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Framework for Revising or Finding Subsidiary Strategic Orientation

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ABSTRACT

Subsidiaries of multinational corporations sometimes operate under the umbrella of corporate strategy, even if it doesn't fit their objectives, local culture, or capabilities. Although there have been several pieces of research that promote the independent strategic direction of subsidiaries, there is hardly any research undertaken to find out how subsidiaries should find their strategic orientation based on what approach. Therefore, there is a need to provide those subsidiaries with a clear road map to guide them with the process of strategy formulation. In this thesis, I followed the Resource-based and Market-based perspectives accompanied by strategic foresight activities and research conducted on the parent company in order to propose a four-dimensional framework to be leveraged as a guideline for subsidiaries to find out their strategic orientation and asses its coherence with that of the parent company. In order to test the framework, a case study has been conducted on a subsidiary that has been part of different corporations and has struggled to find the right strategic position. Values and goals of the parent company related to the subsidiary (to assess the alignment), the internal resources and competences of the subsidiary, the relevant industry, and the future drivers of change as well as the current trends were examined, to come to a conclusion that even both Resource-based and Market-based views together are not sufficient to achieve a strategy which exempts from the risk of failure. Whilst, in addition, it is essential to define the trends and forces of change on micro and macro level of a company and move fast by manipulating "the sticky resources" in a way to utilize them more efficiently at the same time acquiring new fundamental resources, with aim of either defending against the future menaces or exploiting future opportunities that will drive the competition. The value of this work lies in proposing a springboard for subsidiaries, why not also for non-subsidiaries (by ignoring parent company dimension), to revise or find their strategic position. On the flip side hoping to lend additional support to the decision-makers of the case company in finding or revising the strategy while reshaping their strategic beliefs.

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GLOSSARY & ABBREVIATION

- **Specialty chemicals** are chemical products that are sold on the basis of their performance or function, rather than their composition. They can be single-chemical entities or formulations whose composition sharply influences the performance and processing of the customer's product. Products and services in the specialty chemicals industry require intensive knowledge and ongoing innovation (HIS Markit, 2018)
- **Commodity chemicals** are chemical products that are sold strictly on the basis of their chemical composition. They are single chemical entities. The commodity chemical product of one supplier is generally readily interchangeable with that of any other. (HIS Markit, 2018)
- **Surfactants:** Surfactants are smart chemicals that may be completely invisible to us most of the time but which benefit our lives in many different ways. They can be produced from either synthetic or natural raw materials and their versatility makes them a key to both the quality of modern life and many different industries. What makes surfactants special is their ability to mobilize and combine materials - typically water, oils, fats and solvents - that otherwise would not mix due to their incompatible molecular properties. Water, for instance, has a very high natural surface tension (with air) which is what enables small insects to walk on its surface. If a few drops of surfactant were added to the water, a large decrease in the tension between water and air results, meaning that the insect would sink (CESIO, n.d)

- **Surfactants end markets:** The big applications for surfactants are personal care (makeup, shampoo, etc.), household care (detergents and cleaning products), agriculture (crop protection), and oilfield products. The main chemical product to follow in this product segment is ethylene with ethylene oxide being the main component of many traditional surfactants.
- **Ethylene oxide** is an organic compound with the formula C2H4O. Ethylene oxide is a colorless and flammable gas with a faintly sweet odor. The reactivity that is responsible for many of ethylene oxide's hazards also makes it useful. Although too dangerous for direct household use and generally unfamiliar to consumers, ethylene oxide is used for making many consumer products as well as non-consumer chemicals and intermediates. These products include detergents, thickeners, solvents, plastics. At room temperature, it is a flammable, carcinogenic, mutagenic, irritating, and anesthetic gas. It is commonly handled and shipped as a refrigerated liquid to control its *hazardous nature*. As a toxic gas that leaves no residue on items it contacts, ethylene oxide is a surface disinfectant that is widely used in hospitals and the medical equipment industry to replace steam in the sterilization of heat-sensitive tools and equipment, such as disposable plastic syringes ("Ethylene oxide", n.d).
- **Oleochemicals** are produced from natural sources, such as fats and oils obtained from vegetables or animals. They are usually less toxic as compared to petrochemicals.
- **Biodegradation**: The biodegradation of an organic substance, such as a surfactant, is a process of degradation to simple inorganic compounds such as carbon dioxide, water, and mineral salts (CESIO).

    - Ethylene oxide= **EO**
    - Propylene oxide= **PO**
    - The parent company of Chemo B.V= **PCo**
    - The holding under which Chemo B.V operates= **The group**
    - Resource-based view/ inside out perspective= **RBV**
    - Market-based view/ outside in perspective=**MBV**

INTRODUCTION

Years ago, the strategy was limited to a military strategy that some strategic thinkers, who usually knew the battlefield, used to set. Whilst today, almost every field can be combined with the word "strategy", like investments strategy, environmental strategy, housing strategy or business strategy, which guides a company to greater profitability and success (Kourdi, 2015). According to Grant (2010), an enterprise needs a business strategy for the same purpose that an army needs a military strategy: to give direction and purpose, to deploy resources effectively and to coordinate the decisions made by different individuals. This means that having a strategy should be important for a company. However, there are cases when it is not easy to have one. Such as subsidiaries in large corporations sometimes operate under the umbrella of the corporate strategy, whether it fits their objectives, local culture, and capabilities or not, *because/ due to what* they may have a weak sense of strategic direction for themselves, especially in case of being acquired successively by different corporations.

Strategy in business is a phenomenon being studied since the second quarter of the 20th century. Since then different approaches are developed. The literature and the practice are saturated with models and schools of thought on strategy formulation. For instance, on the one hand, already 20 years ago Mintzberg in his book Strategy Safari (1998) classified 10 strategy schools of thought, on the other hand, nowadays, almost every well-known strategy consulting company develops its own strategy formulation model. Nevertheless, there is hardly any research undertaken to find out how, based on what approach, subsidiaries being part of a larger corporation formulate strategies. Therefore, to fill this literature gap, and assist such subsidiaries in finding their strategy orientation, a similar case is chosen to examine: the case of Chemo B.V. Chemo B.V is a chemical specialties company, situated in the eastern part of the Netherlands. Until recently, Chemo B.V. was a subsidiary of a US company, when in 2018 it was sold to a Swiss company (hereafter PCo) owned by an Asian group (Hereafter the group). Due to being sold and bought by multiple corporations the company didn't have a formal own strategy but usually operated with the corporate strategy of its actual parent company. Although it isn't clear whether these strategies could have been suitable or not for Chemo B.V., the fact remains that at the moment of data collection, Chemo B.V. lacked its own strategic direction.

The literature demonstrates that besides lacking strategic direction, there are other drivers for subsidiary management to consider to have a well-formulated strategy. Such as, Birkinshaw and Hood (1998) claim that autonomous subsidiary behavior is a potent force for subsidiary development because it leads to the planned development of resources and capabilities. Subramaniam and Watson (2006) assert that it improves performance, and according to Williams (2009), it influences the corporation as a whole. The question remains which approach to choose to have a subsidiary strategy to strengthen the strategic orientation and autonomous behavior?

As mentioned above, there are many approaches that can be adapted to formulate strategy, such as the Resource-based view (RBV) (Wernerfelt,1984; Barney, 1991) emphasizes firm's internal resources as essential determinants of its competitive advantage, thereby, sometimes is referred to as Inside out approach; the Market based view (MBV)(Porter, 1985; Mintzberg, 1998) alternatively known as outside in approach or market positioning view, considers industry factors and external market orientation as fundamental determinants of firms' performance; Knowledge-based view (KBV) (Narasimha, 2000)

considers firms as mechanisms that generate, integrate and distribute knowledge; Capability based view (CBV)(Grant, 1991) appraise resources to be the source of capabilities and this latter to be the source of competitive advantage; and the Relational view (RV Barney)(Dyer & Singh, 1998) focus on interfirm network routines and processes as important unit of analysis for understanding competitive advantage. However, in this turbulent world, when formulating a strategy, to rely on one approach and refer the performance solely to that would be arguably omissive. Hence, since KBV and RV coexist RBV (Acedo et al., 2006), since CBV is a part of RBV, and since successful strategies are characterized to be designed with deep understanding and appreciation of the competitive environment, and to have an objective appraisal of resources (Grant, 2010); together RBV and MBV would form the most complete approach, which includes internal and external forces. Hence, these two views combined will guide me through this major project. These two perspectives even though contrast each other, are inseparable because the strategy designed from MBV perspective which roots in the field of industrial organization economics and is based on the attractiveness of the industry and the firm's relative positioning against competitors, while the strategy designed from RBV perspective links more closely the internal capabilities and resources of an organization to levels of competitiveness. To formulate a strategy, we need to have maximum information about the company and assess the utmost factors of its environment. Thus, trying to define an advantageous position in an industry without thinking about the resources necessary to support that advantage is not wise. But it is equally unwise to think that one can develop a non-substitutable resource without having a particular position in a specific industry, i.e. in an independent context. Even Wernerfelt (1984), one of the main contributors of RBV, states that the two perspectives are just "two sides of the same coin". Hence, we need to have a clear understanding of both sides of the coin to formulate a strategy. Accordingly, I will inquire into qualitative case study research where data will be gathered from a variety of sources: I am going to use data provided by the case company. Besides I am going to analyze the business environment and the competition.

To come to the point, the last decades have seen a growing trend towards globalization. Certainly, with globalization, the number of subsidiaries that are part of a multinational corporation is increasing continually. Therefore, this research provides an opportunity to advance the knowledge of subsidiary strategy. Moreover, it makes a contribution to the management of subsidiaries by developing a road map to discover their own strategy. Briefly, by conducting empirical research in order to give an analytical solution to Chemo B.V, I seek to address the following central question:

How can a subsidiary revise its strategic orientation relying on both market-based and resource-based views?

The remainder of this thesis is divided into six sections: In the first section, theory will be reviewed to distinguish between several strategic schools and organizational tools. The second section -Methods- will follow to describe the approach chosen to conduct this study. In the third section, the results from the collected data will be summarized from the collected data. In the fourth section -Discussion & Recommendation- based on the facts the strategy will be formulated. Finally, in the last section -Conclusion- a discussion of the implications and some concluding remarks will be given to properly implement the suggested strategy.

THEORETICAL BACKGROUND

Markets are becoming more saturated and customers are becoming more fragmented in their expectations, thus, to conquer at least a part of a market, spotting the right strategic position with the sustainable competitive advantage is becoming more challenging yet crucial. Strategic position determines the market where to operate and where to position the firm within that market (Kotha & Vadlami, 1995). While according to a relatively recent definition competitive advantage is "whatever value a business provides that motivates its customers to purchase its products or services rather than those of its competitors and that poses impediments to imitation by actual or potential direct competitors" (Christensen, 2010). This definition, for example, comes to argue implicitly with the strategies based on either of the most dominant theories in the literature of strategy RBV or MBV. That is because, the researchers of MBV assert that firm's performance is exclusively determined by the structure and competitiveness of its industry (Porter 1985; Schendel, 1994). Whilst, researchers of RBV see the firm's resources as the main drivers of its superior performance. From the above mentioned, it appears that the literature does not provide a step-by-step formula, that could be applied to every case to achieve the prerequisites of a successful strategy. This is the case also for subsidiaries that want to find their strategic orientation. Developing strategy for a subsidiary, guided by RBV, one, can consider only the resources in hand, however, is it wise not to consider the industry factors? When a subsidiary of a multinational could have the same resources as its parent company but the totally different macro environment would change the stage radically. On the other hand, solely guided by thoughts of MBV, counting only on the external factors and avoiding to refer to the internal factors, one, would develop a strategy for a subsidiary that reflects the assumptions that all the firms operating in the same industry have the same resources and influenced by the same external environment should have the same strategy. This leaves us with the choice of combining the two perspectives to come up with a strategy which counts on both internal and external factors. However, to avoid omissions and form a strong theoretical background first both perspectives will be explored separately, then a discussion of the literature which combines these two perspectives will be held.

The Market-Based View (MBV)

According to Wang (2014), the MBV includes theories from both the positioning school of strategy and the industrial organization economics (IO). While positioning school was mainly identified by Porter (1980) and Mintzberg (1998), as per Faccarello and Kurz (2016) it took several decades to develop the IO. Mainly, it began in the 1930s when Chamberlin (1933) and Robinson (1933) separately developed the notion of imperfect/monopolistic competition, asserting that every firm has some monopoly power, but because of other producers selling products that are differentiated (not perfect substitutes), the monopoly profits are equalized to zero. Later in 1939, Mason based on this notion developed a framework known as Structure Conduct Performance (S-C-P). This framework explains how imperfectly competitive markets work, stating that industry structure affects the firm's conduct e.g. behavior of pricing, which in turn influences the industry performance. It was in 1956 when Bain exploring firms with monopolistic structures further developed this paradigm by identifying three potential entry barriers: absolute cost advantage, scale economies and product differentiation. The S-C-P approach was mostly advanced by Porter and Caves, who demonstrated the need of firms to develop strategy taking into account the structure of the industry in which the firm competes in order to gain competitive advantages (Caves & Porter, 1977; Porter, 1979; Caves, 1980).

Thus, the full-fledged MBV of strategy, pioneered by Porter's Five Competitive Forces model, argues that industry factors and external market orientation are the key determinants of strategic choice and firm performance (Bain 1968; Caves & Porter 1977; Porter 1979, 1985, 1996; Peteraf & Bergen 2003; Day & Moorman, 2010). This approach sees the customer as a unique asset. Besides, it allows the firm by observing the market, recognize which resources should be employed and which position in the market should be held in order to gain monopolistic rents by being the first mover in the market (Teece, 1984; Lieberman & Montgomery, 1988).

According to Porter (1979), identifying five competitive forces is the essence of analyzing the structure of an industry and it provides the basis of the strategic agenda of action. Hence, when formulating a strategy with the help of the so-called five competitive force framework, firms assess their own competitive advantage via assessment of the external environment. This model enables firms to examine the present state of their industry in a structured manner. Five competitive forces include rivalry among existing competitors, threat of new entrants, threat of substitute products or services, bargaining power of customers, and bargaining power of suppliers. Porter suggests that these forces emphasize the critical strengths and weaknesses of the firm, illustrate the positioning of the firm in the industry, define what strategic changes may increase the performance, and underline the industry trends which may be interpreted either as opportunities or as threats. The weaker is the forces collectively, the greater is the opportunity for outstanding performance (Porter, 1980). Accordingly, to achieve competitive advantage the strategist's goal should be defining a strategic position in the industry where the firm with its capabilities can properly defend itself against these forces, or can influence them in its favor (Porter, 1979) or can find a position in an industry where the forces are weaker (Porter, 2008). Moreover, the five forces framework provides a systematic way of thinking, by highlighting the profit structure of an industry (Porter, 2008; Teece et al., 1997). For example, the profit may be diminished through the rivalry among existing competitors or it can also be restricted by the threat of new entrants. Briefly, this view insists that only by fully understanding the forces a firm can consolidate industry conditions into strategy (Porter, 2008).

The Resource-based view (RBV)

In contrast to MBV, the RBV focuses on the firm-specific resources as the fundamental determinants of firm performance (Chandler, 1962; Ansoff 1965; Teece, 1984; Rumelt, 1984; Wernerfelt, 1984; Barney, 1991). Although literature refers the term "Resource-based view" mostly to Wernerfelt, it is fact that Nourse and Drury (1938) already decades ago proposed that the firm-specific characteristics determine the performance and that firms are not under the influence of industry factors. Later, Rumelt (1984, p:561) arguably was the first researcher to relate the resource perspective to the strategic domain. When according to him a firm's strategic sense "is characterized by a bundle of linked and idiosyncratic resources and resource conversion activities".

However, if the MBV suggests that for the sake of chosen strategy the lacking resources can be acquired later, the RBV is in conflict with this approach. For instance, according to Wernerfelt (1989), the resources and capabilities owned by firms are heterogeneous. If all firms had the same resources there would be no profitability differences among the firms and a given strategy could be implemented by all firms in a given industry (Barney, 1991). Moreover, in this matter Teece et al (1997) point out that it is not easy to play with the resources and capabilities/endowments, they note: "resource endowments are "sticky" at least in the short run, firms are to some degree stuck with what they have and may have to live with what

they lack." and the reasons can be simple, as an example, firms may lack the organizational capacity in order to develop new competencies in short terms (Dierickx and Cool, 1989). Besides, some resources are intangible and non-tradable, for example, tacit know-how (Teece, 1976, 1980). Furthermore, Ray et al. (2004) suggest an alternative to the changing of resources: redesigning the processes and activities in order to utilize the resources more efficiently and attain sustainable competitive advantage.

Nevertheless, Wernerfelt (1984) exhorts the consideration to develop new capabilities when necessary. Indeed, Learned et al. (1969) earlier suggested that the key to future competitiveness lies in the ability to develop competencies that are unique and distinctive. Hence, according to RBV, the competitive advantage is a result of firm-specific resources and capabilities that are inimitable or are costly to copy by other competitors (Wernerfelt, 1984; Barney, 1986, 1991; Rumelt 1984,1987) and consequently the strategy should be defined lying on these resources (Rumelt, 1984). More precisely, Barney (1991) suggests that to generate a sustainable competitive advantage, accordingly a sustainable market position, the resources should be "VRIN": *valuable,* which has a demand; *rare,* that does not create competitiveness while creates a competitive advantage; *inimitable,* in order to secure the long term competitive advantage; and *non-substitutable.*

Speaking of the type of resources, roughly every subscriber to the RBV approach somehow classified resources owned by firms. For instance, Ansoff (1965) classified firm's resources as physical, monetary or human; Hofer & Schendel (1978) classified resources into organizational resources and technology; others categorized resources as tangible or intangible (Lockett & Thompson, 2001; Ray et al. 2004), etc. Arguably almost every classification revolved around the same idea that resources are either property or knowledge resources. Sometimes the classifications had a goal to distinguish the most valuable class of resources owned by the firm. For example, Lockett and Thompson (2001) and Ray et al. (2004) suggest that from a strategic point of view intangible resources are more likely to be a source of sustainable competitive advantage than the tangible resource. On the other hand, Teece et al. (1997) believe that the competences that potentially contribute the most to the strategy of a firm, are learning and accumulating organizational and "invisible assets"- such as, information flow, know-how, corporate reputation, culture, or technology- (Itami and Roehl, 1987). While Barney and Wright (1998) and Prahalad and Hamel (1990) saw human resources as the most valuable class of resource.

More practical than the trend of classification or finding the most valuable class of resources, there were researchers who realized that the focus should be given only to the critical category of resources, which are strategically significant. In this regard, Conner (1991) highlighted that the value of a strategy essentially resists in the ability of the considered resources and capabilities to generate abnormal profit. On this occasion, Prahalad and Hamel (1990) distinguished the notion of "core competencies", Papp and Luftman (1995) established the notion of "distinctive competencies", whereas Teece et al. (1997) developed the notion "dynamic capabilities" in order to highlight the idea of exploitation the existing internal and external firm-specific competencies to address changing environments. The approach of dynamic capabilities stresses the necessity to develop management capabilities; and imperfectly inimitable combinations of organizational, functional and technological skills.

Despite all these discussions about the types and significance of resources, according to Spanos and Lioukas (2001) the stemming profit from resource doesn't have to be per se the result of utilization of

more unique combination of resources than competitors, it can also be the result of possession of a relatively greater amount of resource. This could be another reason to question the credibility of the strategy solely formulated from RBV perspective. Accordingly, there has been a vivacious debate on the relative value of the two discussed perspectives, in particular in opposing or combining contexts.

Opposing context:

One of the most loyal RBV researcher, Rumelt (1991) dared to raise the idea of the relative unimportance of industry effects and the importance of firm-specific factors. Whereas Wang (2004) mentioned a limitation of Porter's five force model, assuming that industries are complex with inter-relationships, thus are not that simply analyzable. Moreover, Prahalad and Hamel (1990) suggested that sustainable competitive advantage is more based on resources and capabilities than on products and market positioning. Furthermore, Makhija (2003) empirically tested what was previously noted by Grant (1991) who suggested that in rapidly changing environments, the firm's resources are the primary determinants of firm value. On the other hand, Priem and Butler (2001) state that RBV lacks the ability of prediction and lacks the focus on capabilities as a resource. Finally, implicitly highlighting the limitation of RBV, Dyer, and Singh (1998) with the Rational view, suggesting that firm's critical resources are not by definition limited to their inside boundaries' resources, rather extend into firm's inter-organizational network.

Combining context:

Despite conflicting ideas of the two dominant paradigms of strategy: RBV and MBV; several researchers have recognized and/or tested the complementary perspective of these two views when combined. Such as, Spanos and Lioukas (2001) suggest that MBV and RBV need to complement each other, rather than oppose each other, given that they affect distinct but strongly linked dimensions of performance, each covering two components of the SWOT framework, with the MBV concerning the analysis related to opportunities and threats part, while the RBV the strengths and weaknesses part. Amit and Schoemaker (1993) connected the two concepts "Strategic Industry Factors" and "Strategic Assets". Mauri and Michaels (1998) found out that analyze of one side is not always sufficient, suggesting that firm factors are more important than industry factors on firm performance, however, not on core strategies like technology and marketing. Grant (1991, 2010) using the term "Strategic fit" (Chorn, 1991), insists that the goal of business strategy is to determine how the firm will deploy resources within its environment, assuming that the major reason for the failure of some companies comes from their having a strategy that lacks consistency with either the internal or external environment. Priem and Butler (2001) recommend researchers of strategic management to address both perspectives, because one is basically the offer while the other is the demand. While resources dictate what can be done, the outside environment dictates what should be done to gain a sustainable advantage.

Some researchers have defined frameworks that embodied the two perspectives. For example, Gholami and Seyyed-Esfahani (2012) proposed a framework on the basis of the RBV of the firm (firm-level analysis) and Porter's competitive forces (industry-level analysis). Whilst, Spanos and Lioukas (2001) suggested an integrated model demonstrating the relationships between resources, strategy, industry forces, and firm performance. Moreover, Henderson and Venkatraman (1999) argued that the double 'strategic fit' is required in order to increase business performance: between internal and external business factors, and between IT strategy and IT infrastructure and processes. Furthermore, Vecchiato and Roveda's (2010) defined a framework: "anticipatory approach" (see Appendix 1) whereby they assert that the strategist can distinguish the future opportunities that will form the competition; and can identify the competencies and

resources necessary to successfully deal with these sources. Thus, this evaluation bridges the "gap" between the current resources and those necessary.

From the above mentioned, it becomes evident that these two perspectives have different merits in different condition and there is no consensus that one is correct. Hence, separating them would cause incomplete pre-strategic analysis. Thus, the safest view of strategy is probably the mix of MBV and RBV.
Grant's (2010) proposed basic framework for strategy analysis (see Figure 1) is one that combines these two perspectives: (1) the firm and (2) the industry environment; with strategy forming a link between the two. According to Grant (2010) while the industry environment side of strategy embodies the profound understanding of the competitive environment, which is determined by the firm's relationships with customers, competitors, and suppliers. The firm comprises the other three sets of success factors:

Figure1: The basic framework: strategy as a link between the firm and its environment, reproduced from Grant's (2010)

1. Goals and values: simple, consistent, long-term goals
2. Resources and capabilities: an objective appraisal of resources
3. Structure and systems: effective implementation

Briefly, according to this framework, the task of strategy is to resolve how the firm will deploy its resources within its environment and satisfy its long-term goals, and how to organize the implementation of the designed strategy.

However, the strategy is destiny (Burgelman, 2002) and destiny may be perceived as a predetermined future (Raphals, 2003). Hence, even close to perfect, this framework could be considered one that lacks future orientation. A useful comparison was given by Vecchiato and Roveda (2010) when they associated strategic thinking through past successful experiences and beliefs with driving a car in proximity of a bend by just looking at the rear mirrors. Thus, to ensure the longitude of the analyze, long-term strategic thinking and to make sure that the formulated strategy does not fail due to extreme shifts, it is needed to fill the gaps with a future-oriented technique. With this regard, Vecchiato and Roveda's (2010) following three criteria of strategic foresight activities is a helpful tool: the major focus (field of investigation); the scope (level of analysis); and the organizational approach (see Figure 2):

1. **The field of research:** This concerns the conceptualization of the multiple forces in the micro and macro environments of a certain business which contribute to uncertainty for decision makers.

1.1. Forces originated from the micro environment of the firm:

1.1.1 Technology Foresight: studies the likely micro environment evolution in science and technology.

1.1.2 Social Foresight: Scans the changes in lifestyle and consumers' behavior that may affect their future needs and the exploitation of emerging technologies.

1.1.3 Strategic Competition Analysis: analyses the visible initiatives and supposed plans of competitors, suppliers and providers of complementary products, and the strategies they may employ.

1.2. Forces originated from the macro environment of the firm- PEEST landscapes:

These are political, economic, ecological, societal and technological landscapes which arise at a global scale, outside the boundaries of a specific industry, but which may strongly affect the industry structure as well.

2. The scope of analysis:

2.1. The macro level of analysis, which considers the different related segments of a broadly defined industry.

2.2. The meso level, which focuses on a specific business area or on a specific industry segment.

2.3. The micro level, which focuses on a specific organizational or operational unit, or on a specific investment project.

3. The time horizon:

3.1. Micro (operational) level foresight tends to be short and medium-term oriented, as very pressing and concrete issues (e.g. sales volumes for different products and regional markets) are to be dealt with.

3.2. At meso (business) and macro (corporate) level foresight tends to be long term oriented.

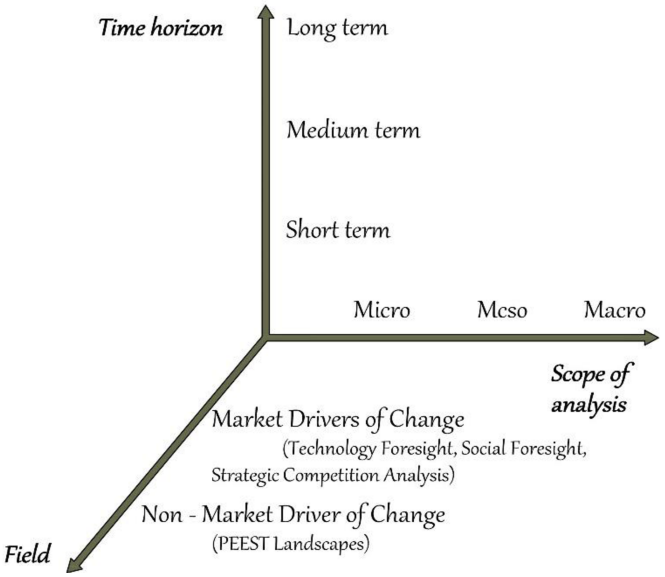

Figure 2: General classification of strategic foresight activities, reproduced from Vecchiato and Roveda (2010)

However, in strategic context, Vecchiato and Roveda (2010, p1532), point out: "the real challenge of strategic foresight is not only to detect drivers of change promptly but, most of all, to reshape the strategic beliefs of managers". In order to achieve this, they identify a framework (see Appendix 1) where they assess the impact of the driver of change on the industry and they define this as "anticipatory approach". This framework is to be used with the purpose of self-assessment!

