	☐	☐	☐	☐
Do not drive compliance too far	☐	☐	☐	☐	☐	☐
Correct items on initial request for proposal	☐	☐	☐	☐	☐	☐
Time pressure and fixed deadlines	☐	☐	☐	☐	☐	☐
Hire the right people for the project	☐	☐	☐	☐	☐	☐
Use of outside consultants	☐	☐	☐	☐	☐	☐
Standardize part numbers and descriptions	☐	☐	☐	☐	☐	☐
Do not change supply base too abruptly	☐	☐	☐	☐	☐	☐
Long-term contracts	☐	☐	☐	☐	☐	☐
Understanding organization's objectives	☐	☐	☐	☐	☐	☐
Utilize total cost of ownership approach	☐	☐	☐	☐	☐	☐
Readiness of the supply base and company	☐	☐	☐	☐	☐	☐
Benchmarking	☐	☐	☐	☐	☐	☐
Dedicate enough resources	☐	☐	☐	☐	☐	☐
Choosing the right products	☐	☐	☐	☐	☐	☐

APPENDIX 3

« Key selection criteria identified by Dickinson (1966) »

RANK	CRITERIA	WEIGHTING	IMPORTANCE
1	<i>Quality</i>	3.508	EXTREME
2	<i>Delivery</i>	3.417	//
3	<i>Performance history</i>	2.998	//
4	<i>Warranties and claim policies</i>	2.849	//
5	<i>Production facilities and capacity</i>	2.775	CONSIDERABLE
6	<i>Price</i>	2.758	//
7	<i>Technical capability</i>	2.545	//
8	<i>Financial position</i>	2.514	//
9	<i>Procedural compliance</i>	2.488	//
10	<i>Communication system</i>	2.426	//
11	<i>Reputation and position in industry</i>	2.412	//
12	<i>Desire for business</i>	2.256	//
13	<i>Management and organization</i>	2.216	//
14	<i>Operating controls</i>	2.211	//
15	<i>Repair service</i>	2.187	AVERAGE
16	<i>Attitude</i>	2.120	//
17	<i>Impression</i>	2.054	//
18	<i>Packaging ability</i>	2.009	//
19	<i>Labor relations record</i>	2.003	//
20	<i>Geographical location</i>	1.872	//
21	<i>Amount of past business</i>	1.597	//
22	<i>Training aids</i>	1.537	//
23	<i>Reciprocal arrangements</i>	0.610	SLIGHT

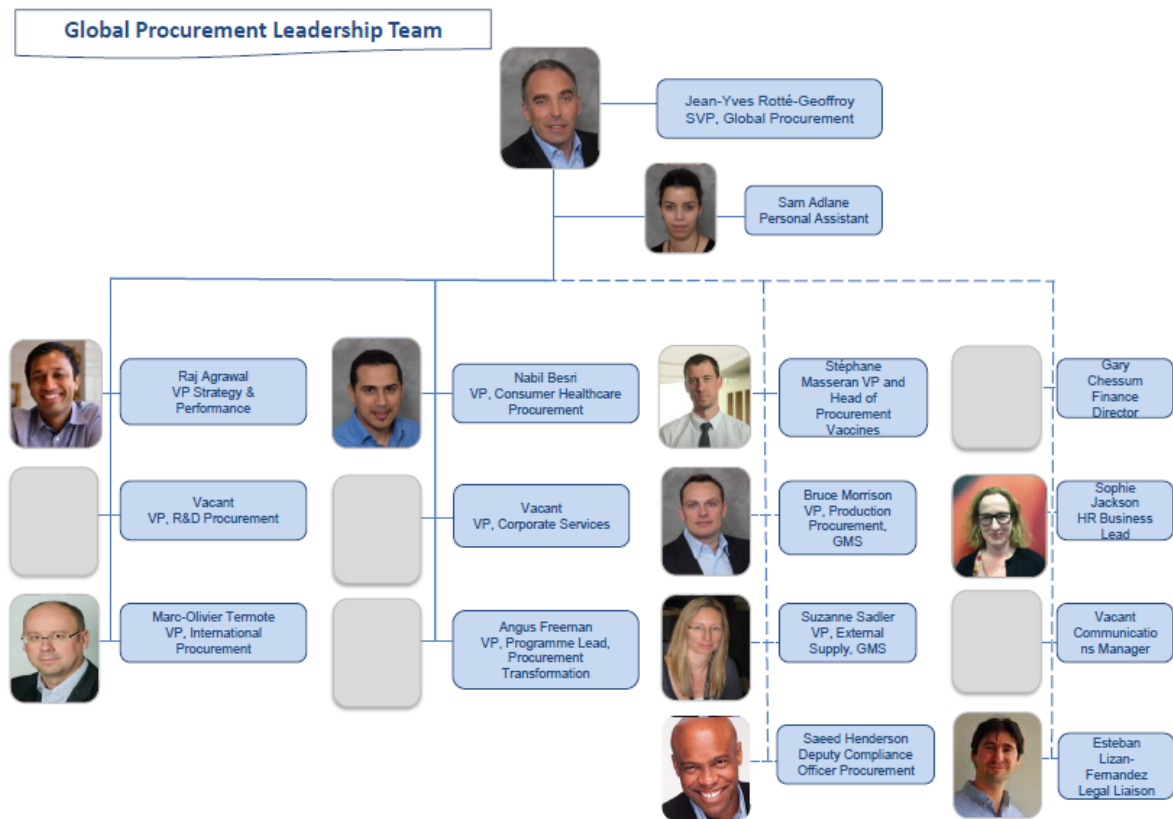
APPENDIX 4

« Kraljic purchasing portfolio matrix » (adapted from Kraljic, 1983)

Purchase category	Supply risk (internal / external)	Profit impact (strategic value)	Potential levers
Routine items	Low	Low	• Limit the relationship investments in order to focus on strategic suppliers • Simplify at best the purchasing process
Bottleneck items	High	Low	• Strong communication and transparency • Continuous monitoring of supplier performances • Diversification and securization of alternative supply sources
Leverage items	Low	High	• Increase the competition among suppliers in order to optimize the gain generation
Strategic items	High	High	• Secure the relationship • Develop collaborative process • Ensure a reciprocal satisfaction and attraction level between the parties

