

# MSc Final Report

Impact of Forward Vertical Integration (FVI) on current Customer relationship. A case study of North East Pharmaceutical Group (NEPG).

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# Chapter 1 Introduction

This introduction section introduces the pharmaceutical value chain and explains the current Chinese vitamin C powder industry. Then the case company is introduced, and the aim of forward vertical integration will be discussed. Finally, its influence on customer relationships will be discussed.

## 1.1 Pharmaceutical Value Chain

The pharmaceutical industry develops, produces, and markets drugs or pharmaceutical licensed for use as medications. Pharmaceutical are allowed to deal in generic or brand medications and medical devices. They are subject to a variety of laws and regulations regarding the patenting, testing and ensuring safety and marketing of drugs. In the pharmaceutical industry value chain (Figure 1), comprises of four main components, namely (a) manufacturing of the active pharmaceutical ingredients (APIs), (b) manufacturing of the end product (medicine), (c) distribution to the dispensing point such as pharmacy or wholesaler and (d) dispensing to the consumer (Aitken, 2016). He stated that there are two categories of manufacturing required for drug production: API manufacturers produce the raw ingredients which will be used in medicine; and the end product manufacturers which produce the finished dose form to be sold to the trading companies and consumed by the patient.

According to Cphi China ([www.cphi.com](http://www.cphi.com), accessed 29th May 2017), China is the world’s largest producer and exporter of active pharmaceutical ingredients (APIs) and it has the world’s second largest pharmaceutical market. In 2014, the global API market reached 130 billion dollars, with a compound annual growth rate (CAGR) of 7%, by which China covers 40% of global APIs production. It is believed that the Chinese API industry will develop more rapidly in the foreseeable future, which will rise to 180 billion dollars in 2020. However, most of the products are sold to the end product manufacturing companies and more than 70 times profit will be created by them (X. Su, personal communication, 06-09-2017). Currently there are five different types of vitamin C end product which include vitamin C chewable tablet, vitamin C effervescent tablet, vitamin C powder drink and vitamin C mixed tablets (with vitamin A and vitamin E, etc.) (NEPG Annual Report 2015/2016, 2016). Take the vitamin C chewable tablet for example, the raw vitamin C powder content is about 10% of the whole tablet but the price of the end is 10 times than the raw vitamin C powder.

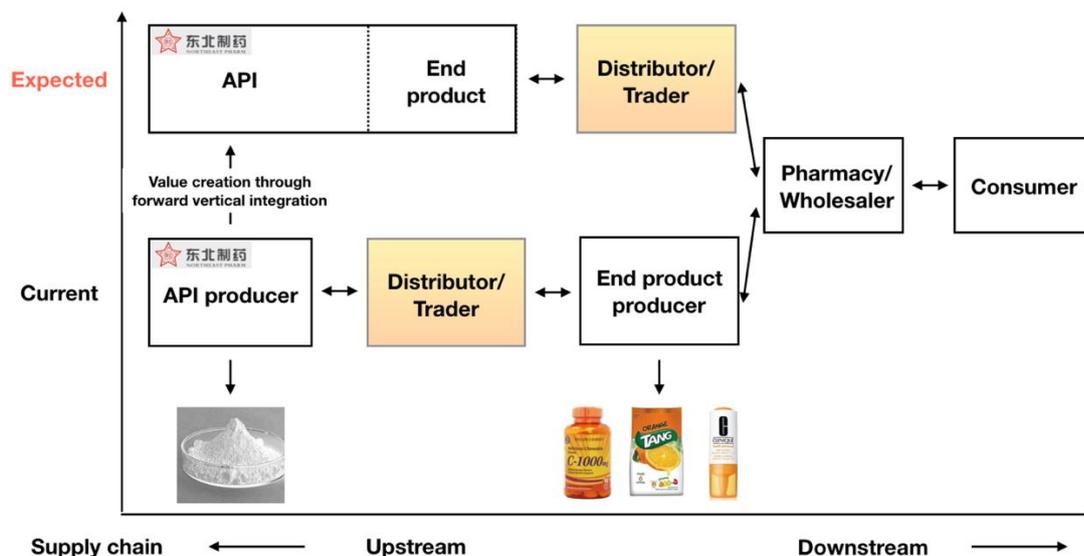


Figure 1 Illustration of the pharmaceutical value chain

## 1.2 Chinese Vitamin C Production and NEPG

Among all the Chinese APIs varieties, Chinese Vitamin C powder industry is a representative example. Chinese Vitamin C industry is one of the few Chinese APIs which has its own patent and pricing power. In 2015, global demand for Vitamin C stood at 120,000 tonnes and China managed to capture over 80% of the global market ([www.foodnavigator-asia.com](http://www.foodnavigator-asia.com), accessed 1st June 2017). There are five major Vitamin C production companies in the world, which are CSPC Pharmaceutical Group. Ltd, North China Pharmaceutical Company. Ltd, Northeast Pharmaceutical Group. Ltd (abbr. NEPG), Royal DSM (Jiangshan). Ltd and Shandong Ruby Pharmaceutical. Ltd. All, except for Royal DSM (Jiangshan). Ltd, which is a Dutch-Chinese joint venture enterprise, are from China. This is because the Chinese Vitamin C production has a relatively competitive advantage in low labor costs, next to advantages in high yield, and strong quality control processes.

NEPG is a Chinese state-owned pharmaceutical company with many years of experience, majoring in producing Active Pharmaceutical Ingredients (API). One of their best-selling product is Vitamin C powder, with annual production of 20,000 tonnes, which ranks the 2<sup>nd</sup> place in China (NEPG Annual Report 2015/2016, 2016). In China, the Vitamin C powder is exported mainly to Europe, it is also exported to South and North America, Japan, Korea, China and other countries in the world (NEPG Annual Report 2015/2016, 2016). According to the NEPG Annual Report, about 47% of its vitamin C powder customers are located in Europe, in which most of them are the distributors/trading companies. The western distributors/trading companies sell the vitamin C powder to the end product producers: Some of them also customize the raw vitamin C powder based on their customers' requirements. Then the end product producers further process the vitamin C powder to make the food, feed, food supplements, cosmetics and vitamin C drinks, etc. To date, the raw vitamin C powder as an API, its price shows a cyclical variation (NEPG Major Product Research Report, 2012). Different medical preparations (which are made to different concentrations) have different prices. Use vitamin C chewable tablets as an example, the price of 1-gram vitamin C powder is charged 325 times more in the tablet than just 1 gram of pure vitamin C powder. (X. Su, personal communication, 06-09-2017). If we calculate the extreme situation, the price of the vitamin C powder in the final product is charged 70 -600 times more than the raw Vitamin C powder. This added-value is mostly created by the western downstream customers who process the powder to the tablet. This situation is a prevalence in the Chinese Vitamin C powder industry, who is exported their product to the end product manufacturing company without adding value (NEPG Major Product Research Report, 2012). Among all the Chinese API industry, NEPG is just one example of the companies whose products are low value added. If NEPG continues to operate in a low value-added situation, the company will be unprofitable with the raw vitamin C powder production. In order to change the current situation, which by supporting the API manufacturing company to increase the bargaining power towards the generic from medicine producer. Also helping the company to capture more benefit within the market, forward vertical integrate was proposed by the company as a possible solution to this situation (NEPG Major Product Research Report, 2012).

## 1.3 Problem statement

In the pharmaceutical industry, Kubo (2011) stated that the most common type of vertical integration is backward vertical integration. This backward vertical integration has two possible causes, which are (1) "provide the company with early access to high quality active pharmaceutical ingredients and improve the profitability, in addition to further enhancing the R&D capabilities (Kubo, 2011; Karwal, 2006)" and (2) "avoid sourcing API from a competitor (Stafford, 2006, p.302). Karwal (2006) points out that "Many key API suppliers, especially from India, China and Eastern Europe, are moving up the value

chain and decreasing their supply activities, becoming direct competitors in finished form generics". However, there is a gap of analyzing the incentives of forward vertical integration in pharmaceutical industry and lack of empirical research of how this could successfully implement in an API manufacturing company.

To date, NEPG's Vitamin C powder production is in the upstream of the whole pharmaceutical value chain and it is low value-added. In order to improve Chinese Vitamin C industry's low value-added production and get more profit, value creation is necessary. One concrete manifestation of value creation is profit maximization (Jensen, 2001). According to Bowman & Ambrosini (2000), a process by which the value can be exchanged and realized by the next tier customers can be defined as a value creation process. He also stated that the result of value creation process could be an increased value of the product, which by increasing the product value and its price. In order to add value to vitamin C powder production and be able to charge more price, NEPG decided to integrate forward. The idea of forward vertical integration is to change the production process from only producing powder to further process the various end products (Figure 1). This value creation process could be defined as a hybrid strategy within Faulkner & Bowman (1995)'s strategy clock. They proposed a pie chart to illustrate the price and perceived value, which showed the applicable strategies. These strategies include low price strategy, differentiation strategy and hybrid strategy. In which the hybrid strategy could both help the company to eliminate the intermediate cost and enable the company to produce various products. However, broaden the product portfolio may result in a conflict with customers' current product portfolio, which could lead to a clash of both parties' benefit. Jensen (2001) stated that company cannot create value without good relations with customers or suppliers. To retain the existing customers, firms need to deploy and leverage resources to achieve superior performance. (Day, 1994; Morgan, 2009). They are usually embedded in organizational processes and enables firm to coordinate their activities more effectively (Day, 1994). Literature stated that a lower price or various customized product range could influence the current customer's relationships which in terms of customer's willingness to buy (Anderson et al., 2004; Yu et al., 2013). However, there are factors that can mediate the customers' willingness to buy, such as the customers' attitudes over the company's current performance and the customers' attitudes over the company's current relationship quality.

Since there is still much uncertainty between forward vertical integration in the Chinese Vitamin C industry and its influence on the current customer's willingness to buy, it is of interest to analyze the direct relation between forward vertical integration and the possible changes of current customer's willingness to buy. Also, the mediating attributes will be analyzed; the identified factors and relations may then be useful for the NEPG.

## 1.4 Objective and Research Questions

The objective of this study is to help NEPG to capture benefits from forward vertical integration by identifying the relation between company's capabilities regarding to forward vertical integration and possible changes of current customer's willingness to buy the new product among its current EU customers.

Thus, the general research question (GRQ) of this study is: *what is the impact of forward vertical integration on customer's willingness to buy among NEPG's current EU customers?*

To answer this general research question, the following specific research questions (SRQs) need to be answered; the words in bracket shows in which chapter and research phase that particular questions will be answered:

(1) What are the measurable factors such as forward vertical integration, current relationship quality, customers' willingness to buy and its relation to the new customer relationships? [**Literature review – Theoretical Phase**]

(2) What are the NEPG's current customers' perceptions regarding to the selected factors? [**Primary data collection & Results – Empirical Phase**]

(3) What are the NEPG's capabilities to offer its current EU customers regarding to the selected factors? [**Primary data collection & Results – Empirical Phase**]

(4) What are the gaps and possible matches between NEPG and its current EU customers regarding to forward vertical integration? [**Data analysis – Analysis Phase**]

(5) What are the options for NEPG regarding to forward vertical integration and how do they affect the new customer relationships? [**Conclusion & Recommendation – Conclusion Phase**]

## 1.5 Research Design and Framework

### 1.5.1 Research Design

The research design establishes the decision-making process, conceptual structure of investigation and methods of analysis used to address the central research problem of this study. The aim of this study was to analyze the direct relation between forward vertical integration and its influence on current customer relationship and draw the managerial implications. To achieve this goal, a cross-sectional study design was selected, which was the most common type of study design in the social sciences (Kumar, 2011). This choice was based on two reasons. Firstly, Kumar (2011) stated that the best design of a study is cross-sectional when the findings in the research will be authentic for a limited period of time after this study. In this study, several factors that could influence the current relationship were proposed. To test the feasibility of these factors, interviews were done with NEPG's managers and its current EU customers. According to the interviews, the best match of both party's preferences was compared and analyzed. In this way, a compromise was made between NEPG and its current EU customers. Hence, a cross-sectional design was used, because it allows for the comparison of different groups of people in one point in time.

### 1.5.2 Research Framework

The research framework of this research can be found in Figure 2 and serves as a tool to clarify the whole research process. The research framework that was used in this research was divided into four phases namely theoretical, empirical, analysis and conclusion respectively. The arrows in Figure 2 represents the sequence of initiation of the research. The theoretical phase consists of the literature review of hypothesis about forward vertical integration, customer relationships in terms of factors influence relationship quality, and customers' willingness to buy. Afterwards, the empirical phase was divided into two different data collection methods, namely customer interviews and company interviews. The outcome from both data collection methods were then used for the comparison, which aimed to find the possible gaps and matches between NEPG and its current EU customers. Lastly, the conclusion phase summed up the result of the analysis and provides the managerial suggestions for NEPG regarding to forward vertical integration and how do they affect the new customer relationships.

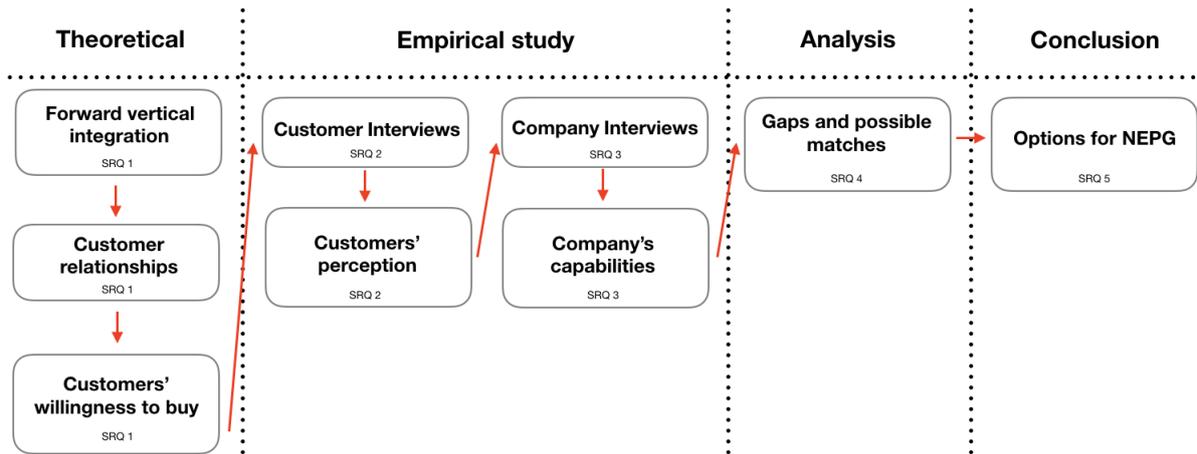


Figure 2 Research Framework

## Chapter 2 Literature Review

To answer the question “What are the measurable factors such as forward vertical integration, current relationship quality, customers’ willingness to buy and its relation to the new customer relationships?”, the literature review covers the existing theoretical frameworks of three main concepts namely forward vertical integration, value creation and customer relationship. This literature review will start by identifying prior works and concepts done within value addition through forward vertical integration. Then, the review will continue by elaborating the frameworks of customer relationships, followed by the variables about customers’ perceptions. This chapter closes by answering the stated specific research question and build the hypotheses, coherently presented by the conceptual framework.