Nevertheless, before restricting the subsidiary strategy formulation process to the discussed 3 perspectives- the industry, the firm, and foresight activities, the role of the parent company should not be disregarded. As per Reilly et al. (2012) subsidiaries better react to rising threats when they integrate their activities and intensify their alignment with their parent company. Moreover, according to Mudambi et al. (2014) for a subsidiary to gain power, the subsidiary's competencies must be relevant to the multinational corporation. Consequently, when finding strategic orientation for a subsidiary it is necessary to understand the positioning of the parent company; its mission and vision; values and goals especially those associated to the subsidiary, with the purpose to align or at least not to dissociate the subsidiary strategy with them.

Four-dimensional framework for subsidiary strategy orientation

Therefore, for the purpose of this study, a framework is depicted (see Figure 3). This framework aiming to serve the strategy formulation process for subsidiaries and in the light of the complementarity between the RBV and MBV is composed of 4 dimensions.

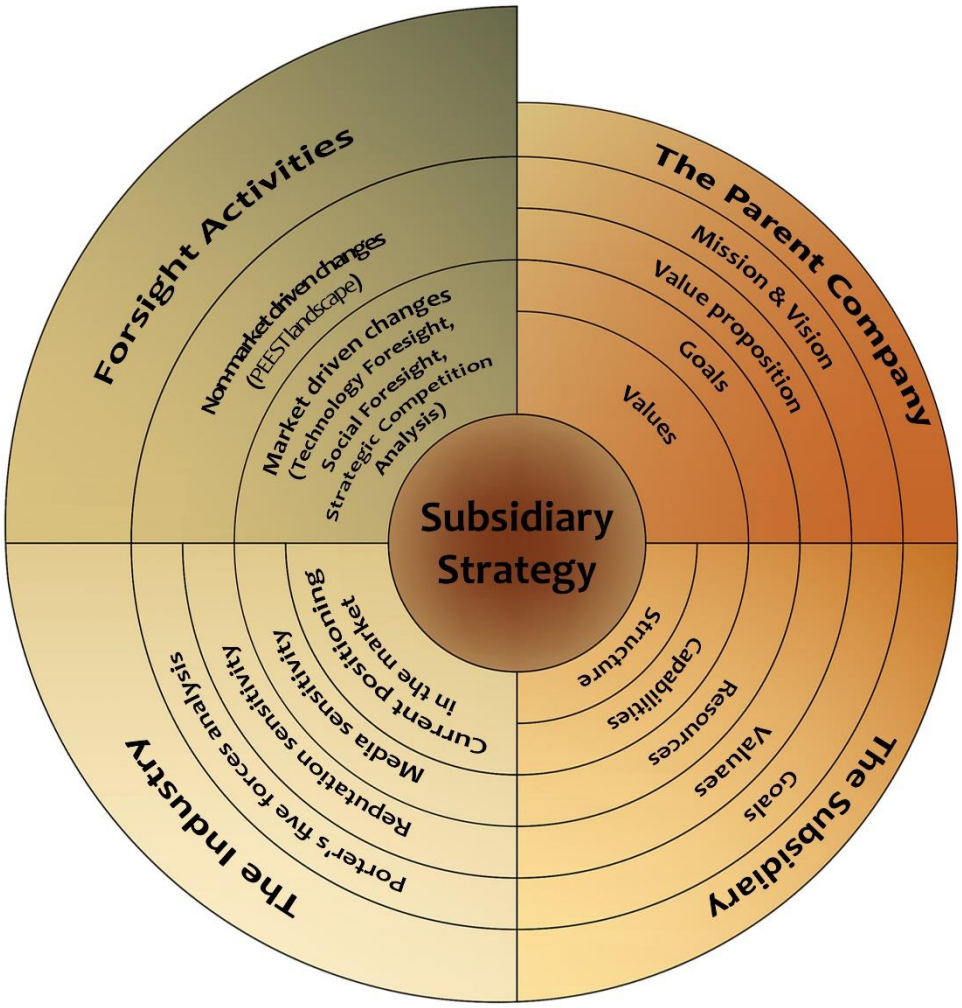

Figure 3: Four-dimensional integrated model for subsidiary strategy orientation

Johnson et al. (1999) define the strategy as: "the direction and scope of an organization over the long-term which achieves advantage for the organization through its configuration of resources within a challenging environment, to meet the needs of markets and to fulfill stakeholder expectations". If we agree that the parent company is a stakeholder of the subsidiary for which the strategy is being set, then this definition supports the idea of investigating not only the industry and the internal resources but also the expectation of the parent company. Therefore, in order to align the subsidiary strategy with the expectations and strategy of the parent company (assuming it has one), the first dimension aims to discover the corporate mission and vision, value proposition, and values and goals which incorporate the subsidiary.

The second and third dimensions are adapted from the framework developed by Grant (2010) (see Figure 1). The second dimension reflects the resources perspective and the subsidiary structure. Here, the subsidiary's resources and capabilities (including the business culture), as well as the subsidiary's

organizational structure, are to be studied. Two important acknowledgments to mention: First that, one could argue that culture is not a component of capabilities, yet as Barney (1986) recognizes, the organizational culture could be a potential source for competitive advantage. Shedding more light on this, Grant (2013) identifies that the shared culture, embedded within national cultures, i.e. shared perceptions, common values, and behavioral norms (Schein, 1990) form the capability to comprehend each other and integrate personal skills without much efforts and without continual managerial direction. With this regard, Grant (2013) sees organizational culture, organizational learning-by-(re)doing and organizational structure as the 3 components that form the coordination which is the "essence of what organization do". Second, it's worth naming that despite the numerous studies undertaken to figure out the right sequential order of the structure and the strategy, Whittington et al. (1999) suggest that the recognition that these two are closely related is the most important point. For instance, many researchers from different periods proposed that the strategy is a precedent to structure (Chandler, 1962; Hall et al., 1980; Kavale, 2012). Chandler (1962) implies that every organizational structure is mainly developed based on the strategy of the organization. Whereas, Peters (1984) suggests that structure precedes the strategy, implying that capabilities are the primary basis of strategy, and capabilities are the result of organizational structure, thus strategy follows structure. Be that as it may, I second Whittington et al. (1999) with their idea that it is important to recognize the connectedness of structure and strategy and not their sequence. Since one could argue saying: in a case where a start-up organization with few employers that don't yet have a strict structure but well a strategy, structure apparently will follow the strategy. Whereas in a case where we are dealing with strategy formulation for an organization that has a structure, then the strategy should be aligned with the structure, thus in this case strategy follows structure. Nevertheless, there could be a case where an organization changes its structure, then the existing strategy might change to fit the updated structure.

The third dimension which reflects the market view, some nuances are added to the Grant's (2010) proposed basic framework. i.e. reputation, media sensitivity and current positioning of the subsidiary. Several researchers have recognized that a positive reputation is an asset that can generate future extra returns (Wilson, 1985a; Porter & Caves, 1977) or would allow the firm to charge premium prices (Milgrom & Roberts, 1986b). Moreover, in this century it is essential evaluating the power of media by assessing the media sensitivity- how issues concerning a particular industry more than others can be elucidated by media either by disguising it or in contrary by exposing. Additionally, it was assumed that the identification of the current positioning is important as a way of attaching point between the inside and outside analysis. Furthermore, in the third dimension, the industry, a more integral approach has been taken, instead of being restricted to Grant's (2010) customers, suppliers and competitors, the other 2 forces -the threat of new entrants and threat of substitutes- of Porter's five forces model are integrated. It is fundamental to consider what makes the industry exposed to entry, and for instance, if it turned out that it is an easy entrance, a strategy should be developed in order to give an advantageous edge to the firm, say differentiation or scale production. Nonetheless, even a company that operates in an industry where the 4 forces are weak, i.e. the competition is weak, suppliers and customer have weak bargaining power and the industry is unthreatened by potential entrants the firm still can be threatened by the power of substitute products. That is the reason why these five forces are inseparable when scanning the environment of an industry.

Finally, the fourth dimension of this framework, integrated from the general classification of strategic foresight activities by Vecchiato and Roveda (2010), covers the foresight part that is fundamental to ensure the span of the analysis.

METHODS

Attempting to verify the identified framework, a profound observation and fair presentation of empirical data is required. Thereby, the strategy-making process was chosen to be conducted within a single organization. As a result, the research was situated in Chemo B.V.

As earlier mentioned, during the research period Chemo B.V. was positioning as a chemical specialties and custom manufacturing firm. By using a variety of technologies, such as sulphation, it produces specialty surfactants. In their own R&D center Chemo B.V serves different markets like Home Care and I&I cleaning, textile, pulp & paper, metalworking, animal feed, agriculture, construction, plastics, polymers, and coatings. Currently, the firm is a subsidiary of a Swiss company. Prior to that, it was part of US, South African, German or other multinationals. A company such Chemo B.V, which during its decades of existence, has been a target of sequential acquisitions of different multinationals from different continents, has passed through different organizational and cultural transformations, thereby, it has suffered from lack of its own strategic orientation. Rather, it usually has operated either intuitively or under the umbrella of the parent companies' strategies. At the moment of this research, it was apparent that the (re)establishment of strategic direction is required. Yet, executives were struggling to attach the different pieces of the possessed puzzle and to come to a strategic direction which will not only serve to achieve the goals of the parent company but also will keep the subsidiary's identity and competitiveness in its specific market. Therefore, this setting of an old firm with frequent transformations composes an extreme case (Yin, 1984) and is regarded as a solid example for investigating the validity and usefulness of the framework which will in its turn be an attempt to answer the raised research question.

Data collection:

Data collection was inquired using multiple research method and sources of data, literally said by triangulation (Campbell and Fiske,1959). According to Webb et al. (1966) triangulation in research results in findings with greater confidence. Denzin (1970), expending this view, referred to triangulation as a research method that uses (1) multiple theoretical perspectives, (2) multiple methodologies, (3) multiple sources of data, and (4) multiple investigators. Indeed, the methodology by which this research was conducted meets these 4 criteria of triangulation:

(1) Multiple theoretical perspectives: As earlier mentioned strategy formulation can be directed from different perspectives. Here the research was based on the Market-based view, the Resource-based view and foresight activities.

(2) Multiple methodologies were used in order to be able to cover the four dimensions of the framework. Such as *activity observation* (site observation), *individual interviews* (4 face to face interviews, 3 multiple phase email interviews with follow up questions and 1 phone interview) and finally, collection of *documentary data* available on the internet or provided by PCo and Chemo B.V.

(3) Moreover, to ensure the variety in the resulting sample, multiple sources of data was examined applying purposive sampling (non-random sampling). This means that sample members all differed from each other with regard to key characteristics and role within the company (Bryman, 2012).

The case participants were selected in a strategic way, that is in relevance to the information needed to fill in the missing parts of the framework. For instance, in order to understand the goals and values of the parent company (a) the plant director, an executive with 22 years of working experience in another Dutch subsidiary of PCo, delegated from PCo to Chemo B.V. was interviewed, (b) also the Head of Marketing &

Product Management of PCo was interviewed. While, to find out the goals and values of the subsidiary, different perspectives of subsidiary executives were investigated. Whereas, to investigate the bargaining power of the customers, the positioning of Chemo B.V, a sales engineer, with 12 years of experience at the largest distributor of Chemo B.V products, was investigated with a different questionnaire and more spontaneous questions.

The sample to cover the subsidiary quarter of the framework consisted of the Director of Research and technical support, the site manager, technical support executive, and the product manager. In outline, the criterion to include a unit of analysis was mainly the ability to answer minimum 15 questions of the "initial questionnaire" (see Appendix 2) which is a set of open questions that are likely to encourage the interviewee to speak freely in order to yield as much as possible information to fill all the 4 dimensions of the framework. To build up confidence (Gill et al., 2008) and give the interviews more natural conduct, interviewees were invited to talk about their position and tasks. In total, the 4 face-to-face interviews were conducted with the complete "initial questionnaire", other interviews were carried out with a selection of questions that correspond to the experience and expertise of the interviewee. Nevertheless, to fill in the gaps in the quarter "Industry" interviews were carried out with the business development manager of a significant customer, a distributor of Chemo B.V products (external participant). Although purposive sampling was the initial method used for sampling, due to the transformation phase and the busy period subsidiary was going through, the convenience sampling was not neglected. That means sample which was available by chance was also studied (Bryman, 2012). In essence, 2 interviews were accomplished as a result of convenience sampling. The duration of face to face interviews ranged from 65-minutes to 160-minutes conversations settled in one or two meetings. All the participants (except for the external participant) had experience in the subsidiary ranging from 17 to 27 years with an average of 23 years (22,27,17,26 years), while the 2 executives of the parent company have worked 8 and 22 years at PCo, whereas the external participant has 12 years of experience at the current employer. A description of the sources used to cover components of the four quarters of the framework is shown in Table 1.

Table 1: Data sources

Dimension	Component	Data source
The parent company	Mission & Vision	Documentary data
	Value proposition	Documentary data
	Goals & Values	Documentary data, inside group interviews
The subsidiary	Goals & Values	Inside group Interviews
	Resources & Capabilities	Documentary data, Activity observation, Inside group Interviews
	Structure & System	Activity observation, Inside group Interviews
The industry	Porter's five forces	Documentary data, Inside and outside group interviews
	Media and reputation sensibility	Documentary data, Inside and outside group interviews
	Current positioning of the subsidiary	Inside and outside group Interviews
Foresight activities	Market-driven changes	Literature review (browsing), Inside and outside group interviews
	Non-market driven changes (PEEST landscape)	Literature review (browsing), inside and outside group interviews

(4) Finally, the fourth criterium of triangulation was also fulfilled as this research was conducted by 2 investigators. Most of the aforementioned interviews (except for the phone interview), were conducted with two investigators. This in its turn eventually resulted in more unstructured and in-depth conversations.

Data Analysis:

After collecting the data, a four-phase analysis corresponding to the framework was carried out. Figure 5 illustrates the method whereby the research was held, where, the 5 stages of qualitative analyze suggested by Lacey and Luff (2007) make part: (1) Each interview was transcribed, as well as in order to present the right flavor of the conversations, laughter, non-verbal gestures, or special verbal communication were identified and set into brackets assuming that those may give added meaning to the spoken word (Lacey & Luff, 2007). Such examples are [laughing], [silence], [annoyed], [concerned], [repeated twice], [hmmm], [mocking voice], etc., (2) The transcripts were organized into easily retrievable sections and subsections according to their relevance to the four quarters. (3) The third phase- the familiarization- had already begun simultaneously with the first 2 stages and that by listening to the records, transcribing them and organizing the transcripts. Then, it continued by (re)reading the transcripts, reading the documentary data, making memos and summaries. (4) Further, to reduce the diversity in the data and identify core categories (Thornberg and Charmaz, 2014), coding was done by identifying exact keywords used or concepts expressed in a variety of ways by respondents, For instance quotes such as: "*Why don't we make more? because we don't know what markets we can bring more business"* were coded as [1] Lack of market information, while quotes such as *"position close to neighbors, not an industrial area"* were coded as [2] non-industrial area. (5) Finally, to finalize the data and make it ready to examine, the last step consisted of identifying emergent concepts and re-coding them to develop more well-defined categories. For instance, [1] and [2] were rebounded as [resource limitations]. These final codes were classified and filled in the framework. After the framework has been completed with the data obtained (see Appendix 3) The Strategy Sketch with 10 elements of strategy provided by Kraaijenbrink (2015) (see Appendix 4) was chosen to formulate a final and complete strategy. The findings are presented and discussed in the following 2 sections.

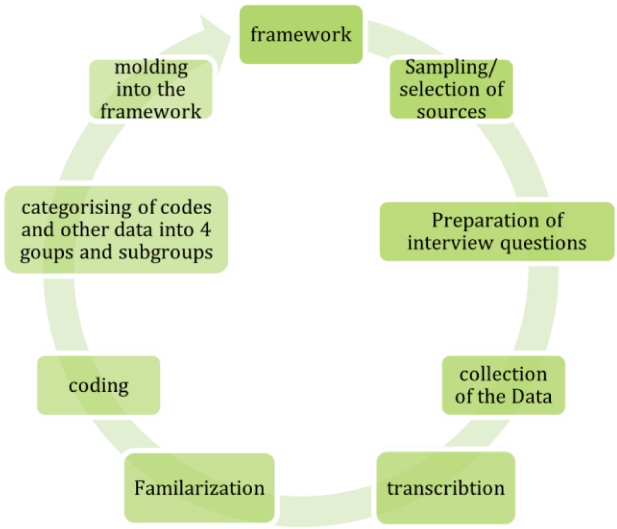

Figure 4: Method used

FINDINGS

In the following 4 subsections the findings from data and specific evidence from the case firm are presented in details and discussed, while an overview of the findings is to be found in Appendix 3.

1. The parent company (PCo)

1.1 Mission & Vision

1.1.1 Mission

- Quality: Consistent delivery of competitive high-quality products and solutions that are focused on meeting and exceeding customer expectations.
- Operational Excellence: Value addition through the commitment to the highest standards of operational excellence driven by a culture of continuous improvement and innovation.
- People: Cultivating a team that values and develops people of all backgrounds through empowerment and recognition.
- Ethical Practices: Values built on the legacy of ethical practices embraced by its founder, committed to operating responsibly and with integrity.

1.1.2 Vision

"Growing to be the most trusted global partner in oleo-based products and solutions, thus enriching human lives in a sustainable manner every day" (PCo website, n.d)

1.2 Value proposition:

- By the set-up of the company: Reliable security, combined expertise, fitting solutions
- By the set-up of the employees: Deeply committed, embracing relationships, aim for sustainable progress.

1.3 Goals & Values

1.3.1 Goals:

Speaking of a for-profit organization such as the studied case, business strategy represents a question of profit, that means the focus is upon a single goal: the maximization of the value of the firm, i.e. maximization of the profit (Grant, 2013). In that regard, a participant from parent company pointed out: *"This site adds technologies to the group that will accelerate our market penetration"*. Nevertheless, to understand the expectation of the parent company related to the acquired subsidiary and prevent a subsidiary strategy that conflicts with the parent company's financial or operational objectives, the envisaged strategic sub goals by PCo, to achieve the definite goal- the profit- was explored. Accordingly, for the sake of illustration, it would be unwise to formulate a subsidiary strategy where "acquiring new customers from innovative offerings" makes part of, while the parent company is aiming to decrease the group costs devoted to the research and development.

Although the discovery of PCo's goals related to Chemo B.V was initially meant to be primarily based on investigating only two respondents: the site director and PCo's head of marketing, it ended up with almost all respondents explicitly or implicitly expressing similar opinions about the sub-goals.

Whoever expressed about the volume of batches agreed that the "orders" were to produce larger batches. A respondent mentioned "*we should review from now on the small quantity orders*", another said,

"*we should talk with big guys in the market in order to fill the plant with volume products*". On the other hand, related to this, we saw that not only higher volume production was aimed by PCo but also to operate each reactor at full capacity. As an example, participants said "*improve our earnings per hour reactor*", "*fill the multi-purpose reactors*".

Some also indicated that PCo has a goal to move down the supply chain, i.e. to build a vertically integrated value chain, considering that, now Chemo B.V. is consuming the natural raw material produced by PCo. Nevertheless, with the condition to stay always supplier and not a manufacturer. Regarding this, participants stated: "*moving in the value chain closer to the final end customer", "Go further in the chain", "More use of Palm oil to integrate within the group", "No final product but supplier".*

All the participants agreed on PCo's aim to increase the volume of the production which will lower the costs and increase the profit. It was highlighted: *"get more volume in this location and generate in that sense in the end more money as profit", "increase sales volume so that profitability of the plant increase.", "we can reduce lots of costs and we can focus more on production"*. However, most of participants put forward that PCo is aiming to increase the production volume of Chemo B.V yet make the range of products narrower and constant, while focusing on a certain area, they stated: *"fill the plant to utilize it and double the capacity but not the portfolio the best is we can have let's say stable portfolio you always have switches and changes in there but we must not grow the portfolio in amount ", "we have to focus from production point of view", "narrow the portfolio a bit and then say ok we have a bit more volume of a certain product and produce it".*

When a corporation acquires a new subsidiary, typically its goals will not be restricted to the new acquisition as a single organization, but as part of the entire group. Indeed, this was also revealed by the participants when they agreed that there should be transfer of knowledge between the subsidiaries as well as exchange of production, saying: *"improve efficiency with transfer of technical know-how in particular on certain processes", "Transfer of products from other sites to ours", "exchange production between sites", "PCo is checking which product is better to produce in subsidiary x or in subsidiary y and to combine it to [here] or from [here] to go to [sister company site], that also will be some goals and goals will be profit".* In this context, it was also disclosed that PCo has no intention to duplicate and apply the strategy of other subsidiaries on Chemo B.V, on the contrary, the aim is to respect and maintain the peculiarities of the studied site, where a respondent said: *"higher contribution margins compared to [the other Dutch subsidiary] but not necessarily as [the previous parent company] had. So in between, for not to lose opportunities".*

It is important to mention that the spotted goals were not limited to short term goals, but rather some participants had opinions about goals for a longer period. For instance, a participant indicated that since not a lot of employees left the company during years, the management will have to deal with changing mindset "*the fluctuation rate was very low its more difficult to change those people, we need to change a mindset*". This is natural, since with a low fluctuation rate, employees must have retained emotional affection to certain processes or customs and changing mindset can refer to any strategic modification. Moreover, multiple participants had an exact numerical notion about the goal regarding the annual total production of the plant in mid to long term. *"double the production capacity, but in the beginning, profit is not the main driver it's more the getting sells on track, and try to get customers in.", "double the capacity,*

go up to [number] tones of sales volume in 3-5 years max". Considering that at the moment of investigations, some participants pointed out that not all the capacity of production is in use, a respondent highlighted: *"But of course, we have to use our equipment more efficient than we do at the moment and we have too many reactors that we don't use full capacity"*. Finally, another long-term goal was the settlement of a higher level of safety culture. Taking into consideration the level of danger associated with the industry this could be an important goal to consider, the site director said: *"safety culture needs to be on a high level"*.

1.3.2 Values:

According to Grant (2013), the value of the firm is determined, primarily, by the profits it earns over its lifetime. Hence, when he states that Goals & Values are important to formulate strategy, with Values he means the monetary value of a firm. Nevertheless, to formulate the subsidiary strategy it is also important to find out the non-monetary values of the Parent company and align the strategy with those values. In view of this, it would be unreasonable to formulate subsidiary strategy where as a result due to specific reasons there would be an increase in waste while one of the values of the parent company is sustainability. Therefore, the values of PCo were investigated with the PCo participants and documentation and the following 9 values are the results:

1. Integrity: Professional honesty openness and sincerity
2. Loyalty and teamwork: Uphold the Company's interest through thick and thin.
3. Humility, respect & recognition: colleagues are valuable contributors to the company's success.
4. Result-oriented performance
5. Innovation which reflects in seeking better ways of doing things and embracing change to adapt to the market and environment.
6. Products part of a sustainable, global economy that benefits all people and the environment. For example, this was mentioned in a report: "Our water management strategies center on water use optimization and reduction in water consumption or wastages, optimization of use with minimal impact on the environment".
7. Strategies and operations aligned with quality, health, safety, and environmental standards.
8. Commodity-driven: reach the highest number of potential customers possible, produce large volumes with low prices
9. Flexibility: a participant said: "quick and scalable when a customer comes in with request"

Taking these values into consideration, for instance, it would be unwise to have a subsidiary strategy that would decrease the percentage of sales abroad (conflicts with "Global economy") or would lead to higher customer wait time (incompatible with "Flexibility").

2. The subsidiary

2.1 Goals & Values

2.1.1 Goals

As earlier mentioned, a parent company's main goal is to maximize the profit, whereas it is consistent that besides the subsidiary's aim to fulfill the parent company's goal and generate maximal profit, it also has the aim to secure the survival and the continuation of the business of the subsidiary. Apparently, despite the interdependence between the parent company's and the subsidiary's goals, it is likely that they may

differ. Initially, this is the main reason why these two variables were investigated separately and made parts of two detached dimensions of the conceptual framework. In reference to this, a participant mentioned: *"We have our own goals and we call them our key performance indicators, KPIs, and they do not really match with those of parent company, because it is more commodity driven so they look at how much energy you use per metric ton how much utilization we have on the reactors and these kinds of KPIs while our KPIs are: product quality and delivery on time in full so OTIF".*

In response to the question: would you describe what are the Goals and values of Chemo B.V, the majority commented differently, for instance a participant brought up the aim to be proactive instead of being interactive, especially in particular areas such as safety. This is rational, as the "real" safety initially could be the consequence of proactive behavior. Here is the quote: "*we want to be proactive on safety, but also on productivity and quality*". Nevertheless, the majority of those who expressed their opinion about the same question: the internal subsidiary goals as an independent entity from the parent company's goals, agreed upon aiming not to be pure commodity company. Illustrative quotes from those participants are: *"we always will be the specialty company because of the size of our equipment and the way we are set up. It doesn't make sense to make here pure commodities", "we have chosen to be more on the specialty side because our reactors are more set up to do so and they are smaller so we cannot compete to this tech volumes and that's why we have to find a balance"*. In addition to these arguments, the site observation was also helpful to understand that this site merits to stay partly or purely specialty, given that the sizes and the diversity of chemical reactors possessed are not suitable for commodity production.