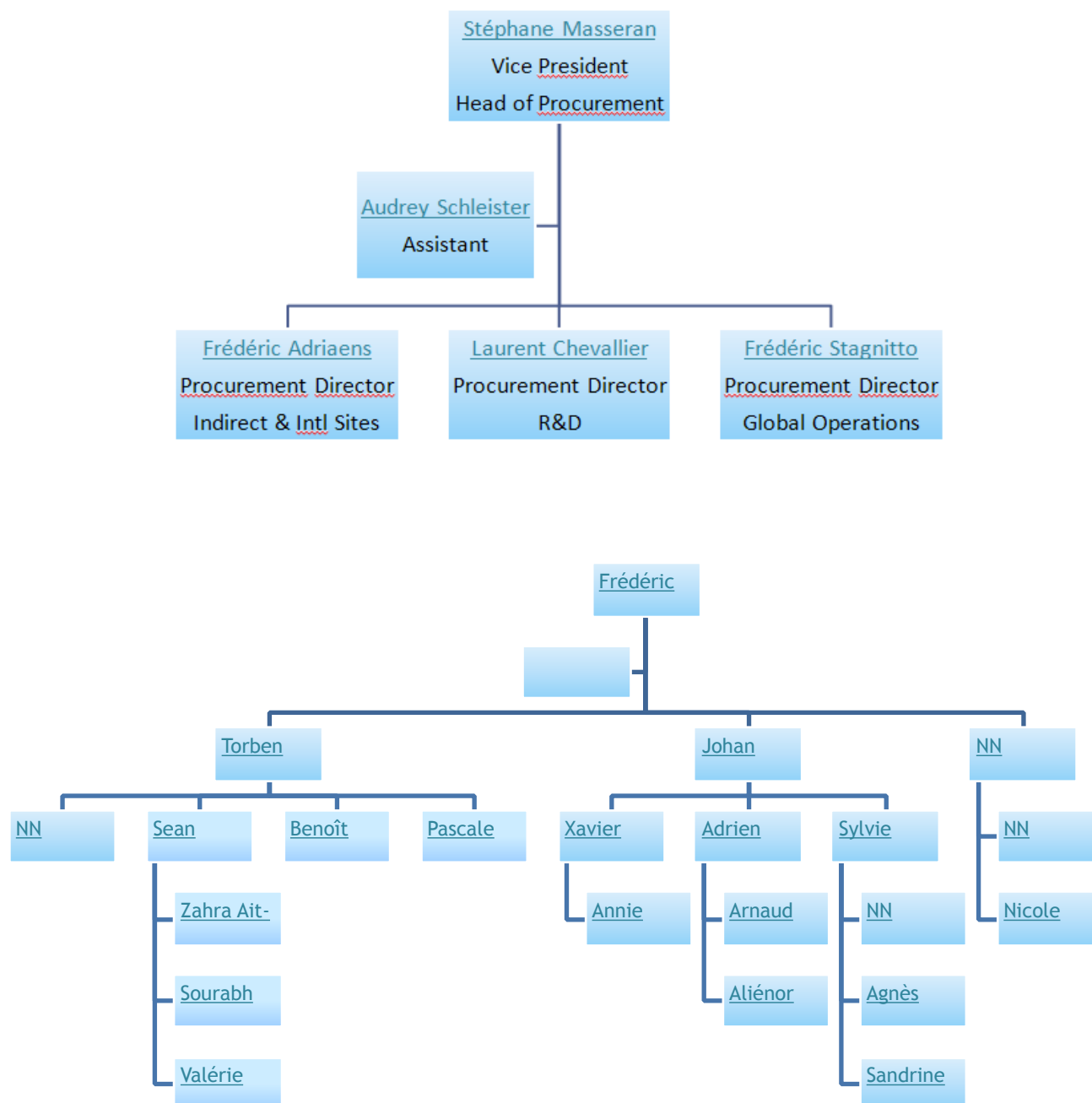
APPENDIX 5

« Global procurement leadership team »



APPENDIX 6

« Vaccines procurement operations - GOP »



APPENDIX 7

« Van Weele's adaptation of the purchasing development model » (A. Van Weele et al., 1998)

• **Stage 1: « Transaction orientation: Serve the factory »**

In the first stage, the main role of purchasing is to build a large supply base with strong suppliers ensuring sufficient replenishments of raw materials and components. The function is rudimentary in nature hence no specific strategy framework is defined and no concrete purchasing goals are defined. Purchasing has a low added value since the purchasing function is only supposed to secure the supply of the right materials and goods for primary production activities.

• **Stage 2: « Commercial orientation: lowest unit price »**

At this second stage, purchasing is more proactively approached and a purchasing responsible is hired in order to facilitate costs reductions and negotiations. More autonomy is given to the function at lower organizational levels with a sharp focus on low prices. Besides, the purchasing department has its own department at business unit level, aimed solely at buying materials. Concretely, at this stage the function starts being viewed as strategic.

• **Stage 3: « Co-ordinated Purchasing »**

In this third stage, a strong central purchasing department is developed with the intend to implement standardized and homogeneous purchasing strategies and systems. The development of tangible purchasing strategies is coupled with a strong cross business unit co-ordination. This stage includes a concrete base of strategy formulation with the intend to identify the potential benefits from internal co-ordinations and synergies. Beyond price and costs considerations, the function significantly contributes to the quality level of purchased goods and components. The major turn is marked by the increased importance of non-production purchasing.

• **Stage 4: « Internal integration cross-functional purchasing »**

The fourth stage is characterized by the emphasis on cross-functional problem solving and in addition purchasing has become more process oriented, trying to manage and organize the purchasing function in accordance with the stakeholders. The function is acknowledged as being much more strategic in nature and the overall purchasing performance is measured accordingly. Besides, the internal focus can take place in the form of internal customer satisfaction surveys and benchmarking, measuring the overall purchasing performance. The organization configuration is « center-led » and strict operational buying is no longer executed by the department (meaning that it is integrated with provisioning functions).