### 2.1 Forward Vertical Integration

In this review subsection, the incentive and the benefit of forward integration will be elaborated. Also, to successfully integrate, what actions/changes should company make/facilitate will be discussed. Then the strategies of forward vertical integration which are prevalence in pharmaceutical industry will be listed. Finally, the applicability level of these forward vertical integration methods to the Chinese pharmaceutical industry will be discussed

#### 2.1.1 Dimensions of forward vertical integration

The concept of forward vertical integration was discussed in different studies. Buzzell (1983) stated that vertical integration can have a significant impact on business performance, which could be crucial to survival. However, different dimensions need to be combined to an overall forward vertical integration measure. As such there are not only different dimensions but also different perceptions of what is a success or failure.

Harrigan (1985) proposed a dynamic concept of vertical integration in which, the key to effective management is to understand the corporate needs for the intrafirm cooperation. Therefore, a corporate strategy need to be developed in order to vertically integrated. Harrigan (1985) also suggested that firms may adjust the dimensions of their vertical integration strategies to suit competitive or corporate needs. He stated several dimensions of integrations need to be taken into consideration, which are:

(1) **Stages of integration.** The number of steps in the chain of processing which a firm engages in - from ultra-raw materials to the final consumer - determines the number of stages of integration. Harrigan (1985) stated that the number of integrated stages matters if firm do not manage complexity well and the firm should define the boundaries of vertical integration.

(2) **Breadth of integration.** The way that firms define their SBU’s boundaries vary. The number of activities firms perform in-house at any particular level of the vertical chain determines the breadth of integration of the SBU at that level. Breadth of integration matters because plants that try to produce too many diverse components for a product line may lose opportunities to enjoy scale economies. Harrigan (198) argues the breadth of integration matters because plants that try to produce too many diverse components for a product line may lose opportunities to enjoy the scale economies. He also stated that overly broad manufacturing policies could also mean that SBUs lose cost advantages of purchasing components or services from more efficient outsiders.

(3) **Degree of integration.** Degrees of integration determines the proportion of total output (of a particular component or service) an SBU purchases from (or sells to) its sister SBUs. Fully integrated

SBUs transfer 95% or more of their requirements for a particular resource in-house. Taper integrated firms purchase more than 5% of their requirements for that resource from outsiders (Crandall, 1968).

(4) **Form of integration.** Although many firms prefer to own vertically integrated units entirely, they need not own a business unit to control it and enjoy the benefits of vertical relationships, for a variety of other control arrangements are possible. In many environments, firms can obtain leverage over other's assets without owning them fully. Often firms can secure knowledge, services, and materials in this manner with only a small ownership stake.

All vertical integration strategies encompass degree, stages, breadth, and form (Harrigan, 1985). He also stated that there could be some combination among these dimensions and the decision to alter one dimension of strategy will affect the values of other dimensions.

Pharmaceutical market consists of an upstream segment that manufactures active pharmaceutical ingredients, and a downstream segment that processes the active pharmaceutical ingredients into finished formulations and supplies them to final consumers. In the pharmaceutical industry, the most common type of vertical integration is backward vertical integration. Kubo (2011) states that there are two possible reasons of vertical integration in the pharmaceutical industry, which are (1) "provide the company with early access to high quality active pharmaceutical ingredients and improve the company's profitability, in addition to further enhancing our R&D capabilities", and (2) "avoid sourcing API from the competitor" (Stafford, 2006).

On the other hand, the most common type of forward vertical integration in pharmaceutical industry is Marketing/R&D integration, open innovation and "keep every production in-house" strategy. Since the product innovation is risky and time consuming, with R&D costs representing a high proportion of sales revenues (DiMasi et al., 1991). Moreover, R&D cost will also influence the pattern of international resource allocation and firms' competitiveness. The aim of forward vertical integration in pharmaceutical industry is in concordance with the general idea of forward integration. Therefore, the vertical integration in pharmaceutical industry is to better understand the consumers' needs and shorten the R&D time (Balakrishnan & Wernerfelt, 1986; Cockburn, 2004; Harrigan, 1986). Researchers stated the most common form for forward vertical integration in pharmaceutical industry is Marketing/R&D integration, open innovation and keep every aspect in-house integration (Becker & Lillemark, 2006; Chesbrough, 2006; Chesbrough & Appleyard, 2007; Gassmann, Enkel, & Chesbrough, 2010; DCAT Week highlights pharma challenges, retrieved Oct. 2017). Becker and Lillemark (2006) studied a European pharmaceutical firm about the integration of marketing and R&D sectors. They classified Marketing/ R&D integration as a cross-functional integration and its main motivation comes from its beneficial effects on new product development performance (Becker & Lillemark, 2006; Griffin & Hauser, 1996; Song, Thieme & Xie, 1998; Song, Montoya-Weiss & Schmidt, 1997). Becker and Lillemark (2006) argued that to improve the cost effectiveness, Marketing/ R&D integration has an opportunity to add value by producing fuller documentation of a drug's profile than what is strictly needed to obtain regulatory approval. He proposed that study the integration of marketing and R&D in the context of the pharmaceutical industry seems particularly promising for a number of reasons. Such as understanding consumer needs, marketing as a source of innovation, translating consumer needs into workable products, testing and forecasting However, Marketing/R&D integration are met with several barriers such as timing of integration, cost of integration, level of integration and mentality difference, etc.

Open innovation is a trend to improve the productivity and probability of success (Khanna, 2012). However, there is a lack of detailed literature about forward vertical integration by "keeping every

production in-house integration” in the pharmaceutical industry, which means to integrate forward/backward to produce every product by the company itself. Especially in the API industry, it seems more lucrative if the company forward vertical integrate from making ingredients to make finished products.

Despite there are many influence factors of the implementation of forward vertical integration (such as company’s capabilities, dimensions of integration, etc.) and lack of literatures about forward vertical integration in pharmaceutical industry, it is promising to give an empirical proof of vertical integration through “keep every production in-house” strategy. In order to analyze how could pharmaceutical industry successfully forward integrate, the aforementioned dimensions will be adopted and used in this research.

### 2.1.2 Value creation strategies and effect on company’s performance

In this review subsection, strategies of value creation will be elaborated. Then, the specific type of value creation strategies which fits the forward vertical integration will be explained. Moreover, its applicability and influence on the performance of Chinese pharmaceutical industry will be discussed. In the end, the relation among value creation, forward vertical integration and customer relationship will be discussed.

#### 2.1.2.1 Value creation strategies

Value creation is the purpose of the firm to create and deliver value in an efficient enough way that will generate profit after cost (Jorgenson, 2015). Also, it is stated that the realization and maximization of profit is an objective function of value maximization and thus, a necessary precondition for the survival of a company (Jensen, 2001; Kalwani, 1995). To create value, a company must possess unique skills that can help it to differentiate from its competitors, in terms of quality, product service, technology or cost. A company that maintains its competitive advantage is able to surpass competitors in the long term (Liu, 2013). To strive for a company’s competitive advantage in the market, firms may position themselves in specific manners trying to achieve cost leadership, differentiation leadership, cost focus or differentiation focus, etc. (Johnson, Scholes, & Whittington, 2009). These strategies are adapted from Porter (2008)’s three generic strategies, Faulkner & Bowman (1995)’s strategy clock and Treacy & Wiersema (1993)’s value disciplines (

Figure 3).

In Porter (2008)’s three generic strategies, he stated a company can achieve its competitive advantage by choosing either of the following three ways, which are cost leadership, differentiation and focus strategies. Cost leadership strategy means the company becomes the lowest-cost company by either lower the input cost (e.g. location, contracts) or reach the economies of scale (e.g. operational efficiency). As an alternative, differentiation strategy involves the uniqueness along some dimension that is sufficiently valued by customers to allow a price premium. In the end, focus strategy is to target a narrow segment of domain of activity and tailors its products or services to the need of that specific segment, to the exclusion of others (Porter, 2008). However, Porter (2008) argues that the company can only achieve its competitive advantage by either lowering costs than its competitors or having a superior products or services that are “differentiated” from competitor’s products. The company who wants to implement both strategies in the same time will stuck in the middle and end up with failure.

However, Faulkner & Bowman (1995)’s strategy clock provides another way of approach. There are three competitive strategies in their strategy clock, which are low-price strategy, differentiation

strategy and hybrid strategy. In contrast to Porter (2008)'s three generic strategies, Faulkner & Bowman (1995)'s strategy clock provided more scope for "hybrid strategies". They argued that besides the low cost and differentiation strategies, the hybrid strategy allows a company to reach both high perceived benefit and low price.

In addition, Treacy & Wiersema (1993)'s value disciplines are also introduced as a complementary strategy. This value disciplines include three strategies, which are operational excellence, product leadership, and customer intimacy. Operational excellence provides customers with reliable products or services at competitive prices and delivered with minimal difficulty or inconvenience. Product leadership strives to produce a continuous stream of state-of-the-art products and services. Customer intimacy is to continually tailor and shape products and services to fit an increasingly fine definition of the customer.

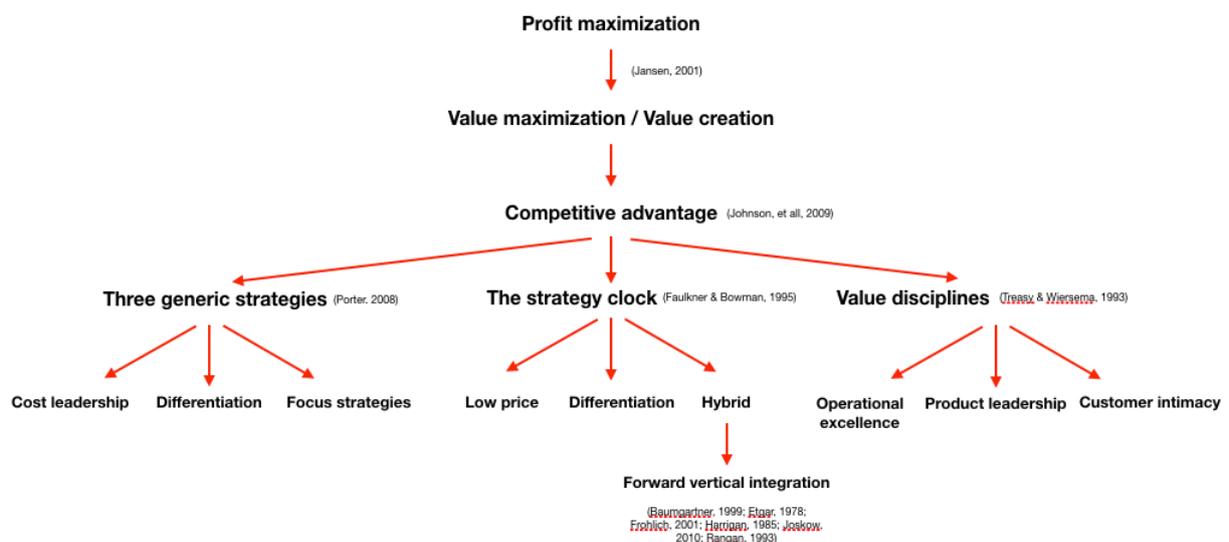


Figure 3 Value creation scheme (Porter, 2008; Faulkner & Bowman, 1995; Treacy & Wiersema, 1993)

De Carolis (2003) stated the value of a firm's resources is determined by the context of the specific market in which it is operating. To develop core competences in the pharmaceutical industry is a rather complex function. The considerable time, money, and uncertainty associated with developing network resources also represent a barrier for firms desiring to compete in the research-intensive side of the pharmaceutical industry. Firms competing in the pharmaceutical industry employ heterogeneous strategies ranging from low-cost strategies adopted by generic drug manufactures to highly differentiated strategies used by large research-oriented and biopharmaceutical companies (Taggart, 1993). Guedri et al. (2011) studied among 68 US, European and Japanese pharmaceutical firms in the time period between 1997 and 2000. His study reconciled that strategic value addition in the pharmaceutical industry has emphasized the role of three dimensions: 1) R&D expertise 2) economies of scale, and 3) access to alliance networks. Other researchers also stated other dimensions such as patent protection, service level and product branding (Thomas & Bogner, 1994; Priem & Butler, 2001; Bogner, Thomas & McGee, 1996; Festel, Oels, Kreimeyer, & von Zedtwitz, 2005; Gassmann, Reepmeyer & Von Zedtwitz, 2008; Guedri et al., 2011).

Technological competencies in pharmaceuticals are a function of expertise in scientific disciplines and therapeutic area. Pharmaceutical companies have been quite fast at embracing the new technology, adapting to their own requirements and using it intensively to increase their productivity. Also, the

advent of new technology increases the probability of discovering new molecules. Firstly, by shortening the time necessary for scanning for the suitable molecules for an identified disease. Secondly, by allowing the holders of the technology to scan across a range of therapeutic indications. This potentially creates a competitive edge for those pharmaceutical producers who possess ownership advantages in the new technology over others do not. Also, on the other hand, pursuing new products in one therapeutic area can enhance learning in other areas. Schweizer (2005) stated there is a clear cut between the pharmaceutical industry as it existed in the past and the pharmaceutical company in its current form as it was shaped through the wave of mergers, acquisitions and the increasing number of strategic alliances in order to co-exploit new technologies, co-discover new molecules, co-market new drugs. Allen, Lee & Tushman (1980) and Katz (1988) suggests in technology driven environments intra-organizational learning enhances research performance. Henderson and Cockburn (1994) also find that a flow of information across the boundaries of the firm is related to the research productivity.

Besides the technological competencies, pharmaceutical companies need to effectively market their new products (De Carolis, 2003). De Carolis (2003) also stated the success of some drugs, particularly those in the same category, depends on how well a company can differentiate that drug particularly to doctors or the customers.

#### **2.1.2.2 Effect on company's performance**

Traditionally, economists suggested that vertical integration is motivated by a drive for market power or cost reduction factors (Bhuyan, 2005; Lin et al., 2014; Carlton & Perloff, 1999, Chapter 12; Yu et al., 2013). From their empirical research, they found forward integration enables a manufacturer to better understand customer requirements and better manage the demand side by directly controlling the retail price. This action allows the manufacturer to provide superior performances, which includes more innovative products at low cost, which could fit Faulkner & Bowman (1995)'s "hybrid strategy". Also, many researchers found that downstream vertical integration plays an important role for manufacturing firms in several ways (Baumgartner, 1999; Frohlich, 2001; Guan, 2012; Rangan, 1993). Firstly, it can help firms to secure the distribution channels of their products in order to achieve more market power, especially in markets with increased uncertainties (Etgar, 1978; Harrigan, 1985; Rangan, 1993). Secondly, it can offer a way to control efficiency gains and transaction cost reductions in the supply chain (Frohlich, 2001; Joskow, 2010). Thirdly, downstream markets can offer the forward integrated suppliers important benefits because now they could make more goods and services in-house (Baumgartner, 1999; Harrigan, 1985). Lin et al. (2014) characterize the main effect of forward integration is on (1) profitability, (2) product quality, and (3) economy of scale (volume) in competitive setting. However, the effect of forward integration is twofold, which unilateral forward integration can harm a manufacturer's profitability.