Similarly, almost all participants independent from their experiences, aligned with the importance to enlarge the sales force in order to search for new leads or to win back former customers or to get more information about the market. Following are quotes that support this statement: *"If you have a better understanding of the market you can see more people, that's sales and marketing", "So, that's what I should improve is more sales manager more product managers and more information".*

Concerning the products portfolio, as reported in the previous subsection, PCo is prone to narrow down the portfolio and focus on a shorter list of products. Whereas, it appeared that the mindset in the subsidiary is still inclined towards retaining a large portfolio, even enlarging it. This could be the affection of the current positioning as "specialty company" or/and personal attachments to some products. Two of Chemo B.V employees highlighted: "*At this, we don't want to exclude anything* (products from the assortment) *I think we want to include as much as possible*", *"It seems customers are interested and coming back with the current portfolio, so the portfolio will stay broad*". On the other hand, a participant has indicated that Chemo B.V in the midterm is aiming to be active in coating, polymerization and textile additives markets, he said: *"Toward the near future we want to stay active in the coating market, because ex-PCo is still our biggest customer, we have indicated that one of the first markets we want to go further is the emulsion polymerization so the resin market and alcy polymerizations what I said on adhesives. The third area is I think one of the focus areas will also be textile additives, because we have already quite strong position there and in the new combination with PCo who already also had a very strong position in the textile we think we can further grow that without combined capabilities. These are I think 3 markets which are for sure very important for us".*

2.1.2 Values

The respondents agree on the key values 'quality producer', 'open communication', 'Unique knowledge', 'service provider more than producer', 'fast and flexible', 'OTIF delivery'. In total, a total of 6 key values has been mentioned by the respondents. Following are those values, supported by illustrative quotes by the respondents or by facts either noticed from observations or mentioned in the documentation:

1. **Quality producer and service provider:** Participants claim that Chemo B.V offers a product with high quality which continues post sales, some mentioned: *"I think we can offer the same quality yes because we have the same standards so I think for me quality is not an issue. It is good and if you have a complaint it will always be solved", "In optimizations and so we are we have good quality. I think there especially the quality we can make a difference"*.
   Moreover, there are two quality management groups- "Quality Assurance group" that ensures all processes are followed through planned, systematic, as well as documented activities; and "Quality Control group" that ensures, thorough testing, only products meeting the highest quality standards are released.
2. **Open communication:** According to some participants, the communication between Chemo B.V and its customers is fast and easy, they pointed out this idea when said: *"the lines are very short here. So, if you call us, you will quicker get the information, quicker get the product, then the large companies", "Other competitors don't give info, sometimes they give the products and number and not a complete product description"*
3. **Unique knowledge:** It was stated that the added value of Chemo B.V is its knowledgeable service, a respondent highlighted: *"Products with an additional value in the sense of knowledge where products can be used exactly"*.
4. **Service provider more than producer**: In multiple occasions, it was mentioned the service above product aspect, namely, some employees stated: *"we are more service provider than a really pure store for chemicals", "Excellent know-how of the available technologies, custom manufacturing capabilities to solve tricky customer requests"*
5. **Flexible and short time-to-market:** One of the most important differentiators of Chemo B.V of its competitor is its flexibility and easy to cooperate characteristics. It was highlighted by the participants in different contexts: *"We also put ourselves in the market as being fast", "the smaller volumes also our flexibility", "the lines are very short here. So, if you call us, you will quicker get the information, quicker get the product, then the large companies", "we can move around much more flexible and this is an added value to the customer", External participant: "Flexibility I think because Chemo B.V is not a huge company huge producer so it is more flexible in the market can have very easy approach customers and make products for the customers it is more easy than the biggest suppliers"*
6. **OTIF delivery***:* On time in full delivery is also one of the main values in Chemo B.V, it was said: *"yeah it's either quality or delivery on time in full at certain standards or pricing"*
7. **Safety:** Safety is an important part of Chemo B.V, there are 12 life-saving rules categorized into personal safety, driving safety, site safety and control of work. Besides the rules, the site is installed with security signs in visible areas, moreover, at the reception, every visitor should watch security videos and pass a one-year valid security test before being able to enter the site.
8. **Sustainable:** Chemo B.V has been fairly engaging in sustainability initiatives. For example, it participates in the Dutch energy covenant (2% energy savings each year in the period of 2017-2020). A participant mentioned: *"I know we work already for many years in energy efficiency*

plan so that's a program from the government to reduce energy and we have to deduce every 3 years a certain percentage of our energy consumption". By replacing 4 old natural gas-fired steam boilers with 2 new energy efficient natural gas fired steam boilers, Chemo B.V has saved: - 23,564 GJ/year of natural gas or 1,334 mt/year of CO2; and - less emission of NOx which complies with the new Dutch emission directive for NOx (Sustainability report, 2017)

2.2 Resources and capabilities:

2.2.1 Resources:

RBV assumes that the bundle of resources of firms within an industry are heterogeneous and this heterogeneity persists over time because some resources are non-tradable and inimitable across firms. To evaluate the heterogeneity and inimitability, the resources of Chemo B.V were studied.

For the sake of this analysis, the resources were classified into tangible resources, intangible resources but also transferable resources. Given that we are dealing with strategy formulation for subsidiaries, the transferable resources from the parent company or from the sister companies should be taken into consideration. Below are the findings based on interview data, activity observations, and documentation data, presented in the mentioned three groups.

2.2.1.1 Tangible resources:

Below are the property resources possessed by Chemo B.V, in some cases illustrated by the participants' sayings:

- **16.2 ha modernized site:** *"We still have a modern plant, there really has been investments"*
- **Site surrounded by forest, yet far only 1km from the nearest town:** "*Land if you see if you compare us to plant of PCo, we have a lot of land forest around us, while the site of parent company it is totally in the living area, it's close to the station and they don't have land to expand"*
- **6 production buildings:** batch production of alkoxylates, phosphate esters, amidation, esterification, polymerization, etc.: *"if you compare our buildings or production to other companies, I think for this size company it's good"*
- **1 semi-continuous installation for sulphation.**
- **20-25 continuous and multi-purpose batch reactors** with capacity ranging from 1 to 25 MT
- **Sizes batch reactors between 1 and 15 m^3**
- **Pilot plant: scaling from 200 to 1000L**
- **Multi-step chemical facilities**
- **Broad permit of chemicals:** It is important to mention that Chemo B.V had at the moment of interviews an extensive range of chemical permits, nevertheless, as also an interviewee mentioned, also the competitors have. In the context of permits, it was said: *"I think that what we have here we have a broad permit for chemicals that are not permitted at other locations or not so many different ones. So, we are really good at multistep products where we use intermediates", "a lot of different chemistries as most of the competitors"*
- **3 state of art reactors for alkoxylation (EO chemical agent)** which were installed in the last 4 years: *"We have now 4 reactors from which 3 have been totally renewed in the last 3 years. So, they are state of the art they're efficient and I know that a lot of competitors they have smaller*

reactors which are quite old and they have to invest really a lot of money to get it back to a competitive size"

- **Equipment:** *"I think machines and equipment we have sufficient available at this moment. When we are full then we have to look at that resource, but that resource is existing.", "We have a broad range of chemical technologies that we can handle here"*
- **2 drum-filling lines** for filling Intermediate bulk container (IBC) and drums
- **About 100 storage tanks** ranging between 5-150 m^3
- **Frost-free storage**, tempered and heated storage for drums and IBC, since frost may affect some container materials leading to irreversible changes or to pressure build-up. If chemicals are sensitive to low temperatures, they should be stored in thermostatically controlled storage units that ensure the setting of specific temperature ranges to avoid chemicals freezing.
- **Own connection to the railway** for the supply of raw materials
- **Wastewater treatment station/ sewage treatment plant:** This is very important, since according to CBS, in 2006 around 3.7 billion m3 of water had been used in industrial processes, in fact, the largest consumers of water for industrial use are companies in the chemical sector. Approximately 71% of the water consumption of Dutch industry in 2006 accounts for the chemical industry.
- **Fire brigade with two fire engines**
- **Fire sprinkler system**
- **Special first aid room**
- **Emergency Showers and eye washers** for people who are exposed to hazardous substances
- **Sustainable boiler plant** room which is designed to save over 10,000 GJ per year
- **Sustainable certified-** entire oleochemical supply chain, from fruitlet to product.

2.2.1.2 Intangible resources:

- **Around 210 employees**
- **Supplier- Buyer Relationship,** with 165 suppliers
- **Intellectual property- 1 registered trademark:** During the research, it was easy to recognize that possessing only one trademark as a specialty company could be considered barely anything. A participant mentioned: *"Prior owner decided not to keep the trademarks for this location, only Ser-chemo is still registered"*
- **R&D center:** a project leader is assigned for each customer project.
- **Over 90 years of experience**
- **Huge portfolio of surfactants**
- **Excellent know-how of the available technologies:** Almost all the participants mentioned Knowledge as an important asset for Chemo B.V and almost all of them associated the knowledge with the long years of experience, here it is how this was pointed out: *"Resources are the assets in combination with the excellent expert know-how of the chemistry", "main of our employees are pretty long in the company, so knowledge will also be." , "with knowledge you are looking at the people at the personnel the most of people here are working for ages and they have lots of knowledge, if you look at interviewee x for instance, he is on R&D, this is an encyclopedia, he really is if he leaves the company we have a problem, we lose lots of knowledge, but we also have interviewee y for instance. on technology part for example if it is for the molecule its interviewee x if it is for the technology it is interviewee y and this makes you valuable, rare,…", "We are one of the few real chemical plants in this region of the Netherlands that's why we don't have much people*

who go to another company. A lot of people stay here for many years and that keeps the knowledge here and also we can really select good people to work here", "The workforce if you look at the workforce, let's say the average age is a little bit high so the fluctuation rate was very low and not that many people left over here, has advantageous because they know the details of the installations."

- **Reputation:** Most what was brought up regarding reputation revolved around trademarks, old owners' names, nonetheless, the stakeholders' relational aspect of reputation was also highlighted. Some examples of what was mentioned by the participants: *"I think reputation yes, when I came it was Ser-chemo, then it was other companies and if we were in a fair or conference, they say oh ser-chemo oh yeah, so reputation yes they still know this site, the Ser-chemo [Here] site. I'm not from this region so I didn't know Ser-chemo before, but in this region yes and also in the chemistry in the customers they know Ser-chemo, they don't know the companies after, we tried 14 years but...", "Currently Chemo B.V has a good reputation. This is especially notable when looking at their excellent relationship with the ones nearby their premises; neighbors, local authorities and of course their own employees", "Chemo B.V is a very well-known name by many customers. Also, the trade names of the surfactants produced with S-wet, S-dox, S-mul etc. are very well known and strong in the market".*

2.2.1.3 Transferable resources:

It is risky to formulate strategy heavily basing on temporary transferring resources, otherwise, we will return to the same situation and be relying on resources which may be temporary accessible and without them the subsidiary may once again return to the state of lacking strategic orientation. For that reason, the transferable resources were categorized into resources that could be in relatively short terms permanently shifted and into resources that can be ceased at any moment and that are more of operational nature. Below are the findings presented in two separate paragraphs.

Permanently shifted resources:

- **Extra reputation:** Apparently, PCo has a strong reputation in the market, which caused all the participants to point out this perspective. Some quotes from the participants: "*Now the new company is much better than before, so brand and trademarks there are more things going on", "PCo is more now known in the European market, it is a brand. It's a good brand name. this reputation is good and we need to keep it that way otherwise it will affect you.", "I have the feeling from the first months under PCo that the name PCo has a good appraisal in the market".* As one could argue that the reputation is not permanently shifted resource, yet the practice of this site has already proved that indeed it could be, under no other circumstance. As previously quoted: *"in this region yes and also in the chemistry in the customers they know Ser-chemo, they don't know the companies after, we tried 14 years but [disappointed face]".*
- **Extra knowledge**: Extra knowledge can is being transferred not only from PCo but also from sister companies. Responding to the question "What resources can the group offer Chemo B.V?" a participants highlighting the role of PCo said: *"aaaaaa lots of resources, again If you look at A project, they flew over a group of 25 people supporting this migration to A, having the knowledge of A. Engineering capacity if new things are coming people flying".* While he added regarding the role of a Dutch sister company: *"There are differences but you can learn from each other this is*

my point. when you talk the same language it's easier and we also have the same authorities so the rules and obligations are the same so you can share knowledge".

- **A better set-up to work with raw material extracted from vegetarian oil:** The backward integration has allowed Chemo B.V to gain extra knowledge of working with raw material with palm oil basis, in this context an executive stated: "*In general the market is driven by volatile raw materials, both in pricing and in availability. These are aspects all players have to deal with. With the integrated setup within The group, Chemo B.V is better prepared for this".*

Temporary shifting operational resources:

- **Organizational and productional advantages***:* The most notable resource here is the human resource. For example, previously Chemo B.V lacked marketing department. In this regard, participants said: *"Bigger sales and marketing group in Switzerland where we are now aligning and I think that something that where we for sure can improve and where we can put some effort in the near future", "sales integration we have already executed and what you see that the sales grow the portfolio has widened", "I think the added value of the group is that we can put more synergies in the organization".*
- **Cheaper raw materials*:*** The group processes the entire supply chain of some Chemo B.V's raw materials. This provides the opportunity to access some raw material at cheap prices. Executives noted: *"What I already indicated one advantage for us is that we have back integration of some raw materials because our new parent company is producer of fatty alcohols fatty acids. And that is something where I think we have to focus on and how can we use this new opportunity to develop also new modifications", "internal row materials at low price that makes it easier to compete, and if you have to buy it on the market there you already [disappointment], with PCo coming in who has Palm oil plantages in Asia. They make chemicals out of Palm oil; they make fatty acids fatty alcohols. These are typically the raw materials that we use"* here [disappointment] indicates: lose advantage/ pay more. Moreover, Chmoe B.V has gained a better negotiation power due to joint purchasing with sister companies, it was pointed out by a participant: *"In previous organization no one else was buying EO, so instead of us just X metric tons we buy we buy now in total I think 10X so 10 times more, which gives you more power than buying just 1000 tons.so in that sense for certain raw materials we have already seen that also PCo had a better position than we had, because they were buying much bigger quantities".*
- **Single-ownership of some value chains,** which results in traceable products, superior quality, and on-time delivery.

In this stage of analyzing, where there hasn't yet begun the market research, it isn't easy to evaluate the resources being strategic or not. The same assumption works here, the participants might have emotional affection to certain resources as they might have been involved in the process of acquisition or daily interaction and assess them as strategic. Moreover, it was indeed impossible to find a single resource which satisfied Barney's VRIN criteria (To be valuable, rare, inimitable and non-substitutable at the same time), even when the participants were hinted by diagram for a common type of resources. This indicates one more time that the resources are not meant to be the sole constituent of a strategy.

Furthermore, besides the actual resources, the participants were aware of limitations related to resources, those were considered to be potentially affecting the strategy formulation, the following are the findings:

- ✔ **Broad knowledge:** According to two participants, it is a weakness to have a broad knowledge and not be a specialist in a certain area. This is also the same argument when there is a large portfolio

of products the quality of the production and effective utilization of resources suffer. An illustrative quote: "(With wide portfolio) also the experience for the operators would be less".

- ✔ **Equipment not efficient and specialized for one purpose usage:** Just like the previous limitation, this leads sometimes into inefficient usage of resources. *"Again, it comparable to our equipment if you want to use it for multiple processes, then it is not the ideal most efficient equipment for one of the processes", "our reactors are compared to some of the big competitors relatively small"*
- ✔ **Lack of knowledge sharing culture:** this becomes more critical when the turnover rate of employees is low and the knowledge becomes the possession of a counted number of employees.
- ✔ **Lack of human resources, not only for operations but also to analyze and find new markets:** For instance, when a participant was asked "What differentiate Chemo B.V from its competitors?" he responded: *"This sometimes hard to describe, because you have to know what your competitors are really doing"* Other participants occasionally shredded light on this limitation, saying: *"Why don't we make more; because we don't know what markets we can bring more business", "We need the resources to find new markets. Or where can you expand your market", "finding new contacts and so we are limited in that", "At the moment I have more request than I can handle. How can I fasten my process over there? Yeah, the most speed determining factor at the moment is I think manpower"*. Another participant listed this limitation as a risk that the entire industry will face: *"The scarcity of qualified staff"*
- ✔ **Increasing age of personnel:** Some participants when naming risks that Chemo B.V will face in the future, they listed: *"increasing age of personnel", "relative high age of personnel, especially maybe a risk in production shifts"*.
- ✔ **A plant which is not integrated via pipeline with an Ethylene oxide plant**: it is expensive, dangerous and impermissible to transport a large amount of Ethylene oxide via railroad. Executives perceive this limitation, they indicated: "*you wouldn't get a permit any more to transport this* (the amount of Ethylene oxide consumed in sister company) *via rail to here, it's too much too dangerous. This is a limitation for this plant you can also imagine the transport via pipeline is cheaper than with an RTC. This is behind this so normally you see commodity plants connected directly to EO plant and the specialty plants they rely on RTCs", "EO is an explosive it's dangerous you need to have for the higher volumes you need to have integration with an EO producer"*
- ✔ **A plant in a non-industrial area:** The previous point is a derivative example of this limitation. A respondent said in a context of limitation: *"position close to neighbors, not an industrial area"*.
- ✔ **Lack of patents:** this resource limitation was indicated by multiple participants in different contexts, an example quote: *"We don't own a lot of patents, for example, most of our actual business what we call is "me too"."*

However, these limitations do not dictate that these resources should be per se obtained, the idea resist in either acquiring those resources or manipulating these limitations when finding strategic orientation.

2.2.2 Capabilities

- **Competence in combining technologies, production assets and raw materials:**
  1. **Ability to work with a broad range of raw materials,** such as Ethylene oxide, Propylene oxide, (Liquid) ammonia, Dimethylsulfate, Acrylic acid, Acrylonitrile, Epichlorohydrin,

Methyl- and benzyl chloride, etc. In total ability to work with around 300 different raw materials.

2. **Multistep production with certain individual steps and intermediates:** Competence in alkoxylation (ethoxylation and propoxylation), esterification phosphation, sulph(on)ation, amidation, polymerization, quaternization, dispersing, emulsification and Blending. In this regard, the CHE Manager of PCo indicated: *"Chemo B.V. adds unique capabilities to the group which will offer additional value to our customers. Their product portfolio is a perfect fit to ours and they are very experienced in technologies which are new to the group such as phospate esters and quats"*. In addition, participants pointed out: *"we can produce here inhouse multistep products where we use intermediates", "we can produce here inhouse multistep products and for other customers they probably have to go then to a customer who makes a product and who buy the intermediate from another one, but of course makes it more expensive"*.

- **Custom manufacturing capabilities:** For most of the participants custom manufacturing was highlighted in both specialty production and flexible production aspects, here are some illustrative quotes: *"we have custom manufacturing capabilities to solve tricky customer requests", "we have a strong pyramid that gives us a lot of capabilities, personally I always say we have to advertise ourselves with this kind of multiple technology, capabilities, and flexibility", "And when you have big suppliers they say ok we have red product and green product we don't want to make small volume of something which is somewhere in between. Then we say ok, we have small reactors we are pretty much prepared to treat the molecule, the product that fits your application"* however there were participants who doubted in this notion, for example it was stated: *"I think there are lots of me too products but the point is that there are some special products certainly, I would say we would not be able to fulfil these products in other plants. Point is that you always have competitors here you don't have the only position in the market so also Chemo B.V. has the competitors in every section they produce. So, I am not sure, I think it is more me-too products than really special"*. Moreover, other aspects of flexibility are:
  1. **A capacity of production up to 100,000MT**
  2. **Short response time** due to efficient lab structure
  3. **Ranging reaction conditions**: Temperatures 0C- 260C, Pressures 1 millibar -10 bar.
  4. **Ability to efficiently scale up**: as previously mentioned batch reactors' sizes vary between 1 and 15 m3 and Pilot plant: scaling from 200 to 1000L
- **Dutch business culture*:*** It was internally recognized that the culture is Dutch business culture, a respondent said: *"I think the culture is a west European Dutch culture"*. Yet, to understand better the Dutch business culture, some browsing was done and below are the identified characteristics:

➢ Open to international developments: The Netherlands is a member of all the major international organizations (expatica.com, 2019) such as to the World Trade Organization (wto.org, 2016)

➢ Highly organized society: Applying the principles of diversity, social responsibility, tolerance and industriousness (expatica.com, 2019)

➢ Flat organizational structure: Usually there are daily interactions between high and low-level staff, without displaying symbols of rank. Dutch believe that each individual may hold information that is valuable to the company (Hollandalumni, n.d.; Businessculture.org, n.d) and that the equality attitude promotes productivity in team decision-making (Hollandalumni, n.d.).

- ➢ Punctuality is a must (reliability): The Dutch tend to have structured agendas (both social and working) often set weeks or months in advance (Hollandalumni, n.d.; Businessculture.org, n.d). Missing an appointment or being late at a meeting is experienced annoying and unreliable (Hollandalumni, n.d.; Businessculture.org, n.d)
- ➢ Straight-talking, direct communicators (honesty): If Dutch people have something to say, they usually say it and eliminate the chances of ambiguity (Businessculture.org, n.d.).
- ➢ The strategy involves step-by-step planning: The strategic direction of a company is communicated to a relatively low level in the organization (Hollandalumni, n.d.).
- ➢ Managers are not considered omniscient: The manager will know the general strategic outlines and is rather a problem solver or facilitator (Hollandalumni, n.d.). Thus, the emphasis is put on bringing diversity in a group, thereby improving its expertise (Hollandalumni, n.d.).
- ➢ Global traders: Dutch believe to be historically good at international trade. Thus, at Dutch companies, international experiences and multilingual skills are welcome (Hollandalumni, n.d.).

2.3 Structure and System:

As per Grant (2013), "formulating a strategy without taking into account the conditions under which it will be implemented will result in a poorly designed strategy". Based on observations, and as the culture dictates, it was recognized that Chemo B.V. has a relatively flat organizational structure, with a solid and professional relationship between the employees. The doors of the executives are open most of the time. Despite the busy period of transformation, the subsidiary was passing through, it was possible to pass by with a quick question. During the site observations that was held by the site manager, I had an impression of committed operational employees, despite what was recognized by one of the participants: "*I think in operations the loss of people is more"*. Moreover, even though during the research period the executives had stricter responsibilities, in comparison to the time of previous organization where "*more or less all these 6 people have to do a little bit from everything*", it was easy to notice how participants interact with each other. As a supporting quote, the head of R&D is brought up: *"Every now and then I am involved in customers visit. Also, sometimes some people from my lab might go also with sales to customers"*. This is straightforward, taking into consideration the complexity of the products sold.

It is worth to mention that there was a recognition of improvement regarding the communication between the parent company and Chemo B.V, especially for the business development part, in this regard, it was indicated by 2 participants: "*The sales director is a German lady, but she lives in Switzerland now, I think. And then the managing director is also a German guy who is also for the Belgian company. And then the sales managers are French, German, Swiss. I think Swiss are in the minority. And also, the 2 colleagues from here they report also to a French man. It is already integrated and international. I report to the head of marketing; she is a Dutch lady living already 7 years in Switzerland. So, the sales and marketing its already pretty integrated", "When we first came here, we saw lots of silos lots of silos *2, organizational unit that has poor interaction with other units, negatively affecting overall performance"*. here [*2] indicated repetition with the purpose of emphasizing.

3. The Industry

In this section, Porter's five forces, as well as media sensitivity and reputation sensitivity, are assessed separately as Strong, Strong-moderate, Moderate, Moderate-weak or Weak. Moreover, the current positioning of Chemo B.V is assessed.

3.1 Porter's five forces analysis

Porter's Five Forces analysis of Chemo B.V establishes the following intensities of forces:

3.1.1 The threat of new entrants (Weak):

The weak threat of new entry to the surfactants market in the EU is based on the following factors:

3.1.1.1 Capital requirements (weakening factor):

To start up a chemical manufacturing company, one must make huge investments. A verifying quote by a participant is: *"You have to have … And quite some high investments. So, I think it's difficult to enter the market"*

3.1.1.2 Incumbency advantages (weakening factor) independent of size, such as:

- **Quality advantage:** this point is very important in this industry taking into consideration that there aren't significant differences between the end products of the different market players, they all will serve the same purpose. Accordingly, homogenous answers were given to the question "what barriers have you put in place to stave off the competition?" all highlighting the importance of service, differentiation, and the quality. examples are: *"Portfolio, pricing, quality, and service level", "You cannot prevent that, then it comes to customer relations, reliability, let's say trick molecules, when you say 6, it can be 5,8 or 6,2 it is still 6 and it could be that your customer is saying ahh we need 6,2 instead of 6,0 there you can differentiate it and the competitors cannot see that in information, of course, they can see it by analyses, and that's what we can do to make it not easy for competitors".*
- **Patents:** In the chemical industry there are huge players who practice monopolistic rights on some inventions. For example, BASF prepares and uses patent applications throughout the world. Namely, it files more than 1,000 patent applications per year with the United States Patent and Trademark Office (uspto.gov, 2015).
- **Connection to EO producer:** Since EO represents a substantial raw material to make surfactants, and it is problematic to transport this raw material, sites that are connected to EO producer have an advantage. This fact was realized by the participants occasionally. For instance, a respondent pointed out: *"For the higher volumes you need to have integration with an EO producer".*
- **Cumulative experience:** To start up a chemical company is not easy, a participant highlighted: *"You have to have process knowledge and also a salesforce, you have to know your customers. And quite some high investments. So, I think it's difficult to enter the market."*

3.1.1.3 Restrictive government policy (weakening factor):

Constantly there are new regulations for the chemical industry, for instance, according to a report published for European Commission, the legislation relevant annual total direct cost by the chemical companies had doubled during the period 2004-2014 with an average €9.5 billion annually, which represents around 2% of the industry's turnover and 12% of the value added (Maroulis et al., 2017).

The followings are some regulations to which a surfactant company must comply with:

REACH registration: REACH applies to all chemical substances; companies need to register their substances. It is a regulation of the European Union, adopted to improve the protection of human health and the environment from the risks that can be posed by chemicals. To comply with the regulation, companies must identify and manage the risks linked to the substances they manufacture and market in the

EU. They have to demonstrate to European Chemicals Agency (ECHA) how the substance can be safely used, and they must communicate the risk management measures to the users. Authorities and ECHA's scientific committees assess whether the risks of substances can be managed. Authorities can ban hazardous substances if their risks are unmanageable (ECHA, 2019; CESIO, 2019). In this regard, Marco Mensink, Cefic General Director (2018) stated: *"Our companies have made a tremendous effort to compile all registration dossiers on time for the 2018 deadline. A huge amount of data on more than 20,000 substances that are on the European market has been provided while ensuring that no supply chain disruptions occurred. Over 2 billion EUR has been invested to ensure compliance with REACH."*

Almost all participants mentioned REACH to be an important obstacle of new entrants, following are some comments related to REACH: *"REACH can be a barrier, REACH can also be an advantage. Because we registered also some products which competition didn't register", "In Europe we have REACH registration that means that every chemical you have to register when it is not a polymer, otherwise you are not allowed to make that molecule", "Any product, some will cost you 1,500 euros, but some product will cost you 300,000 euros for 1 product, and the rest is in between", "For REACH it can take up to 6 months till 1 year depends, it depends on which information you need to provide, also for which application you choose. Depending on which data you have already available, can you buy a letter of access from another company, do they want you to join a part of their registration dossier", "we had a large customer that doesn't want to pay for registration. And yeah it takes 250000 euros per product, the cost will never be absorbed by the product so we decided to stop it".*

The Classification, Labeling and Packaging (CLP) Regulation:

Under the CLP regulation manufacturers/importers of chemical substances in the EU are obliged to gather relevant and available information on all hazardous properties according to certain health and environmental criteria. These hazards are then addressed in Safety Data Sheets (along with guidance on safe use). Thus, this regulation ensures that any potential health or environmental hazards presented by chemicals are clearly communicated through harmonized classification and labeling (C&L) standards that clearly reflects a product or substance's potential hazards (ECHA, 2019; CESIO, 2019).

The Detergents Regulation and biodegradation requirement

It requires the biodegradability of surfactants used in detergent products i.e.:

- Proof of ultimate aerobic biodegradation for surfactants used in detergents.
- The biodegradability criteria apply to all types of surfactants (anionic, non-ionic, cationic and amphoteric surfactants).