• **Stage 5: « External integration; supply-chain management »**

In this stage, a clear outsourcing strategy coupled with a complementary attention on cross-collaboration among supply chain partners on product development and pre-production planning, is elaborated. The objective is to create a maximum leverage on the company's external resources. The purchasing department strives to facilitate the overall operations in order to ensure a thorough buy-in from the stakeholders. In addition to this, supplier management is turned into supply chain management, with a key focus on the whole flows rather than just the incoming flows.

• **Preliminary stage 6: « Value chain orientation »**

The final stage of the model is characterized by a full-recognition of the importance to deliver high value to the end-customers. This stage is value chain oriented and strives for maximizing the overall links of the chain. How to create and deliver this value depends per organization and industry. Suppliers are continuously challenged to support and improve their product and market strategies. Product development is very frequent is part of the strategic nature of the stage. Ultimately, the objective of the purchasing function is to design and develop the most efficient and effective value chain as possible, in order to serve the end-customers.

APPENDIX 8

« *Determining factors of material risk assessment* »

IM RISK STRATAGY: RISKS IN SCOPE (PARENTS RISKS)

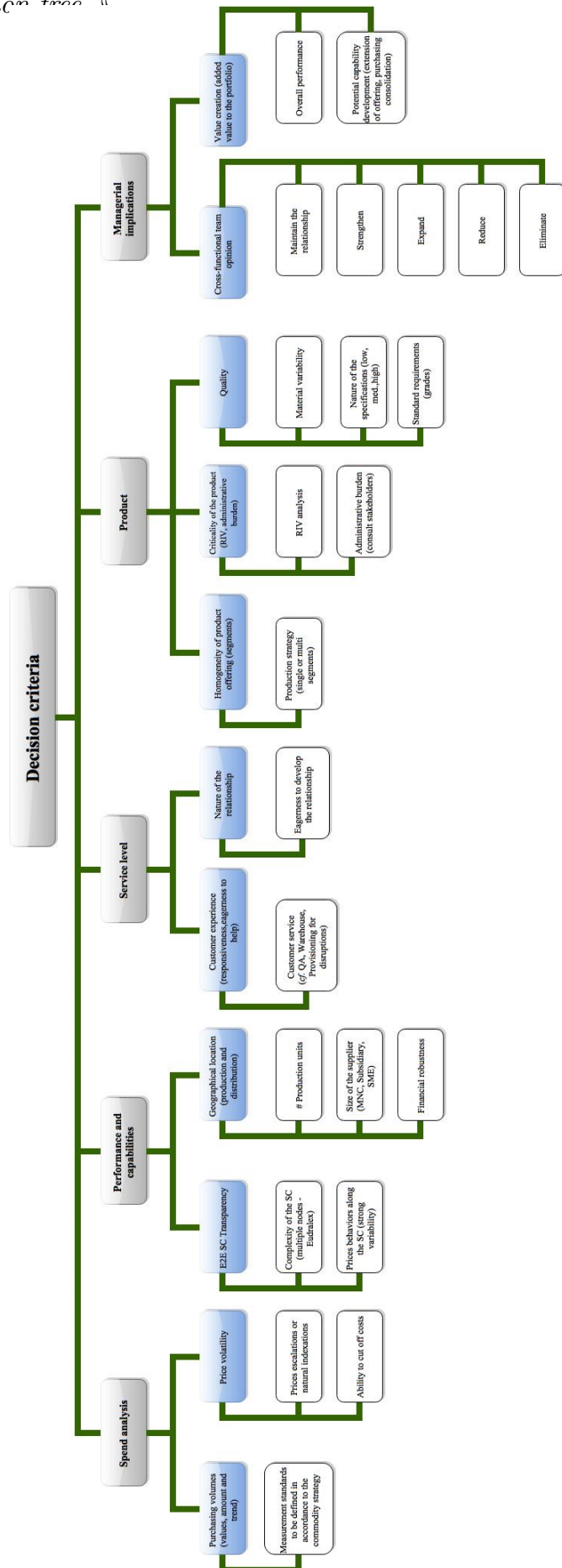
PARENT RISKS	CATEGORY
Sourcing strategy	SUPPLY
Supply chain	SUPPLY
Supplier relationship	SUPPLY
Product specification	QUALITY
Quality	QUALITY
Sustainability	QUALITY
OTHER RISKS	OTHER

RIV COMPUTATIONS:LIKELIHOOD KPIs (REATIVE WEIGHTING)

KPIs	WEIGHTING
# CRISIS	0.03
# NOTIFICATIONS	0.03
COMPLIANCE	0.25
FORECAST ACCURACY	0.05
LEAD TIME	0.05
OTIF	0.1
QA DEVIATIONS	0.24
SOURCING	0.15
WRITE-OFFs	0.1