In China, the API industry possesses a low R&D intensity, fierce competition over the low-ended product (X. Su, personal communication, 28-10-2017). The high-quality standard and long R&D period lead to a high entry barrier of the API industry. Normally, the western manufacture company will source from two to three API suppliers. Therefore, the competition for the western customer resources becomes intense. For most of the Chinese API manufacturing companies, includes NEPG, the main purpose to forward vertical integration is to extend the production line, increase the production efficiency and quality to get more profit. Since the main advantage in Chinese Vitamin C industry is the low labor cost and production efficiency. By integrating forward, NEPG could produce versatile products in a relative low price to meet different customers' needs.

In an exchange relationship a product must first exist, so a relationship can be built around it. Customers do not have the motivation to continue the relationship merely for the relationship itself unless they receive a product that meets their standards. Based on the incentive of Chinese pharmaceutical industry and the purpose of NEPG, the main effect of forward integration which summarized by Lin et al. (2014) will be adopted and measured in this research. By analyzing how performance can influence the customer relationship, these measurable factors will be adopted from the literature and empirically examined in this research.

However, those factors are measuring the direct effect of a company who forward vertically integrated. According to Walter et al. (2003), if the benefit of a relationship is realized within that relationship, it is a direct effect. This means that the fulfillment of the function does not depend on other relationships or factors. These indirect effects include non-product related attributes such as service and communication (Wilson, 1995) Based on the Maslow's demand theory, Chen et al. (2005) gives an extra vision about the communication/interaction. Interaction between the customer and supplier, which means, more specifically, the face to face interaction. This kind of interaction focus more to the technical support since the quality of technical support is as the same importance as product quality. The ability to communicate with exchange partners fosters cooperation and trust in relationships (Perrien and Ricard, 1995; Deutsch, 1958). Therefore, these indirect factors will also be adopted and examined in this research.

To sum up, in NEPG Major Product Research Report (2012) it stated that the future Vitamin C production should aim at both mass-production and lean production. For the low-end product like pure vitamin C powder, cost leadership could be reached by lower the production cost and improve the production efficiency. For the high-end product, such as pre-mixed powder products, differentiation strategy is more suited, as the company should focus on improving the quality, producing tailored product and providing better service. Since NEPG integrates the production process from only producing Vitamin C powder to the finished dose forms. This kind of forward vertical integration in Chinese vitamin C industry could partly meet the concept of Faulkner & Bowman (1995)'s hybrid strategy, who argued that a company could serve different markets by both being both cost leadership and differentiate from the competitors. By combining the abilities to respond directly to customer requests and to provide the customer with a highly interactive, customized experience, companies have a greater ability today to establish, nature, and sustain long term customer relationships than ever before (Chen & Popvich, 2003). Besides these advantages, researchers also indicated that value addition by forward integration could significantly influence the customer relationship thus customer relationship management (CRM) is needed. However, there is limited research about the relationship between forward vertical integration and customer relationship in API industry. Therefore, the relationship between forward vertical integration and customer relationship in the Chinese vitamin C industry need to be further analyzed, which by using the aforementioned three aspects.

## 2.2 Customer relationship

In this review subsection, general idea of customer relationship management will be introduced. Then, the measurement factors of customer relationships quality will be elaborated. Finally, how can these factors apply to this research will be discussed.

Management of customer relationships is a key activity for the enterprise. Ways of more effectively managing relationships with customers are typically addressed under the heading of relationship marketing (RM), customer relationship management (CRM) and customer management (Frow et al.,

2011). However, there is a considerable confusion in the academic and managerial literatures about how they differ and what the implications might be used each approach for effective customer management. Parvatiyar and Sheth (2001) argued the terms RM and CRM can be used interchangeably. While Zablah, Bellenger, & Johnston (2004) and Frow et al. (2011) agreed on that the RM and CRM are different phenomena, which a clear distinction should be made between them.

According to many researchers, relationship marketing (RM) involves the strategic management of relationships with multiple stakeholders (Christopher et al., 1991; Doyle, 1995; Gummesson, 1995). It also emphasizes that customer retention affects company profitability in that it is more efficient to maintain an existing relationship with a customer than create a new one (Bull, 2003; Payne, Christopher, Peck & Clark, 1998; Reichheld, Teal & Smith, 1996). Since the existing customer are already familiar with and require far less persuasion to buy the company's products or services (Bull, 2003). Empirical evidence stresses that it is critical for a company to build the "right" type of relationship with its customers (Niraj, Gupta, and Narasimhan, 1996; Reinartz and Kumar, 2000). This "right" relationship depends on several situational factors, which are organizational design, adequate incentive schemes, and information technology resources, as well as industry, company, or customer relationships. These factors may affect the performance of relationship marketing activities.

Customer relationship management (CRM) is defined as an activity that addresses all aspects of identifying customers, developing customer insight and building customer relationships (Boulding et al., 2013; Srivastava et al., 1999). Thus, CRM involves the strategic management of relationships utilizing appropriate technological tools (Frow et al., 2011). Customer management represents parts of CRM which involves a more tactical management of customer interactions and transactions. According to Newell (2001), CRM is a useful tool in terms of identifying the right customer groups and for helping to decide which customer to jettison. There are several CRM value drivers to enhance the customer equity, which are target profitable customers, integrate offering across channels, customize products and services and improve service efficiency and effectiveness (Richards & Jones, 2008). The relationship model was adopted from Frow and Payne (2009), which is shown in Figure 4.

In this research since the research objective is NEPG and its current EU customers and the aim is to retain the current customers. Therefore, to identify the "right" relationship with the customers is our focus. This fits the relationship marketing (RM) theory which stated by Niraj, Gupta, & Narasimhan (1996) and Reinartz & Kumar (2000). In order to identify the "right" relationship, customers' perceptions will be analyzed. Also, company's capabilities and strategies will be analyzed, which in respond of customers' perceptions and preferences regarding to the relationship. This action involves a tactical management of customer interactions and transactions (Boulding et al., 2013; Srivastava et al., 1999; Newell, 2001). Therefore, this study will adopt a combination of both relationship marketing (RM) and customer relationship management (CRM) theory.

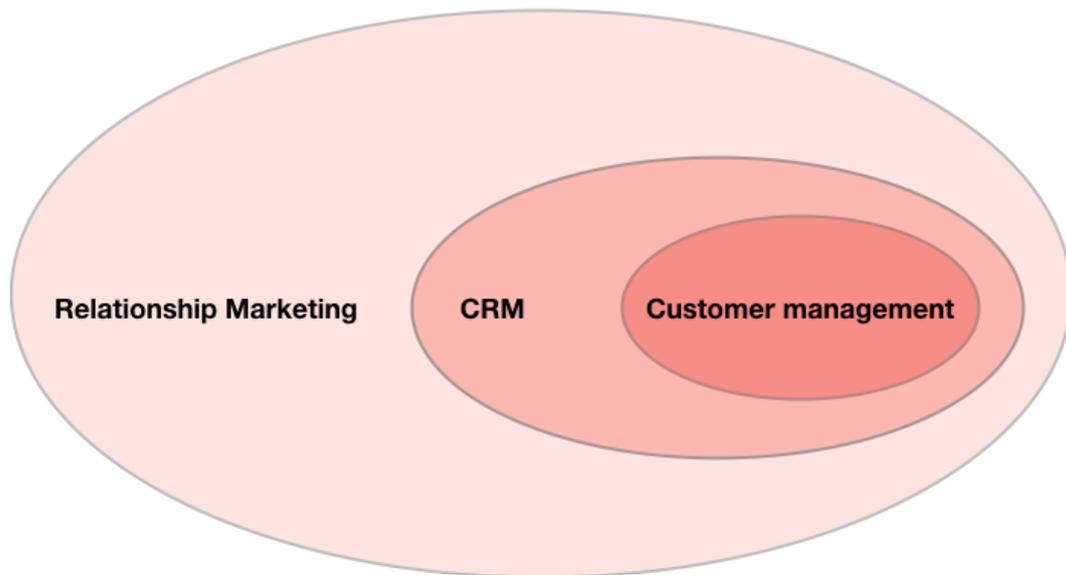


Figure 4 Relationship marketing, CRM and customer management (Source: Frow and Payne (2009))

### 2.2.1 Factors determine customers' willingness to repurchase

In today's environment, businesses are increasingly dependent on the relationship they have with their suppliers/customers and are demanding that they adhere to high standards. It is increasingly important that suppliers have strong relationships with their customers to stay ahead of the competition. The establishment, development, and maintenance of relationships between exchange partners is crucial to achieve success (Morgan and Hunt, 1994). There are many advantages for firms that enter into productive relationships with their customers such as low transactional cost, more cooperation, lower risk, and information sharing (Ellram, 1995). Research has begun to investigate what determines the success or failure of relationships between exchange partners by looking at both seller characteristics and the nature of interactions between suppliers and customers (Crosby, Evans, and Cowles, 1990; Morgan and Hunt, 1994).

Hellier et al. (2003) stated that these three constructs directly influenced the customers repurchase intention. Repurchase intention defines the individual's judgement about buying again a designated service from the same company, taking into account his or her current situation and likely circumstances. Hellier et al. (2003) stated that the customer repurchase intention is directly related to customer perceived quality, perceived value, and perceived equity.

**Customer perceived value** determines the customers' overall appraisal of the net worth of the service, based on the customers' assessment of what is received (Benefits provided by the service) and what is given (costs or sacrifice in acquiring and utilizing the service).

**Customer perceived quality** measures the customers' overall assessment of the standard of the service delivery process. This process could be further explained by the product quality, service quality, and ways of communication/interaction.

**Customer perceived equity** is the customers' overall assessment of the standard of fairness and justice of the company's service transaction and its customer problem and complaint handling process.

According to many researchers, analysis of the inter-relationships between customer retention factors can be undertaken at the single transaction (micro) level or at a global (macro) level. In this research,

since the NEPG is a Chinese vitamin C manufacturing company and the target customer group is the European customers. Therefore, macro level framework will be adopted. This is also because the customer repurchase decision often depends on a general assessment of the service and supplier, based on multiple service transaction experiences with that supplier (Danaher and Mattsson, 1994; Liljander and Strandvik, 1995).

### 2.2.2 Customer relationship quality

Many factors may contribute to the customer repurchase intention. Hellier et al. (2003) stated that the current relationship quality directly influenced the customers repurchase intention. Researchers argued that relationship quality has three dimensions, which are commitment, trust and satisfaction (Parsons, 2002; Crosby, Evans, and Cowles, 1990; Hennig-Thurau and Klee, 1997). **Commitment** is often cited as a critical ingredient for determining customer relationship success (Dwyer, Schurr, and Oh, 1987; Schurr and Ozanne, 1985; Morgan and Hunt, 1994; Wilson, 1995). **Trust** is believed to alleviate risk and to increase cooperation in exchange relationships (Schurr and Ozanne, 1985; Swan and Nolan, 1985). **Satisfaction** refers to the degree to which interactions between the buyer and the seller meet their expectations for performance and can be based on evaluations of the tangible product or non-product related attributes such as service and communication (Wilson, 1995; Hellier et al., 2003). Parson (2002) summarized the aforementioned dimensions as customers' perceptions, since all these three factors are measured from the buyers' perspective.

According to Parson (2002), customers' perception variables focus on buyers' perception of how the supplier perform in order to influence the relationship quality. In a competitive business situation, there is always a chance that a seller can be replaced by a competitor. Therefore, it is useful to understand the supplier's performance that customers think influence the quality of supplier-customer relationships. These variables include commitment, trust and satisfaction, which according to many researchers, measures the customers' perceived value, perceived quality, and perceived equity.

**Commitment** is the enduring desire to maintain the relationship and the length of the relationship (Moorman, Zaltman, and Deshpande, 1992). According to Morgan and Hunt (1994), commitment should be an important variable in determining successful relationships depend on mutual commitment between customer and supplier. When motivation to maintain the relationship is high, then the probability that the quality of the relationship is also high increases. A longer relationship implies a certain degree of commitment between two parties (Dwyer, Schurr, and Oh, 1987). Therefore, commitment should be considered as a necessary condition for maintaining relationship quality.

Just like commitment, **trust** is one of the most widely examined and confirmed constructs in relationship marketing research (Crosby, Evans, and Cowles, 1990; Morgan and Hunt, 1994; Wilson, 1995). Common to all different definitions used to conceptualize trust there is the notion that trust constitutes the belief, attitude or expectation of a party that the relationship partner's behavior or its outcomes will be for the trusting party's own benefit (Andaleeb, 1992). Moorman et al (1993) define trust as "willingness to rely on an exchange partner in whom one has confidence". Summarizing the conceptual approaches of other scholars, we summarize trust have three essential components: (1) the belief that the relationship partner will show benevolence in his or her actions (Anderson and Weitz, 1992; Geyskens, Steenkamp, Scheer, and Kumar, 1996), (2) honesty, which means the trusting party relies to the relationship partner being credible (E.g. Doney and Cannon, 1997; Ganesan, 1994), (3) the belief that the relationship partner has the competence to act for the benefit of the relationship (Andaleeb, 1992; Ganesan, 1994; Moorman, Zaltman and Deshpande, 1992). In this research, we adopt this approach, for which the concept of trust includes benevolence, credibility, and global trust.

According to considerable attention to business relationship consequence, a construct that has received particular attention within the domain of B2B relationships is trust (Sharif, 2005). It maintains relationship by staying with existing partner and resisting attractive short-term alternatives.

**Satisfaction** has been discussed extensively as a central elements of a firm's marketing concept during the past two decades and it is considered as a key driver of the long-term relationship between suppliers and buyers (Anderson and Sullivan, 1993; Churchill and Supernant, 1982; Tse and Wilton, 1988). Anderson and Narus (1984) define satisfaction as "a positive affective state resulting from the appraisal of all aspects of a firm's working relationship with another firm". Customer satisfaction with a product presumably leads to repeat purchases, acceptance of other products in the same product line, and favourable word-of-mouth publicity (Cardozo, 1965). Therefore, the knowledge about factors affecting customer satisfaction is essential. According to Cardozo (1965), Oliver (1980) and Churchill & Supernant (1982)'s research, satisfaction is built upon the match between product performance (i.e. quality, price, capacity, etc.) and customer's expectation. Moreover, Chen et al. (2005) analysed the factors that affect the degree of customer satisfaction. Boulding et al. (1993) indicate that customer satisfaction can be transaction specific or cumulative. Transaction specific customer satisfaction may yield meaningful insight into a particular encounter and may be predictive of additional transactions, but cumulative satisfaction is a more fundamental conceptualization of a firm's past, current and future performance (Anderson et al., 1994). Johnston et al. (2004) stated that the degree to customer satisfaction can be enhanced depends on how well the trading partners are integrated. Organizational learning theory helps explain why integration should be related to customer satisfaction. Mutual knowledge created through information shared along the supply chain increases the profitability of a common understanding among the parties. Hence a customer's expectations are kept consistent with the supply chain's ability to meet the customer's need; met expectations being correlated with satisfied customers, especially to the extent the customer has contributed to the mutual knowledge created by the shared information. For example, through collaboration with customers and suppliers' firms can learn to tailor service offerings to more closely match specific customer requirements (Stank et al., 2001).

For NEPG, if it forward vertically integrates, the relationship with its current EU customers will change (Yu et al., 2013). During the literature research, we found there appears a gap on actually measuring the direct impact of forward vertical integration on customer relationships. To measure the impact of forward vertical integration on customer relationships, customer perceptions will be measured and analysed (Parson, 2002). One of the purpose of this research is to fill this gap and empirically investigate the impact of forward vertical integration on customer relationships.