This regulation was also pointed out by two participants, who said: *"If you go to the cleaning market home care, car care this kind of things then the product needs to be meeting a certain requirements on bio-aggregation that it doesn't remain in the environment for many years, so and it is easy biodegradable and it ends up in canal or so and it is not remaining compound and can be toxic for certain organisms. If we look at oilfield, there is a regulation for European countries for the North Sea area, that you have to comply with you have to supply data on bio aggregation, toxicity towards other see species, you have to meet and if there is a product which is lower toxic or better biodegradable, this industry is more or less forced to go to that way, and to move away from the product that is less green or whatever you call it, there is a lot of terms, eco, green, sustainable, bio-based…", "Surfactants used in Europe for applications relevant to water quality need to be readily biodegradable".*

Phosphate ban in the EU:

This Regulation bans phosphates in consumer laundry detergent and in dishwasher detergent since there are cost-efficient alternatives to phosphates available for laundry detergents (European Commission Report

on phosphates in detergents, 2010). The Regulation aims to reduce the number of phosphates found in wastewater and to improve water quality. While phosphates have law toxicity and make detergents more efficient, they remain in wastewater and cause nutrient pollution and lead to a buildup of algae which can starve fish of oxygen (Kogawa et al., 2017). This regulation was brought up by a participant: *"Also, detergent regulations for cleaning can be a barrier. Phosphate ban in the EU; they want to have phosphate-free detergents I think there are a lot of"*.

Permit Requirement:

The most basic regulation barrier that was mentioned is at first place getting the organization permit, respondents highlighted: *"I think that if you have to produce these types of product you at least have to have a permit, environmental permit. Which I think new companies will hardly get. That's difficult for companies to enter", "barriers I think also the permits like we are allowed to work with hazardous chemicals so it's not only the industry it's also the law, the regulations"*.

As a result, here we can easily conclude that the threat of new entrants is weak. Two participants have supported this idea by giving additional information that in the last two decades they don't remember a new player in the market except for those of merge & acquisition results. It was pointed out: *"I don't see a lot of new players in our market, the only change you might see is that sometimes they change their name and finally you find out that they are that company. No, I didn't see a lot of new players, at least in the western Europe market"*, *"They are all old. I think it's not easy to enter it's more like, just a big company says to just buy another site or extend the site. But everyone is getting more efficient, so what I see is that a lot of sites have part of their site closed. I see more reduction than that there is new coming in. It's also quite an old industry of course"*.

3.1.2 The negotiating power of suppliers (Strong-moderate)

Suppliers influence Chemo B.V in terms of the company's production capacity based on the availability of raw materials. This force is evaluated being between strong and moderate.

➔ The following factors (supported by illustrative quotes from interviewees) contribute to the strength of the bargaining power of suppliers of Chemo B.V:

3.1.2.1 A small number of suppliers relative to buyers (strengthening factor):

"Yea I think they are 3 or 4 companies and 2 have a shut down at the same time. Normally you would say it is not smart. But probably they have this power to the customer so they can afford it".

3.1.2.2 Substitutes are unavailable (strengthening factor):

"For example, we buy a product somewhere where they change the grade to a lower grade and we cannot work with that but they are the only supplier and they don't want to change back because all the other customers they don't have issues with it and your volume is low"

3.1.2.3 Low overall supply (strengthening factor):

I think this is more relevant to the chemical industry than other industries. Let's think a moment in suppliers' shoes. If the transportation of 10 tons of a raw material is as dangerous as 100 tones, which one is more attractive? accordingly, it's worth mentioning that after the acquisitions, Chemo B.V occupies a stronger position within its suppliers' than before it did, due to current stronger joint buying power with sister companies. A participant highlighted: *"In previous organization no one else was buying EO, so instead of us just X metric tons we buy we buy now in total I think 10X so 10 times more, which gives you more power than buying just 1000 tons.so in that sense for certain raw materials we have already seen that also PCo had a better position than we had, because they were buying much bigger quantities",* yet other participants

considered that Chemo B.V is a small player in the market with small buying demand, they said: *"I think in general Chemo B.V is a small player for our suppliers, if we buy EO, I don't know the exact number but more than X metric tons, but if compared to what BASF and Shell are using it is below 1% of their usage, so we are small we don't have in that sense a lot of power to negotiate a price. Because they have customer who buy much bigger quantities who can determine the price and then they say ok if I don't have your 0,00X metric tons that you would buy for me than its pity you will have to pay this price otherwise I won't sell it to you. And sometimes our volumes are that small that the producers don't sell directly to us but also go via a distributor, and then you don't have a lot of negotiating power".*

3.1.2.4 Buyer relies heavily on sales from suppliers (strengthening factor):

"For example, the EO it's our biggest raw material and the supplier they said they going to have a big shut down for maintenance I think in October and there are 2 plants so we can't get the material then they still have a lot of power. If they can do it", "I think we try to build a solid relationship with our suppliers as we rely on their supply from raw materials if we don't get it in time in full then we have an issue, we're contractual connected to our customers on supply within a certain time frame and if we don't have eee".

3.1.2.5 Forward vertical integration of suppliers (strengthening factor):

"We have suppliers, customers, and competitors. It can be that a competitor is also a supplier and also be a customer. This is possible, yeah and also that I think at this moment competitor 1 is not producer it's a sort of tolling, so they will deliver the raw material, we do the production, and then deliver back to them because they can't do it themselves. And then it's an intermediate for different process".

➔ While the following factor (supported by illustrative quotes from interviewees) bring *moderating effects on the bargaining power* of suppliers of Chemo B.V:

3.1.2.6 Backward integration in the supply chain (in fatty acid fatty alcohols) (weakening factor):

"To some extend backward integration with the group, so we have a better position to our raw material suppliers. We had a really weak position, the small volumes we had and to buy it competitive and we have a much better shape", "There is some which we will buy now from sister companies, that will help us. The sister company in the Netherlands, produce 50 times what we do, so they have also EO they buy it in much bigger quantities than we. So, if we now combine that and buy that raw material for the whole company, we are more competitive. And we can still buy it at the same company", "We bought our volume of EO together with PCo. In previous organization no one else was buying EO, so instead of us just X metric tons we buy we buy now in total I think 10X so 10 times more, which gives you more power than buying just X tons. So, in that sense for certain raw materials we have already seen that also PCo had a better position than we had, because they were buying much bigger quantities, than we bought and with our additional quantities you even improve your negotiating power", "So I think in a lot of cases the suppliers determine the price, of course there are some products where we also try to do that but I think in general suppliers have strong power in our case".

3.1.3 The negotiating power of buyers (Strong-Moderate)

To evaluate the force of buyers of Chemo B.V, a sales engineer at XYZ (the largest distributor of Chemo B.V surfactants in several market segments: Cleaning, Coating & Construction, Polymers, Inks, Pulp & Paper, Textiles & Leather. XYZ also gives technical support to these) was interviewed, and according to this interview, the customers of Chemo B.V have moderate negotiating force. However, according to the participants who gave similar comments related to the power of buyers, the customer of Chemo B.V pursue

strong negotiating power. Below are the factors that contribute to the strong to the moderate bargaining power of customers of Chemo B.V:

3.1.3.1 Large-volume customers (strengthening factor)

Answering to the question: what are the vulnerabilities of Chemo B.V? a participant said: *"If you rely on 1 customer for 25-30% its dangerous you have to be careful; you have to be careful with the big companies. They can push you out, they can push you out (2*) if I just reflect and look back at the former owner time this NCH business was good business but also made them vulnerable because when this corporation stopped, they lost 25-30% of the production volume and I think from the result".* Beyond this, the following data together with the illustrating quotes confirm that the customers of Chemo B.V are of larger volume:

- Around 30-40% of the production volume goes to the former owner: *"I think the former owner is a big one. We also have 1 person responsible for all the former owner business and with the supply agreement we have that's quite an important one".*
- Around 50% of the production volume is sold via distributors: *"At the moment our biggest customer is actually a distributor, but that means that he is selling more or less our products to all kind of small customers. So, in that sense, we had and still have a very small sales team, so we try to go to some of the major customers, but for the very small customer who order 2 drums 5 drums, we say go to the distributor, he will take your orders and he will buy from us", "the distributor company is the intermediate, they determine if they come to us to buy the material or go to someone else", "if something goes wrong between us and the distributor than we lose their customers, so we would than go to another distributor. And we know some of the names of our customers of course and then we say this distributor is no more supplying our product, but we are still available. It is possible you get it (…) I know that we 5 or 7 years ago changed our distributor in UK, and there we lost some of the business because our distributor said that I am now going to offer the same product from someone else to that end user and I am going to get sure that he stays with me as distributor."*
- Majority of the distribution is done via company XYZ: *"So, we use the distributor in Europe for every country and for the majority of the customers we have one distributor which is a company cold XYZ, they are really big distributor in Europe and they sell more or less our product to these smaller customers and therefore they actually collect the business from a lot of different customer into one customer that is buying from us"*
- Around 80% of the production volume goes to the biggest 20 customers: *"I think if you go to our customer list, if you go to the 20th most important customer it would be 80% of our sales volume".*
- There is communication line reopened with a former major customer (hereafter, NCH) that was 25-30% of the production target: *"In the past we had NCH as the most important customer and as you know we lost them, that was a problem, because then we lost almost ⅓ of our customers of our sales volume"*

3.1.3.2 Exclusive supply agreement (strengthening factor)

Like any agreement, the supply agreements of Chemo B.V are meant to protect both parties, yet apparently the buyer more than the supplier. Since the buyer has some minimum commitment obligation, whereas Chemo B.V is obliged to exclusively supply the product only to the given buyer, and is not allowed to supply to other buyers sometimes even after the parties terminate the contract perpetually. This is a very committed agreement, which binds an entire production line to a sole buyer. This idea was mentioned by four participants several times:

"In the supply agreement with the former owner, who is coating customer now, we of course have a limitation on going to competitors and that same account for the oil food chemical business, lost business with NCH, that we cannot go a competitor. Because we signed a perpetual contract that we will never go to a competitor even if we stop the business with them, we were happy with that", "If it's one product produced by a specific customer it will never be promoted to other customers. So, we have also agreements with customers, so for example now the new product for customer B, it will never be in our portfolio to offer to other. We have also a secrecy agreement also in place.", "We have contract for a certain period of years now so if one of the parties terminates that contract there will be another 2 years before you can anything in that market and that's the way these contracts are".

3.1.3.3 The same company can be a supplier, a customer and a competitor (strengthening factor)

This is an important aspect, especially when we are dealing with strategy formulation for a subsidiary that is back integrated in the supply chain, because it might be the case that a large customer of the parent company's raw material is also a competitor, then the dilemma will be to supply or to compete. A participant illustrated this idea with an example: *"That happens going a little bit back in the history, at a certain time there was a group of products that use the same alcohol, we were part of ex-PCo at that time and they were selling this alcohol also to competitors of this business. As soon as ex-PCo acquired [Chemo B.V] (Buyer company) said: "what are you going to do with this group of products because now you are competing with my business. If you are going to compete and make them more competitive by giving them a cheaper raw material, we will move away from you with the alcohols" and the amount of alcohols that (Buyer company) was buying was 10 or 50 times the amount that we were using internally, so you don't want to lose that business and then we actually quit our business in that area and [said:] "here are our customers, start selling to them then we sell you the alcohol" and we got a little bit more sales from the alcohol. But we don't lose our big customer in the early phase, there we have to be careful."* This is another supporting argument why a subsidiary must come to a strategy in alliance with the parent company.

3.1.3.4 The customers are price sensitive (strengthening factor)

Considering the specifics of Chemo B.V 's resources, as "non-commodity", one might immediately notice the treating aspect of the high price sensitivity of the buyers. While the internal participants indirectly indicated in several occasions the high price sensitivity of the customer, for instance saying: *"End user would also say I found someone else who also make the same products and it is cheaper. In general, cheaper is the most important reason to go to another one :D",* the external participant came to lend support to this, by explicitly bringing up the high price sensitivity of the end customers. For examples while implying the weaknesses of Chemo B.V he mentioned: *"Pricing is mainly the weakest point: customers are looking for cheaper alternatives when the raw-materials even if these are specialties are too expensive. Technical support is low, technical application support is weak"* and when he was asked whether the customer is aware of the market prices, he added: *"Compared with other suppliers but also with other material so in fact it is not comparable but most customers are looking for cheaper alternatives".*

Nevertheless, all fingers are not the same! In that regard, there were five factors mentioned by the participants that affect the degree of price sensitivity of buyers. It seems customers have less price sensitivity when:

1. The percentage of a surfactant in the active ingredients of the final product is not substantial:

A participant clarified: *"In particular in a higher volume product if it is 2 cents cheaper if it is 60% of your raw material in your final products than these 2 cents already count than when it is very small amount in your final formulation, then it is often they more want constant quality and they are not so eager to go to*

someone else, so it also depends on what percentage of our products is find in the products of our customers(…) The percentage is used in the final formulation differs from application to another, a lot of our products are not in general very substantial parts. But we also make here the active ingredient of fabric softener, then it is the major cost determining part in the fabric softener, that you can buy in the supermarket. They sell some 95% Water, a little parfum and color in that and the active ingredient 5-10 % which is then could be our product but since it is 5-10% it is the majority of the active ingredient and then it determines the price and that is typically a market where on a couple of cents they might move from one supplier to another". This means that if the percentage of a surfactant is low, then the customer is more sensitive to the quality than to the price.

2. The surfactant is a specialty product:

Supporting quotes: *"Customers of standardized products are more price sensitive (…) Customers of specialty products are in general more demanding", "Lower prices are always a fight for XYZ with Chemo B.V for mainly the commodities as there are 2-Ethylhexylsulphate, sulphosuccinate, ethoxylates"*

3. The surfactant is free available,
4. There is more post purchase support,
5. The price is constant:

"Customers are less price sensitive if products are free available (When they have an order and you can deliver it within 5 working days, so it is in the stock. We have several warehouses), more technical application support (e.g. support on guide formulations), not too much price fluctuation"

6. The product is bio.

Finally, to not lose the sight of the strengthening force of the high price sensitivity of buyers, I believe it is worth mentioning that when the external participant was asked to grade on a scale of 10 the price sensitivity of the final customers, he indicated that *"Customers are mainly quiet sensitive on prices: 8"* Moreover, he added *"the customers are allllways complaining because the prices are going up and never satisfied, so this is always a discussion point. But the relation, in general, is very good between XYZ and Chemo B.V"*. If we consider that the customers of distributors are low-volume customers, then we would assume that the price sensitivity of large-volume customers will be higher. This puts pressure to investigate more in-depth the factors affecting the sensitivity of each product group and to explore if there are opportunities that could be seized in order to reduce the price sensitivity.

3.1.3.5 Differentiated products and switching difficulty (weakening factor)

Although all the internal participants stated occasionally that the customers are free to go to the competitors, the external participant was against this notion. For instance, internal participants said:

"We don't have a contract with most of the customers that we have with the former owner that they have to take a certain volume from us. But most of the customer just come to us and say can you make this product for us. And they do that every month or every year. But they can go wherever they want". While the external participant said: *"Replacement of Chemo B.V surfactants would be very difficult because of the special raw material used at the group for the specialty surfactants and the special customers XYZ has where these surfactants are delivered", "Noooooo, it's very hard [there aren't alternative companies] (…) it's very specific no other suppliers have these specialty surfactants in their portfolio"*.

I believe these results are conditioned with the fact that the internal interviewees are looking from a single customer perspective whereas, for the distributor, it might cost to switch to other company regarding the amount of investigation needed to find alternatives and to persuade the end customers to use the given alternative, especially for multiple products. Here is the supporting quote of the external

participant: *"Switching to another supplier costs XYZ a high price: investigation of alternative surfactants, approach customers to test with these alternatives (most customers are not willing to do that, so XYZ should lose these customers)"*. From this quotation appears one more time that according to the external participant, there are some differentiated products of Chemo B.V.

3.1.3.6 Backward integration is not easy for customers (weakening factor)

This fact was recognized by both internal and external participants. Particularly, an internal participant mentioned: *"They [B competitor] will deliver the raw material, we do the production, and then deliver back to B, because they can't do it themselves"*. While the sales engineer of XYZ indicated: *"Own production is not an option for XYZ. The only way to produce is simply mixing and blending with low viscous liquids (we do that). Alkoxylation, condensation, phosphatation, sulphatation, quaternisation and polymerisation are reaction grades which are very specific and done by synthetic production. XYZ is not capable to do so"*

3.1.4 The threat of substitute products (Moderate)

This element of Porter's Five Forces, has a goal to study the potential negative effects of substitutes on a firm's growth. With our case, since we are dealing with a firm with a large portfolio, it was not possible with the available resources to investigate the availability of substitutes for the range of products, whilst the aim has been to understand the availability of substitutes in a broader sense. It appeared that in general the product portfolio is moderately threatened particularly by more sustainable substitutes, and the following are demonstrating examples/quotes that contribute to the mentioned assumption:

"I think there are quite some product substitutes not all of them and some will be cheaper some will be more expensive I think that will vary", "There are substitutes for some of the products and pricing can be lower", "sometimes, you can find something completely different that gives the same performance. What I said a lot of shampoos have sulphates, sulphated products, they are now looking for can you find an alternative, which is not a sulphate but is actually removing the dirt from hair. There are already products. If you look at cosmetics of course they try to replace certain chemicals by some extracts from nature, do they do exactly do the same? no in many cases they don't do exactly the same but it is the balance of course from a lot of characteristics that you are trying to achieve but you say I have a green product which still more or less doing the same it has some advantages on skin irritation for example but it removes the dirt a little bit less. And then you find the balance and you come up with something new and I have the selling argument that it is bio based and so and then the customers are prepared to pay either the same or even a little bit more. Despite the fact that they might lose some of the performances of, of course,e selling company will not tell the disadvantages too open but you find out yourself :D :D".

3.1.5 Rivalry among existing competitors (Strong)

Chemo B.V faces tough competition. On this matter all the internal participants interestingly used the same wording "a lot of competitors" to describe the intensity of the market. To illustrate the sharpness of the competition a participant hinted: *"we had an exclusive contract with an oil field company that was also here on site partly, NCH, you have an existing business you think it will go on like it will go on. They at a certain time said yeah your competitors come with new products, we don't see you."*

In total there were identified indicators which contribute to the intensity of rivalry in the surfactants industry or the chemical industry in total:

3.1.5.1 Slow industry growth:

Slow growth leads to "fights" for the market share (Porter, 2008). To elaborate on this idea, it is noteworthy that, for example, the European Chemical Industry Council is expecting only 0,5% growth in the chemical

production for 2019 compared to 2018 against the 0,5% decline recorded in 2018 compared to 2017 (Cefic, 2018).

3.1.5.2 Low switching costs:

Apparently in the surfactant industry, it is easy to switch from one company to another, here is an illustrative quote: *"We had this incident we lost some business due to the fact that you are not any more reliable to your customers and that your reactors is broken and you cannot supply for 6 months, your customer can not wait for 6 months and say ok then I will start my business also again after 6 months, they go to competitors, so you lose business when you have an incident"*

3.1.5.3 High exit barriers and devoted management:

If the entry barriers are high, it is rational that the exit barriers be high. For instance, it was mentioned previously that to enter into the surfactant industry large capital investments are required, most likely on highly specialized equipment and assets, which wouldn't be used in another industry. This fact could be the most powerful reason to keep companies in the same business. Accordingly, as indicated previously, there are a lot of merge and acquisition in the industry, an employee said: *"I don't see a lot of new players in our market, the only change you might see is that sometimes they change their name"* The closest example is Chemo B.V itself, which during the last twenty years was acquired by four companies. Moreover, it is worth mentioning that the majority of market players are companies of decades. Namely, Chemo B.V was founded +90 years ago, Schaerer-surfactants +70 years ago, Pulcra Chem +140 years ago, BASF +150 years ago, KAO Chemicals Europe +130 years and so forth. The same counts for the management, as indicated earlier the participants of this research have been working in Chemo B.V, on average, for 23 years. Hence, it really seems difficult to exit from the industry, I assume even in case of negative returns. Indeed, it has been put forward that in Europe alone there are at least 20 players. Table 2 shows the most mentioned competitors and the number of participants who recalled a specific competitor.

Table 2: Most recalled competitors

Competitor	Participants	Competitor	Participants
3M Company	2	Rhodia- Solvay	2
Akzo Nobel N.V.	4	Sasol	1
BASF SE	4	Schaerer-surfactants	1
Bayer AG	1	Schill+Seilacher GmbH	1
Clariant	3	Shell Chemicals	1
Evonik Industries AG	3	Stepan Co.	1
Kao Corporation	3	The Dow Chemical Company	1
Lakeland Chemical Specialties, Inc.	1	Unilever	2
Levaco Chemicals GmbH	1	Wall Chemie	3
P & G Chemicals	1	Zimmer und Schwarz	2
Pulcra Chem	1		

It seems that the chemical specialties market is not only divided between big players but also between smaller players. The following was stated by two participants: *"There are a lot of competitors, first of all, the big surfactants producers, I mention shell Clariant, Clariant is a big one, Sasol. BASF, that are the really big ones. But then you also have some smaller producers, company that I can mention for example for EO, PO: Wall Chemie, it is a German company. They are also a producer of non-ionics, we see for example in a lot of alkoxylates that they try to compete with us"*, *"You have here, for example, BASF*

but that is just one or two sites which make the specialties. BASF is the same as PCo, they have commodity sites and specialty sites. But there are also some that are a family company which only specialty company". To elaborate more on this, it is worth mentioning that some of the most recalled competitors by the participants were for instance, Wall Chemie and Kao, relatively smaller companies, beside BASF, AkzoNobel, Clariant, Evonik, four companies that stand among the 10 largest European specialty chemical companies (VPG Market Research, 2010) and among the 50 largest chemical producers in the world (Tullo, 2018).

Moreover, since Chemo B.V does not operate in a single segment in the market, it is pertinent to highlight that it has competitors that compete on the entire portfolio level and competitor that compete on a specific segment or on a particular competence level. In this regard, it was mentioned: *"Competitors depend on which product group, depends on which market so a lot a lot. Akzo, for cleaning, Kao, BASF, Evonik. (...) it can also be smaller companies like Zimmer und Schwarz, Lakeland in the UK, depends where in which product and market", "it [competition] depends a little bit on the type of chemistry, for phosphate acids Clariant is a big competitor, Solvay is a big competitor, that are 2 important ones. Lakeland is a smaller company; they are typically surfactants producers"*. Based on this view, presumably, companies like Chemo B.V should devote special attention to identifying the competitors.

It was stated that it is difficult for Chemo B.V to compete on a single segments level. Since, there are companies who operate either on a single segment or have other sources of competitive advantage which make difficult to compete in a particular segment. An employee said: *"Our competitors are sometime back integrated, they make EO themselves and we have to pay them for EO and there is already their advantage, because we already have to pay their profit and then start our processes. So, in the same product range you can not compete because they have an advantage of raw material cost"*.

Having all this in mind, at a glance, it appears extremely difficult for a firm in the specialty sector to differentiate itself from competitors. Nevertheless, all the participants found at least an aspect by which Chemo B.V. differentiate itself, in particular:

1. **Multiple technologies in one location:** It was occasionally named by multiple participants the fact that Chemo B.V has a wide range of production technologies in a single site, unlike many big producers who possess the same technologies but in different production sites. Therefore, even sometimes those competitors, refer to Chemo B.V to get some products. By way of illustration, below are participants' quotes:
    - *"In theory I always say if you look at the big chemical companies like Clariant, BASF. Clariant has also phosphate esters and they also make sulphates, they also make non-ethoxylates so in theory, they have all these capabilities but they often have them in different locations. (...) The very big producer BASF makes almost everything, Evonik can do almost every type of chemistry. And these companies are that big that often a Clariant in Germany and a Clariant division in Spain that they more or less act with each other as different companies (...) for example Akzo company here in the Netherlands asked us to produce some surfactants when Akzo also produces surfactants in Sweden. And that is why we have everything on one site so we have pretty close lines",*
    - *"Biggest differentiation maybe that we can do it [Multi chemical processes] all inhouse and with flexible production output (low or high volumes)",*

- *"I think the capabilities and also what I've mentioned before, we can produce here inhouse multistep products and for other customers they probably have to go then to a company who makes a product and who buy the intermediate from another one, but of course makes it more expensive",*
- *"there are a number of our products that the big suppliers also more or less offer the same product, and there it's often particular to smaller customers they like to buy all the things at one shop. So, then they buy some specialties from us but they also buy some regular available materials also from us, so there we actually have the same products then the big suppliers, but then when they really would start looking for the cheapest they might move away from us, but they say ok we have package its package deal we also other material from you",*
- *"For sure it [multiple steps] differentiates us from a lot of competitors for certain individual steps. We do ethoxylation but we can compete with back ethoxylates, but they don't do phosphatation afterword and do make bland out of it. They just look at the ethoxylation where we say ok and that's where we can add value through row materials that we have to purchase"*

2. **Modern site ➔ high quality:** Based on: *"I think that we still, although the company is already 96 years old, we still have a modern plant, there really has been investments there. In optimizations and so we are we have a good quality. I think there especially the quality we can make a difference".*
3. **A unique way of communication:** the rapid, flexible, personal approach of communication is what according to internal and external participants differentiates Chemo B.V of its competitors. In this regard, it was said: **"***For the same product I think the flexibility the product information we can give to them, the contacts (...) I think the lines are very short here. So, if you call us, you will quicker get the information, quicker get the product, then the large companies", "what I can imagine is also the flexibility. What we see and this is actually that's why also the fit is good also at PCo it's an SMB it's not a large company it's an SMB and your competitors are big companies like Procter & Gamble, Unilever all the big companies, Shell. We can move around much more flexible and this is an added value to the customer, this is also what we see within PCo, flexibility is our key position actually. They can phone us we want this product; we say ok we can deliver it in a few days. If you do it for the big companies, they are lost so this is our advantage". Even the external participant indicated this by saying: "Flexibility I think [is what differentiates Chemo B.V] because Chemo B.V is not a huge company huge producer so it is more flexible in the market can have very easy approach customers and make products for the customers it is easier than the biggest suppliers"*
4. **(Custom) manufacturing capabilities:** not only some internal participants but also the external participant agreed that the differentiation resists not only in the service Chemo B.V provides, while also in the product itself. It's been highlighted: *"Excellent know how of the available technologies, custom manufacturing capabilities to solve tricky customer requests.", "Products of Chemo B.V are differentiated mainly in phosphatizing and quaternization from its competitors, with specialty raw-materials which are nowadays very good available delivered by the group", "when you have big suppliers they say ok we have a red product and green product we don't want to make a small volume of something which is somewhere in between. And then we say ok we have small reactors we are pretty much prepared to treat the molecule, the product that fits your application. and we just do it for this customer as long as there is something where we can make a profit from, of course".*

This means, if we adopt only the resource-based perspective and take what participants indicated regarding the differentiation "for granted" and not verify in the market, we will have to recognize that the previous 4 characters are the uniqueness of Chemo B.V. However, as this research is based on both market

and resource-based view, some verification is needed. With this in view, analyzing the websites of the most recalled competitors (at least by 3 participants) was enough to imply that the majority of these distinguishing attributes are not really unique characteristics of surfactant producers, at least from the buyer perspective, who might perform a small online research to shorten the list of possible suppliers.
Table 3 shows which of the 4 "distinguishing attributes" are also a characteristic of any of the 6 investigated competitors: Akzo Nobel N.V., BASF SE, Clariant, Evonik Industries AG, Kao Corporation, Wall Chemie.