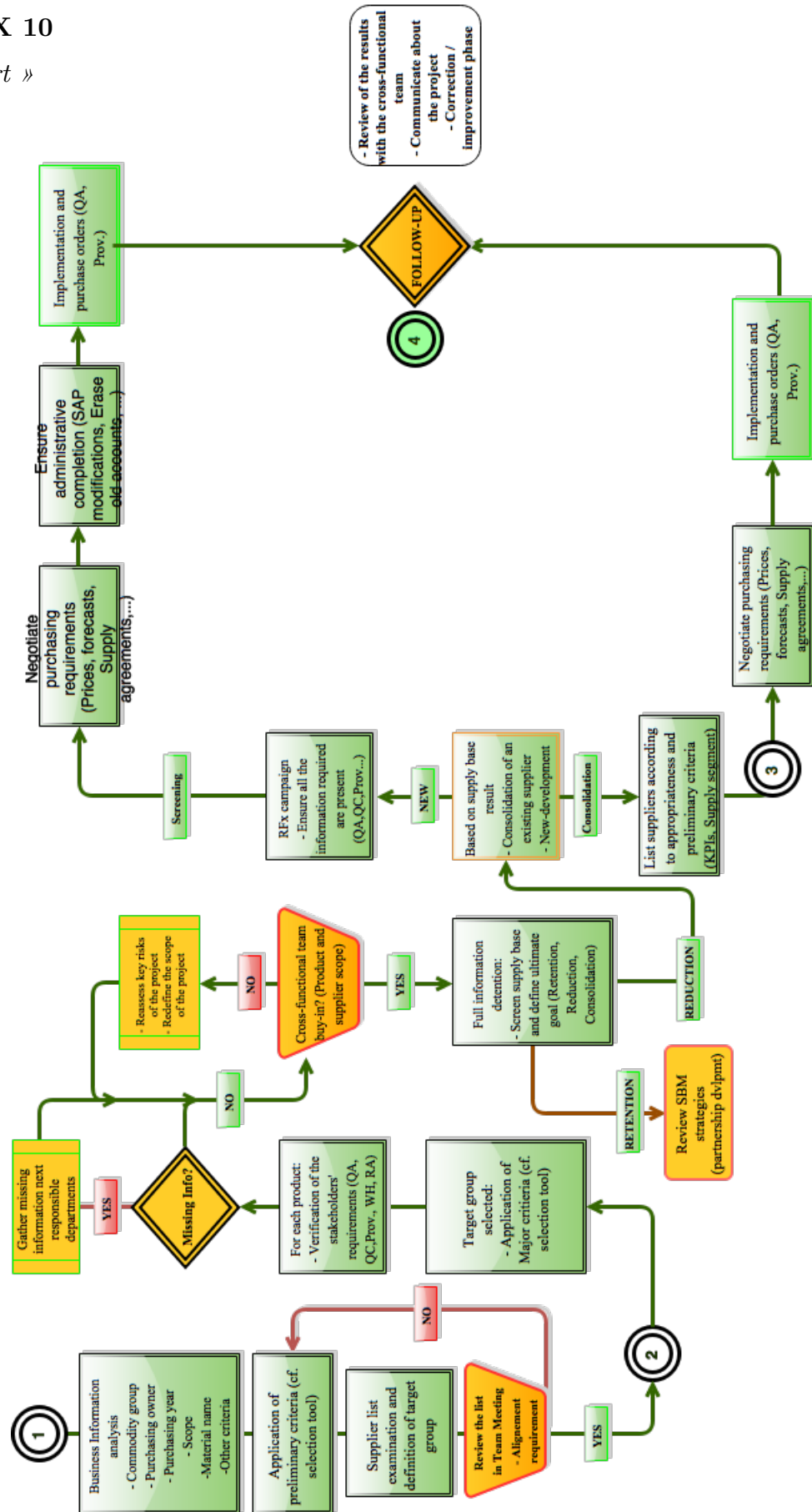
APPENDIX 9

« Conceptual supplier selection decision tree »



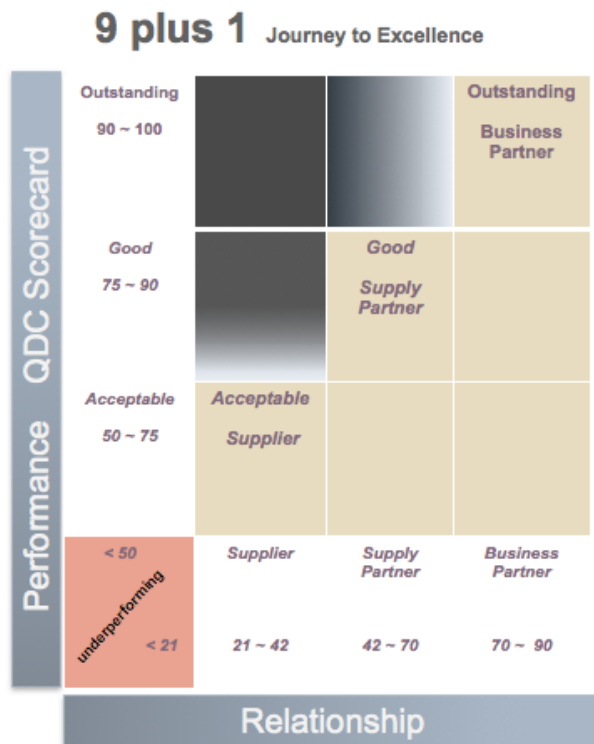
APPENDIX 10

« SBR flowchart »

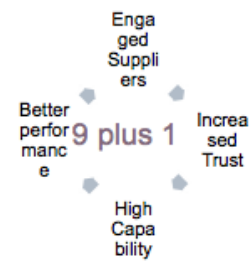


APPENDIX 11

« Volvo CE 9+1 scorecard »



Supplier Relationship:
Measure of Engagement,
Relationship and trust.



QDC Performance:
Measure of effectiveness of
Relationship dimension

APPENDIX 12

« Interviews collection »

1) VOLVO - JOHN MATTHEWS

Supply base management

Sourcing strategy

Slide number 5 journey started in 2010 change in strategy

Quite business at the beginning

total of 3752 suppliers half came with the accusation of

Consider as a demanding customer they are asking a lot from their supplier's relationship

Expect high quality, delivery performance, year on year cost savings, agreements,

Expecting it on the 3752 suppliers is not realistic: not enough resources and business

Too much effort

Analyses on which suppliers will spend our money with

Pareto verified

Critical items : treat them the same, send them a schedule, same access to information

Every part on the machine is important ☒ objective with tail management

Even when the relationship is working on the short term (good rates, good quality, good price) does not mean they are going to be efficient on the long term (cost savings year after year, meet requirements, and when changing design that's when they are going to change the business to one supplier from another) opportunity of a change to consolidate

Some occasions when they have to be more decisive, urgent decision : small supplier having problem, financial struggle ☒ immediate actions

Global project not just Europe

Between 2010 and 2013 proactive in reducing the tail, now about 220 suppliers

Working with the bigger suppliers opportunities

Working with new technology, innovation

Higher repeatable performance

45% of their people supply engineering supplies that they develop

Investment in time effort money with working on optimization for them

Lean process: Volvo Production System (VPM)

Also implementing this project at suppliers

Problem on segmentation : what about when a supplier doesn't fit in any?