## 2.3 Conceptual Framework

Based on the theoretical framework previously discussed, the following conceptual framework (Figure 5) was assembled and the hypothesis is made.

This study considers three main sets of variables, forward vertical integration in terms of dimensions of integration, customers' willingness to repurchase (i.e. customers' perceptions regarding to the company's new product, service, price, communication, etc.) and the current customer relationship quality in terms of commitment, trust and satisfaction.

### 2.3.1 Forward Vertical Integration and Customers' willingness to repurchase

According to Baumgartner (1999); Frohlich (2001); Guan (2012); Rangan (1993); Joskow (2010); Etgar, (1978) and Harrigan, (1985), a well-integrated supply chain can reduce the transactional cost and

deliver more service and versatile products. However, they stated that before company forward vertically integrate, there are several variables need to be measured and considers by the company. These variables describe the factors that measures the dimensions of forward vertical integration. According to Harrigan (1985), dimensions of integration variables describes the characteristic of the specific forward vertical integration a company will carry out which links with a company's strategy. These dimensions of integration variables include stages of integration, breadth of integration, degree of integration and the form of integration. The aim of the forward vertical integration process in this research is to eliminate the intermediate cost and produce various products, which fits the "Hybrid strategy" in Faulkner & Bowman (1995)'s strategy clock. However, according to researchers, value creation by forward vertical integration could change the current customers' attitudes towards continue buying the new product from the same supplier. This is because the company's new product portfolio may overlap with the customer company's product portfolio thus threatens the customer company's own benefit.

According to many researchers, the repurchase intention is made when customers found a product in terms of quality, value and equity meet their expectations (Hellier et al., 2003). These quality, value and equity measures of a supplier will be measured from customers' perspective and be treated as customers' perceived benefit. Walter et al. (2003) stated that if the benefit of a relationship is realized within that relationship, it is a direct effect. This means that the fulfillment of the function does not depend on other relationships or factors. The direct effect of supplier's can be measured from product price, product quality and service quality (Bhuyan, 2005; Lin et al., 2014; Carlton & Perloff, 1999, Chapter 12; Baumgartner, 1999; Frohlich, 2001; Guan, 2012; Rangan, 1993; Etgar, 1978; Harrigan, 1985; Joskow, 2010; Vickery, Jayaram, Droge & Clantone, 2003; Danese & Romeo, 2012). These three factors can be classified as direct functions where a customer gains benefit from a supplier relationship. The indirect effect includes the service/support and the communication/interaction. These factors are classified as an indirect factor because they cannot be measured directly. Personal relationships and other factors also need to be taken into consideration (Walter et al., 2003). Based on these, the first hypothesis is made.

***Hypothesis 1: Company's capabilities which in terms of dimensions of integration has direct impact on customers' willingness to buy the new product.***

### 2.3.2 Current relationship quality

Besides the impact of forward vertical integration, Hellier et al. (2003) stated that the customers' willingness to repurchase could also be influenced by the current relationship quality. Parson (2002) stated several customers' relationship variables can be summarized into the factors that influence the relationship quality, which refer to the customers' perceptions over the company which includes both tangible and intangible attributes (Parsons, 2002). More in specific, these variables are commitment, trust and satisfaction (Cardozo, 1965; Oliver, 1980; Churchil & Supernant, 1982; Hennig-Thurau & Klee, 1997; Chen et al., 2005; Hellier et al., 2003). Especially for the customer satisfaction, Homburg et al. (2005) stated that higher customer satisfaction would lead to improved company performance and thus lead to an increase profitability. Many researchers also found that customers tend to repurchase from the same supplier in a B2B relationship when they perceived a high value, high quality and equity over its supplier. Therefore, the following hypothesis is made:

***Hypothesis 2: Current customers' perceptions over the company in terms of commitment, trust and satisfaction has a mediating effect between forward vertical integration and customers' willingness to buy the new product.***

### 2.3.3 Conceptual framework

In this conceptual framework it hypothesises that company’s capabilities regarding to forward vertical integration will influence the current customers willingness to buy or repurchase intension (Bhuyan, 2005; Lin et al., 2014; Carlton & Perloff, 1999, Chapter 12; Yu et al., 2013; Baumgartner, 1999; Frohlich, 2001; Guan, 2012; Rangan, 2013; Etgar, 1978; Harrigan, 1985; Rangan, 1993; Joskow, 2010). However, customer’s perception over a company in terms of commitment, trust, and satisfaction may have a mediating the impact. These factors were developed from the literatures (Parson, 2002; Crosby, Evans and Cowles, 1990; Hennig-Thurau and Klee, 1997; Dwyer, Schurr, and Oh, 1987; Schurr and Ozanne, 1985; Morgan and Hunt, 1994; Wilson, 1995) and used in this research. Therefore, in this research, three aspects were measured to test the aforementioned two hypotheses. Firstly, the company’s capabilities in terms of the dimensions of integration will be measured. Secondly, customer’s willingness to buy the new product will be measured. Finally, the current relationship quality that from the customers’ perspectives will be measured. In order to find out the gaps and the possible matches between NEPG’s capability regarding to forward vertical integration and its influence on current EU customers’ willingness to buy the new product will be measured. All the aforementioned factors are listed in the following conceptual framework (Figure 5) and were measured in this study.

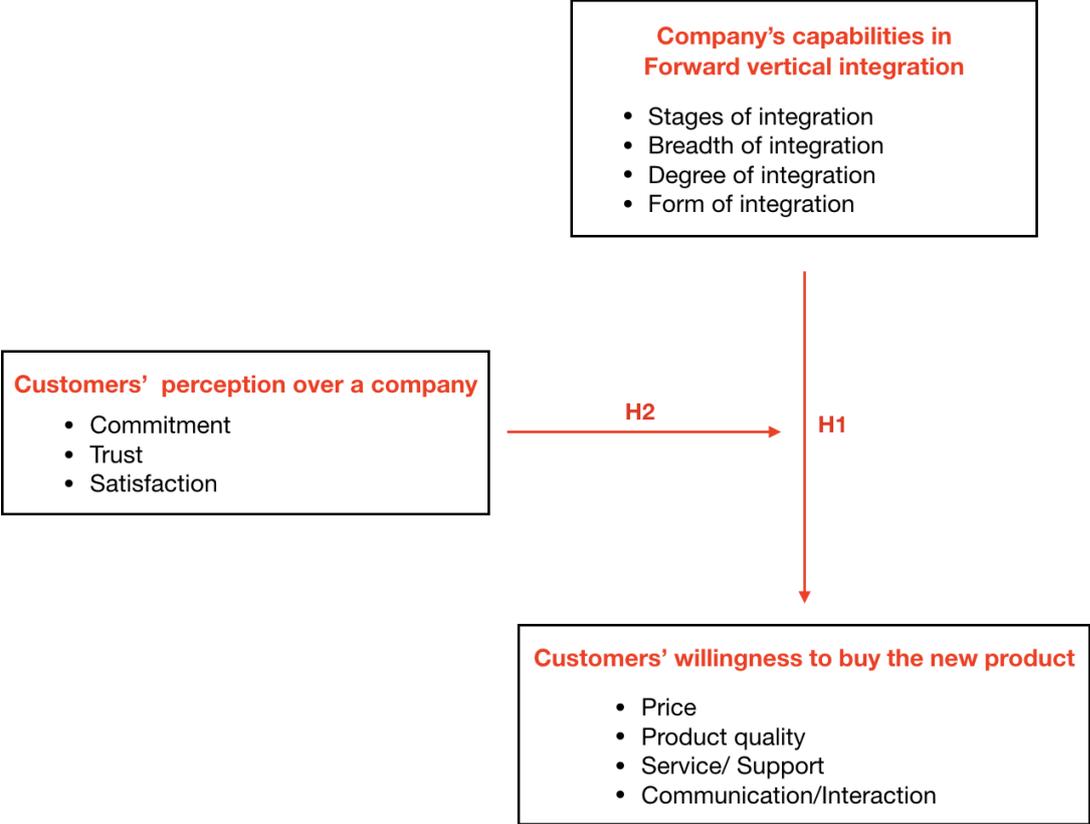


Figure 5 Conceptual framework

## Chapter 3 Methodology

In this chapter, the methodology of this research will be explained, which includes research design, data collection, and analytical method. In the end, the limitation of this methodology will also be discussed.

### 3.1 Research Design

The research design used in this study is a case study design, since the total study population is one entity (which is NEPG) (Kumar, 2011). Kumar (2011) stated when doing a case study design, it is assumed that the case being studied represents the typical case. This assumption allows us to have a valuable insight on a particular topic or situation. He argued the major strength of the case study design is that it is useful in areas where little is known, which is prevalent in qualitative research. The main focus in qualitative research is to understand, explain, explore, discover and clarify situations feelings, perceptions, attitudes, values and experiences of a group of people (Kumar, 2011). Since the main interest of this research is to study the strategy of the company and the perceptions of the customer, the qualitative study design is more appropriate. As it is a very flexible and open-ended technique to collect data and it is more appropriate for exploring the variation and diversity in any aspect of social life (Kumar, 2011).

### 3.2 Data collection

In this study, the data will be collected within two groups, namely NEPG's managers and NEPG's current EU customers. The reason that these two groups of informants will be chosen is:

According to NEPG Major Product Research Report (2012), NEPG exports about 47% of its vitamin C powder product to Europe, which the European customers are NEPG's major customer segments. Also, to analyze the customers' perceptions over the company in the context of forward vertical integration, customers' willingness-to-buy towards the new product and current relationship quality will be analyzed. Finally, to respond the customers' preferences and aim for getting more profit, company's capability will be developed.

Since the NEPG's headquarter is in Shenyang, the place for the data collection will be in Shenyang, Liaoning province, People's Republic of China. Depending on these two groups of study population, primary data will be collected and analyzed. The primary data collection method will be used in this study is interview, since interview is one of the most common methods used in the qualitative research (Kumar, 2011). Also, Frey and Fontana (1991) note that case studies normally focus on two types of data gathering methods, which are observation and interviews. Interview involves asking questions, listening to and recording answers from an individual or group on a structured, semi-structured or unstructured format in an in-depth manner (Qu & Dumay, 2011). McNamara (1999) stated that interviews are particularly useful for getting the story behind a participant's experiences. He also stated the interviewer can peruse detailed information around the topic, since the questions can be further explained, and the information can be supplemented. The whole interview research for both parties will be conducted over a period of one month since there are time limitations of this research.

In this research, two parts of interviews will be conducted, which the first part interviews will be set up among NEPG's EU customers and the second part of interviews will be conducted with the NEPG managers. For all above the reasons and the fact that not all NEPG's managers and its customers will have the same chance to be selected, the judgmental sampling will be used. This type of sampling method will be used for both groups of interviews. According to Kumar (2011), this sampling method

is appropriate for qualitative studies when the goal is to describe a phenomenon. Moreover, it is used when the researcher knows who can provide the best information to achieve the objectives of the study (Kumar, 2011).

The first part of interviews will be set up with NEPG's current European customers for inquiring their perceptions over NEPG and their attitudes toward forward vertical integration (Table 1). For selecting the adequate amount of interview customer candidates, Baker et al. (2013), suggest that researcher should shoot for a sample of 12. Since this number gives them the experience of planning and structuring interviews, conducting and partially transcribing these, and generating quotes for their papers. However, for a longer project such as thesis, the sample size might extend slightly, but rarely more than 20 (Baker et al., 2013). Since this study is a six-months thesis research, the first part of the interviews will be set up among 14 NEPG's current European customers. The specific customer companies will be selected under the help of NEPG, which the selecting criteria will be based on the customers' firm size, purchasing behavior, their final product type and the relationship with NEPG. Since NEPG will forward vertically integrate from making powder to make effervescent tablets, chewable tablets and coated tablets, the customers who also make vitamin C tablet product will be selected in priority.

Table 1 Company selection

Nr.	Company	Location	Customer tyoe	Product type
1	AVIDA HEALTH PTE.LTD.	Europe, (Mainly in UK)	Distributor	API
2	WILD Flavors & Specialty Ingredients	Germany	Distributor	API
3	P&G	International	Distributor	API
4	FLEVO CHEMIE (NEDERLAND) B.V.	Netherlands	Distributor	API
5	PARKACRE ENTERPRISES LIMITED	UK	Distributor	Finished product
6	Alliance Boots Sourcing (Hong Kong) Limited	Hongkong	Trader	Finished product
7	OSKAR BERG GMBH	Germany	Distributor	API
8	VICORQUIMIA. S. A	Spain	Distributor	API
9	SELECTCHEMIE AG	Switzerland	Distributor	API
10	ECSA Chemicals AG	Switzerland	Distributor	API
11	Jo Kozerzet Kozpont Kft	Hungary	Retailor	Finished product
12	ATLANTIC CHEMICALS TRADING GMBH	Germany	Distributor	API
13	Catalent Germany Eberbach GmbH	Germany	Distributor	API
14	SANDOZ ILAC SANAYI VE TICARET A.S.	Turkey	Distributor	API

A semi-structured customer interview guide will be created, which regarding to the measurable factors developed from the literature (such as the factors measure current relationship quality and customers' willingness-to-buy). According to Yin (2013), when utilizing semi-structured interviews, it is important to identify key informants and focus on those who are in a position to have information about the problem studied. Therefore, interviewing the sales manager or other equivalent position of the vitamin C tablet product manufacturing companies will be put in the top priority. This part of interviews was seeking to answer the sub-question 2, which analyzes the customers' perceptions regarding to the current relationship with NEPG, who is going to forward vertically integrate from only making powder to make effervescent tablets, chewable tablets and coated tablets, etc. Also, the customers' willingness-to-buy, will be measured in this research. The customers' interviews will be conducted in the end of November, 2017. Ideally, all the interviewees will be approached physically. However, some of the customer companies may operate a subdivision in China and others do not. Therefore, the interviews among selected customers were approached either physically or via social media (E.g. Skype,

etc.). Moreover, some of the interview among all the 14 European customers were recorded under the customers' approval.

Table 2 NEPG manager information

	Name	Function	Title
<b>A</b>	Yinan Huang	NEPG international trading department (European division)	General manager
<b>B</b>	Zhenghe Wang	NEPG international trading department (European division)	Managing director
<b>C</b>	Xianying Su	R&D	Vice-general manager
<b>D</b>	Jinna Cao	NEPG international trading department	General manager
<b>E</b>	Wenqing Zhang	NEPG international trading department (European division)	Sales manager

The second part of the interviews was set up among five managers of NEPG (Table 2). According to the interviewees' job function different questions were asked, but some questions were repeated. Information questions and opinion questions were used to collect facts and perceptions; probing questions was also prepared to be used when informants' answers cause confusion or required more details. These questions were aiming for gathering information about the varieties of current Vitamin C products, company's strategy over forward vertical integration and its current relationships with its EU customers. The first interview was conducted in the middle of November, with the general manager of NEPG's international trading department (European division), Yinan Huang (**Manager A**). The aim of the first interview was to get the information about the varieties of the current Vitamin C product NEPG export to the European market, the customers' final product type and the current customer relationship strategies. Together with Ms. Huang, informant customers were selected based on their firm size, purchasing behavior, their final product type and the current relationship with NEPG. The second interview was conducted after the customer's interviews finished, which was conducted with the managing director of NEPG's international trading department (European division), Zhenghe Wang (**Manager B**). To respond the customers' perceptions, the second interview aimed for asking what the company's capabilities are regarding to the related aspects (such as product quality, total product quantity being exported, service/support, communication/interaction, etc.). The third interview was conducted with the vice-general manager of NEPG, Xianying Su (**Manager C**). The aim of the third interview was to know NEPG's dimension over forward vertical integration and to see what adjustments can be made in order to match the customers' needs, which in terms of stages, breadth, degree and form of integration. Aimed for getting more information from the company, two more managers Jinna Cao (**Manager D**) and Wenqing Zhang (**Manager E**) were interviewed. All these five interviews were semi-structured as well, since the target group are the top managers. According to Bryman (2015), semi-structured interviews can provide a framework, which allows the interviewer to set specific topics to be examined and in the meantime provides a higher possibility for interviewer to acquire more in-depth answers.