Table 3: Overlap of Chemo B.V's "distinguishing attributes" with competitors' characteristics

Chemo B.V's distinguishing attribute	Supporting quotes from competitors' websites
Multiple technologies in one location	BASF: "BASF Antwerpen products go on to be utilized in virtually all processing sectors, such as the automotive industry, the construction sector, paper and leather manufacturing, sports equipment, as well as the textile, food and pharmaceutical sectors."
Modern site ➔ high quality	AkzoNobel Specialty Chemicals: "What started as small venture for table salt under brand names such as JOZO is now a large-scale operation which forms a key foundation of the modern chemical industry"
A unique way of communication	-
(Custom) manufacturing capabilities	Wall-Chemie: "Custom-made solutions- Talk to us if you have any question or if you are looking for customized solutions to your challenges. Our employees are happy to advise you and they will support you during the entire process from the development of your special product to the test phase until the application is finished."

Table 3 confirmed one more time the saturated state of the surfactants market and how that it must be difficult for companies to differentiate their offering from those of their competitors. Based on the information on the 6 competitors' websites one out of four components that built up the positioning of Chemo B.V. -The unique way of communication- was pure Chemo B.V characteristic. Though, considering the peculiarity of this component, one can argue the reliability if this uniqueness, given the complicity to communicate this component on a website.
In short, the result of this Five Forces analysis shows that Chemo B.V experiences the effects of external factors at varying intensities, and it needs to prioritize the strategy related to competition, buyers, and suppliers, all of which exert strong or strong to moderate force while the other forces (threat of substitutes and new entrants) exert lower force on Chemo B.V.

3.2 Reputation sensitivity (Strong)

At the time of this writing, it is difficult to think of a single industry which is not sensitive to reputation, yet there are some industries which are more sensitive to reputation than others. For instance, there are some industries, where reputation is the most essential asset of a company's survival. Such an industry could be considered the banking industry. This is why banks should give extra attention to this factor while setting strategy. On the other hand, to evaluate the reputation sensitivity of the transport and logistics industry, let us ask ourselves, how many times have we considered the reputation of a transport provider

before using its services? Hence, it is important to know the degree of reputation sensitivity of an industry to know its impact on the buying decision.

Expectedly, according to the majority of the participant, the reputation in the chemical industry has a very important impact on the customer decision making, a participant stated: *" For sure, I mean that's why if you look back at these values, team work, open, honest, humility, but also this culture thing, safety culture, if this is not to level what we want to have it, we can have incidents, they had an incident here they had an explosion in 2013 this is affecting you as a company. you are death if you do this"*. Another participant added that the reputation is an important indicator not only for the customer but also for the supplier: *"So reputation I think is an important factor yes, I think also for suppliers she wants to be a reliable for customers and also for the suppliers. You want to rely on your customers and they want to rely on you"*. Whereas, there was one participant who claimed that the chemical industry is not reputation sensitive and that customers remained buying from Chemo B.V even after the incident of several years ago: *"We have a criminal case, you probably heard of but that didn't stop people, from buying from this company"*. Nevertheless, if we look at this point from another perspective, we can assume that the good reputation was the reason why customers remained buying from Chemo B.V and not that the industry isn't reputation sensitive, after all the sensitivity of reputation is not limited with the negative reputation.

This implies indeed that the chemical industry is sensitive to reputation. Nonetheless, as previously mentioned, any industry is sensitive to reputation, thus the degree of the sensitivity is the evaluated. In this regard, the finding of a recent 2-phase research conducted by Jelínková & Lostakova (2016) within chemical product supply chains in the Czech Republic, separately with employees of large chemical raw materials suppliers and with their counter B2B buyers, came to validate the assumption of the sensitivity of the chemical industry to reputation. Moreover, it has showed that there are three almost identical factors from the point of view of suppliers and customers, that influence on the strengthening and developing relations between the suppliers and the customers in the chemical industry. Those factors are **Reputation and image of the supplier; Technological advancement of the supplier**; **Tradition and reputation of the supplier in the industry.** With the majority of both groups considering reputation as the most important factor of the competitiveness of their companies.

3.3 Media sensitivity (Strong)

As previously mentioned, in the 21st century media makes a great part of companies lives. Media can both negatively and positively affect a company, its reputation, its sales volume, etc. Nevertheless, likewise reputation, any industry is media sensitive, almost nothing nowadays remains not interpreted by media. Therefore, the intensity of the influence media make on an industry should be investigated while making strategic decisions. For this purpose, Google news was used to evaluate the media sensitivity of chemical industry, via analyzing how often an article related to chemical industry is published in news websites and by comparing to other industries. However, this analysis was not completed because it would result in a biased result, because it would be for only English news. The other way was to find out via Dutch news websites. This analysis was not completed neither, because to investigate this greater resource are needed, considering, there are many news websites, there are many criteria of news websites, such as different geographical coverage, different opinion power. Moreover, this research will be mainly for the Dutch territory which doesn't cover the target market of Chemo B.V. Hence, the data obtained during the interviews were solely used to evaluate the sensibility of the industry towards media.

According to the majority of participants chemical company is strongly media sensitive, especially when it comes to negative actualities. Some confirming examples are: *"When the accident happened here, everybody here said nothing has happened but, in the media, it was blow up. I've never been afraid. So, there were things in the newspaper also it was not correct. So yes, in the chemical industry we are under the media", "We were in the news in the last 5 years quite often. I think every half year we were on tv. Because of the incident of course and what happens with the criminal case we had", "We know that, I think, quit often in the news talks about a nasty thing that happens an incident that happens in the industry, in that sense I think we are also sensitive to that. And it starts already with your neighbors here, of course they see that there is an incident in the Netherlands and then they ooooo dangerous industry"*. I believe this result was expected. This was also revealed by a participant when he was asked whether chemical industry is sensitive to media. he sarcastically responded: *"Interesting question, I would almost ask, what do you think when we talk about chemistry and media sensitivity"*.

Nevertheless, the majority of participants also claimed that the media sensitivity is not limited to the coverage of negative news. In particulier, according to a participant media can be both negative and positive influencer when it comes to specific group of materials, here is what a participant commented: *"we also already talked about the bio based, that's the good material and everything that comes from chemical plant. Media also in particular determines a lot of, if you look to the personal care industry there is a lot of marketing via media that actually changes the minds of customers toward acceptance for certain products and choice for other products, in particular int that sense I think chemicals are very much nowadays in the media, media determines what… they can kill or make our products I would say",* another participant added *"the industry also of course is trying to fight against that and also make people aware of the positive things that chemicals bring, so I think it is more an open debate then maybe number of years ago, I think environmental organizations are quite strong in setting the media in a certain way, and in that sense the broader public"*. Whereas another participant looks at the media sensitivity from another perspective, outlining the most two topics that contribute the most to the media sensitivity of the chemical industry: Safety and sustainability, the following is the exact wording used: *"Safety of a chemical site is always media sensitive. As part of the group, a leading palm oil plantation company, the topic of sustainability is media sensitive"*

Furthermore, the view put forward by one of the participants regarding the correlation between the media sensitivity and reputation is in good agreement with that of Chris Levy, the director of APCO Insight in Europe. After the Chemical Industry Study from APCO Insight ,based on surveys conducted on more than 6,000 individuals from the UK, Germany, France, Spain, Italy, Brussels and the United States(2015), Levy claimed: "the stronger a company's reputation, the more likely opinion leaders are to act as advocates—be that on social media or in more traditional forums" , whereas the participant to this research indicated: *"I think the chemical industry is also nationally sensitive but mainly the bigger companies, like AKZO, BASF, Shell, but more companies like us are regional sensitive (…) the media attention which [our incident] had was only regional RTV Oost they mention it quite some times and also the newspapers here but it's not national, it wasn't on the national news, I think that's also because it was prior owner. If it was Akzo it would be different, people know Akzo but they don't know (the prior owner)"*. These two quotes are substantial to conclude that there is a positive correlation between the firm's reputation and its media sensitivity.

3.4 Current positioning in the market:

Although, I think that the best way to find out the positioning of the company is to investigate its customers' perception of the company, since positioning is "the place a brand occupies in the mind of its target audience" (Maggard, 1976), due to limitation of external resources (only XYZ), the internal participants were also asked to define the role of Chemo B.V in the market.

According to the different perspectives raised by the internal participants, we can assume that currently, Chemo B.V positions itself in the market being "Flexible specialty chemicals manufacturer with a competitive set up to make a personalized, rigorous and multistep products". By a wider margin, there were three different views of Chemo B.V's market role highlighted: **Flexible, custom manufacturer, Multi-step products manufacturer and Me too manufacturer.** Table 4 demonstrates the quotes that contributed to the perception of the positioning and highlights the key idea in each quote.

Table 4: Current value proposition by quotes

Supporting quote	Flexible, Custom	Multi-step	Me too
"It has always been the development of tailor-made specialties for different markets. Not necessarily high-volume markets. Products with additional value in the sense of knowledge where products can be used exactly"	✓		
"Tailor-made specialties I think one of the main roles in the market"	✓		
"The place to go for special requests. A hidden champion. Small to be flexible and with a good setup to be competitive"	✓		
"I think we are more service provider than really pure store for chemicals, if you look at specialties, at specialties if a certain product is not doing exactly what the customer is looking for, then we are prepared to just make a small modification its then maybe more unique to the market but it fits better to the end user"	✓		
"Chemo B.V produces specialty products which are surfactants and I think that what we have here we have a broad permit for chemicals that are not permitted at other locations or not so many different ones. So, we are really good at multistep products where we use intermediates and I think our strength here is production volume between 50 metric tons and a few thousand metric tons of a product. SO also, not commodities but also not the real small quantities"	✓	✓	
"There might be some unique products but 98% of our products are supplied by other competitors"		✓	
"We don't own a lot of patents for example. Most of our actual business what we call "me too"."			✓
"But we are not the cheapest supplier we are not the real market changer, (...) so we are more the followers but we are prepared to treat the molecules to make them more suitable for our end users"	✓		✓
"I think most of our customers they just want a 2nd supplier or they have maybe delivery problems, they want better quality, so they come to us and ask if we can produce that and make that also. So, it's me too product. So if we look at what problem it is solving, it's more like to buy the products competitively, that's what they want. And it's not they really want a unique product that isn't there in the market, for some it is, but I think the main products can be produced at another company also"			✓

However, when the external interviewee was asked to give his opinion regarding the Chemo B.V role in the market, he pointed the role of Chemo B.V for XYZ and the other way around and it turned out that the added value of XYZ as a distributor is the facilitation of a more personalized approach to the small buyers. He said: *"Chemo B.V is an important supplier of specialty surfactants in above mentioned market segments [Cleaning, Coating & Construction, Polymers, Inks, Pulp & Paper, Textiles & Leather] The cooperation between XYZ and Chemo B.V is very important for the sales/technical approach of the market with the Chemo B.V surfactants (...) Technical approach is more link to the market which Chemo B.V doesn't have, because XYZ is approaching every customer every small customer as well Chemo B.V doesn't do that they only provide knowledge and deliveries to let's say to big customers large customers these are the most important and the smaller customers XYZ is approaching them and making technical knowledge to those smaller customers".*

4. Strategic foresight activities

Now that we have interpreted the subsidiary, the parent company and the forces in the industry, before taking any strategic direction, we need to ensure the longitude of the strategy. Hence, in order to evaluate the possible evolution of factors that may affect the strategic decision within the chemical industry, the three criteria of strategic foresight activities recommended by Vecchiato and Roveda's (2010) was adopted:

4.1 The field of research:

4.1.1 Microenvironment foresight:

4.1.1.1 Technology Foresight:

When the participants were asked about the future opportunities or threats of the industry, only one participant mentioned the increasing importance of the digital. He said: *"I think for the future is the smart industry 4.0. (...) to some extent we already do, we have 4 reactors fully automated 100%. But you can do much more with it and also, we use 3D, if we make a new installation, we do a 3D scan and then we have it in the system and so we can walk through the new installation already on the screen to check if highs are ok. So, we are using it to some extent but for example, an operator has to discharge from 1 system to another tank he has to make some connections and then another person has to come to check if the connections are made right. But if he would have a camera then the other one would have already seen if it's connected right so he doesn't have to walk".* Nevertheless, accepting the importance of the digital, this participant also indicated how challenging the digital can be, in particular, to chemical companies, he added: *"So there are a lot of things that you could do but that will take some time especially here because everything has to be explosive safe so you cannot just buy a normal camera. And that's a lot of regulations with cameras".*

It was capturing the word used to describe the augmented usage of digital, **Industry 4.0**, which refers to the combination of several major innovations in digital technology such as, advanced robotics and artificial intelligence; sophisticated sensors; cloud computing; the Internet of Things; data capture and analytics; digital fabrication (including 3D printing); platforms that use algorithms to direct motor vehicles; and many more technologies that come to transform the energy and manufacturing sectors (Geissbauer et al., 2016). Basically, the principle of Industry 4.0 is that it creates intelligent networks along the entire value chain by connecting equipment and systems; letting these networks control each other in an autonomous way ("industry 4.0", n.d). Muller et al. (2017) comparing the current factory state with those of Industry 4.0 identified that currently various data sources provide information to monitor current operating conditions and to detect faults, whilst an Industry 4.0 factory, in addition, has the ability to gain self-awareness and self-predictiveness, which will provide the decision makers with more insights.

Thus, how can the digital impact Chemo B.V? To answer to this question literature review was conducted, and the views of multiple opinion leaders in this emerging field has been brought into one place. The following were distinguished as the potential impact of Industry 4.0 on the manufacturing in general.

1. **Manufacturers will be able to grow their revenue:** Rationalization of the processes and more useful data help in the maximization of the productivity and in the minimization of the resources used. I.e. with less costs on labor and materials and with fewer manufacturing failures thereby less customer churn, the Industry 4.0 helps in growing revenue. (Bonner, 2017)
2. **Manufacturers will have closer interactions with customers**: With more useful data and technology, the manufacturing processes will get more and more responsive to customer demands, by responding and adapting more quickly to customer needs, even by developing custom products with minimum labor and less setup time. (Bonner, 2017)
3. **Distributors will be able to connect customers to products anywhere**: With vanishing boundaries between players, independent distributors may gain extra power by ensuring the product is still delivered on time with high quality and a proper price. Already in clothing manufacturing distributors make sure custom designs from Europe are manufactured by many companies in China resting on the availability of materials or the prices (Binkhuysen & de Graaf, 2019)

Nonetheless, due to the significance of this phenomenon, some researchers even have devoted attention to the impact of Industry 4.0 on particular industries. Klei et al. (2017) at McKinney & Company, points out that due to data mining and interpretation the digital will have a deep positive impact on Chemical companies' business processes, particularly on manufacturing, marketing and sales, and R&D.

1. **Impact on manufacturing operations:** Where Klei et al. (2017) envisage for companies across all segments of the chemical industry a potential of 3-5 percentage-point increase in return on sales (ROS) from integrating digital in production operations. Particularly, they see that advanced analytics will allow more accurate forecasting, more precise scheduling of batch production, shorter lead time and more flexibility. However, for many subsectors of the chemical industry, they assume that advanced analytics extend over production to the entire supply chain, such as to logistics and warehousing. Hence, this will lead to improvements and stabilization across the entire planning process. An illustrative example was given by the Klei et al. (2017): "A leading specialty-chemical company went a step further at one of its main plants: it used advanced analytics to model its production process to a new level of accuracy, and then used the model to provide detailed, real-time guidance through a specially designed app for the plant's operators on how to adjust process parameters to optimize performance. Just one month into the implementation, output at the plant—already the company's most profitable—increased by over 30 percent and yields increased by six percentage points, thus saving on raw materials, while energy consumption fell 26 percent". More detailed overview of the impact of the industry 4.0 on the entire supply chain of chemical companies was given by Thienen et at. (2019) at Deloitte. They demonstrated the power of the industry 4.0 on Improving business operations, particularly on improving the productivity and reducing risks. In this regard they Identify several transformational plays that include the key opportunities for companies to create with Industry 4.0 technologies, including:
    - Predictive asset management: As it was indicated in the porter's five forces analysis, the chemicals industry demands a great amount of assets. With this in mind, advanced technologies can help chemical companies refine their maintenance investments and enhance asset efficiency through predictive maintenance. This is done via interpreting the collected data from sensors on critical

equipment such as turbines, compressors, and extruders (Thienen et at., 2019). Advanced analytics tools can identify algorithms to predict and diagnose possible breakdowns, then smart equipment can inform plant operators about required maintenance, potential breakdowns, or about the necessity to order parts, this is not necessarily limited to data within a single production site, while it can extend to similar data collected from equipment installed in different sites, then it can be compared, and used for predictive maintenance (Thienen et at., 2019).

- Safety management: It is not necessary to cite any literature or bring in a quote from the participants of this study to freely say that chemical companies should give a particular attention to the safety inside and outside the production site borders, during the entire supply chain. It's worthwhile to mention that the traditional safety measures include monitoring and examining of the samples, whilst connected technologies help companies to constantly monitor products and equipment (Thienen et at., 2019). An illustrative example based on Al-Saffar and al. (2012) was pointed: ""smart" (piezoelectric composite) paints can sense mechanical vibrations or other changes such as corrosion or cracks in a chemical tank and inform the operators, reducing production risks."
- Production simulation: As already mentioned, it was pointed by the only participant who mentioned Industry 4.0, that Chemo B.V is already using 3D visualization. According to Thienen et at., (2019), chemical companies are more and more using 3D visualization and virtual reality for training purposes, as well for the maintenance staff. As an example, the Siemens' Immersive Training Simulator was brought up by Thienen et at., (2019), apparently this technology provides trainees the virtual reality to "walk" around the plant, to live and handle different situations, while the instructor gets the opportunity to evaluate the trainee performance without taking any risks.
- Supply chain planning: Thienen et at., (2019) suggest that Industry 4.0 assists chemicals companies plan a better supply chain in two manners:
    - First, by helping chemical companies sense demand patterns, thereby align their supply chain and production accordingly (Sniderman et al., 2016)
    - Second, by helping in improving visibility of the supply chain while reducing operational risks via sensors and connected systems, such as by using satellite monitoring devices fitted with GPS on railcars to monitor and control logistic conditions while tracking the location (Thienen et at., 2019). This visibility due to direct and non-stop interaction between the railcar and the supplier can ensure a more accurate supply chain planning at the same time increasing the safety of the transport of materials, particularly, hazardous chemicals. This example one more time stresses what was mentioned by Siegfried Dais (Partner of the Robert Bosch Industrietreuhand KG) in 2013 during a discussion between Executives at Robert Bosch and McKinsey experts devoted to technology-driven changes that promise to trigger a new industrial revolution. Dais indicated that the company that operates in industry 4.0 does not restrict to boundaries of individual factory, while it interconnects multiple players that are aiming to a single objective. For instance, in the given example the following players are involved: the transport operator, sensor provider, satellite network operator, technology provider for data storage on the cloud, and analytics provider for data analysis and visualizations (Thienen et at., 2019).

2. Impact on sales and marketing: Here the opportunity lies in digital-enabled initiatives in marketing and sales, where Klei et al. (2017) see a potential of 2-4 percentage points increase in the industry's average ROS against potential of 3-5 percentage points increase in the average ROS of specialty chemicals. Among the digital initiatives in marketing and sales they name (1) applying advanced-analytics-enabled pricing

systems, (2) generating growth opportunities from data, (3) and using algorithms to predict individual-customer churns while suggesting remediations to apply for sales personnel. An illustrative example was given: "A large specialty-chemical company used advanced analytics to reset prices for hundreds of thousands of product-customer combinations in seven core countries, based on individual risk and willingness to pay. By combining analytics, capability building, and change management, the company was able to achieve price increases of 3 to 7 percent, compared to 1 percent increases in previous years". Beside the digital initiatives, Klei et al. (2017) foresee the significance of customer experience and digital go-to-market channels. For instance, they indicate that nowadays B2B buyers prefer digital channels: "Our latest proprietary research shows that 85 percent of B2B chemical purchasers would prefer digital channels when reordering a product rather than interacting with a salesperson. Combining a digital channel with process digitization will create an improved customer experience, while lowering cost to serve" (This perspective will be discussed more in details in Social foresight section).

3. Impact on research and development: Klei et al. (2017) also anticipate the significant contribution of digital to the research and development by faster creating higher-value-added, higher-margin products, namely in specialty chemicals. With emerging technologies, they assume that chemical companies will have an opportunity to develop and adjust molecules that offer more value. They will have as well the chance to simulate experiments by employing advanced analytics and machine learning, they will be able to consistently optimize formulations for performance and costs by using the predictive force of digital, they will be able to use information available from past experiments, finally, they will have the chance to find out the optimal resource allocation in order to enhance the performance of R&D. According to Klei et al. (2017), some of the pointed practices are already accepted in the pharmaceutical industry while they weren't affordable for chemical companies, what is anticipated to change due to more affordable computing.

Extra: Impact on the environment: All the above mentioned, besides having impact on the performance of the company it is enabling companies to operate in a more sustainable manner. In particular, with the help of scientific advancement and technology companies are able to consume resources more efficient.

4.1.1.2 Social Foresight:

in the technology foresight section, we saw how technology is affecting and will affect factories, now in this section changes and customs in the lifestyle of the business buyer, factors that may affect the decision making or the future needs of Chemo B. V's potential customer, have been studied.

4.1.1.2.1 Empowered Business Buyer due to the internet:

In the first place as a transmission from the previous section, technology foresight, it is appropriate to evaluate the impact the most available technology, the internet, had and will further have on the business buyers. For this purpose, approaches demonstrated in recent years by academic researchers, marketing agencies, or consulting firms have been identified. Particularly, it has been suggested that **nowadays':**

- **Sales are done mostly by buyers' initiative:** If before, the business sales began by the visit of a salesperson to the buying company, or by a telephone call. Due to internet, the sales are more and more being done by buyers' initiative. Research conducted by HubSpot (An, 2016) made clear that 80% of business buyers just contact the seller company after taking the initiative of searching.
- **B2B purchase is not a one-person purchase, rather a group effort:** a survey conducted by IDC (2014) showed that the number of people involved in a large purchase increased from five in 2010 to seven in 2012. Another study from CEB (2013) found that in a B2B purchase in average 5.4

people are involved, while according to a more recent study it seems that people involved in the purchasing decision have further increased during the last 5 years, as per Gold (2017) the number of individuals involved range nowadays from 7 to 20 people.

- **There are high levels of diversity of people involved in purchase:** 75% of the respondents of the CEB (2013) study reported people involved with wide variety of roles, teams, and locations. It is confusing how this tendency on one hand makes the power more dispersed and decentralized; while making it hard to reach consensus decisions because of conflict of goals and interests of these diversified stakeholders.
- **The increase of choices to solve a certain problem has in its turn created greater anxiety**, especially within certain industries (Gold, 2017). Namely, Gold (2017) mentions that in 2011, there were only such 150 marketing technology solutions against more than 4,000 marketing technology vendors in 2017 and assumes that the antidote for this anxiety is being more research, more assurances and greater reliance on group decision making.
- **Buyers are much more informed about the alternatives, without (with postponed) direct personal contacts with any salesperson**. The fact that buyers are taking the lead was shown in a study, where almost 60% of front-line sales representative acknowledged buyers are less dependent on sales during the buying process compared to just 2-3 years ago (An, 2016).
- **Business buyers are mostly brand agnostic when searching for a solution**. If before the salesperson was the gateway to the knowledge, nowadays, according to relatively old insights from Google (Snyder & Hilal, 2015), 71% of B2B researchers start their research with a generic search, that means they look for product options and solutions first, and not a specific brand.
- **Business buyers continue to carefully and thoroughly research potential purchases.** For instance, almost half of those surveyed by DemandGen (2017) reported that their purchase cycle is longer than the prior year. One key reason for this goes back to buyers conducting more and more in-depth ROI analysis (32%), with 11% increase from 2015 to 2016 (DemandGen, 2017) and the number of people involved in the B2B buying process is larger, meaning more information is required along with more time to review (Erskine, 2017). Namely, in 2015 on average, B2B researchers did 12 searches prior to engaging on a specific brand's website (Snyder & Hilal, 2015).
- **Buying process is a continuous journey with no distinct phases and with two-way interaction**, since overwhelming amount of information available (Court et al., 2009; Reed, 2017), it is no more necessarily the linear process with the traditional funnel, which goes from one phase to the next, whose timing and flow control the vendor: First by building awareness, second, by driving interest, and then by creating desire, which finally leads to action (Reed, 2017; Ara, 2014).
- **Business buyers use multi channels throughout their buying journey:** On average, six different sales and marketing channels are used, such as they might refer to the seller's website, seller's blog, news and articles, offline research, an infographic, video and/or review sites (Gold, 2017). Particularly, 75% of business buyers used more sources to research and evaluate their purchases than they did a year ago (DemandGen, 2017).
- **Business buyer's journey may be completed before they reach out to a salesperson,** for instance, according to a Forrester survey (2015), this applies to as much as 74% of situations. This fact makes companies under growing pressure to shift resources and embrace rapidly advancing technologies in order to support digital relationships pre- and post-sale (Mertz, 2018).