Categories : just an explanation

No lost sheep

Objective is to improve all of them in the good direction

lift the performance of all of them (tail also)

supply delivery performance : 91-92% (was 88% minimum)

delivery is full and on time or it's a zero

Combination of different actions: combination of making sure the suppliers are well informed

Forecast, schedule,

Quality problem ☒ proactive to help them

Evaluation: every day

Preferred supplier 30% of the total: twice a year for a business review

Criteria: performance (slide 8 : score card for suppliers) they all have access to it call it 9+1

When supplier is on the 9th card he can either get back on his feet with help of Volvo or he is out

Contains way of measuring (QOC combined it with relationship axes)

What do you have to do to have 90 points on the relationship axes is also well explained to supplier

agreements in place, responding quickly, having the right attitude, contacts, positive response

Once a month: update for the suppliers is sent

Getting better, getting better (slide 10 : confidential !!) green dots are real suppliers

An exemple : HSL (fabrication company in Europe based in Poland, good working relationship : they score highly, year on year cost savings, delivery, quality, but QDC performance not amazing so twice a year formally a meeting go through the details to see what they have to improve)

Who is in charge of feeling those evaluation

Automatic: all the data is in the system

On line, in live,

The review is managed by commodity manager within purchasing

Relationship managed by commodity

Extend the 9+1 matric to items instead of suppliers

this is a supplier evaluation but in the system it is possible to evaluate different performance on different part of the same supplier

Able to compare different parts

Spill over generated

it's not just about the direct material cost saving, it is also administration cost (9000 – 10 000€ per year) sending the schedule making a phone call... not including crisis

Less suppliers: supplier know it, he is feeling reward and will work harder in the future

Number of different areas where you can save money on reduction in SBM

Inventory also trying to have it at the minimum

Where is the supplier? (Far away: cost)

Inbound logistics is manage by Volvo itself, (visit a number of supplier to collect parts: optimized deliveries) fewer suppliers less place to drive, logistic savings

Biggest opportunities (slide 8): best performance only with fewer suppliers, not possible with 3000 still too hard with 2000 but the journey is not over

Volvo construction equipment is a division of Volvo group

this strategy is global for VCE but not for the group

Support the overall strategy on slide 4

Suppliers represent 70% of their cost so it is important that the strategy is on line with overall strategy

it has to be successful because of the representation of the cost

Methodology, criteria taking into account for this strategy

Slide 3

It is the not grey box with red writing

SRM is key: right suppliers with right relationship

Be like mind : wanted to go to the same place

kind of a marriage (required effort but it is worth it) stability, problems fixed together, stand

by each other and support each other

It is easy to be friend when times are good

1 key point ☒ Matrix ☒ Manage the supplier base

What would cost the right relationship?

Other ways of measuring performance

but this way has been like this for years in all of the automobile companies but what is new is the relationship dimension

2) RENAULT - DAVID BECHU

Division qui converge Renault-Nissan même si appartient au groupe Renault

CA groupe Renault-Nissan

Saint Quentin en Yvelines

Supplier Panel Management

On définit tous les deux ans la stratégie technique et achat sur un périmètre de pièces.

Exemple : les étriers de frein avant pour les projets sur les 3/4 ans à venir, quelle va être la stratégie technique, quelle stratégie sourcing (qui peut être sourcer), on définit également le panel de fournisseur.

ACM : alliance Comodity Management

Décision commune Renault et Nissan

Une partie faite par l'engineering (définition des grandes familles techniques) puis les achats viennent mettre leur couche

Pas le même travail sur les sièges que ce qu'on peut faire sur les balais d'essuyage, pas les mêmes pièces, ce n'est pas la même chose. Donc on va passer moins de temps sur des commodités qui sont plus facile.

On a un panel, on essaye de s'y tenir, ce qui n'empêche pas d'envoyer de nouvelle cotation à des nouveaux entrants. Mais ils ne sont pas validé et devront passer par un processus de validation.

Système de freinage : 7 commodités qui n'ont pas toute la même taille et la même importance

Objectif annuel ou stratégie ? Performance sur le CA et performance sur les P0 (assurer la rentabilité des projets)

Analyse du portefeuille achat :

1. Au jour le jour on suit la performance de nos fournisseurs
2. Documentation d'évaluation des fournisseurs : point de vue qualité, qualité de développement, analyse financière, logistique, gestion des rangs 2 = cartographie de chaque fournisseur. Doit être mis à jour avant chaque revu de panel. 1 doc différente par commodité.
 - a. Vie série
 - b. Et sourcing

Les deux sujets sont abordés par les managers = avoir la main sur les 2 leviers principaux

L'ingénierie fait également elle-même son évaluation

Les deux évaluations sont séparés mais elles font l'objet ensuite d'une évaluation globale.

On le fait par fournisseur, et par site du fournisseur !! Chaque usine doit être auditée.

Pas de matrice mais fichier excel avec code couleur

Critères (=items) puis fournisseur à chacun sa colonne avec des couleurs

Entre 3 et 10 fournisseurs par commodité, toute façon après ce n'est pas gérable.

Les critères il y en a 5 achats, 12 ingénieries, + 7 = 24

Cette fiche doit être présentée dès qu'il y a un nouveau sourcing

Il y a une pondération par critère,

Changement de mentalité avec la crise : une grande partie du tissu fournisseur a été mis en danger, on a dû mettre à jour les sites fournisseurs, les usines, et à ce moment-là a été introduit la notion de risk management et donc tous les critères ont été remis à jour.

Le support est bien avancé et si il y a des modifications à faire elles seront minimum, se sera de l'optimisation.

Equilibre propre chaque commodité (=sous-famille de pièce) parce que il faut que je puisse avoir suffisamment de CA pour être important chez mes fournisseur et être important pour eux tout en n'ayant pas tous les œufs dans le même panier. La seule règle est le risk management, qui est aussi une règle légale on essaye de pas dépasser un certain pourcentage de CA dans chaque usine de fournisseur. (On ne dépasse pas 30%)

Mon périmètre c'est 850 millions d'euros par an. 1 famille de pièce fait 40% et on a 4/5 fournisseurs.