The second part of interviews sought to answer the sub-question 3, which analyzed the company's capabilities regarding to the forward vertical integration, which from only producing vitamin C powder to produce effervescent tablets, chewable tablets and powder drinks. The second interview guide was created based on the direct & indirect effect of company's capabilities and dimensions of forward vertical integration. To respond customer's preferences, company's dimension over forward vertical integration, profitably, product quality, service and communication/interaction will be measured. In this part of the interviews, the interviewees were approached physically, and the interviews will be recorded.

### 3.3 Analytical method

Qualitative data analysis is the range of process and procedures whereby we move from the qualitative data that have been collected into some form of explanation, understanding or interpretation of the people and situations we are investigating (Strauss, 1987). It refers to research activity which, involves several different but related elements (or operations). Qualitative analysis occurs at various levels of explicitness, abstraction and systematization.

It is time saving by using the electronic software to code, but it might also take several weeks to get acquainted with a software package (Basit, 2003). Regarding to the time constraints and the translation process, the data was transcribed and coded manually in this research (Table 4, Table 6 and

Appendix 1 Company interview questions). The framework of coding was guided by the measurable factors which were derived from the literature.

The main variables in this research were measured by multiple items, such as company's capabilities in terms of dimensions of integration, current customer relationship quality and the customers' willingness-to-buy. The detailed interview questions are listed in

Appendix 1 Company interview questions and Appendix 2 Customer interview questions (and Expected answer).

In total, 31 questions were constructed and asked to the NEPG managers, respectively. Some of the questions were also repeated in different interviews. These questions were divided into four question types, namely direct effect questions, indirect effect questions, questions regarding to degree of integration and informative questions. The classification of the questions is shown in Table 3.

Table 3 Classification of questions (Company interview)

<b>Question Type</b>	<b>Question number</b>	<b>Number of questions in total</b>
Direct effect questions	2; 7; 12; 13; 20; 21; 22; 24; 28	9
Indirect effect questions	23; 25; 27; 30; 31	5
Questions regarding to degree of integration	1; 3; 4; 5; 6; 11; 14; 29	8
Informative question	8; 9; 10; 15; 16; 17; 18; 19; 26	9

According to Walter et al. (2003), if the benefit of a relationship is realized within that relationship, it is a direct effect. Lin et al. (2014) stated there are three aspects of the main effect of forward integration which are profitability, quality and volume function. These factors that were summarized by Lin et al. (2014) are adopted and measured in this research. Nine questions (in

Appendix 1 Company interview questions) were generated to measure the direct effect of company's performance. These items are developed based on the studies by Lin et al. (2014) and Harrigan (1985).

There are also indirect effects which could also influence the firm's performance. These indirect effects include non-product related attributes such as service and communication (Wilson, 1995) Based on the Maslow's demand theory, Chen et al. (2005) gives an extra vision about the communication/interaction. Interaction between the customer and supplier, which means, more specifically, the face to face interaction. This kind of interaction focus more to the technical support since the quality of technical support is as the same importance as product quality. The ability to communicate with exchange partners fosters cooperation and trust in relationships (Perrien and Ricard, 1995; Deutsch, 1958). Therefore, these indirect factors will also be adopted and examined in this research. Five questions ( in

Appendix 1 Company interview questions) were created based on the studies by Chen et al. (2005), Wilson (1995) and Perrien and Ricard (1995).

Dimensions of integration refers to the stage, breadth, degree and form of integration (Harrigan, 1985). Harrigan (1985) suggested that firms may evaluate themselves before integrating. Firms may adjust the dimensions of their vertical integration strategies to suit competitive or corporate needs. Eight questions (in

Appendix 1 Company interview questions) were used to measure dimensions of firm's integration. The items are developed based on the studies by Harrigan (1985).

In addition, according to the manager's answer, nine followed-up questions (in

Appendix 1 Company interview questions) were asked, which aimed to acquire more information. Since these questions were asked extemporaneously, those questions were not strictly followed the framework.

Current relationship quality was measured from the customers' perceptions, which contains three aspects, namely commitment, trust and satisfaction. In total 22 questions (in Appendix 2 Customer interview questions (and Expected answer)) were generated, which aiming to find out customers' trust, satisfaction and commitment over the NEPG. These factors were measured by Likert scale, and further inquiries were made to find out the customers' intentions behind the score.

Commitment is the motivation to maintain the relationship and the length of the relationship. According to Morgan and Hunt (1994), commitment should be an important variable in determining successful relationships depend on mutual commitment between customer and supplier. When motivation to maintain the relationship is high, then the probability that the quality of the relationship is also high increases. A longer relationship implies a certain degree of commitment between two parties (Dwyer, Schurr, and Oh, 1987). Three questions (in Appendix 2 Customer interview questions (and Expected answer)) were generated to measure the customer's commitment over its supplier. These items were developed based on the studies by Dwyer, Schurr and Oh (1987). Moreover, because of the complex nature of the B2B context, Kristensen et al. (2000) stated that business customers consider corporate image as the most important criterion for being loyal to the supplier compared to satisfaction, trust, and handling customer complaints.

Trust refer to the belief that the other party is honest and sincere and in no circumstance will deliberately do anything to damage the relationship. The trust of a firm may be determined on the basis of reputation, trustworthiness, mutual disclosure (Kwon and Suh, 2004), as well as previous experience (Wilson, 1995). Authors such as Doney and Cannon (1997), Ganesan (1994) treats trust as a second-order construct of credibility which is based on the extent to which the retailer believes that the vendor has the required expertise to perform the job effectively and reliably (cognitive dimension); and benevolence which represents the good intention of exchange partners, as well as beneficial motivation of the vendor to the retailer when new conditions arise (Ganesan, 1994). We define the trust between supplier and customer belongs to inter-organizational trust, and it measures the aspects of transaction experience, fairness, reputation, and trust worthiness. Based on the direct and indirect dimensions developed by Lin et al. (2014) and Walter et al. (2003), six questions (in Appendix 2 Customer interview questions (and Expected answer)) were generated to measure the customer's trust over its supplier. These questions were also developed based on the studies by Claro et al. (2003), Doney and Cannon (1997), and Ganesan (1994).

Customer satisfaction was used to measure the quality of a business relationship. People are satisfied when the perceived relationship is equal to or stronger than what they expected. Wallin Andreassen and Lindestad (1998) suggest that the customer satisfaction indicators should tap into the construct by addressing overall satisfaction and congruence with expectations. Ping (1993) proposed that the relationship between buyers and sellers reflects overall satisfaction. In addition, we adopted two items commonly used in customer satisfaction research as indicators of the customer satisfaction construct (Oliver and Swan 1989). Moreover, adopted from the direct and indirect dimensions developed by Lin et al. (2014) and Walter et al. (2003), which can determine the customers' willingness-to-buy, thirteen questions (in Appendix 2 Customer interview questions (and Expected answer)) were constructed and used to measure relationship satisfaction. This measurement instrument was also developed based on Fornell et al. (1996).

A follow up question was asked, which is “If NEPG forward vertically integrate, from only producing powder to produce tablets product, will you still buy its product?”. If the customer’s answer is “NO”, then the intention hidden behind this answer will be asked and then the interview will be ended. However, if the respondent answers “YES”, the following question which related to the customers’ expectations (i.e. product quality, price, volume, service, communication and the relationship) will be asked. These questions were constructed based on Lin et al. (2014), Walter et al. (2003), Oliver and Swan (1989), Dwyer, Schurr, and Oh (1987), and Fornel et al. (1996).

### 3.4 Triangulation

Because of the limitation of the case study method, triangulation of data source is required. Secondary data will be collected to avoid bias and gain insight from other case studies. In a case study design, the “case” you select becomes the basis of a thorough, holistic and in-depth exploration of the aspect that you want to find out about (Kumar, 2011). Also, it is stated, a case study should focus on a bounded subject/unit that is either very representative or extremely atypical. In this study, cases about customer relationship regarding to forward vertical integration in European Fast-Moving Consumer Goods (FMCG) industries will be selected first. If there are not many cases could be found, then the customer relationship management case regarding to forward vertical integration in any industries in Western countries will be selected. However, the boundary of the case search will keep within the western countries.

When doing the search for the cases, the credibility of the source has to be evaluated and taken into consideration. Within this study, the sources are divided into high, medium and low credibility levels. Case sources from academic and governmental institutional bodies are classified to have high credibility level; several examples include universities, government reports, and journals. Case sources from non-academic institutions are classified to have a medium credibility level; several examples include news articles, consultancy company’s articles, non-profit organization articles. Case sources from colloquial platforms are classified to have a low credibility level; several examples include self-written articles and forums.

### 3.5 Validity and Limitation

This section presents the validity and limitations of both the interviews and the case comparison analysis method. Since this research is a case study, there are several limitations of this study. The limitations are the case study limitation itself, sample selection method, and data collecting method.

In this research which only NEPG will be analyzed, its lack of representativeness and its generalizability to the whole vitamin C industry is low. Another possibility is that researcher bias may arise according to the amount of data being collected. There are possibilities that the data gathered are misread or misinterpreted by the researcher. Moreover, the information of the contact customers was given by NEPG which they might just be the sales person or contract employee of that company. This could influence the quality of the result since the interviewed person may not represent the company and also, he/she may not know all the company’s decision in this situation. Because of the aforementioned reasons, it would be hard for the researcher to have an objective outlook on the data and reduce the scientific nature of the research.

When constructing the interview guide, it is important to have the face and content validity. Each question or item on the research instrument must have a logical link with the objective, and the items and questions over the full range of the issue is measured. Also, the wording of questions and physical setting is important, while avoiding the leading questions.

When conducting the interview, the quality of the data depends on the quality of the interviewer, the quality of the interaction and the researcher bias (Kumar, 2011). In an interview situation the quality of the data generated is affected by the experience, skills and commitment of the interviewer. Also, because the interaction in each interview is unique, the quality of the responses obtained from different interviews may vary significantly. Moreover, the researcher bias in the framing of questions and the interpretations of responses is always possible. In this research, the researcher will be the primary instrument for data collection and analysis, it is possible that he/she may exhibit bias in the way he/she interpret responses, select response categories or choose word to summarize respondents' expressed opinions. In the end, due to the companies' confidential agreement, the interviewee may not willing to tell everything. This may also affect the quality of information or even result in an interview being terminated. In addition to the data collection method, the integrity and skills of the investigator are important. Because the researcher will be the primary instrument for data collection and analysis. It is also possible that the researcher might need time to prepare for the training and transcribe responses.

# Chapter 4 Results and analysis

In this section, the result of the primary data collection method will be presented and discussed. The main objectives of this section are to answer the second SRQ “What are the NEPG’s current customers’ perceptions regarding to the trust, satisfaction and commitment?” and the third SRQ “What are the NEPG’s capabilities to offer its current EU customers regarding to the dimensions of integration?”. This chapter is separated into three sub-chapters, each chapter would first start with presenting the primary data collection results, and then analyzing the found result, which could drive to the possible gaps and matches between NEPG and its EU customers.

## 4.1 Customer’s interview result

The idea of the customer interview is to search for the customers’ perceptions over NEPG’s current performance, and to analyze whether there is a positive match between customers’ perception over NEPG’s current performance and their willingness to buy NEPG’s new product after forward vertical integration. The results of the customer interviews showed customers’ perceptions over NEPG’s current performance which in terms of trust, satisfaction and commitment was quite positive. However, there was no significant correlation between customers

Used the three factors (trust, satisfaction and commitment) that had been derived in Chapter 2, all the customer interview results were summarized (in Table 4) and averages were calculated (in Figure 6). From Figure 6 we could see that most of the averages were above 5 and most of the standard deviations were below 1. perception over NEPG’s current performance and their willingness to buy the new product.

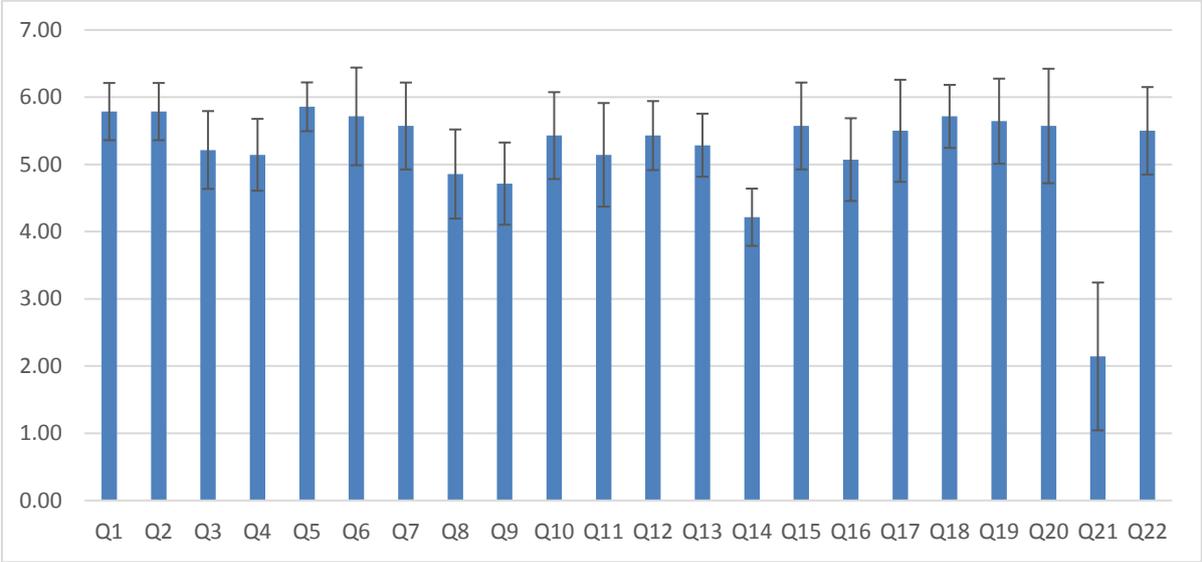


Figure 6 Overall average result of all the customer interviews

According to Table 4, customers’ trust over the company was measured (Question 1 to 6). The results ranged from 4 to 7 (out of 7) and the averages were above 5. From the table it is clear that customers trusted NEPG’s brand and the quality of their products very well. Especially the question 5: “Our company believes NEPG treat us in an honest way in every transaction”, it reached an average of 5.86. The reason why these European customers trusted NEPG is mainly because NEPG is a large, state owned company. Moreover, it has a relative good reputation in the European market, which regarding to the product quality and delivery time.