- **Content is crucial:** Internet and technologies are only mediators by which companies deliver their message, "the content". According to the findings of DemandGen survey on business buyers (2017), half indicated relying more on content than they did a year ago, whereas 75% said the winning vendor's content had a significant impact on their buying decisions, whilst 89% said: "winning vendors provided content that made it easier to show ROI and/or build a business case for the purchase". What concerns the type, business buyers appreciated the most as a help to make a purchasing decision,
    - **In 2015:** White papers (82%), Webinars (78%), Case studies (73%), E-books (67%), Infographics (66%), Blog posts (66%), Third-party/Analyst reports (62%), Video/Motion graphics (47%) (DemandGen, 2016).
    - **In 2016:** Third-party/Analyst reports (77%), Case studies (72%), White papers (69%), Webinars (62%), E-books (54%), Video/Motion graphics (45%), Interactive presentations (43%), Infographics (39%) (DemandGen, 2016).
- Comparing the two successive years data, it becomes evident the shift toward user stories and testimonials, more appraisal of shorter and more visual content such as video/motion graphics (45%) and interactive presentations (43%) (DemandGen, 2016). Thus, It shows one more time how business buyers are becoming more and more sophisticated in their independent research with floating preference of the type of content.
- **B2B professionals are not only learning about products, brands but also sharing their own experiences about the brand they had experience with, with day by day growing networks:** For illustration, independent from age, 75% of business buyers use social media to make purchasing decisions revealed an IDC study from 2014. This is not surprising, given that these buyers are after all consumers and they are also increasingly connected to one another. Another data from Influitive (2016) assert that 84% of business buyers start the purchasing process with a referral from trusted peers. Buyers are sharing pictures or self-made tutorials of their purchases probably mostly in industry-specific groups and forums which make it easier than ever to connect to people from the same sector (Law, 2015) or on LinkedIn. On the other hand, Video is actually becoming a vital part of research, according to Snyder & Hilal (2015), 70% of buyers use video in their research process. Half are watching 30 minutes or more videos, while 20% watch an hour or more. According to the same insights videos that explain product features are among the top viewed ones, followed by how-to and professional video reviews. As per Almquist (2018), a Forrester survey (2017) more generally indicates that the digital natives prefer precise information, often in visual formats. However according to him although digital natives have brought their consumer habits to the B2B world, older buyers are adopting these habits too. One thing is obvious, there is a strong desire for content that educates and informs, rather than sells (Erskine, 2017). The proof is to seen in the 2016 report of DemandGen, when 93% want content that has less of a sales pitch.
- **Business buyer may exert extra power due to alliances:** Cooperative strategy literature demonstrated the power that businesses can gain from internet by forming cooperative alliances, by leveraging their collective strength to negotiate for better deals and lower prices from their suppliers (Chang et al., 2012; Griffith & Pol, 1994; Hult et al., 2007; Mudambi & Aggarwal, 2003; Lim, 2017). Thus, the Internet potentially has also augmented the opportunity to find business alliances.

Briefly, Due to the internet business buyers are more informed than ever, particularly in some industries they can easily compare the offers making the whole selling process more competitive. There are more people involved in the buying decision, they take longer time to make a purchase, they even cooperate with industrial peers, they care more for the right content, when they invite the seller, they will have already formed a strong opinion about many aspects of the value expected from a vendor. Thus, nowadays it is crucial for vendors to create their online content constantly. Many B2B sellers lag on these activities, choosing to invest more in their sales forces than in their online presence (Almquist, 2018). Moreover, given that digital natives are the majority of today's business buyers and that when they meet the seller, they already have searched the functional and reputational aspects of the vendor, vendors are enforced to deliver the proposed value in a way that the young professionals expect. Researchers from Santa Clara University found that this group respond favorably to salespeople who evoke feelings of trust, compatibility, and connectedness, in contrast to buyers 50 and older who focus more on business benefits and deliverables (Almquist, 2018). Thus, the complexity of business buyer journey is continuing to increase (DemandGen, 2017; Lemon & Verhoef, 2016). This means that no matter how much internet and information have simplified things, it continues to make the real process more and more complex for both buyers and sellers and it has not achieved yet to substitute the sales personnel, especially when it comes to guide buyers and offer personalized solutions, in the contrary, it has given the seller more opportunities, such as to lower cost of sales or to improve its relations with buyers and to share best practices and encourage cross-customer learning, for instance, via forums, blogs, and webinars.

4.1.1.2.2 Higher demand for sustainability:

I believe lot will agree that besides technology, sustainability, is a very common topic at the moment, together with technology it could definitely be considered force that is driving changes in manufacturing and consumption. As a participant indicated: *"I think there is a lot of push in the market towards bio, and it is good, maybe since I work in chemical industry I try to fight against it little bit [:D :D] but i think not all argument are fully justified and I agree with it"*. This new era of sustainability is touching every industry, from banking to clothing to education. Independent from the size, companies are under the pressure of consumers and governments to be reactive and proactive in their sustainability strategy (Nielsen, 2018). What concerns the chemical companies, per (Van Kranenburg et al., 2016), one of the most notable challenges that European chemical companies are currently facing is how to become more sustainable − in an economically feasible manner. However, to support this idea, viewpoints raised by the participants were considered accompanied by a review of reports concerning the changes in consumer behavior and demand, and the current state and future expectations of sustainability.

It's no secret that with the economic growth more and more people are feeling the effects of pollution on their "skin", this is resulting in more and more adjustments in the consumer behavior towards themselves and the environment. On the other hand, the bigger the impact of pollution, the more governments are depending on companies to support and drive their sustainability initiatives (Nielsen, 2018). Thus, if before it was only institutional pressure put on companies to act sustainably, today, with the growing societal awareness the sustainability is impulse by three influencers, governments and institutions; companies; and consumers, who constantly reacting to this space are asking for more sustainable products. As it was reported by a Nielsen report (2018).: "Driven in part by consumers, governments, corporations and the growing visible effects of pollution, sustainability initiatives are becoming more ubiquitous, more aggressive, and more expected. Looking for a better lifestyle, consumers are searching for options that are healthier for them and for their homes". To better illustrate the aforementioned, below is presented some

initiatives that have been taken by European leaders for a better environment and some facts that reflect the crucialness of sustainability for consumers. What concerns the sustainability initiative that have been taken by some companies, particularly competitors of Chemo B.V, will be presented in the next section: Strategic Competition Analysis.

European government initiatives:
In 2016 European leaders endorsed mid to long-term sustainability objectives with actions to take to achieve those objectives. Such objectives are:

- ➔ The cutting of EU greenhouse gas emissions in the transport sector by 60% by 2050 compared to 2016 level, and that's by cutting down the use of 'conventionally fueled' cars in urban transport to half of 2016 level by 2030; by phasing them out of cities by 2050 and by achieving carbon dioxide free city logistics in major urban centers by 2030 (SWD, 2016)
- ➔ Increasing the EU road safety while halving European road deaths by 50 % by 2020 compared to the 2016 level. To achieve this a package of road safety measures were issued including standards for, vehicle safety and infrastructure safety. Considering that each year, around 25,000 people lose their lives on EU roads. (SWOV, 2018).
- ➔ Achieving the three goals of climate and Energy Policy Framework for 2030: At least 40% cuts in greenhouse gas emissions (from 1990 levels), at least 27% share for renewable energy and at least 27% improvement in energy efficiency (SWD, 2016).

Consumer behavior towards sustainability:
Business buyer facts:
According to a Mordor intelligence[1] report conducted in 2018 for period (2018-2023), because of the increasing demand for bio-based products and sustainable solutions, along with changes in regulations, different new biosurfactants are emerging as replacements for petroleum-based products. What in its turn, together with the growth of crude oil prices, is leading to the increase of the demand for oleochemicals (Ihsmarkit, 2017). A participant has highlighted the importance of substituting crude oil base material with plant oil base material by saying: *"[now with PCo] we go to vegetable based raw materials palm oil as a base, instead of crude oil, and that's where we see a movement now in products that shift to us towards that direction. Of course you have to stay aligned with what market is asking, so you see for example a shift to vegetable base, if we don't follow that in the end, we will lose our market share, so we have to every now and then change something in our portfolio to stay aligned with the market".* This perspective was not only that of internal participants, while the external participant expressed similar opinion when highlighted: *"I think it is very good position Chemo B.V has, because of these vegetables based raw materials…. The synthetic alcohols, acids, solvents, etc. which are coming from refineries from producers like Sasol etc., who also are raw materials for Chemo B.V these are more into difficulties because it is very hard to approach the market with these kinds of products. Because the demanding is more into green products, green chemistry, you know the green products".* Moreover, in the same report (Mordor intelligence, 2018) it was pointed out that since most of the natural feedstock-based surfactants are derived from oleochemicals, the growth of the oleochemicals market is anticipated to drive the market for bio-based surfactants during the forecasted period (2018-2023).

[1] Market Intelligence and Advisory Firm

However, at the moment of the investigations, it seemed that the sustainability choices of Chemo B.V are mostly driven by regulations rather than by the own initiative to become sustainable. A participant expressed: *"Sometimes legislation can create that customers move away from us, because they say your competitors is creating the same product which does not have this 1-2% side effects that is present in your products. That happens. There is softener in plastic toys or so, that keeps the plastic it doesn't become brittle (...) there is small amount of this intermediate present in our product, and then the customers say that I can buy it without that's small amount of intermediate and we move away from you and that's partly also because customer is forced by legislation to move to something else", "We still make non alfino based products, we know that these are also under discussion on environmental and toxic aspects, I think if you would come here 5 years from now that we might be out of that business almost completely, that is partly based on legislation".* In addition, when a participant was asked whether he sees difference what market is asking now and 2 years earlier, he reacted as follows: *" I wouldn't see, I wouldn't say that there is a lot of difference it is a lot what I already indicated legislation driven and that certain products are abandoned, I already indicated about this registration of products, this Reach registration in Europe that you have to register, one of the results are that more components are indicated maybe toxic for the environment or toxic for people, actually that they force the industry to find alternatives"* another participant had almost the same standpoint when was asked a similar question: "you are working already in this industry lots of years, did you notice that customers are looking more to green products even if I think green is more expensive and they are price sensitive?" he stated: *"Yeees yeees sometimes, if the law forces to do it, then they are obliged to use these kinds of green materials".*

Hence, these opinions set the perfect stage to find out whether companies should only be driven by legislation or be more spontaneously sustainable, for that purpose, next step is dedicated to find out what is the consumers' perspective regarding sustainability.

Consumer facts:

In 2018 a Nielsen global consumer survey reported many interesting insights regarding consumer perceptions and expectation of sustainable living. The findings included but was not limited to the following:

1. 81% of all respondents stated that it's crucial that companies participate in improving the environment. This 81% was distributed almost equally between genders and different generations.
2. Consumers conscientiousness is not limited to their demand against companies to change. Whilst, 73% of global respondents stated that they would definitely or probably make adjustments in their consumption habits for a better environment.
3. 46% of consumers are ready to forgo a brand as long as a product has sustainable attributes they're searching. This fact can be considered an opportunity for non-name brands.
4. Nevertheless, consumers weight their choice of sustainability by its convenience, price and awareness. Particularly, they link their readiness to pay higher than the average for the sweet spot of "healthy for me and healthy for the world" products, to the following top factors:
    1) With high-quality/safety standards, which often were associated with strong sustainability practices such as organic, antibiotic free, hormone free- 49%
    2) Organic -41%
    3) Made with sustainable materials- 38%
    4) Deliver on socially responsible claims- 30%

One might argue saying that the consumer facts are irrelevant to the target of Chemo B.V, since Chemo B.V's targets are business buyers while this report is not concerned solely to business buyers. However, if nowadays the end customer is ready to pay more for sustainable products, than shouldn't the target customer of Chemo B.V be able to offer its customers sustainable products? Here, it is worth mentioning that it is right that Chemo B.V do not directly offer final products to consumers, nevertheless its substances make part of supply chain of the end products. In this regard, it is fully justified to suggest that this force of change is relevant for Chemo B.V as a chemical company, in particular a surfactant manufacturer, when the practice to assess the sustainability of a product like a surfactant it is taken into account its entire life-cycle, from the raw material used to the final disposal (CESIO, n.d). It is known that surfactants can be made from both natural renewable feedstock (e.g. palm kernel oil) or (and) synthetic feedstock (fossil fuel from crude oil refining and petrochemical processing) (CESIO, n.d). Nevertheless, it should not be claimed that a surfactant is sustainable just because it is produced with bio raw material, because all the life-cycle should be considered, even before the acquisition of the raw material into a given production site. For instance, natural feedstocks have other sustainability aspects to take into consideration, such as, clearing of natural forest. Whereas some surfactants that leave a positive sustainability impact on product, such as, a low carbon footprint, can be produced only by using synthetic raw materials (CESIO, n.d). In this regard, it is worth mentioning that the assessment of surfactant sustainability is not limited to the eco-relevance of the surfactant itself but also to its impact on the end-to-end value chains where it is used (CESIO, n.d). Given that a surfactant may play a key role to make an application more sustainable by promoting process efficiency and the use of fewer overall resources, be it energy, water or other materials, (e.g.: in laundry detergents, smarter surfactants allow dirt to be removed at lower washing temperatures, this way reducing energy and fuel consumption, or in foam created by surfactants added in shampoos and liquid soaps enable the easy rinsing with minimum amount of water) even sometimes by reducing the level of more hazardous components needed to achieve the same functionality (e.g.: surfactants in the household cleaning have played a key role in making cleaning easier, with greater hygiene, appearance and protection of the surfaces cleaned and by reducing the requirement for more hazardous chemicals)(CESIO, n.d).

> *"Sustainability has become an increasingly influential driver in determining the future viability of surfactant markets".*
>
> CESIO (the European Committee of Organic Surfactants and their Intermediates)

Hence, it could be assumed that at the moment there is no single pathway for assessing the sustainability of a surfactant. This could be assessed not only with the sustainability of the raw material used but also with the positive sustainability impact it leaves on the product (CESIO, n.d). For instance, according to CESIO, around 50% of surfactants in Europe contain at least one constituent from a renewable feedstock. Yet, apparently, we can't consider 50% of surfactant produced in Europe sustainable. Now that we have an idea about the current state of sustainability and consumer perception of it, as indicated before, here will follow the expectations distinguished regarding the future of sustainability.

I think it's safe to assume that in the coming decade chemical companies will have to give a greater attention to sustainability and here are some expectations that together contributed to this assumption:

1. According to the information revealed on CESIO website, sustainability matters will continue to be addressed by cooperation among governments, scientific community, and companies, what will have influence the surfactant industry to make sustainability through continuous innovation and

through more intelligent, tailor-made surfactant solutions. A similar opinion was raised by Nielsen (2018), stating that "Specific sustainability will shift to personalized sustainability". Associating this with technology, Nielsen (2018) states that buyers will be able with technology to find out the exact ingredients they need. Which accordingly, put more pressure on companies to process and interpret more data, and to communicate with consumer appropriately.

2. As a result of digitalization, accelerated globalization and higher demand for circular economy, Guertzgen (2017) believes that customer and material proximity, intellectual property, or technology know-how will likely no longer be sufficient to secure a sustainable competitive advantage for companies in the chemical industry, rather there will be more chemical companies, built around topics such as "circular economy". Something that will expand beyond their traditional value chain to start competing as an entire or larger ecosystem of companies that might seek to localization of operations and reconfigured supply chains in order to share risk and to add technological capabilities (Herrmann et al., 2019; Guertzgen, 2017).
3. Moreover, there is likelihood for chemicals companies to develop business models which are more customer-centric and that focus on selling business outcomes of product rather than the product itself (Herrmann et al., 2019; Guertzgen, 2017).
4. According to the report of Nielsen (2018), sustainable companies will grow in influence, consumers and governments will reward companies that are undertaking sustainability challenges, and companies will have more than ever political and cultural influence.
5. Understanding the consumers and their expectations of sustainability will continue to be essential. For instance, by 2021, Nielsen (2018) expects sustainably shoppers in the United States to spend up to $150 billion in sustainable Fast-Moving Consumer Goods against $128,5 billion spent in 2018 and against 107,3 billion spent in 2014.
6. Based on a survey conducted by PwC among CEOs (2019), the coming decade is likely for chemical industry to face in general increasing pressure on a range of sustainability measures. Nevertheless, for some time there will still be room for opportunity for companies to demonstrate that they are part of the solution, rather than the problem. Thus, there is and will be fair opportunity to show that innovation, rather than regulation, can dictate the future.

4.1.1.3 Strategic Competition Analysis:

This part of analysis is dedicated to identifying the visible initiatives and perceivable plans of competitors and the strategies they are willing to employ. for this purpose, observing websites and news pages of some market players, was sufficient to understand the initiatives or the mindset of companies.

Initiatives of Competitors:

Interestingly, the main competitors' initiatives turn around implementing technology or acting more sustainably. Below are some initiatives detected:

Initiatives related to technology:

1. BASF has already enabled mass customization without human involvement. For instance, it has completely automated the production of liquid soaps at its smart pilot plant in Kaiserslautern. Once a user places an order for a customized soap, the radio-frequency identification tags attached to the soap containers inform the equipment on the production line via wireless network connections

about the desired composition of the soap and packaging (Alessi, 2014, as cited in Thienen et at., 2019)

2. BASF has cooperated with third parties to introduce online control of complex batch processes. The advantage of connected systems and advanced analytics according to Seda, BASF project lead, is: "the ability to produce a product within narrow quality specification limits, and at the same time, to achieve maximal efficiency in energy and cycle / batch production time because the process control follows the optimal process trajectory at each time," Hence, this contribute to increase reactor productivity while decreasing the energy consumption for heating and cooling of the reactor (BASF, 2015, as cited in Thienen et at., 2019)
3. BASF and AkzoNobel, two big market players, have been deploying a predictive analytics approach. BASF by combining its historical data with other available economic data, is able to forecast demand and responsive scheduling in order to achieve capacity optimization. The forecasting model considers external factors such as seasonal effects, macroeconomic data for customer industries, regulatory changes, and internal factors such as its own strategies such as expansion, mergers and acquisitions. With this model, BASF can adapt both internal and external changes when planning production (Blackburn et al., 2015, as cited in Thienen et at., 2019). Whereas, AkzoNobel, being relatively on the downstream of the chemicals' value chain, as paints and performance coatings provider for both business and consumers, can relatively easier forecast demand, given their proximity to end customers (Thienen et at., 2019) for example, It has planned since 2013 to use data from retail outlets in order to reduce operational risks associated with out-of-demand paints, prevent costs associated with inventory turnover and satisfy customers. As said EMEA Planning Director at AkzoNobel: "Using daily retailer data with demand sensing enables us to predict their orders. The ability to sense shifts in demand and quickly respond helps us meet our key goals of lowering stock while improving customer service" (Businesswire author, 2013).
4. Another example of technology used by chemical companies in order to improve the maintenance and safety is application of drones equipped with cameras. For instance, for monitoring and inspecting hard reachable or dangerous locations in the plant The Dow chemicals, a specialty chemicals manufacturer, traditionally used ropes, ladders, and bucket trucks. Now, It's been already a while that the company is using drones to inspect locations such as elevated pipelines, power lines, tanks, and especially flare stacks which temperatures could exceed 2,000 degrees Celsius, and with manual inspection methods require the plant to be temporarily shut down (Federal Aviation Administration, 2015; Everts & Davenport, 2016 as cited in Thienen et at., 2019) whereas, drones equipped with cameras can capture high-resolution images, while a variety of sensors can capture much more information than the human eye (Thienen et at., 2019). In short, as spokeswoman from The Dow chemicals, R. Schikorra said: "This [drones equipped with cameras] will improve the safety and efficiency of inspections and plant operations" (Griggs, 2015).

Initiatives related to sustainability:

Some chemical companies are already voluntarily targeting the opportunity of potential revenue stream stemming from sustainability. Some projects to impact positively the environment are being undertaken. For instance:

1. BASF has been developing high-performance polymers to replace metal parts and cut down vehicle weight (Herrmann et al., 2019).

2. Kao has been able to reduce plastic use in packaging by 93,100 tons in 2018 by promoting the refills and replacing packaging (Kao.com, 2019)
3. Borealis, another chemical company is using data mining and modeling to develop dynamic target values for the energy consumption of the plant—accounting for factors such as the current conditions of the plant, outside temperature, aging of the catalysts, etc. (Thienen et at., 2019).
4. While, Clariant has launched in 2017 a renewable, label-free surfactants in hand dishwashing liquid detergents based on European-sourced sunflower oil & glucose, and came to address challenges such as irritant labelling, non-tropical ingredient sourcing, and achieve comparable performance to traditional surfactants (Nehlsen, 2017).

Strategic plans of competitors:

In addition to the above mentioned, a glance at the most frequently named and most communicative competitors' global websites immediately gives the impression of companies with focus areas related to sustainability (environmental, safety, corporate), innovation, and technology.

For instance, on the home page of **BASF**, there were 4 core topics named: "Smart Energy: How to power earth sustainably, Food: How to feed a growing population, Urban Living: Forging tomorrow's megacities, and Digitalization: Human vs. machine". Moreover, in the menu bar, in the category "Who we are" there are the following sub-categories: "Organization", "Strategy", "Sustainability", "Innovation", "Digitalization", "Core Topics", and "History". Where for example "Digitalization" has the following sub-sub-categories: "Smart Manufacturing", "Smart Supply Chain", "Smart Innovations", "Digital Business Models", and "Startups". Whilst, the "Sustainability" sub-category contains, for instance, a sub-sub-category "Employees & Society" which is dedicated to corporate social responsibility issues, such as to the security, safety, health management, working conditions, employees' diversity, corporate volunteering, etc. Furthermore, BASF's strategy was identified on its global website, which is: "To be the world's leading chemical company for our customers, we will grow profitably and add value to society. This is how we create chemistry for a sustainable future". Furthermore, BASF was transparent when it came to strategic action areas to reach the strategy and goals, it was written on the website: "We want to strengthen our performance in **innovation** and in **operations** as the leading chemical producer and plant operator, leverage **digital** ways of working across the entire company, and integrate **sustainability** more deeply into our business decisions. We want to strengthen our passion for our customers in all **employees**. We aim to strengthen our **portfolio** and further develop our organization to better meet customer needs using the power of our Verbund integration[2]".

On the other hand, on the website of **AkzoNobel**, there was a long list of key topics mentioned, the entire list is presented below to illustrate the intensity of topics related to the focus areas mentioned before, the following are the key topics: "100% renewable energy by 2050", "Carbon neutral by 2050", "Circular economy", "Diversity", "Eco-premium solutions", "Eco-systems and biodiversity", "Ethical animal testing", "Fair competition", "Genetically modified crops", "Human Cities", "Human rights", "Innovation", "Lifecycle assessment", "Management of hazardous substances", "Nanomaterials", "Product stewardship", "Public and private partnerships", "Resource efficiency", "Safety", "Sustainability", "Sustainable

[2] per BASF website: "In our Verbund, we intelligently connect our production plants and technologies to efficiently use resources and leverage our expertise.

shipping", "Taxation", "UN Sustainable Development Goals", "Zero tolerance approach to modern slavery". Moreover, these topics are clickable presenting more details or the plan of actions of AkzoNobel regarding a specific topic, for instance, clicking on "100% renewable energy by 2050", it is described that in 2017, AkzoNobel has committed to increasing the sustainability agenda with the goal of using 100% renewable energy by 2050 against the current 40% share of renewable energy. It was added: "At AkzoNobel, sustainability is a driver for innovation, new technologies, new partnerships, and new service models, all of which will ultimately lead to market transition. We are also involved in several sustainability partnerships, which includes sourcing energy from two new wind parks in the Netherlands".

What concerns **Clariant**, also this specialty chemical company is focused on similar topics. Particularly, on the menu bar, it has dedicated categories for sustainability and innovation. Moreover, investigating the latest media releases & events section on Clariant.com, it was revealed that per 25 April 2019 the latest 3 news were dedicated to 1) Corporate social responsibility and innovation, with article title: "Clariant fights malaria with new dual-action anti-mosquito masterbatch" 2) Sustainability and innovation, with article title: "Clariant introduces solutions for a smarter and more sustainable world at Feiplastic" 3) Sustainability and innovation, with article title: "Clariant launches new tube & stopper package to serve Vietnam market", where in this article, it was specified that: "Durable, rigid tubes along with desiccant stoppers from Clariant offer a protection solution for breakable and moisture-sensitive pharmaceuticals and nutraceuticals".

Finally, it was identified that per 26 April 2019, 3 out of 5 most recent news on the website of **KAO** (specialty chemical producer), were dedicated to environmental, corporate responsibility and sustainability issues, beside the 2 investors related press releases (could also be considered corporate social responsibility related). Though, the most eye-catching news was the launch of ESG Strategy. On April 22, 2019, Kao Corporation, announced a new global ESG (Environmental, Social, and Governance) strategy, the Kirei (clean) Lifestyle Plan, to support consumer lifestyle changes and to integrate it as the foundation of business management. It was clarified: "A Kirei lifestyle means living a beautiful life inside and out, where making your own life clean and beautiful never compromises the beauty and cleanliness of the world around you. A Kirei lifestyle is enjoying today, with the peace of mind that those joys will be there tomorrow. It's the chance to express who you truly are, with the confidence that you are walking the right path. Even in the smallest, everyday moments. That's why at Kao, everything we do is in service of this lifestyle. It's why we do what is right, not what is easy. We put our innovation and imagination to the task of enriching lives by finding ways for people the world over to live the Kirei lifestyle." To deliver this vision of a Kirei Lifestyle for all, Kao has set three bold commitments supported by 19 actions to achieve by 2030: 1) "Make my every day more beautiful" by empowering at least 1 billion people by 2030 to enjoy more beautiful lives — greater cleanliness, easier aging, better health and confidence in self-expression; 2) "Make thoughtful choices for society" by ensuring that 100% of Kao brands make it easy for people to make small but meaningful choices that, together, will shape a more resilient and compassionate society; and 3) "Make the world healthier and cleaner" by promising that 100% of Kao products will leave a full life-cycle environmental footprint that science says our natural world can safely absorb. In particular, examples of the Kirei leadership actions includes releasing at least 10 transformative sustainable product innovations by 2030; and Zero Waste such as eliminating non-recyclable waste at factories and offices.

4.1.2 Macro environment foresight - PEEST landscapes:

In this section the political, economic, ecological, societal and technological landscapes, that may strongly affect the chemical industry structure, were investigated at a global scale. For that purpose, besides the external empirical evidence, the insights gained from the interviews, in particular as a response to the questions (1) What are the top 3 risks Chemo B.V face right now and (2)What are the most important risks/opportunities you think Chemo B.V or the industry in general will face in the future? were taken into consideration as extra verification.

4.1.2.1 Political:

Chemical companies should consider their attitude toward political obstacles which may arise out of the sudden due to for instance trade wars, withdrawal or joining from or to union, etc.

At the moment, some political parameters which may affect operations of Chemo B.V. are:

- Trade regulations and policies, such as import and export restrictions that may occur after Brexit. Namely, according to a PwC report conducted by Velthuijsen and Bernard (2015), seven EU countries were among the top-10 trading partners of the UK in 2015 (The Netherlands being the UK's second largest EU trading partner, in terms of both volume and proportion of exports and imports). Moreover, in 2015, about 44% of UK export was headed to the EU Member States, while some 53% of the total import came from EU countries (Velthuijsen and Bernard, 2015). Among western European countries, Belgium, the Netherlands and Germany export significantly more to the UK than they import from the UK, which makes particularly those countries more vulnerable to Brexit. Nevertheless, Velthuijsen and Bernard (2015) assume that the damage associated to Post-Brexit outcomes with its substantial impact on the cost of trade between the UK and the rest of the EU will not be limited to the latter's, but will encounter both sides. Thus, it is inevitable that countries that have profound economic ties to the UK will most likely suffer from immediate economic impact when the UK leaves the EU. According to Velthuijsen and Bernard (2015), the countries that would endure the highest losses to GDP are Ireland, the Netherlands, and Belgium.