Dépendance du fournisseur à éviter.

Notion de risk management intégrer

Pendant la crise Peugeot a retiré son business de chez un fournisseur. Il en résulte que Renault devient le plus gros client du fournisseur en dépassant les 80% du CA. ☒ Gros risk mitigation

On essaye quand même de rester dans un équilibre pour ne pas perdre les leviers de négo

Nouveaux fournisseurs : on refait tous les audits, on regarde ces propres indicateurs en allant directement sur le site. Evolution de son CA, ventilation, quel est le business plan.

On envoie des RFI et RFQ suivant si on le connaît ou pas

Possibilité d'accélérer le processus de validation d'un fournisseur quand on le veut vraiment dans un projet, dans un tender.

On veut nommer le fournisseur : processus accélérer = quick update panel

On essaye de ne pas faire du one shot, il rentre dans le panel pour y rester longtemps

Dans l'automobile on vit avec nos fournisseurs : relation long terme.

Le véhicule démarre 1 an après, 4/5 ans de vie du fournisseur puis 10 d'AV. Pendant 10 Renault doit fournir des pièces détachées à ces clients. = bien 17 ans de vie commune.

Business hold : plus fréquent que de sortir un fournisseur. Délicat à gérer car le fournisseur peut décider d'arrêter toute livraison. Si on n'a pas de plan de sécurisation d'approvisionnement il y a un gros risque. Les sorties existent cependant c'est rarissime. L'apparition dans le panel est de même très compliquée.

Certaines commodités sont distributeurs mais sur certains articles très difficile de changer de fournisseur.

Solution aussi : le double sourcing. Il coûte beaucoup plus cher, peu fréquent sur le freinage. C'est une question d'équation économique en phase de risque en fait parce que quand on parle d'une pièce on parle de son prix, du coût de développement, de l'outillage. Suivant l'équation des choix sont faits de ne pas faire de double sourcing. Le but étant de ne pas prendre des fournisseurs à risque pour rester sur du mono sourcing.

Le processus et les outils en place sont robustes, lorsque le travail est bien fait le résultat est robuste. Ça engendre énormément de travail, c'est un travail qui implique énormément de

personne, beaucoup de la direction. On parle ingénierie et achat mais il y a aussi la qualité la direction de la logistique, les usines, et tout ça il faut que ça match Renault et Nissan. On a devant nous une masse de travail et de décision qui fait que l'on ne peut pas le faire tout le temps. Il y a une inertie du système qui est dommage. Mais pour avoir cette qualité et profondeur d'étude on est obligé de passer par là.

Les items achat : on consulte l'ensemble des acheteurs concernés. On demande aux homologues de Nissan mais concrètement c'est l'équipe achat qui documente. On a automatiquement les indicateurs mais on essaye de faire une lecture qualitative. Ex : Qualité un indicateur n'est bon que si le fournisseur a été bon dans les 12 derniers mois, si on refait le panel en septembre et un fournisseur a eu un incident qualité cette année et c'est le seul, il a travaillé sur un plan d'action... Son indicateur sera mauvais, on va ne pas être bête et méchant.

Les outils servent d'aide mais on étudie chaque item. On regarde les globaux pas par usine mais quand un indicateur est mauvais on regarde pourquoi. L'été la logistique est moyen donc les indicateurs sont mauvais à la rentrée. On fait une lecture analytique et c'est d'autant plus important que quand on va montrer la scorecard les interlocuteurs, ils savent qu'elle a été étudiée.

3) JOHN DEERE - PHILIPPE COLOMBAT

A. ANTECEDENTS OF SBM STRATEGY - 15 minutes

1. Background information on the company

Main activities

Leader mondial dans les machines agricoles mais également présent sur le secteur des transports publics et forestier.

Principal products and markets Organizational structure (business units) Company's strategic focus

Philippe travaille dans le secteur des moteurs diesel pour véhicule non routier (division à part entière) 2/3 de la production est réservé à John Deere les 1/3 restant sont revendu.

Annual sales

Le CA de John Deere s'élève à 36 milliards de \$ celui de la division moteur diesel n'a pas souhaité être partagé.

Number of employees

60.000 employés au sein du groupe John Deere, 4.000 dans la division moteur diesel.

2. Background information on purchasing

Annual purchase spend

1,5 Milliard de \$ en spend en HA direct

Main purchasing categories

Organisation centralisée, 6 commodités: Fonderie, Power train, Fuel system, Mechanical assembly, After treatment and others. Philippe a un travail transverse au commodités il est chargé de la perf fournisseur, de la capa de production, de la gestion du risque...

Purchase spend, divided according to purchasing categories Centralized and/or decentralized purchasing

Entre 200 et 300 millions de spend par commodité (sauf pour la others seulement 100 million)

Development of the purchasing function (cf. Van weele)

Degrés élevé de maturité, 15 ans que l'E fonctionne avec la même organisation

Position and perceived importance of purchasing (ibidem)

Les HA sont considérés comme un département stratégique (part HA dans le chiffre d'affaire est de 2/3 voir de 3/4)

3. Purchasing and supply strategies

Main objectives of purchasing (cf. Van weele)

1. *Qualité (moteur + complexe, trop d'incident qualité)*
2. *Que le fournisseur apporte des technologies nouvelles (force de proposition)*
3. *Coûts (en TCO ou en coût global)*

Buyer-supplier relationship strategies

La réputation de John Deere est primordial face à leurs fournisseurs : axé partenariat, relation historique

Contrat et relation long-terme, VCR (value chain relationship : board to board) 1st metric dans leur auto-évaluation : payer le fournisseur dans les temps

Connection between purchasing and business strategy Development of purchasing plans and strategies

Business et HA proche :alignement des stratégies (global et par commodités)

Relation étroite entre HA et engineering (pas tant entre HA et prod)

4. Purchasing portfolio analysis

Main purposes and use

ERP : SAP [X] ref [X] commodité [X] Acheteur

Utilisation pour les négociations, les contrats (spend : force de négoc)

Le fournisseur a accès à ses données (pour chaque usine : nb de pièce livré, détail par ref, indicateur qualité, performance livraison, plan, spécification technique...)