Table 4 Result of customer interview

	Questions	Remarks
<b>Trust</b>		
1	Our company <i>trusts</i> the current relationship with NEPG (Overall trust).	
2	Our company <i>trusts</i> the current product brand of NEPG.	Large company, state owned, good reputation in vitamin C market
3	Our company <i>trusts</i> NEPG's current product quality.	The quality of the product is above the standard. Some of the companies found there are deviations between batches
4	Our company believes the expertise of NEPG to perform job effectively and reliably.	NEPG could deliver the product on time. However, sometimes the technical problem takes longer time
5	Our company believes NEPG treats us in an honest way in every transaction.	Every transaction is under the negotiation and regulated by the regulation
6	Our company has interest of NEPG in company's welfare and motivation to seek joint gains.	Companies focus on the long-term goal and would like to seek mutual benefits
<b>Satisfaction</b>		
7	Our company is <i>satisfied</i> with the current relationship with NEPG.	Problem could be solved together, could be solved accurately, NEPG treat customer honestly, communication is smooth. However, the duration is a bit long
8	Our company is <i>satisfied</i> with NEPG's current product quality.	Sometimes there are impurities/deviations/color/size problems among batches
9	NEPG's current product quality meet our company's expectation (which aspect does and which aspect doesn't meet the expectation?)	The general quality is good, but for some batches, the quality should be improved
10	Our company is <i>satisfied</i> with the current price NEPG offer to me.	The price matches the product quality, and the product quality is above the standard
11	The current price NEPG offer to our company meet our company's expectation. (which aspect does and which aspect doesn't meet the expectation?)	The price is the result under the negotiation, but it is always good to be cheaper
12	Our company is <i>satisfied</i> with the current service quality of NEPG? Why?	Staffs are helpful, most of the problems could be solved. However, sometimes the duration is too long
13	Our company is <i>satisfied</i> with the current service regarding to the technical problem.	Most of the technical problems could be solved. However, the traceability is low, sometimes also takes longer time
14	Our company is <i>satisfied</i> with the current service regarding to solve the problem in time.	Sometimes the problems could be solved very slow, especially regarding to the technical problem
15	Our company is <i>satisfied</i> with the current service regarding to the problem solving accuracy.	Most of the technical problems could be solved accurately.
16	The current service quality of NEPG meet our company's expectation. (which aspect does and which aspect doesn't meet the expectation?)	Most of the aspect (service quality such as accuracy, attitude, etc.) Except for the problem solving time.
17	Our company is <i>satisfied</i> with the current communication/interaction with NEPG. Why?	Staffs are easy to communicate and always willing to help. However, for the traceability of the process, may be NEPG should improve the communication within the company
18	Our company is <i>satisfied</i> with the current way of communication with NEPG. Why?	Email is the most common media NEPG uses to contact with their customers. Moreover, face to face meetings will be arranged when it is necessary. The current way of communication is enough
19	Our company is <i>satisfied</i> with the current frequency of communication with NEPG? Why?	Normally when orders are made (2 months in average), we definitely contact NEPG. For other cases, like there are problems happened, we contact NEPG immediately. If it is needed, we contact NEPG anytime.
<b>Commitment</b>		
20	Our company focus on long-term goals with NEPG in this relationship.	NEPG is a quite reliable partner, if the product quality could be standardized then customers definitely would like to cooperate with them in a long run.
21	Our company shares any values with NEPG. (What kind of values do you share with NEPG?)	Some of the companies only share formulas with NEPG. NEPG works as the manufacture, and after production NEPG will put customers' label on the product and export
22	Our company willing to invest time and other resources into the relationship with NEPG.	NEPG is a state owned company, a trustworthy partner, if it is needed, we would be happy to share our resources with NEPG to build our mutual benefit

For the customers' satisfaction measurement (Question 7 to 19 in Table 4), results ranged from 4 to 6 (out of 7). If we calculated the average scores which were based on the customers' satisfaction, most of the customers are quite positive towards NEPG's current business performance, since most of the average scores were above 5 (Figure 6). However, question regarding to the product quality (Question

8 and 9) had an average score of 4.86 and 4.71. This was because sometimes the products are different between batches, which in terms of impurities, yellowish color and different particle sizes. Also, NEPG scored low (an average of 4.21) in problem-solving issues (Question 14).

Moreover, the results over customers' commitment (Question 20 to 22 in Table 4) ranged from 1 to 7 (Out of 7). However, in this section there was an outlier which is question 21, stated "Our company shares any values with NEPG" (Figure 6). which had an average of 2.14. The reason of this low commitment score was because some of the customers they only share their formulas with NEPG and others didn't share anything with NEPG. NEPG either produce customers' formula and put on the customer company's label, or NEPG sell their own products to the customers. Another reason for this low commitment score is because customers stated the traceability of the problem-solving process is low and the processing time is always too long. Customers especially pointed out the technical problems, which the solving time is extremely long.

Finally, based on these customer's perceptions, their willingness to buy the new product were asked. The result from the interview were classified, as can be observed in Table 5. Compared the results, most of the existing EU customers would like to continue buying the vitamin C powder product (API) from NEPG, instead of buying their new chewable or effervescent vitamin C tablet product.

Table 5 Customer's willingness to buy the new products

No.	Company name	Willingness to buy tablets
1	AVIDA HEALTH PTE.LTD.	No
2	WILD Flavors & Specialty Ingredients	Depends
3	P&G	No
4	FLEVO CHEMIE (NEDERLAND) B.V.	Yes
5	PARKACRE ENTERPRISES LIMITED	No
6	Alliance Boots Sourcing (Hong Kong) Limited	Yes
7	OSKAR BERG GMBH	No
8	VICORQUIMIA. S. A	No
9	SELECTCHEMIE AG	Yes
10	ECSA Chemicals AG	No
11	Jo Kozerzet Kozpont Kft	No
12	ATLANTIC CHEMICALS TRADING GMBH	Yes
13	Catalent Germany Eberbach GmbH	No
14	SANDOZ ILAC SANAYI VE TICARET A.S.	No

Among all these 14 analyzed companies, 9 of the customers (which were marked in red in Table 5) answered they do not want to buy the new tablet product after NEPG's forward vertical integration.

From the answer of previous questions that were listed in Table 4, we analyzed the average score of these (positive) customers who are willing to buy the new product (Figure 7). Compared with the customers who are not willing to buy the new tablet products, the average score of these positive customers were slightly higher. Especially from question 7 to 19, these positive customers were more satisfied with NEPG's current product/service quality. Moreover, the answers of these customers were more positive than the others, which means they would like to focus on the long-term goals or share more values with NEPG.

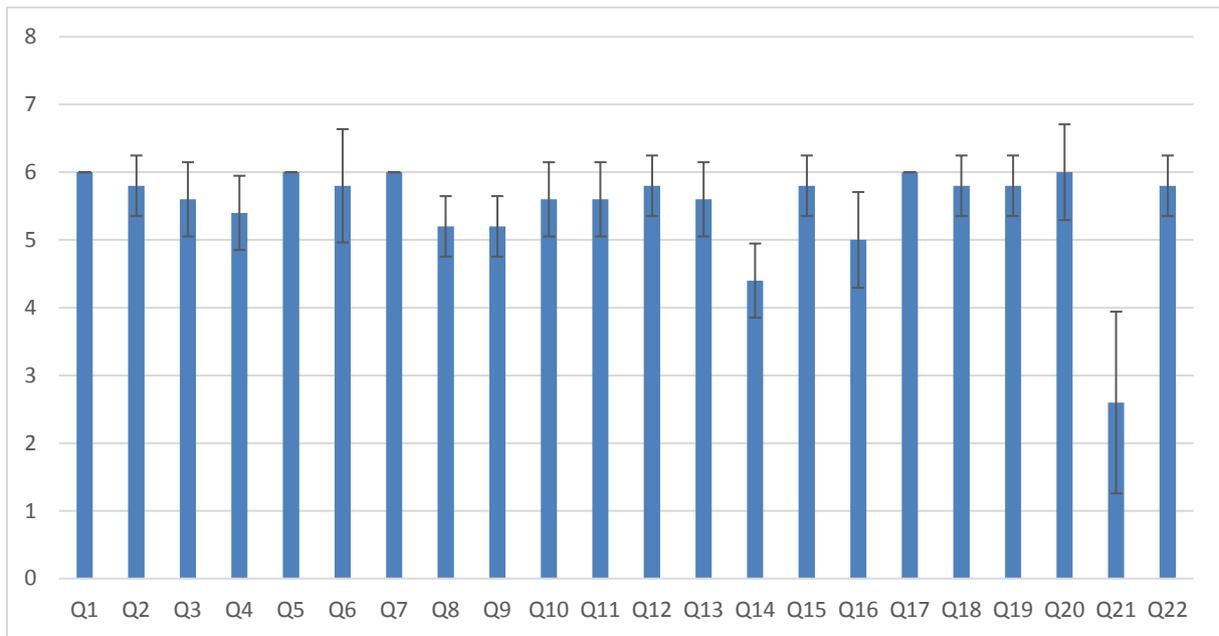


Figure 7 Average result of customer who are willing to buy the new tablet product

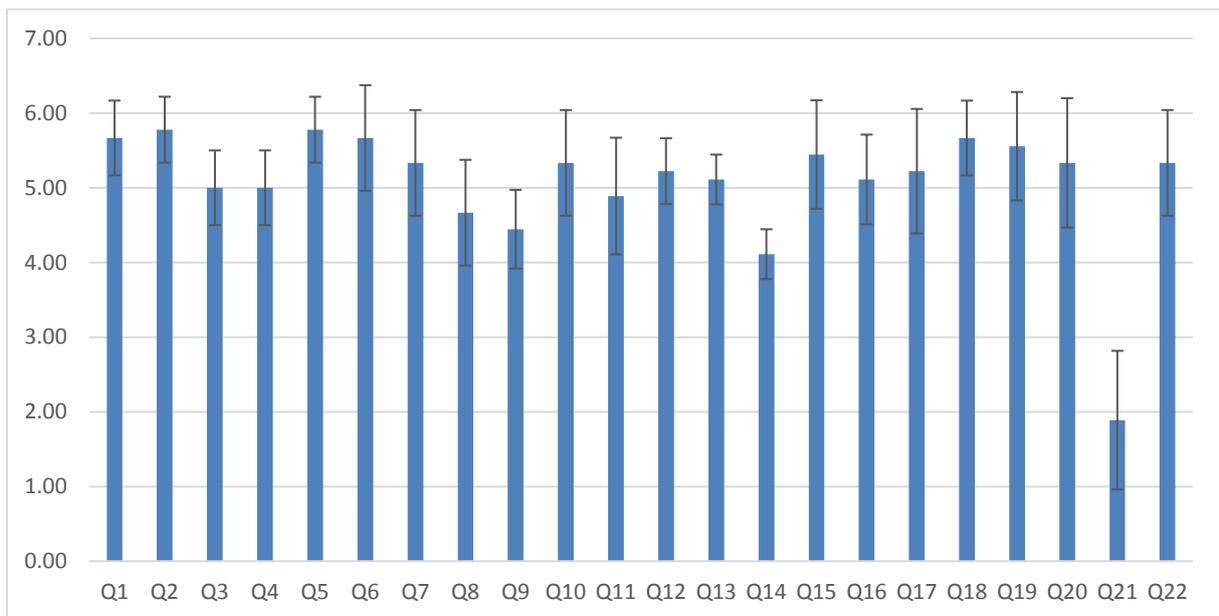


Figure 8 Average result of customer who are not willing to buy the new tablet product

For all the customers, the intentions behind were further asked, which were listed in Table 4. From the results we found that the main reason for the customers who are not willing to buy the new product was because the short effective shelf life of the finished product (vitamin C tablet) after its arrival to Europe. In general, from the day that customer order the product till the product is ready for shipment, it will take around 3-4 months. Moreover, all the products are shipped by marine transportation, which will take another 45 days, approximately (Figure 9).

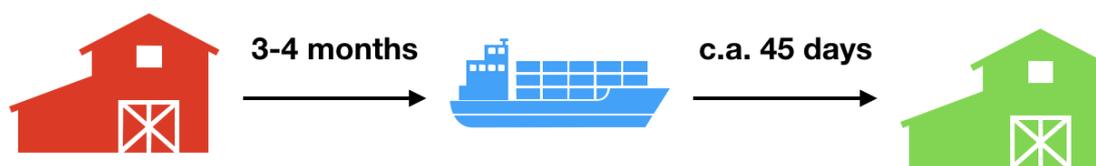


Figure 9 General procedure of production to delivery

From the very beginning the shelf life of the raw material (vitamin C powder) is two years. The effective shelf life is calculated as: shelf life remained when arriving at the final destination divided by the shelf life of the vitamin C powder when start producing the tablets (Equation 1).

Equation 1 Effective shelf life calculation of vitamin C tablets

$$\text{Effective Shelf Life} = \frac{\text{Remained shelf life when arriving at the destination}}{\text{Total shelf life of the raw material (vitamin C powder)}}$$

Normally before the order is made, the effective shelf life for the product should be more than 80% will be stated in the contract (Personal communication, 23 Nov. 2017). However, to export vitamin C tablet products from China to Europe, from the day that customer ordered till the final delivery, it takes approximately half year. It is not possible to reduce the lead time since the factory is not only supply the overseas customers. The product will be produced by order but if there is a rush order then NEPG will ship the product by air freight. In general, the effective shelf life of the imported vitamin C tablet product remains only 75% of the total shelf life, which is hard for the next tiers customers either to sell the product or keep more products in stock. Therefore, short effective shelf life is the main reason that the European customers are not willing to buy the tablet products.

Customers also stated another option for NEPG to sell the vitamin C tablet products in the European market, which is diving into the retail market and sell their tablets directly to the market. This could provide NEPG a broad potential market by cutting the intermediate costs which are created by the traders/distributors. Three of NEPG managers also showed positive attitudes towards diving into the European retail market, but they listed the potential risk. Even though diving into the retail market could eliminate the intermediate bid-ask to spread which is created by the traders/distributors, it need a strong support by the local market. However, the European market is segmented, and most of the end customers trust more about their own countries' brand. For NEPG it is even harder to introduce their product as an overseas manufacturer who is unfamiliar to those local consumers.

For the rest 5 customers (which were marked in green and orange color in Table 5, 4 of them (which are marked in green) showed their interest of buying the new tablet product from NEPG. These customers would like to buy both vitamin C powder and tablet products, the purpose of these customers is to broaden their current product portfolio and try to maximize their profit. The last one customer's answer is "it depends" (which are marked in orange in Table 5), since they would like to make a decision based on the price of the new tablets product and the quality of the product. The reason why WILD Flavors & Specialty Ingredients gave this answer was because if comparing the production and transportation fee, there is not much cost difference between the Chinese

Manufacturers and the European manufacturers. Since in China more labors are used, and, in the Europe, productions are all completed by machines.