4.1.2.2 Economical

- Fluctuation in the currency market. Although most of Chemo B.V operations are held within the European market, its supply chain initiates from Malaysia, from Palm plantations, and if there is a high EUR/MYR (Malaysian ringgit) exchange rate fluctuation it would undoubtedly affect the company.
- Changing prices of raw materials. Chemo B.V largely depends on the procurement of two groups of raw materials, extracted either from natural oils or crude oil. Thus, the fluctuating (growing) prices of both sorts of raw material may have a tremendous effect. In particular, the prices of crude oil have seen a sharp increase since 2016 and still seems growing, since the average closing price for 2018 has been $64.90 a barrel while the World Bank forecasts an average of $67 a barrel by end of 2019. On the other hand, the increasing number of regulations rising as a result of high pollution levels in Asia will certainly have an impact on global supply chains of chemical industries. Considering, most of the raw material with a natural oil base is originated from Asia. For instance, China has just lately introduced a draft low, under the scope of the Ministry of Ecology and Environment, covering the environmental risk assessment and control of new and existing chemical substances. According to Li (2019), this draft, which was referred to as the 'real' China-REACH, will affect companies manufacturing, processing and using, importing and exporting chemicals in and from China. As a result, this wave of regulations may spread in Asia, affecting the supply chain of Chemo B.V. Although the increasing price of raw materials

were considered as a potential risk for Chemo B.V operations, only the increasing price of crude oil based raw material was taken into account, the respondents mentioned: *" the availability and the pricing of EO of the major raw material is a risk", "Mostly general it is the availability of raw materials and availability of products and also what is pricing of these raw materials will be (...) Syntetic alcohols (ethilinoxide) are going to be more expensive because most of the customers are willing to use vegetable based materials. More biodegradable, more biological and sustainable, etc. etc. it is going more to that direction"*

- Moreover, it is not wise to always separate the macro factors since they may highly correlate. For example, cconomic and political factors may intensively interact with each other. In Particular, sometimes abrupt leadership changes are accompanied with economic changes. For example, it wasn't predicted that Donald Trump would win the US presidential elections of 2016, yet he did! And there were tremendous results to this winning, globally. One of those was the economic sanctions on Iran. The sanctions are targeted to the heart of Iran's economy, to oil, and will affect other countries and industries, and may lead to global oil price disruption.

4.1.2.3 Ecological:

- Considering the growing concerns regarding the environmental impact of emissions, scarcity of key raw materials, and waste, as previously mentioned, it is likely that most industries will come under increasing pressure or under regulatory requirements on a range of sustainability measures or circular economy. Regarding the demand for sustainability, the external participant occasionally brought up the notion that there is a need for sustainable products, he said: *"The synthetic alcohols, acids, solvents, etc. (...) these are more into difficulties because it is very hard to approach the market with these kinds of products. Because the demanding is more into green products, green chemistry, you know the green products"* in another context he added: *"Synthetic alcohols (EO) are going to be more expensive because most of the customers are willing to use vegetable based materials: more biodegradable, more biological and sustainable, etc. etc. it is going more to that direction"*. while others saw this fact accompanied with regulation as a risk, some listed this as a risk: *"future requirements for green chemistry in the world", "but also energy efficiency, we are investing in that also but to a certain extent and I think it will become more important. And we sure see that also in our products, it has to be biodegradable", "increasing regulatory requests", "I think now there have also quite some changes in biodegradable products already, but for some for example nonyl-phenol-ethoxylates, we know that in 2 or 3 years it's not allowed anymore. But we still have quite a volume because the customers don't have an alternative. So, they still buy it"*.
- Moreover, most of the participants considered the scarcity and supply regulation of some raw materials as a potential risk the industry will face. For instance, all the participants in a way brought up that chemical companies will face the risk of the scarcity of EO and PO as a result of regulations limiting the transportation, a participant illustrated how already some geographical areas are affected by this limitation, although he thought that Chemo B.V still has a good geographical position, he said: *" You see for example in UK almost no usage of that [EO] anymore, I think there is 1 company who still produces it and uses it. There is no transport anymore over the sea. You see in south of Italy they don't use it anymore only in the north because of the long distance they don't want to make. I think here we are quite good because we are still close to the industry of Germany where they still produce this raw material"* Nevertheless, other participants thought that these limitations affect Chemo B.V as well, they said: *"And what I think is a big risk is the EO supply. So, if there will be a railway accident or*

anything like that, we cannot get it delivered anymore. And we have an issue", "the availability and the pricing of EO of the major raw material is a risk. And I know we have also in the market, Shell has a problem with C13 alcohol and is also a large very important raw material for our products also for the PC product. So, availability and legislation. With legislation permits, like you said in the Netherlands like you are not allowed to ship EO or you like some components you are not allowed to use", "I mentioned another one if you look at the future, there would come a time that they say you are no longer allowed to ship EO by road car, then we don't have a supply of raw material and we have a real big issue. our sister company now they are close to EO plants so they can remain up on running, but they would kill part of our business", "Mostly general it is the availability of raw materials and availability of products and also what is pricing of these raw materials will be", " EO and PO supply", " the other risk we have is that something which is in our mind already in a longer time and to the near future that certain raw materials we get by rail car, and there is a lot of debate on transporting nasty chemicals on the road or on the railroad and if it's not possible any more than we don't get our raw materials than we cannot run our operations and that is a certain risk", " volatility of raw materials",

- In this sense, with the adoption of the United Nations 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals, a new pathway has been created regarding actions on the environment. For the sake of illustration the following sub-goals were distinguished: "By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity" , "By 2030, achieve the sustainable management and efficient use of natural resources", "By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse" ("Sustainable Development Goals", 2017). Nevertheless, I assume that the attention to the activities of the chemical industry will be much intense than other industries, since it is known to be a non-ecofriendly industry. For instance, a recent analysis by the International Energy Agency (IEA) shows that petrochemicals are becoming the largest driver of global oil consumption. Where, they are considered to account for more than a third of the growth in oil demand up until 2030, and even almost the half until 2050, higher than the demand of trucks, aviation and shipping for oil (Herrmann et al., 2019).

4.1.2.4 Societal

- Product and production safety. Two participants considered the safety as one of the most important concerns the industry will face, since if an incident happens it cost more than if a company had initially invested in safety, moreover, it affects the reputation negatively, leads to increase in unplanned expenses, loses in business and even sometimes human loses. A participant commented: *"it is always when you talk about coasts for safety and environment on the other hand if there is an incident it coasts even more, so also we want to operate safe because in some cases bad advertisement can still be an advertisement, but that's not the case for our industry. We had this incident in 2012 we lost some business due to the fact that you are not any more reliable to your customers and that your reactors is broken and you cannot supply for 6 months, your customer can not wait for 6 months and say ok then I will start my business also again after 6 months, they go to competitors".* In order to demonstrate how an incident can internally create more expenses, he added: *"we had an incident here on site in 2012, there was (also) in western part of the Netherlands there was a big fire in chemical industry plant and that has also forced hat the government since so have come much more strict, developed new legislation or tightened the boundaries in which you are able to operate, so that creates extra coast so we have to*

spend more time on storage of chemicals in a safer way in a EEEEven safer way I would say, we had to change our process a little bit to a less risky experimental situation, but on the other hand it slows down our process a little bit so, in the end, it costs extra money. so, we have to bring in a lot of new tools that are related to safety and environment, we don't have anything against it of course but if you don't balance that over the world. Then It could create, in a certain area, you are no longer competitive anymore". The other participant indicated the risk of having incidents when the company does not operate with contracts, he said: *"I think another big risk is maybe we or a competitor would have an incident again, last time we had an incident here they shut down our main reactor for 3 months. We lost quite some customers but at that time it appeared that quite some customers didn't have a backup yet. So, we regain quite some business. But that a real risk for us. We cannot afford another incident. Because everything we make is, we don't have a contract with most of the customers…"*

When speaking of industrial safety, it would be irrational to bring up examples from other industries when we are dealing with one of the most safety demanding industries: The chemical industry. The safety is a concern and a trendy topic, governments, and other institutions are working to create a safer working and living environment. Even, the consumer is aware of the multi-dimensional effort of safety, where according to a survey of public opinion by the European Commission in 2013, EU citizens think that industry and public authorities should ensure the safe use of chemical substances in the EU (Echa, 2016). An example, that demonstrates the importance of this issue, is the challenging ambition of Safety Delta Netherlands, which is a leading organization that acts as a hub in the network of governments, companies in the (petro-)chemical industry and related sectors, universities, knowledge and educational institutions, where the parties involved will work together for the goal of The Netherlands having the safest (petro-)chemical industry in the world by 2030 (Romein,2018).

- Customized products/ solution providers. With the existence of the internet and behavioral targeting, consumers and business buyers are searching for more personalized approaches. According to the market research conducted it seems chemicals companies, most likely due to the specifics of their operations and sophisticated customer needs, have shifted from being product sellers to being solution providers. Nevertheless, to drive sustainability initiatives, chemicals companies will have to collaborate more with their customers (Herrmann et al., 2019).
- Corporate sustainability. Although corporate social responsibility was the trend of the first decade of the 21st century, companies should be involved in corporate social responsibility (CSR) programs as a dimension of their sustainable acting. Along the lines, per Awang and Jusoff (2009) CSR provides the utmost contribution to the corporate reputation of the firm itself. Thus, companies should not neglect it if they want to be perceived positively by their stakeholders.

  To examine whether Chemo B.V is engaged in CSR program, participants were questioned. Turned out that in contrast to PC employees, who are more informed about The group's CSR program, the majority of Chemo B.V employees are not well informed whether there is an official CSR program within Chemo B.V., however it seems they expect to be one. Answering to the question: "Does Chemo B.V engage in social responsibility programs?", Participants give such comments: *"Don't know exactly, but I assume yes", "I think yes", "Yes but I'm not sure which one"*. On the other hand, some of the participants mentioned few Chemo B.V related social responsibilities, other spoke about CSR program related the group, where they referred to PC or the group with "They". Two internal participants pointed out the RSPO certification*. For example, one of them said: "*We are what they call RSPO certified, so responsible care palm oil user"*. (*There is in an ever-urgent need and growing global concern that commodities are produced without causing harm to the environment or society. RSPO certification is

an assurance to the customer that the standard of production is sustainable) Other two specified CSR program associated to neighbors, For example one of them said: *"We had a setup with the neighbors that we also had done a survey with them to how to work together what information do they need to feel safe, do they know what they have to do when there is an incident, how do they have to be informed, that was something which was a cooperation between the mayor of the city and the neighbors and the company here"*. A pure CSR program example was also given by a participant regarding the employees and Chemo B. V's initiatives, the participant said: *"Also the vitality program the health programs, we won a price for the vitality program, most vital company in [this province] last year. To keep the employees healthy all we have to work longer they have a lot of workshops for mountain biking for running"*. Whereas Head of Marketing & Product Management of PCo, gave a clearer description about The group's CSR program, saying: *"Chemo B.V has local initiatives. [The group] as a group has many social responsibility programs that are presented on the website branded by [The group] Care focusing on Education, Community, Environment and Employee"*.

4.1.2.5 Technological

The following 4 main trends and drivers were identified to be mentioned in the technology landscape overview.

- **Artificial intelligence (AI).** AI simply said, is a program that learns over time as it processes huge amounts of data that human is incapable of interpreting, and the more AI is fed a sort of data, the better it gets at predicting outcomes (Zoldan, 2018).

  We are daily interacting with AI technology in our life, though, for example, recurrent use of Natural Language Generation, a common form of AI, which is used to deliver massive information from data into natural text, such applications are chatbots that are being used as a substitute to customer support to customers' answers to basic questions with computer-generated human-readable text, or through behavioral targeting tools that use machine learning algorithms. What concerns the industrial applications of AI technology, the influence of AI technology is apparent arguably in every industry, for example in manufacturing sites, robots are being used in production, other tools are being used to monitor equipment and predict potential failures, driverless cars are being used to transfer goods. In investment companies, AI is being used to foresee stock market changes, etc. Nevertheless, Because of the huge opportunity lying behind AI technology, companies such as Google, Apple, Microsoft, Amazon are continuing to intensively invest in R&D to develop AI technology (Olson, 2018). For instance, according to the overview of Novoseltseva (2018), researchers are actively exploring how AI technology that detects human emotion can be used with different purposes, such as to treat depression, or to improve customer service and online shopping. Thus, it is estimated that the impact of AI will outperform in the coming years.
- **Internet of things (IoT).** IoT is inseparable from AI. After all, to interpret immense data, first you need to capture it. Thus, IoT is the process through which data is collected to drive AI and predictive analytics. Networked machinery with for instance communicative sensors, software, not only process what is happening to them (e.g. recognize overheating) but also can transmit that data to a central location (Zokdan, 2018) where the role of machine learning (AI) begins. IoT is rapidly touching almost every aspect of our daily life, such as sensor equipped traffic lights are allowing to improve traffic flows, smart thermostats that with AI are automatically setting home temperature to one's preferred temperature, even refrigerators are shopping online for groceries. What concerns the industrial applications of IoT, in distribution for instance it can help in managing inventories. In manufacturing

sites, for instance, engineers can monitor pipe temperatures and tank levels through IoT equipment, which for instance, shows different colors without having to touch the equipment. This reduces the risk of engineers getting hurt on the job (Transcendent, 2018). The possibilities are arguably endless when it comes to how IoT together with AI can help industries to perform better. The future promises even more. For example, it is predicted that in 2020 the IoT spending in discrete manufacturing will account to 40 billion U.S. dollars worldwide against 10 billion U.S. dollars spent in 2015 (Statista, 2018).

- **Big Data**. Analyzing Big data helps companies identify new opportunities and make smarter business decisions, have higher performance and get more satisfied customers. Moreover, Big Data allows companies to test new ideas and compare it with previous state, this way helping companies to increase the efficiency of their production process (Novoseltseva, 2018). There is a remarkable increase in data gathering and data investigating. It is enough to just browse through recruitment website to see how massively companies are searching for data analysts and data scientists. According to tens of sources, such as LinkedIn or Indeed, Data scientist is the most promising and trending job of 2019. Data gathering has been rapidly growing in the last few years, probably due to the simplicity and cheapness of the process. Nevertheless, it is predictable that Big data will gain a more significant ground, as a result of growth of IoT devices. Which will in its turn drive industries to adopt machine-learning technologies that can give meaning to these data and bring back relevant, useful information (Olson, 2018).
- **Virtual reality (VR).** To say it simply, Virtual reality is the technology that allows people to experience the "what it feels like to". Already, brands are putting this technology into work. For example, real estate company Redfin has adopted VR to sell homes. Redfin allows people to get "inside" the house without ever setting foot on the property (Athwal, 2017, as cited in Accenture, 2018). That provides an emotional connection that no other marketing tactic has been able to deliver. Thus, there are endless applications of VR for marketing (Olenski, 2018). Except for the marketing implication, companies are using VR to train their employees. As it was pointed out in the Accenture technology vision 2018, VR eliminates the distance not just between the trainer and the trainee, but also between a concept and the practice. By placing people directly into the setting that trainers envisage, VR delivers immediate experience with usually challenging or potentially dangerous situations, without real-world risk. For example, Walmart used VR to prepare the employees for the chaos of Black Friday, which is the biggest shopping day of America (Rao, 2017; as cited in Accenture, 2018).

To sum up, it is worthwhile to mention that the identified four technologies are interrelated and have something in common- All four create for organizations opportunities to act economically and socially sustainable.

4.2 The scope of analysis and time horizon

For the purpose of this study, the foresight activities were carried out
for a short to midterm, where most foresight is due to 2030 counter the identifies current trends.
at meso level, where, the main area of foresight activities was dedicated sometimes to the entire chemical industry while other times to the surfactants segment.

DISCUSSION & RECOMMENDATION

The presented findings couldn't find strong evidence of insufficiency to rely on one perspective while it revealed that ignoring future or emerging trends when formulating a strategy could lead to unreliable conclusion. To elaborate this idea and find out if we get similar strategies based on different perspectives, in this section based on the main findings basic strategies will be formulated either based on RBV or MBV, followed by a strategy based on the conceptual framework.

Beforehand, it's worth mentioning that findings from the first dimension of the framework, the parent company, will be used to assess the degree of alliance between the final subsidiary strategy and the values and goals related to subsidiary of the parent company, with the purpose of preventing implementation of a strategy which contradicts the expectations and values of the parent company.

Strategy based on the resource-based interrogation of the subsidiary:

Findings from the current goals, values, and availability/lack of certain resources/capabilities of Chemo B.V hint that Chemo B.V in the mid-term, should operate as a quality specialty producer with capability of multi-step production in one site, offering huge portfolio, with focus on alkoxylation, however with gradual adding of vegetarian based products into the portfolio. Moreover, Chemo B.V should consider enlarging the sales team to conquer new customers. Considering that the results demonstrated that Chemo B. V's goals, values, resources, and capabilities correspond to:

- **Non-commodity but flexible producer** (Plant in a non-industrial area; equipment not efficient and specialized for one purpose usage; batch reactors with capacity ranging from 1 to 25 MT; Pilot plant scaling from 200 to 1000L; storage tanks ranging between 5-150 m^3; short response time; etc.)
- **Custom manufacturer and (multi-step) specialty producer** (Multi-step chemical facilities; 20-25 continuous and multi-purpose batch reactors; 6 different purposes production buildings; ranging reaction conditions; broad permit of chemicals; supplier-buyer relationship with 165 suppliers; huge portfolio of surfactants; R&D center with a project leader assigned for each customer project; over 90 years of experience with excellent and broad know-how of the available technologies; competence in combining technologies, production assets and raw materials).
- **A quality service provider** (Good reputation, and extra reputation transferred from PCo; Dutch business culture- a highly organized society with attention to punctuality, and direct and honest communicators; on time in full delivery is a goal; unique knowledge; proactive safety and quality; single-ownership of some value chains- which results in traceable products, superior quality, and on-time delivery).
  However, Custom manufacturing and quality service demand for a larger salesforce. This was also recognized as a resource limitation by the participants, thus, Chemo B.V should consider enlarging the sales team to get more insights from the market and generate more leads.
- **Proficiency in alkoxylation** (3 states of art reactors for alkoxylation; limitation of not being integrated via pipeline with an ethylene oxide plant, which is acceptable as long as the transportation of EO/PO with the railway is permitted and as long as Chemo B.V has a stronger negotiating power as a result of combined purchase of EO/PO with sister companies).
- **A better set-up to work with raw material extracted from vegetarian oil** as a result of being acquired by PCo.

Strategy based solely on the market-based examination:

Since the threat of new entrants is low, overcoming the other threats would imply operating in an attractive industry. Results of Porter's five forces analysis hint that Chemo B.V should operate as a custom specialty surfactants producer and quality service provider while retaining a large portfolio and gradually adding

green products into it. Considering that the result demonstrated that Chemo B.V operates in an environment where there is:

- **Strong to moderate bargaining power of suppliers**: in order to disempower the suppliers, it is recommended to diversify the suppliers for non-dominate raw materials, this way ensuring the wide range of supplier-buyer relations, yet to have a strong negotiating power for the initial raw materials, it is recommended either keep joining the purchasing power of sister companies or keep insourcing some raw materials such as fatty acids and fatty alcohols.
- **Strong to moderate bargaining power of buyers:** in order to neutralize the power of buyers, Chemo B.V should adopt key account management program, which can help retaining the existing big customers, improving the business relations with the same company either as its supplier or buyer, and conquering new opportunities by enabling salesforce to concentrate on this task, what on its turn would decrease the strong force distributors execute on Chemo B.V. Moreover, since the buyer was identified to be price sensitive, the key management program would add additional value by providing personal customer care which would decrease the price sensitivity.
- **Moderate threat of substitute products due to more eco-friendly substitutes:** Since it was identified that the sole threatening substitutes were those that are more environmentally friendly, it is propitious to gradually increase the number of vegetarian oil-based products in the portfolio.
- **Strong rivalry among existing competitors:** Since the rivalry among existing competitors is high due to factors such as low switching costs and slow growth of the target market, the key account management program would allow the retention of the existing customers and allow the sales force to concentrate on defining new leads and conquering them.

Since the industry was characterized being reputation sensitive, it's worth mentioning that key account management itself is reputation. Nevertheless, since the industry was also identified to be media sensitive, and there is a positive correlation between the reputation and media sensitivity, where according to the findings the latter is more sensitive to safety and sustainability issues, Chemo B.V should dedicate more resources to act as sustainable as possible both inside and outside the plant borders. In this regard the key account management program should include educative agenda to guide the buyers toward sustainable buying and acting.

Strategy orientation for 2020-2030 based on the conceptual framework:

The separate findings from resource and capability analysis or industry analysis hinted to adopt more and more green products and to operate as a high-quality producer and service provider. However, there was no significant difference between the above two basic strategies. Hence, the test failed to demonstrate the necessity to base strategy on both RBV and MBV, yet it is still to see whether the strategy based on the entire finding will add any value. With that in mind, the following is the ten elements of strategy (Kraaijenbrink, 2015) filled with the insight from the entire findings and will be considered the compiler of the only strategy advised to be employed by Chemo B.V.

1. **Value Proposition:**

With the set-up of multiple technologies in one place and custom manufacturing capabilities, Chemo B.V is "the convenience store" for anyone around. A store where you can reach out to the seller easily and find or ask for all the necessary goods needed to survive.

This value proposition was deduced taking into consideration that Chemo B.V first off doesn't possess enough resources, such as equipment, that are efficient or specialized for one purpose usage. Moreover, Chemo B.V in a short-mid-term will face the challenge of having access to a great amount of core raw materials, such as EO and PO, because of the vulnerability of crude oil based material in general, because Chemo B.V doesn't have a pipeline integration with an EO plant, is not located in an industrial area, and the transportation of such hazardous materials are becoming more and more difficult, which all together set a discouraging base to solely rely on few products → commodity production. Hence, it was concluded that Chemo B.V doesn't have the right set up for commodity production, while, it has a strong heritage of

working with a broad range of raw materials and suppliers, moreover producing complicated, multistep surfactants with the ability to scale up the production efficiently. Furthermore, above the dispersed knowledge it already had, Chemo B.V has gained additional knowledge from the group after the acquisition. Hence, all the above mentioned already dictates an ideal set-up for a specialty production.

2. Values & Goals:

The aim is to identify and choose key accounts coherent with values and value proposition of Chemo B.V and provide them the necessary products (within the range of the group's capabilities) and services needed. Whereas, to ensure the growth, the goal is to gain and retain smaller customers with a focused portfolio, thus keeping the privilege of custom products to key accounts, while applying stewardship approach to smaller customers. What concerns the segmentation and portfolio choice for the focused portfolio, I believe that the data, as well as the chemical knowledge, was not sufficient to assess which markets offer the greatest potential and to recommend Chemo B.V of specific orientation, though it was identified that Chemo B.V processes three state of art batch production reactors special for alkoxylation and that in the midterm is committed to staying active in the coating market, and target resin and textile additives markets, which are the markets where Chemo B.V has a strong position. Thus, for a guaranteed zone, focused production, there is a necessity to apply disciplined portfolio management approach in order to assess the returns from current operations and incorporate them with identified drivers of changes, including sustainability and digitalization trends. However, given that at the moment of analysis there were discussions regarding the exchange of productions between sister companies, in the remainder of this paper, I will be using the wording "focus area" to refer to the focused batch production of Chemo B.V. To reach the goal and be the first choice of "the convenience store", based on the insights gained, I believe that Chemo B.V should focus on the following strategic key success areas:

- **People**

One of the main values of Chemo B.V is its employees, employees are the ones who have the knowledge and skills, they make the culture, they are the ones who bring all the stakeholders into a single point, through them Chemo B.V retains or gains new customers, they are the ones who facilitate customized and differentiated products and services. Despite all this, it was made clear that there is a lack of knowledge sharing culture, lack of human resources, employees remain in the company for long years which might be perceived as positive because the knowledge remains in the company, however, the low turnover of employees is not always favorable for the development of a company, it's sometimes risky, because when an employee of years leaves, a lot of knowledge leaves with them and because with the increase of the average age of employees there would come forward some consequences, such as less training, less simulation, tolerance towards problems, a siege mentality, etc. Hence, in order to face the mentioned risks and consequences, and address the weakness identified by participants- lack of external knowledge about demands and offers in the market- Chemo B.V is advised on one hand to hire new talents and with their help aim to position each market segment against apposite competitors and understand the gaps between the offers and demands. On the other hand, it is recommended to integrate knowledge sharing/gaining programs, and more intense employee engagement programs, for instance simply stimulate team dinners in order to provide the employees' opportunities to communicate together outside the daily office atmosphere and learn from each other not only about standard operations but also about trends, competitors, actualities, etc. Finally, to reach the goal as the chosen convenience store, it is important to stimulate the customer intimacy spirit of all employees.

- **Sustainability**

It is recommended in a short to long term to optimize the production that contributes to end-to-end sustainability. I believe Chemo B.V is in a good position to fuel ecological, social and economic sustainability. *Ecological sustainability,* for example by using sustainable raw materials or/and by offering solutions that are less harmful to the environment, such as surfactants for detergents completely free of

phosphate or/and by providing solutions that contribute to the sustainability of the end product or/and by participating more to circular economy and making part to ecosystems that seek greener supply chains and share risks (this practice is already by regulation in the chemical industry, such as through CLP regulation if a company supplies mixtures it should consider sharing information on the mixture and its components). *Social sustainability,* for instance, by providing internal-production-, and external-product-, maximal safety, which was recognized to cost more if isn't proactive and can have tremendous effects on the reputation. *Economic sustainability,* by promoting process efficiency and the reduction of the use of overall resources. It is worth mentioning that Chemo B.V has already dedicated noticeable resources to take the sustainability path, such initiatives were distinguished: wastewater treatment station, fire brigade with two fire engines, fire sprinkler system, special first aid room, emergency showers and eye washers, sustainable boiler plant. What concerns the future, after the acquisition Chemo B.V has gained a better position to act more sustainable, due to its backward integration to sustainable raw materials extracted from palm oil. On the other hand, we've seen that Chemo B.V faces a threat of substitutes due to more sustainable products; Chemo B.V customers are less price sensitive when the product has sustainable attributes; the industry is recognized to attract the media attention when it comes to either positive or negative sustainability and safety topics; the strategies of main competitors revolve around sustainability matters; the buyer is relatively brand agnostic if the product has a sustainable attribute, something that gives an edge to face the aggressive competition. Moreover, it was revealed that not only governments and institutions but also companies, consumer groups, and business buyers have taken remarkable sustainability initiatives and still there are plenty of sustainability programs set to achieve. Accordingly, one thing is obvious there is pressure exerted on the industry, be with regulations, by scarcity of resource or by the increasing demand of consumer for sustainable products. Furthermore, it was revealed that the continuous increases of (1) the price of crude oil (economic sanction of Iran) and (2) the demand for sustainable products or/and solutions for sustainable products are contributing to the augmenting demand for oleochemicals, what in its turn was predicted to drive the market for bio-based surfactants during 2018-2023. Hence, these conditions set reasonable argument for Chemo B.V to grab the opportunity, proactively address the increasing force of sustainability measures, and before the market becomes extremely crowded establish itself by expending the sustainable products' share in its portfolio over the non-sustainable ones and demonstrate that it is part of the solution to address the root cause of ecologic problems rather than the late remediation.