Occasions, frequency, situations, and timing

Chaque mois tracking des spends, 1 fois/an : spend file (grâce au nomenclature)

Kraljic-based or otherwise?

Non pas vraiment, utilisation de matrice décisionnel uniquement quand il y a un problème

Un manque mais quand acheteur expérimenté utilisation de cette expertise pour s'en passer : connaissance du marché, connaissance des produits...

Choice of dimensions and selection criteria, factors per dimension, labels for quadrants

Generic strategic recommendations per category

Measurement of dimensions/variables (establishing positions in the matrix) Attributed results

B. KEY STEPS AND OUTCOMES ACHIEVED OF SUBSEQUENT SBM STRATEGY - 10 minutes

5. SBM strategies developed?

Main purposes and use, rationales behind those strategies

Deux outils existants :

Le workbook de l'acheteur : formaliser la stratégie pour la commodité, lister les fournisseurs, lister leur spend actuel et le spend des 5 années à venir, intégrer la notion de performance et prendre des décisions (« je ne veux plus de ce fournisseurs dans les 2 ans, je veux intégrer cet autre fournisseur l'année prochaine.. »).

Le segment review : 1 composant (grosse dépense ou complexe) mapper la base fournisseur monde, les concurrents... Un market HA

Frequency, situations, and timing

Le workbook est mis à jour en temps réel (vrai outil d'aide pour l'acheteur : trackeur/ « bible ») et il est présenté 2 fois par an

Le workbook est présenté dans les 5 usines, les feedbacks et l'implication des stakeholders sont un plus

Selection criteria

Le panel comporte 3 inputs :

- *Le portefeuille technologique (mon fournisseur est-il au point sur cette nouvelle technologie, que me propose-t-il...)*
- *Performance de mon fournisseur (tous les mois puis bilan tous les semestres et finalement une revue final en fin d'année) ou audit si nouveau fournisseur*
- *Gestion du risque (santé financière par ex)*

Metric dans performance fournisseurs (achieving excellence)

- *PPM qualité (mesure en pièce/million) et impact du défaut qualité*
- *PPM livraison (le jour même)*
- *Connaissance technique (questionnaire avec l'engineering)*
- *Wave length (relationnel : réactif, transparent, aligné...)*
- *Cost management*

Scope of the strategy

Measurement of variables and subsequent interpretation and decision-making process

C. KEY SUCCESS FACTORS OF SUBSEQUENT SBM STRATEGY - 5 minutes

6. KSF identified for elaborating the strategy

Main success factors and demonstration of their importance

Transparence avec le fournisseur, règles clairement définies

Factuel (questionnaire clair)

Interdependence with other factors and corporate context

D. KEY LEARNINGS - 5 minutes

7. Key learnings of SBM projects/strategies

List KL and room for improvement identified: point out reasons

Dilemme entre HA centralisé et décentralisé

Beaucoup d'entreprise change d'orga tout les 5 ans

15 ans de même orga : le modèle a évolué, des pièces ont changé de commodité, les outils de mesure de perf se sont affinés

Cependant quand une usine a un fournisseur unique sur une spécificité unique pourquoi pas décentraliser l'HA de ce produit ?

Les concurrents à l'HA (automobile, poids lourd) bien plus gros en terme de clients : intérêt d'être centralisé

Pas vraiment dans une logique de réduction de la base fournisseur (à part pour la commodité

« others ») au contraire dans une logique d'augmentation de la base (beaucoup de monosourcing, de niche...)

4) RENAULT -VALERIE BARAT

Consultation

Pas de veille stratégique à chaque besoin de prestation

☒ dispose d'un panel de fournisseur qui est validé par tous les directeurs d'ingénieries et porté par les achats

Premier cadre gris : reconnu par Renault et le fournisseur sait qu'il fait partie du panel

On entame le processus

☒ le métier ingénierie à d'un coup une problématique, nouveau sujet qu'il ne peut pas faire, besoin d'outsourcer.

Exprimer factuellement dans un cahier des charges l'activité et les résultats qu'il attend de cette prestation. La flèche symbolise un besoin de prestation et pour ce besoin on va choisir dans tout le panel de fournisseur de Renault, ceux qui sont les plus pressenti pour réaliser correctement cette activité. Première flèche

☒ panel de 3 fournisseur, pressenti : capable de répondre au cahier des charges qui va leur être envoyé

Sélection dans le panel pour chaque activité métier qu'on souhaite outsourcer.

☒ Short liste

Une flèche = un cahier des charges

On connaît leur carte d'identité en terme de compétence, on sait ce sur quoi ils sont les plus forts, et également là où ils sont le moins bien positionné. Naturellement certains se dégagent et d'autres pas.

Première sélection puis sur cette sélection les achats vont envoyer le CdC et commencer le processus de consultation. Chaque fournisseur va revenir avec sa compréhension technique du sujet, une offre économique

☒ évaluation technico-économique par engineering et achat

A la fin un fournisseur se dégage et est nommé.

Panel très compliqué à faire, je vous avoue que quand on a fait un panel honnêtement on essaye de le faire grandir et de leur donner des parts de marché suffisante (aux fournisseurs) à chacun. Pour qu'ils se disent : je fais bien parti du panel Renault et je suis reconnu par le Renault. Quand on lance un panel on évite de commencer à le revoir avant 5 ans. Certains se dégagent plus que d'autres, certains nous déçoivent et au bout de 5 ans on refait des refontes complètes de panel. La plus part des fournisseurs sont reconduits mais certains (santé financière, déçu sur des activités particulières).

Objectif base fournisseur : on l'a déjà bien réduite, de façon majoritaire sur les 130, ça demande un énorme effort de canalisation. On peut toujours le réduire évidemment on essaie encore de le réduire pour massifier les prestations et les performances mais il faut se rendre à l'évidence que les fournisseurs n'ont pas une polyvalence de prestation tel qu'ils peuvent réaliser toutes les prestations d'un constructeur automobile. Naturellement on pourrait arrêter de réduire autant qu'on aimerait. Garder les compétences nécessaires à la réalisation de toutes les prestations.