Moreover, the price of the raw material (vitamin C powder) also plays an important role. Since the price of the vitamin C powder shows a cyclical variation, which ranges from 3.58 – 10.2 Euro/kg and currently it stays at a historic high price between 9.5-10.2 Euro/kg. If the price of vitamin C powder rises, the production cost will rise directly since the price of the raw material rises. Take vitamin C chewable tablets for example, the production of one vitamin C chewable tablet is 0.03 Euro and the selling price is 0.13 Euro/tablet. The amount of pure vitamin C powder contains in one tablet is 0.3 grams. Therefore, if the cost of vitamin C powder is 0.03 Euro/tablet, plus the production cost 0.03 Euro/tablet, the total cost for one vitamin C chewable tablet will be 0.06 Euro. This cost is almost the half of the selling price, which still didn't include the selling expenses (e.g. employee cost, shipping cost, etc.). In this situation, it is better to procure vitamin C tablets from other Chinese suppliers instead of making their own product. However, if the price of vitamin C powder product (API) is lower than 7 Euro/kg (which stated by all NEPG managers), then it is cheaper for the European customers to make their own vitamin C tablet products.

Among those companies who would like to buy the new tablets product from NEPG, followed up questions were inquired. These questions were trying to ask what this action means to customers' current production. The summarized results are shown in Table 6.

Table 6 Customers' intention of buying the tablets

If NEPG forward vertically integrate, from only producing powder to produce tablets product, do you willing to give the current production process to NEPG?	It depends, but the price NEPG offers to us should be way more lower so we can gain profit from it. However, the main concern is the validity of the tablets. If we buy a large amount of tablets from NEPG and then sell it to our EU customers, the period of validity will be shortened and it is not considered as a "fresh" product by the customer. We always want to make sure our company can gain more profit and avoid the risks.
If you give the current production process to NEPG, what does it mean to your process?	Broaden our product portfolio, find new customers
What conditions do you have regarding to the relationship with NEPG?	Our relationship with NEPG might be tighter, since we have more product which are sourced from NEPG. We also share more resources with NEPG
What conditions do you have regarding to the NEW product quantity/volume do you want to buy?	It depends on the volume our customers need, and the company's capability
What conditions do you have regarding to the price of the NEW product?	The vitamin C finished product is not really expensive, so we would like the price that NEPG offer to us be as cheap as possible
What conditions do you have regarding to the NEW product quality?	The shelf life is the main concern
What conditions do you have regarding to the service/support (Technical support, etc.)?	The service/support should be better, in terms of short processing time and more accurate
What kind of communication/interaction do you expect?	Email, some face to face meeting if it is needed
How often do you prefer to communicate with NEPG?	Before every order is made, and when problem occurs
Do you still focus on long-term goals with NEPG in this relationship? Why?	Yes, we are still focusing on the long-term goals with NEPG. Since we are now sourcing more from NEPG and we would like to establish a tighter relationship our supplier
Do you still willing to invest time and other resources into the relationship with NEPG? Why?	Yes, if it is needed, we would like to invest more of our company's resources into this relationship.

In Table 6, it showed two main concerns for the customers who were willing to buy the new product. The first concern was about the profit. Since every company want to get more profit and do a better business in the market, they always care whether from sourcing vitamin C powder to vitamin C tablet is profitable or not. All the companies stated that since the price of vitamin C tablet is not really expensive (which is around 0.13 – 0.3 Euro/tablet), so they would like to ask NEPG to offer a relative lower price. The second concern was about the effective shelf life (Equation 1), because the shipment

takes a long time and it is also quite hard to shorten the lead time. Then for these distributors/traders, to source vitamin C tablets from NEPG means they could broaden their product portfolio. Moreover, this could also mean that besides the existing customers who are buying the vitamin C powder, the customer companies need to find new customers.

Considering about the relationship, all of the customers stated that they would prefer a tighter relationship with NEPG. This is because the customers will source more product from NEPG and they would like to share more resources and information with NEPG. Moreover, all the customers would like to focus a long-term goal with NEPG if it is needed because base on the current performance, they trust NEPG and their products.

On the other hand, customers had a recommendation about the quality and the service/support which provided by NEPG. They explained that they would like to have a more standard product quality and a higher traceability for their new vitamin C tablet products.

To conclude, however, there was no positive mediating effect between the customers' perceptions over NEPG and their willingness to buy the new product. Since most of the customers are distributor and traders, who import the product from NEPG and further sell to their EU end product producers. When they want to make a decision they also need to take their next tier customers' interests into consideration. Also, the effective shelf life directly affects the customers' willingness to buy the tablets products, since the production and transportation takes longer time. In the end, the cost and the brand effect could also be included into the reason why most of the customers showed no interest about buying NEPG's new tablet product.

## 4.2 Company's interview result

Based on the customers' perceptions, the idea of the 5 company interviews were to search for the company's capabilities in the actions of forward vertical integration. This subchapter will be divided into two parts, which are company's capabilities regarding to the forward vertical integration. In order to adapt to the customers' requirements or preferences, company's strategies must be adjusted. Basically, using the dimensions that were derived from Chapter 2; together with the customers' perceptions, company interview results were summarized (

Appendix 1 Company interview questions).

Table 7 Classified company interview questions

	Name	Question asked
A	Yinan Huang	1,2,3,4,5,6,8,9,15,16,17,18,19,20,21,
B	Zhenghe Wang	1,2,3,4,5,6,7,10,11,12,13,14,15,16,18,28,29,30
C	Xianying Su	1,2,3,4,5,6,7,8,9,10,11,13,14,15,16,28,29,30
D	Jinna Cao	1,3,7,11,12,13,14,15,16,19,20,21,22,23,24,25,26,27
E	Wenqing Zhang	1,19,20,21,22,23,24,25,26,27

Detailed manager information was shown in Table 2 and in Table 7 the questions were classified by person. According to Manager B, NEPG’s raw vitamin C powder products hold a 18% market share in Europe, with an annual exportation amount of 4000-5000 tonnes. The production cost of pure vitamin C powder is 2.3 – 2.6 Euro/kg, and the previous selling price was 2.8 Euro/kg (Table 8). The net profit for every kilo of pure vitamin C powder is 0.5 – 0.2 Euro/kg (stated by Manager A, B, C, D and E). Then all managers stated the shipment cost should also be taken into consideration, which is around 20 Euro/kg. If we added these cost up, there is already a negative sum. Moreover, manager A and B stated that the total number of NEPG’s current European customer is less than 100. Within this customer group, most of the NEPG’s current customers are distributors or traders. In order to broaden the product portfolio and generate more profit, Manager A, B and C all stated that NEPG was already decided to integrate forward, by producing vitamin C chewable tablets and vitamin C effervescent tablet. They explained the reason why NEPG would like to make vitamin C tablet product is, the production cost for one vitamin C chewable tablet (which only contains 30mg pure vitamin C powder) is 0.003 Euro. However, the market price for one chewable tablet is 0.13 Euro. So as the effervescent tablets, the production cost for one 1000mg tablet is 0.01 Euro. The selling price for one effervescent tablet is about 0.3 Euro. One of the reason why NEPG chose these two products is because these two are the most lucrative product among all the vitamin C tablet variations, which also matches NEPG’s production properties. On one hand, Manager A and B said NEPG did a market research in early 2015, which includes the world market trend of vitamin C tablet consumption. They stated that vitamin C chewable tablet was consumed most by the consumers worldwide. Moreover, managers mentioned NEPG already has its own vitamin C chewable tablet production site, thus vitamin C chewable tablet was chosen in their product portfolio. On the other hand, vitamin C effervescent tablet product was also very common in the European market and many large companies (like Bayer, BASF, etc.) are producing them. Therefore, based on the relative large margin and market share of these two types of vitamin C tablet products, NEPG selected them to produce (Manager A, B and C).

Table 8 Price comparison of vitamin C products

Item	Production cost	Selling price
Pure vitamin C powder	2.3-2.6 Euro/kg	3.58-10.2 Euro/kg
Vitamin C chewable tablet (30mg)	0.003 Euro/tablet	0.13 Euro/tablet
Vitamin C effervescent tablet (1000mg)	0.01 Euro/tablet	0.3 Euro/tablet

By forward integrating to make vitamin C tablet products, Manager A, B and C all stated that NEPG would like to keep every production in house. Manager A stated that the intension behind is that the cost to produce tablet in house is low since NEPG already has a production site for the tablet products.

Also, for NEPG's current domestic customers, it is easier to produce the tablets in Shenyang and transport to other cities.

All the five NEPG managers confirmed the possibilities of NEPG could directly diving into the European vitamin C tablets retail market. However, they also stated that there are several challenges to sell the vitamin C tablet products in European market. One of the challenges was that besides the duration of transportation, European market is segmented. This means that besides the EU members whose food importation are regulated by the EFSA (European Food Safety Authority), non-EU members still execute their own countries' food safety standard. Also, from the interview with Manager B (Personal communication, 23 Nov. 2017), he explained that based on the previous market analysis and experiences, European consumers tend to buy their own countries' brand. This is mainly because they trust more to the product or the brand they are familiar with. Even though there could be a possibility for NEPG to dive into the European vitamin C tablets retail market and sell their product directly to the European consumers, NEPG will still face the risk of unprofitable or even loss. It is hard to predict the profitability of exporting tablets to Europe, which will risk of putting a considerable effort and getting a low profit in return. Therefore, NEPG needs to analyze the risks and benefits thoroughly before it finally decides to export to Europe.

However, Manager D and E stated that NEPG does produce tablet products and export to South America, which the transportation time is also about 45 days. NEPG produce the bulk tablet products and exported to the South America and the final packaging and labeling procedure will be done in the customers' factories. Some of the NEPG's customers are end product manufacturers, however, they will only procure the tablet products from NEPG when the price of vitamin C powder is too high. This is because the price of raw vitamin C powder was show a cyclical variation, which could be influenced by a short in supply, exceed the emission limit, or the government regulation. However, the price of vitamin C tablet product shows very stable.

Regarding to the target exportation volume, Manager B stated that the exportation volume of the next year is targeted for more than 5,000 tonnes for the vitamin C powder. Since they will export their first batch of vitamin C tablet product to Europe, their target is 1,000 tonnes.

To conclude, from all these five interviews it is clear that NEPG is capable of further producing tablet products. It might also be promising and lucrative to dive into the European retail market but a detailed risk analysis need to be done in advance. Also, the main constraints for NEPG is the production time. From the production side Manager C stated that they will try to shorten the lead time but it is not sure yet.

## Chapter 5 Discussion

This discussion section presents the possible gaps and matches between customers' preferences and the company's capabilities which is aiming to answer the fourth SRQ "What are the gaps and possible matches between NEPG and its current EU customers regarding to forward vertical integration?". Also, the limitations of the data collection method will be discussed. In the end, there will be a reference case of a successful Chinese vitamin C tablet manufacturing company who managed to integrate successfully. The relatability of this reference case will be further discussed together with the focal case.

The general information which regarding to the informative questions were got from both the NEPG manager and the customers were in concordance (for example, delivery time, transportation time, complaints, etc.). Regarding to the customer's reaction about the trust, satisfaction and commitment of the company, NEPG was quite satisfied with it. However, considering about the customer complaints, which regarding to the product quality and the extremely long processing time, NEPG managers stated that they will work on the quality control and the traceability of the problem-solving process. Especially for the tablet products that will be exported to Europe, NEPG will improve the traceability of each process between NEPG and the factories, from the powder to the tablet production.

The first objective of this study was to examine whether there is a (positive) relationship between company's capability about forward vertical integration and the customers' willingness to buy. Thus the first hypothesis was made, which is "***Company's capabilities which in terms of dimensions of integration has direct impact on customers' willingness to buy the new product.***". This hypothesis was tested by the customer's reaction over the company's forward vertical integration. Several measurable factors were used to test company's capabilities and customer's willingness to buy, which are dimensions of integration, price, product quality, service/support and communication/interaction. Customer interviews and email questionnaires were done to get the customer's attitudes towards NEPG's forward vertical integration. Moreover, five company interviews were also done to see what the company's capabilities are. However, from those results it was hard to see there was a direct correlation between forward vertical integration and current customers' willingness to buy the new product. The reason could be because most of the NEPG's customers are distributors or traders, they do not need to process the raw vitamin C powder by themselves. Normally these distributors/traders source the vitamin C powder from NEPG and sell them to the next tier customers (European end product manufacturing companies). According to the customers' responds, if NEPG forward vertical integrate, which means NEPG will produce both vitamin C powder and tablets; they still can buy the raw vitamin C powder from NEPG. Since most of these distributors' customers are end product manufacturing companies. Also, considering about the duration from the production to the transportation, these distributors would not prefer to buy the tablets from NEPG.

The second objective of our study was to examine whether there is a mediating effect between customers' perceptions and their willingness to buy the new product. The second hypothesis is: "***Current customers' perceptions over the company in terms of commitment, trust and satisfaction has a mediating effect between forward vertical integration and customers' willingness to buy the new product.***". This hypothesis was also tested by customer interviews, by which asking the customers about their trust, satisfaction and commitment over the NEPG's current performance. The findings reveal a subtle support for such an effect. It showed that the customers who trust more about the company tend to buy the new product. Since during the customer interview there were some companies showed their willingness to source the vitamin C tablets from NEPG. It is worthwhile to compare the result with Hellier et al. (2003) and Homburg et al. (2005), which they both focus on the

customer's expectation and the (re)purchase intention. Hellier et al. (2003)'s findings suggest that customer's expectations/satisfactions have a strong correlation with the repurchase intention. Homburg et al. (2005)'s findings suggested that higher customer satisfaction lead to a higher willingness to buy function. Our study extends Hellier et al. (2003) and Homburg et al. (2005)'s work by identifying other two aspects that the customer can use to measure their perceptions – namely, commitment and trust. Among all the interviewed companies these companies presented a relatively higher score in trust, commitment and satisfaction towards NEPG's service quality and communication; they would also establish a long-term relationship with NEPG. The reason behind because they have a mutual goal with NEPG, which they also want to expand their product profile and find more customers to obtain profit.

Literatures about the relationship between customer perceptions and their repurchase intentions were searched and compared with our results. According to Hellier et al. (2003) and Olsen (2003), they found that customer satisfaction lead to a customer loyalty and brand preference and therefore it influences the customer repurchase intention. In their results it didn't show a direct relation between customers trust, commitment with their repurchase intentions. However, they were stated more in a cause and effect relationship. In Yi & La (2004)'s result, they showed a more comprehensive relationship among commitment, trust, satisfaction and customer repurchase intention. They also stated that all this factors lead to a disconfirmation and therefore influence the customers satisfaction, loyalty and the repurchase intention.

For triangulation, it was hard to find the literature which showed a direct influence between customer's trust, commitment, satisfaction and their repurchase intention. The main reason is that compare with the previous research, there was one construct missing in our research. The customer loyalty was not included into this research and this might be one of the reasons why there were limited information about the similar research.

Finally, there are several limitations of conducting this study. One of the biggest limitation of the study is the incomplete information. Since the contact information was provided by the company and the quality of the contact person could not be ensured. There might be a chance that the contact person is contracted by another company and he/she is not aware of any company's decision. Or he/she only in charge of sourcing and directly takes order from the company. In this cases the contact person may not know the company's decision towards NEPG's forward vertical integration. This could lead to an incomplete or even wrong direction of the final result. Another limitation was personal bias, since this study was mainly based on interviews and probing people's ideas. There might be a chance that in any part of the interview the question was not explained well or it is not well understood by the respondent. Moreover, the ideal situation for data collection in this study was that all the interviewees will be approached face to face, which further opinions could be asked. However, in the real case, only 5 out of 14 companies were approached in person. This could also lead to an incomplete answer, since some respondents only gave scores while without giving any remarks. In the end, the construct of the interview questions was obtained from several studies, which may lack of finding out the detailed intention about the direct relation between forward vertical integration and customers' willingness to buy.