- **Technology**

Technology is evolving and digitalization is inevitable for 21st-century businesses. Technology is a great mean to stay ahead of the market and safeguard success, to be proactive in quality, safety and in understanding the gaps in the market, while discovering keys in order to anticipate future changes. There are a lot of technologies, yet, we have distinguished the most evolutionary technologies- artificial intelligence, Internet of things, big data and virtual reality. Thus, the possibilities are numerous and it is normal that digital will have a deeper implication on Chemo B.V, which has already taken initiatives. Such initiative are the integrations of SAP software, implementation of 3D visualization of new equipment, etc. Nevertheless, from a strategic point of view, there are fundamental aspects to consider before planning to fully embrace digital such as to find out the value pools expected from technology, which technologies meet those expectations and are those really necessary for Chemo B.V's case? which has the priority on a benefit-cost ratio? which improves both Chemo B.V processes and its customer experience? Hence the purpose of digitalization should not be an issue of embracing technology just for its attractiveness. Accordingly, with an attempt to give answers to the above questions, the following areas of digitalization applications have been distinguished: Batch production, logistic system, selling process (e-commerce), distributors ecosystem, safety and maintenance, demand forecasting, R&D, virtual reality, asset management. Although it is recommended in the long term (2050) to have a fully embraced digital infrastructure, for the short-mid-term it has been considered essential to have a digital selling process (e-commerce), a shared digital inventory system with distributors, as well as to invest in technologies for improved safety and maintenance, and in demand forecasting. *Digital selling process (e-commerce)*- we

have seen how the internet has changed the selling process, today's buyers prefer multi-digital channels and like to get quick information, immediate pricing, ability to compare products, and learn and share experiences. It isn't easy to provide those attributes, especially to a diversified group of decision makers, without an e-commerce platform and social existence, which together beside improving the processes and creating new opportunities (e.g. purchase alliances by customers, brand agnostic customers) contribute to a better purchasing experience. Hence it is recommended to have a "basic" e-commerce facility for the focus area products with assisting and visual content, as well as to have a more intense social existence, most importantly on LinkedIn. Moreover, it is vital to mention that, e-commerce creates the opportunity to collect data which allow more accurate demand forecasting, understanding the customer better, and responsive scheduling the production, in case where we have remarked that one of the weaknesses of Chemo B.V is the lack of market information. For this reason, demand forecasting tools were considered also a fundamental investment area. Additionally, it is recommended to create a shared digital integrated inventory system of focus area production with distributors, to provide them real-time and traceable ordering information while acquiring valuable information about them and their buyers. For instance, it is worthwhile to point out that the participant from the distributor company has highlighted the fact that customers are less price sensitive when the product is available and has constant prices. Furthermore, a priority has been given to invest in technologies which enhance safety and simplify maintenance, because as earlier mentioned, safety has been considered a core success factor for the industry preceded and followed by predictive maintenance. There have been identified numerous technologies that can contribute to constant monitoring, hence the enhancement of internal and external safety. Such technologies are for instance, drones equipped with cameras, different kind of sensors, devices fitted with GPS (especially important for hazardous material transportation), which all monitor and predict failures, in addition to generating data that could be shared in the group for further predictive maintenance. All the named technologies are interrelated and all together promote better processes, reduce risk and result in more satisfied buyers. Such as, safety is a result of constant and predictive maintenance, while predictive maintenance and asset management take place under advanced analytics, artificial intelligence, and the internet of things. Regarding technology for batch production/ automation, it is considered in short term redundant, because at first the goal of technology is to solve specific topics, such as use the reactors efficiently and reach the (current) full capacity. Likewise, although virtual reality contributes to safety for instance by allowing training without risks, yet it is considered unnecessary high investment at the moment.

3. **Organizational Climate:**

One of the main strengths of Chemo B.V is its Dutch organizational culture, which reflects reliability, transparency and honesty, while promoting flexibility and short communication lines ensuring the customer attractive working relations.

4. **Customers' Needs:**

Chemo B.V serves *either* the customers that are looking for flexibility by a personalized approach to their diversified needs of specialty chemicals, who know that without Chemo B.V they would have to go door by door to several companies to purchase in a longer period what they are looking for, or the customers who are looking for fast accessible products.

5. **Competition:**

To compare the offering of Chemo B.V with those of the competitors, it was assumed that the customers consider the following characteristics: quickly available, tailor-made, high-quality products as a result of years of experience and single ownership of some value chains, accompanied by high quality and personal service.

6. Resources & Competencies:

To say in short and with stranger eyes, the most valuable resources and competencies of Chemo B.V are considered to be the multiple technologies in one place, custom manufacturing capabilities and a set-up to face the strongest drivers of change.

7. Partners:

Chemo B.V has a lot of partners, all undoubtedly affect the end value of the firm, yet we have distinguished the distributors of Chemo B.V to play an essential role in delivering the value- fast, helpful, and flexible to small customers. Moreover, since Chemo B.V is positioned to fuel a circular economy and better environment, customers are considered partners and their collaboration is needed across the entire value chain with the purpose to deliver safer and more sustainable products. Here we can foresee that indeed, "Specific sustainability will shift to personalized sustainability".

8. Revenue Model:

To deliver the value proposition to the target customers, it is suggested that Chemo B.V implement an account-based strategy. With that in mind, it is recommended to integrate key account management program besides the sales force, e-commerce, and distributors system.

Key account program would offer key accounts a personalized and high-quality service. Key accounts enjoy the privilege of custom products and partnership relations. While *salesforce* would be responsible for bringing in new customers and retaining the customer base with an ambition of giving birth to new key accounts. *E-commerce*, as previously mentioned would facilitate the fast and standard ordering. *Distributors* were identified to add value with their post-sales service to small customers, where Chemo B.V was not able to cover with its resources, thus, this channel is considered to be essential for non-custom, focus-area products. Focus area of Chemo B.V should be configured according to possessed orders data of Chemo B.V, sustainability demands and differentiation of Chemo B.V from competitors and sister companies, such as it was identified that Chemo B.V is experienced in phosphation, quaternization technologies that are new for the group. Table 5 justifies the choice of the above-mentioned 2 revenue models with facts from the data.

Table 5: Justification of revenue model choice

Revenue models	Data
Key Account Program	Custom manufacturing capabilities, broad knowledge, and a wide portfolio
	Wide range of technologies in a single location with facilities of multistep production
	Equipment not efficient for one purpose usage
	A pilot plant- flexibility in volume
	Ability to work with wide range of raw materials
	Not integrated via pipeline to essential (hazardous) raw materials
	R&D center
	Short communication lines (flat organizational structure)
	Customer-centered service provider more than a producer
	Broad permit of chemicals
	Superior quality, reliable delivery (single ownership of value chain, Dutch organizational culture)
	Good reputation
	Difficulty to focus on one market resulting from lack of market knowledge
	Non-industrial area
	The volatility of some raw materials, in terms of scarcity or supply regulations even as a result of economic sanctions
	Rising of personalized sustainability as a result of collaboration
	Rising of business models that sell business outcome rather than the product itself

	A necessity for loyalty programs (High rivalry yielded from slow industry growth and low switching costs)
	A necessity for partnership relation rather than seller-buyer relation (The same company can be a supplier, a customer, and a competitor)
	Technology is enabling buyers to find the exact ingredients they need
	customers are less price sensitive when the surfactant is a specialty product, is freely available, is sustainable and is accompanied by post-purchase support
Focused-area: Online channels, distributors, existing sales force	Chemo B.V has brought new capabilities to the group, e.g phosphation, quaternization
	Several states of art reactors for alkoxylation
	The necessity to efficiently use the reactors and fill the plant
	Lack of human resources to generate leads
	Own railway connection- short to mid-term ability to access to hazardous raw materials
	The business buyer likes to take the initiatives
	The business buyer prefers online channels over the face to face meetings
	The business buyer is brand agnostic due to online channels
	The necessity to collect data and build key accounts
	Distributors add value to Chemo B.V products with post-sale service

Of course, it is easier said than done, an account-based program requires coordinating an ecosystem of all functions to deliver consistent personalized experiences to key accounts and to drive engagement for the long term. We have witnessed that Chemo B.V has the base in form of technology and knowledge to "serve" such accounts, it has entered into several exclusive supply agreements and has/has had several large customers who were not always considered as profitable business rather as risky business (since focusing with 24-30% of production on one customer was considered risky). However, with the acquisition, Chemo B.V got synergic marketing resources, which it can use until it establishes a dedicated marketing team. Thus, it is the time for sales, marketing, and the other teams to collaborate on serving the key accounts. Such as marketing can focus on generating more personalized content, R&D can collaborate to design more sustainable products, while key account managers direct and guide the accounts through intensified knowledge-sharing, organizing special training, demonstrating relevant cases, executive sponsorships, and intensive catch-ups in order to ensure the high-quality service and to reflect reliability. This way Chemo B.V becomes customer-centric rather than sales-driven and can secure a growing revenue stream. While to find the balance between commodity and specialty products, it is advised to have focused area products, thus it is recommended to refer to online channels, distributors' channel, and existing sales personnel and secure quick wins with scheduled production of focused area products meanwhile refine data for a long-term strategy in order to fuel key account program.

Speaking of data, undoubtedly, technology will create additional value to customers and increase the efficiency of the plant, nonetheless, there are certain areas that need attention by management to have a successful digital implementation. Particularly, it is required to upgrade the digital skills of the employees either by training or/and hiring new talents, in order to promote a digital culture that considers the advanced analytics as a key capability to be ahead of the market.

9. Cost Model:

It should be taken into consideration that besides the long-term advantages of a proper key account management program, having key accounts, costs the company additional services and additional human resources with special talent and skills. Moreover, just for instance, a change of key account contact's career could be detrimental and not always predictable. On the other hand, Chemo B.V will still be facing strong negotiating power of key buyers, however, the difference is that key buyers most likely will also be interested to stay the "spoiled" customers. In addition, the negotiating power of buyers is anticipated to weaken due to the multitude of sales channels and presence of focus area.

10. Trends & Uncertainties:

The chemical industry is an industry that carries out a lot of innovations, every day there is an innovation that might affect the entire value chain thus the precedent and following products in the chain, one day a surfactant can be the main components of a final product the next day it might be useless. Chemo B.V likely deals with such cases, that is the reason why the R&D center should be proactive, know the market, the trends, and stand ready for any changing regulations or trends particularly related to sustainability. Here also the key accounts play a valuable role to help Chemo B.V detecting such trends and emerging needs. An additional point to consider is the political obstacles that may occur such as after the withdrawal of countries (the United Kingdom) from the European Union, hence, it is preferable to concentrate the key account in Scandinavia, Benelux and Germany region.

Now that we have come to strategy for Chemo B.V, before adopting it there is an additional step that should be taken, it's assessing whether the above strategy is in coherence with that of PCo, if yes then it's ideal, if no, we should understand where do they conflict and try to find alternatives.

Looking back at findings related to PCo we can definitely say that Chemo B.V's new strategy is in accordance with PCo's mission & vision, values, and value proposition. Where both parties give particular emphasis to topics such as human resources, reliability, combined expertise, fitting solutions, professional honesty, openness, and sincerity; and where both strategies are aligned with quality, health, safety, and environmental standards. Furthermore, Chemo B.V with the above strategy is able to fulfill all the goals and expectations PCo had related to Chemo B.V in particular, with the proposed strategy and the revenue model, Chemo B.V will be able to have a focused batch production area different than what have sister companies. Moreover, with the sustainability in mind Chemo B.V is encouraged to increase vegetarian based solutions in the portfolio, what could be considered a mutually beneficial deal for Chemo B.V and PCo, where Chemo B.V gets cheaper and greener raw material with lower prices, while PCo moves down in the supply chain.

CONTRIBUTION TO THE THEORY

With the four-dimensional framework for subsidiary strategy orientation, there is the potential to make contributions to double streams of literature:

This thesis contributes to the scholarship of strategy when it presented in a systematic way different perspectives of strategy formulation yet offered a road map that could be implemented by any organization aiming to define its strategic orientation. Moreover, it attempted to provide a separate comparison between the results of the two interpretations, inside-out and outside-in. While, for the subsidiary management field, although the conceptual framework was heavily dependant on existing conceptions and subsumed different perspectives, it could be considered as a first of its kind built upon the complementarity between the resource-based view and market-based view developing and validating a new definition of pre-strategic analysis that points to the essentialness of another third view- foresight activities. Thus, the framework proposed here is a call to not only live in the past and in the moment but also to consider the future drivers of change while formulating a strategy. Beside the theoretical implication, the developed framework can be utilized by practitioners as a guide in finding the strategic orientation of subsidiaries while having the necessary ingredients to evaluate whether the achieved direction contradicts or is in alignment with that of parent company's, in the meantime not per se dictating the subsidiary to take the direction that the parent company envisages. On top of that, the same framework could be employed by non-subsidiaries by simply ignoring the dimension of the parent company.

CONCLUSION

With the growing number of subsidiaries due to vanishing trade boundaries and the globalization, there is an urgency to fill the literature gap associated with subsidiary management. The identification of the best road map for subsidiaries in order to revise their strategic orientation was recognized to be such a gap. To formulate strategy some authors state that the internal resources are the essential determinants of competitive advantage hence companies' future orientation indicators, while others consider industry factors and external market orientation as the fundamental determinants of firms' performance. On the other hand, third group of researchers considers that the deep understanding of the competitive environment, as well as the objective appreciation of resources, are inseparable precedents of a successful strategy. Although this study failed to prove whether it is wise or unwise to rely on a single approach when finding strategic orientation, it could establish the claim that it is indeed unwise to omit the critical thinking regarding drivers of change. Thus, this research gave me an opportunity to understand that in strategy identification process beyond the current internal and external indicators, it is essential to evaluate and perceive the trends and uncertainties on both micro and macro levels of the company. For instance, for the studied case, data from inside and outside analysis wasn't enough revealing to take the sustainability path or to realize the increasing demand for personal service, even further to perceive the extreme importance of technology in the chemical industry. Whilst, by means of the framework, it was straightforward to achieve a strategic direction believed to be safe of threats and uncertainties, that is shortly said to keep operating as a high quality specialty producer with fostering a key account management program with key success factors of customer choice as chemical convenience store, customer loyalty, and more and more sustainability, whilst, establishing data-driven multi-channel sales, to offer a standard production safely and easily accessible to customers. Moreover, we were able to assess whether the envisaged strategic direction is in alliance with that of the parent company, where in our case, it was perfectly in the alliance.

LIMITATIONS AND FUTURE RESEARCH

Despite the aforementioned contributions, I aware that this research may have some limitations. To begin with, it is plausible that the choice of the industry may have influenced the results obtained, given its complexity and the requirements of certain knowledge. Another major source of unreliability could be considered the insufficient resources to find out a more reliable positioning of Chemo B.V in the market, and to identify and analyze the main competitors or substitutes (especially when Chemo B.V has a very large portfolio of products), what could have been more favorable if there was conducted more than one customer interview. Another possible source of error might be the sample size, in addition to the fact that the average years of experience of participants in Chemo B.V was 23 years, what could account for their biased interrogation of Chemo B.V's resources due to potential personal affection to particular resources and processes. Moreover, we have witnessed that the separate findings from subsidiary analysis and industry analysis hinted to employ similar strategies, and this research failed to prove that the outside in and inside out perspectives complement each other, however a possible unintended bias should be taken into consideration, since the findings were the result of the interrogation of a single researcher, it is not reliable to assume that the two strategies were purely based on a single perspective and were not affected from the information learned during the remainder of the study, thus, I assume dissimilar evaluations would have arisen if the collection of data has been conducted by different researchers. Thus, further experimental studies are recommended to be conducted by preferable three different researchers each investigating one perspective to verify collectively the merit of this framework. Moreover, there isn't any doubt that companies should sooner or later take the sustainability path, nonetheless it is still not clear what is considered sustainable for the business buyer, is it really facing the regulations or satisfying the consumers? therefore, it is recommended to understand what are the sustainability indicators that appeal the most to the

customers of Chemo B.V in order to detect where to allocate more resources. Finally, in general, there is a strong need for strategic management research tailored to the specifics of subsidiaries, which more and more represent companies in the world. These firms should be facing challenges in finding their own way of management while doubting aligning it or not with that of parent companies. Consequently, they need empirically proven recommendations, whether to align or not their strategies with those of parent companies considering their particular characteristics. Although in this study, the alignment path was chosen, considering that the controlling interest, thereby the choice to sell or retain any subsidiary is in hands of the management of any parent company, and contradicting their expectations and beliefs might lead to an insecure situation, which most likely will end with a new acquisition. Hence, more empirical investigations in this field would improve the understanding of this dilemma, thereby would contribute to the viability of subsidiaries in the current turbulent business environment.

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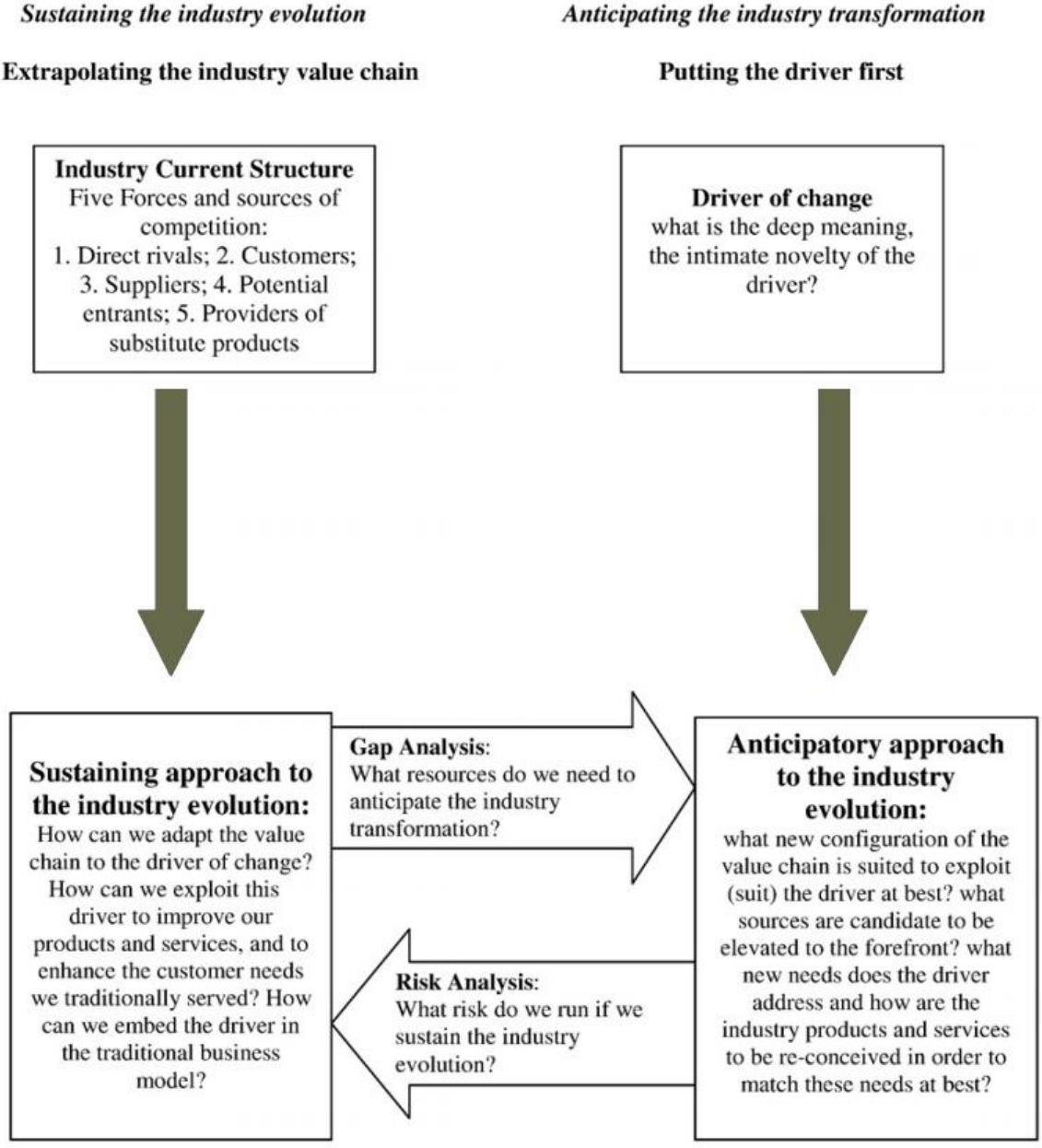
APPENDICES

Appendix 1: Anticipatory approach reproduced from Vecchiato and Roveda's (2010)

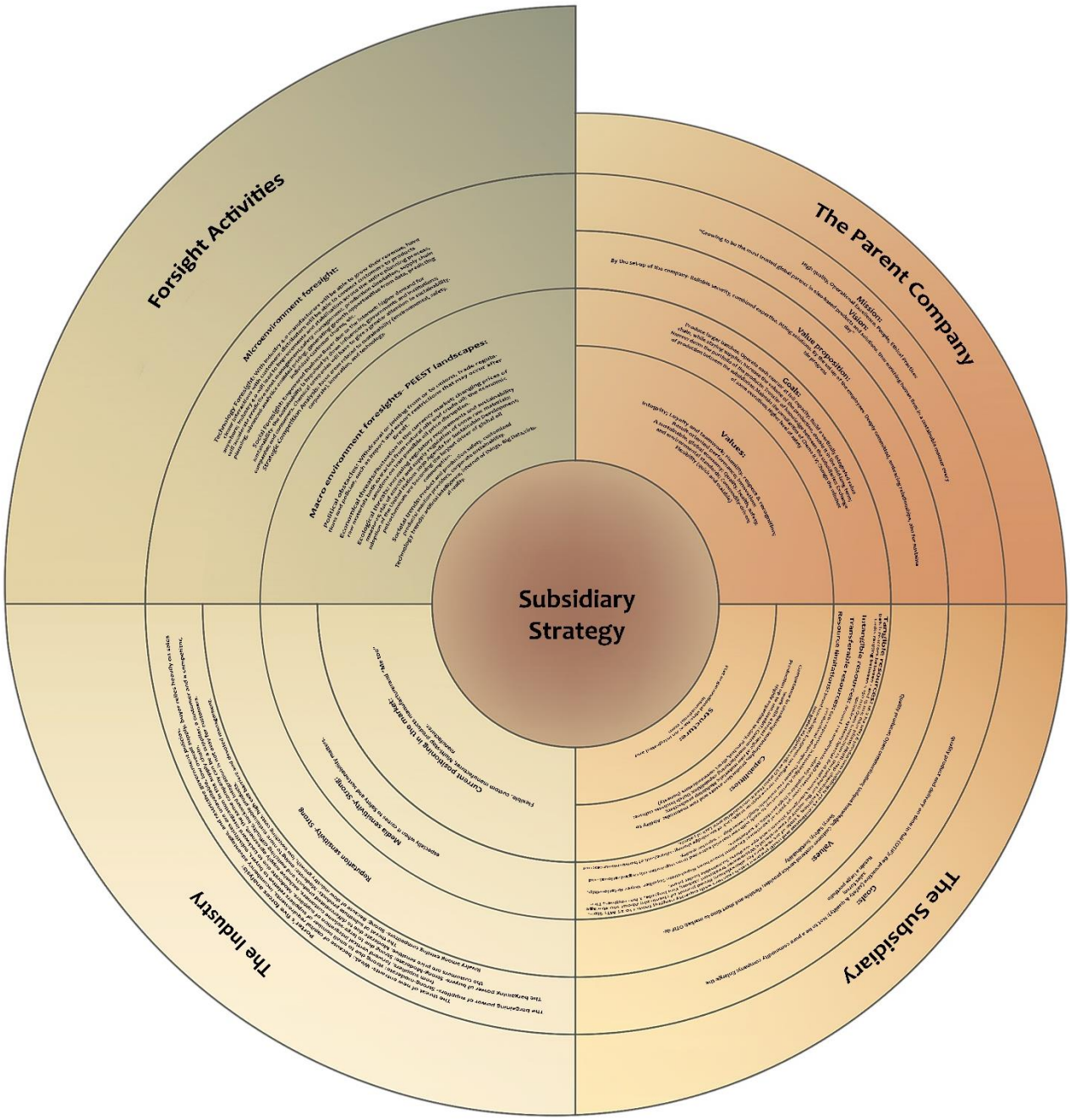


Appendix 2: The initial questionnaire used for the case study

Research Questionnaire

1. How long have you worked at Chemo B.V? Can you tell us about your role in and out the company?
2. Would you describe to us in short from your perspective Chemo B.V.
3. As now the company is in transformation phase, what do you think would be the most important step that Chemo B.V takes that would please the Parent company (PCo)?
4. Accordingly, can you think of Goals that PCo has related to Chemo B.V?
5. Are these Goals and Values in accordance with those of Chemo B.V?
6. On the other hand, would you describe shortly what are the Goals and values of Chemo B.V
7. What is the real problem Chemo B.V is solving for its customers?
8. What differentiates Chemo B.V from its competitors? And what is its biggest differentiation?
9. On the contrary, what are the vulnerable parts of Chemo B.V?
10. Could you think of resources that Chemo B.V has, which are simultaneously valuable, rare, inimitable, and non-substitutable.
11. In order of their exploitation, in your opinion, is the necessary attention given to those resources?
12. What are the future opportunities to better utilize the resources?
13. If there is one thing you could improve, change, or add to the resources, what would it be?
14. Do you think reputation of Chemo B.V is important factor for customers and suppliers? Currently is it a profitable asset that Chemo B.V has?
15. How would you describe Chemo B.V' role in the market?
16. How many influencing customers do you have? Could you consider the customers of Chemo B.V concentrated?
17. How is a target customer chosen in Chemo B.V? is there a segmentation approach?
18. Who are the competitors?
19. What barriers have you put in place to stave off the competition?
20. What are the industries barriers to entry?
21. Are there any other substitutes to Chemo B.V products? If yes are those cheaper?
22. How would you describe the relationship with the suppliers of Chemo B.V. Most of the time who has the bargaining power, Chemo B.V or the suppliers?
23. Are there any complementary products to those of Chemo B.V that you can think off?
24. Are there any specific legal, environmental or social issues that promote or obstruct specific productions?
25. What is the geographic scope of Chemo B.V for long and short terms?
26. As suggestions are there any products that should be excluded and/or included from the assortments?
27. Is the industry where Chemo B.V operates media sensitive? Or in contrary things that happen in the industry are not much illustrated by media
28. What are the top 3 risks Chemo B.V face right now?
29. What are the most important issues you think Chemo B.V or the industry in general will face in the future?
30. Does Chemo B.V engage in social responsibility programs?

Appendix 3: Framework filled with data from the case study



Appendix 4: The Strategy Sketch with 10 elements of strategy reproduced from Kraaijenbrink (2015)