Slide 45, à partir du moment où on commence à lancer une démarche de consultation : quelle stratégie on souhaite ? Monosourcing, bisourcing, multisourcing. Possibilité de nommer plusieurs fournisseurs pour le même objet. Stratégie monosourcing plus confortable car un seul interlocuteur en faveur de lui et il grandit avec un fournisseur par contre il y a des moments où on met le frein sur des gros sujets, quand on met en situation monopolistique. On scinde en plusieurs parties pour ne pas être en dépendance.

1. Est-ce que techniquement le fournisseur a compris ce qu'on lui demande ? Outils basé sur des fichiers excel ou à la fin sur un spider chart on a 5 ou 6 axes d'évaluations techniques. Avec les mêmes questions et avec le même outil. Evaluation non contestable au niveau des achats. Note qui discrimine un fournisseur, pour qu'on rentre dans un effet entonnoir.
2. Deux fournisseurs minimum qui en ressortent (ou au moins on l'espère) , les achats font de leur côté ce que l'on appelle des last call, où ils essaient de négocier au mieux les prix et de faire converger avec une performance économique qui était un des objectifs de la consultation.

Acheteurs = acteurs finaux de la consultation et qui disent à la fin on en est arrivé là pour nommer tel ou tel fournisseur.

Cadre orange = décision global engineering/achat

5) SANOFI - JULIEN KROLL

Catégorie de fournisseur différent

Au lieu d'avoir 4/5 fournisseurs qui font la même chose, arrivait à en avoir 2 qui couvrent tout ou 3

Le mieux est d'en avoir deux (soucis avec l'un on a l'autre)

Parfois passer de deux fournisseurs à un seul (monosourcing)

Fournisseur en transport, 2 types de transport : via colis (FEDEX, colissimo, DHL) ou fournisseur premium

Envoi des essais cliniques

Couper la carte du monde en 5 régions, 1 appel d'offre par région

Compétitif sur toutes les régions ? Volonté d'avoir un fournisseur pour toutes les régions

Sinon solution hybride

Au début solution hybride et optimiser au niveau des couts

On choisit un fournisseur là où il est bon et pas trop cher, mais surtout là où il est bon

Pas le prix le critère, mais la qualité des livraisons

1 fournisseur meilleur qualité et moins cher ☒ Décision de partir en mono-sourcing

Parce qu'à côté on garde des fournisseurs premium haut de gamme

Pour produit sensible

Mono sourcing car si un jour ce fournisseur a un souci on a en back up un fournisseur premium (qui sait faire la même chose mais en beaucoup plus cher)

Premium garder 3ou 4 premium suivant l'expertise avec la région (épicerie fine, deux envois par an par ex obligé de garder le fournisseur)

Qualité et le prix

Au niveau contractuel que se passe-t-il au niveau du contrat : prestation très élevée pas d'engagement sur un volume (indirectement les fournisseurs savent qu'ils auront du business)

Exemple aux îles canaries 1 seul fournisseur : pas le choix obligé de le garder

Quel méthodologie pour rationaliser les fournisseurs

Impliquer avec le client interne : donc utilisation d'une matrice de décision

Achat (cout) Qualité (Qualité) Logistique (Délais)

Client impliqué dans la décision

Chacune des équipes 1/3 des voix

Critères choisis par le client interne, pondération réalisés tous ensemble

Achat critère :

Santé financière (10%) Prix (90%)

Note sur 10 au final

Fournisseur le moins cher 10/10 le fournisseur deux fois plus cher à 0

varier les notes des achats en conséquence : ne pas faire tourner les notes autour du même pot

Seul critère différenciant : les achats qui ont vraiment contrebalancé les notes ☒ maître de la décision

Certains critères sont éliminatoires (passage de l'audit)

Bien de faire des matrices multiparti

Note en aveugle et les achats compilent et au final carte du monde avec code couleur avec une carte du monde et fournisseur

Possibilité durant le meeting de prendre de nouvelle décision suivant résultat de la matrice :
ex : Finlande autre fournisseur que toute l'Europe de l'est ☒ tant pis on change et on mais le même fournisseur pour toute l'Europe de l'est Finlande compris (important de pouvoir juger derrière et réadapter)

Client interne impliqué

Exclusivité à 90% pour le fournisseur sélectionner le reste pour le back-up

Canaries : hors scope (2 commandes par an)

Clé du succès pour la réussite de ce projet : avoir l'appui du management, avoir « les couilles » de porter le projet

Tout le monde approuve la matrice : on ne peut pas faire marche arrière

Aux US attention car pas la même sécurité de l'emploi donc plus difficile d'avoir l'appui du manager

Financier:

Prix (80%)

Santé financière

RFA (outil de reporting)

Logistique

Temps de livraison (50%)

Expertise théorique (20%)

Relation fournisseur (10%)

Réactivité force de proposition (20%)

Qualité :

taux de performance

suivi des réclamations

capacité d'investigation

Suivi du RFI

Sélection des échelles importantes (façon de mettre les notes)

Avant validation de la grille, méthode de notation importante à partager : recommandation

Pour pouvoir faire un feedback et être sûre que les notes auront un sens (pas de notation au feeling mais une notation juste)

Livré à l'heure livré un peu à l'heure livré pas à l'heure : pas de donné quantitatif alors que important (sauf pour relation client)

Deuxième mission :

10 agences de marketings sollicité au bon vouloir du marqueteur

pour étude de marché (certaines sont spécialisé sur un sujet)

récupérer les contrats, le spend par an (pas d'accès à SAP donc compliqué de récolter les données)

fournisseurs : listes de ce qu'ils font (interview médecin, recrutement patient étude de marché...) qu'est-ce qu'on a en doublon, que peut-on enlever (over lap des services proposé) travail avec les client interne (toujours une bonne excuse sur le pourquoi on utilise ce fournisseur est pas lui)

Important de diminuer le nombre de fournisseur

Le client interne prend la décision – achat présent sur le support pour préparer l'outil, les présentations, à l'initiative du projet...

☒ peut-être plus d'info sur cette mission

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