## Chapter 6 Conclusion & Recommendations

The general research question of this study is *“what the impact of forward vertical integration on customer’s willingness to buy among NEPG’s current EU customers?”*. This study attempted to answer this question using the different constructs that influences forward vertical integration, customers’ willingness to buy, and the factors influence customers’ trust, satisfaction and commitment over the company. In order to answer the general research question, five sub-questions were developed, and the methods were developed in order to answer these questions.

According to the literature three main factors were determined, which were company’s capabilities in forward vertical integration, customer’s willingness to buy the new product and the customer’s perception over a company. Two hypotheses were made, which ***“Company’s capabilities which in terms of dimensions of integration has direct impact on customers’ willingness to buy the new product”*** and ***“Current customers’ perceptions over the company in terms of commitment, trust and satisfaction has a mediating effect between forward vertical integration and customers’ willingness to buy the new product”***. In order to test these two hypotheses several sub-factors were developed for constructing the questions and approaching to the answer. In this research interview and email questionnaires were used, since not all the respondents were available for a face-to-face interview. In total 5 customer interviews, 9 email questionnaires and 5 company interviews were done in this research. Customer interviews were done first; the aim of these interviews was to find out whether the customers would like to continue buying product from the same company if it is forward vertical integrated. Also, the customers’ trust, satisfaction and commitment over the company were inquired. For every interview question, further explanation was required, to see whether there is a correlation between forward vertical integration and customers willingness to buy. Moreover, the aim of customer interview was also seeking to find whether there are correlations between customers’ perceptions and their willingness to buy the new product. However, our findings suggested that there is no significant relation between forward vertical integration and customers’ willingness to buy the new product. This was primarily due to long production to delivery time and segmented European market. Other reasons might lead to this result was because most of the NEPG’s customers are distributors or traders, their preference may differ from the manufacturing companies’ preferences.

Subsequently, the company interviews were done by adopting the Harrigan (1985)’s four dimensions which were used to examine the company’s capabilities. After finding out the customers’ preferences, in the perspective of Harrigan (1985)’s four dimensions, this study predicted several gaps and matches that may arise during NEPG’s forward vertical integration. Since NEPG will only produce vitamin C chewable tablets and effervescent tablets and keep every production in house. The main managerial gaps between NEPG and their European customers include the information management and the length of processing time. The possible matches could be NEPG and their European distributors would both like to expand their business area and find more customers, which could be one of the potential point of NEPG’s forward vertical integration. Moreover, the product type (vitamin C chewable and effervescent tablets) or the industry (food supplement) could be varied. If NEPG decided to acquire more downstream/retail companies, they could also extend their business to animal feed or cosmetic industry, which is more lucrative than the food supplements industry. However, this strategy needs a detailed investigation about the certain industry and gain extra expertise over it, since NEPG is not familiar with those industries.

De Carolis (2003) stated the value of a firm’s resources is determined by the context of the specific market in which it is operating. The considerable time, money, and uncertainty associated with developing network resources also represent a barrier for firms desiring to compete in the research-

intensive side of the pharmaceutical industry. Firms competing in the pharmaceutical industry employ heterogeneous strategies ranging from low-cost strategies adopted by generic drug manufactures to highly differentiated strategies used by large research-oriented and biopharmaceutical companies (Taggart, 1993). Guedri et al. (2011) emphasized the possible value addition strategy in three dimensions: 1) R&D expertise 2) economies of scale, and 3) access to alliance networks. Because of the limited budget and short-term goal oriented attitude, it is relatively hard to pursue the R&D expertise in China. Therefore, this dimension was not adopted in this research.

Finally, our results suggest that approaches to measure the rest of the strategies which stated by Guedri et al. (2011), to analyze which option is the best way for the Chinese vitamin C industry. Also, add the customer loyalty into the conceptual framework to make a more comprehensive relationship between customer's expectation and their repurchase intention (Yi & La (2004); Hellier et al. (2003); and Olsen (2003)). Then, the quality of the respondent should be standardized. This action is to guarantee all the respondents could represent their company and they are also fully aware of their company's decision. Moreover, the impact of forward vertical integration should be built on both of the customers' perceptions and company's capabilities. Since in the long term, current customers' perceptions are relevant because they determine the company's existing profit. In the end, based on the reference case of Aland (Jiangsu) Nutraceutical Co., Ltd., we also suggest that acquiring the pharmacy/retail companies and reach the economy of scale might be a potential aspect for NEPG in their process of forward vertical integration.

## A reference case – Case study of Aland (Jiangsu) Nutraceutical Co., Ltd.

According to the interview with NEPG managers, they mentioned a reference case which could be a perfect example for NEPG. The company is Aland (Jiangsu) Nutraceutical Co. Ltd., which was part of Jiangsu Jiangshan Pharmaceutical Co. Ltd.. Jiangsu Jiangshan Pharmaceutical Co. Ltd. was found in 1990, which is a global leading vitamin C API manufacturing company and the main dietary supplements producer in China. In 2015, Royal DSM acquired Jiangshan Pharmaceutical's vitamin C API production and left Aland (Jiangsu) Nutraceutical Co., Ltd. to grow itself.

In 2010, Aland (Jiangsu) finalized the full acquisition of American's dietary supplements producer IVC (which was found in 1955). This acquisition facilitated Aland (Jiangsu) to become a large contract manufacturer in the American dietary supplement market. Few years later, it acquired many American dietary supplement companies, such as Adam Nutrition, Perrigo Nutritionals, the British largest dietary supplement manufacturer Brunel and Bio care. By acquiring these western old brand companies, Aland was able to enter the Europe & American dietary supplements retailing market.

Overseas acquisition is the key of the success of Aland (Jiangsu). By combining contract manufacturing and brand sales together; enabled Aland (Jiangsu) to centralize the production and maximize the capacity. To date, low profit, high demand is the current situation in the dietary supplement market all over the world. Aland (Jiangsu) is a positive example which shows the principal pathway of survival in the world's dietary supplement market. Besides the centralized production and capacity maximization, adopting delicacy and a superior information management also contribute to Aland (Jiangsu)'s current monopolistic advantage. Despite the profit (per order) of vitamin C tablet product is less profitable than the vitamin C API product; by reaching the economics of scale and centralized production after the delicacy management, which brought Aland (Jiangsu) an over 7-billion-Euro value of exports.

Aland (Jiangsu) could be a good example for NEPG, which shows how to reach the economics of scale in the vitamin C tablet market. Keep acquiring the old brand European vitamin C tablet manufacturing companies could be important, which may enable the foreign company to secure the European retail channel. Also, the information management is crucial in the whole process. Without a good information management, it is hard to track and trace the process, especially for the overseas transport.

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## Appendix 1 Company interview questions

A set of interview questions will be created for measuring the company's capabilities in this study. We asked the first interviewee from NEPG to identify up to 20 European customers based on their firm size, purchasing behavior and the product they buy.

Question	Answer
1 What kind of product will you make after forward vertical integration?	Vitamin C chewable tablet and effervescent tablet
2 What kind of value will you deliver after forward vertical integration? (Lower the cost, broaden the product portfolio?)	Broaden the product portfolio, since there is not much profit can be gained within the European market
3 How to extend product portfolio?	After analyzed the market, result shows the most popular vitamin C product that consumed by the European consumers is vitamin C chewable tablets and effervescent tablets. Therefore, the product portfolio will only be extended to these two products.
4 Will NEPG keep every production in house?	Yes, after sourcing the raw material. Every production will be kept in house
5 Does NEPG produce both vitamin C powder and vitamin C tablet products in the same production site?	No, they are separated. Since the process and also the production requirements are different. The quality standard and the quality evaluation methods are also different. Two sites are located in two different places, which the distance is 6.5 kilometer.
6 What will the process be if the production site is separated?	First the powder was produced in the powder production factory and packed in bulk. Then transported to the tablet production factory. Since the distance between two sites are not far away the transportation cost could be kept low
7 Currently which product can get the most market share in Europe?	Raw vitamin C powder, currently it holds a 18% market share in Europe, with an annual exportation quantity of 4000-5000 tonnes.
8 How many customers does NEPG has in the European market?	Less than 100
9 Are they distributor or final manufacturing company?	Most of NEPG's customers are distributor, which due to the production and exportation time limit. However, there are also small fraction of final manufacturing company, which is less than 20.
10 Why most of NEPG's customers are distributors?	Shelf life, storage capacity, etc.
11 Is there any possibilities for the distributors (or end customers) to buy NEPG's vitamin C tablets product?	It depends, for example, a pharmacy in Portugal they have their own factory to produce vitamin C tablets. Normally, they source from NEPG and they can produce the vitamin C tablets by themselves. However, during the time that the price of vitamin C powder rises, they think they cannot cover the production capital, then they source the vitamin C tablets from NEPG.
12 What is the profit of vitamin C tablets product?	Normally is 10-15%
13 Compare with the vitamin C powder and the tablet product, which product is more profitable?	There are fluctuations in the vitamin C powder industry. This means the price of vitamin C powder could be very high or very low. These changes depend on the governments regulation (pollution), the competition among the industry, etc. However, the price of vitamin C tablets shows a very stable status. No matter how much the raw material rises, the price of the end product could not vary much. This is because of the customer expectation and the market control.
14 What is the market power of NEPG's vitamin C powder	We position ourselves as an cost leadership manufacturing company. DSM they position themselves as high end product producer. They charge a relatively higher price since the purity of the product is higher than the other companies.
15 Do you see the potential of selling vitamin C powders?	The added value of vitamin C tablets is depend on the vitamin C powder. If the price of vitamin C powder get lower, then the added value is high. However, if the price of vitamin C powder is high, the added value of vitamin C tablets is low. This is also the reason why there are many SMEs quit from the market.
16 Do you have any recommendations/suggestions for NEPG's forward vertical integration?	If NEPG want to be the market leader, it must acquire the end retailer and improve its information system. Managing the supply chain demand is the crucial point.
17 Is it possible to select top 20 European customers based on the aforementioned aspects and who has a good relationship with NEPG? Who are they?	
18 What are the firm size of these European customers?	Medium to large companies, but most are the distributor
19 What products do they normally buy from NEPG?	Vitamin C powder, and other powders (e.g. Vitamin E, Vitamin D, etc.)
20 How much volume do they buy from NEPG? At what price?	9.5-10.2 Euro/kg, quantities are depend on the customers' requirement
21 What products they produce by using the NEPG's raw materials? (Effervescent tablets, chewable tablets, coated tablets, etc.?)	Food additives, supplement, drinks, feed, etc.
22 How often the customers buy from NEPG?	It depends on the customers' need, every quarter or every month. However, it is hard for the overseas customer to keep stocks, since the shelf life of the vitamin C products are limited.
23 How does NEPG export the product (vitamin C product) to the customers?	For the large companies, NEPG make the product for them and then export. For the small companies, NEPG will export the product in large packages to the destination and then distribute to each customer.
24 What kind of quality does NEPG provide to them?	Standard quality, with specified particle size.
25 Are there any customer complaints and how does NEPG deal with that?	Yes, if there are quality/technical problem, the problem will be transferred to the quality/technical department. If there are complaints, customers need to fill in a form and the complaints will be solved within several weeks, by changing, returning or sale at discount. Most of the customers are satisfied with the result.
26 How long will it takes to export to Europe?	Normally from production to the final delivery it will take about more than 90 days. Since the shipment will take at least 40 days to Europe.
27 How does NEPG deal with the rush orders	Normally all orders are shipped by marine transportation, which will take 45 days. If there are rush orders, the product will be shipped by plane, which will only take 2 or 3 days.
28 Will NEPG generate more profit after forward vertical integration?	It's hard to say. Since the quality guarantee period for vitamin C tablets is 2 years, after production and transportation the quality guarantee period will be only one and half year. Also, european market is segmented, different country has there own quality standard. For european customer, they trust more in their own countrie's brand.
29 What are the volume setting that you aim at the customers buy for vitamin C powder? For vitamin C tablets?	More than 5000 tonnes per year for the raw vitamin C powder, for vitamin C tablets maybe only 1000 tonnes.
30 What type of communication/interaction do you perform with your customers (Face to face, email, etc.)?	Normally by email, if there are conferences the customers may be approached face to face.
31 How often do you communicate with your customers?	Normally every two to three months, but if there are complaints or questions, the communication will be anytime.



## Appendix 3 Customer company details and type of respond

Nr.	Company	Location	Customer tyoe	Product type	Contact person	Type of respond
1	AVIDA HEALTH PTE.LTD.	Europe, (Mainly in UK)	Distributor	API	Liangfang Chen	Interview
2	WILD Flavors & Specialty Ingredients	Germany	Distributor	API	Eric Wang	Interview
3	P&G	International	Distributor	API	Cherry Wang	Interview
4	FLEVO CHEMIE (NEDERLAND) B.V.	Netherlands	Distributor	API	Lu Xu	Interview
5	PARKACRE ENTERPRISES LIMITED	UK	Distributor	Finished product	Oliver Harvey	Company email
6	Alliance Boots Sourcing (Hong Kong) Limited	Hongkong	Trader	Finished product	Gigi Lau	Interview
7	OSKAR BERG GMBH	Germany	Distributor	API	Bernhard Hartmann	Company email
8	VICORQUIMIA. S. A	Spain	Distributor	API	Lourdes Pimienta	Company email
9	SELECTCHEMIE AG	Switzerland	Distributor	API	Monica Gonzalez	Company email
10	ECSA Chemicals AG	Switzerland	Distributor	API	Nicola Filippini	Company email
11	Jo Kozertz Kozpont Kft	Hungary	Retailor	Finished product	Lajos Dunás Varga	Company email
12	ATLANTIC CHEMICALS TRADING GMBH	Germany	Distributor	API	Jeffrey Rumble	Company email
13	Catalent Germany Eberbach GmbH	Germany	Distributor	API	Barbara Klauer	Company email
14	SANDOZ ILAC SANAYI VE TICARET A.S.	Turkey	Distributor	API	Çağla PEKÇEÇİNAR	Company email

## Appendix 4 Coded interview transcripts (Company)

Key word	Respond	Reasons	
<b>Strategy</b>	Produce vitamin C chewable & effervescent tablets		
	Keep every production in house		
<b>Reason and Value</b>	Broaden product portfolio		
	Gain more profit		
	Brodnen customer portfolio	Get more end product manufacturer	Only if the vitamin C powder is expensive
<b>Other options</b>	Directly dive into EU retail market		
<b>Risks/Challenges</b>	Short effective shelf life	Long lead time	

## Appendix 5 Coded interview transcripts (Customer)

Key word	Respond	Reasons
<b>Trust</b>	Company size, state-owned	
<b>Satisfaction</b>	Product quality in terms of color, impurities,etc.	
	Delivery time	
	Price	
	Service	Delivery in time, problem solving
<b>Commitment</b>	Less/No shared values	NEPG only produce powder for the company, or company only share formulas with NEPG
	Long term goals	
<b>Impact on customer companies</b>	Influence on company's current production	Price difference, less control over process
		More shared facilities/values
		Tighter relationship with NEPG
<b>Main concerns</b>	Price, volume, shelf life	