

# **Supplier Performance Measurement Recommendations**

## **Case: Restaurant chain X**

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<p>This thesis was commissioned by the restaurant chain X. A fine-dining chain serving pizza and Italian dishes, the case company has had serious problems regarding supplier performance which affects its daily operations as well as total costs, which stem from the lack of measurement. The SCM department, which is in charge of purchasing and supplier management and the Operations team, which directly receives and uses the goods are involved. The thesis aims to explore the situation from both perspectives plus expectations and challenges identified by the case company when establishing a system for measuring supplier performance, thereby proposing recommendations for improvement.</p> <p>The thesis is composed of a theoretical part and an empirical part. In the theoretical part, the author investigates literature on supplier performance measurement with emphasis placed on two points: who to measure (suppliers to measure) and what to measure (measures to include). This explains the inclusion of supplier segmentation and supply base reduction, as they support the organizing of the supply base for measurement. Based on the theoretical framework, the author acquired qualitative data from the case company staff on the topic. Semi-structured interviews were conducted with the respondents from the Operations team and the SCM department. The acquired data was analysed using the qualitative approach. In addition, the author gathered secondary data through books and articles.</p> <p>Based on the analysed data, the author presents suitable recommendations for the case company: supplier performance measurement system implementation (mainly how to create a list of suppliers for measurement, and what should be measured), as well as the segmentation of suppliers and supply base reduction.</p>	
<b>Keywords</b>	
Supplier management, supplier performance measurement, supplier segmentation, supply base reduction	

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# **1 Introduction**

The chapter below presents the background of the thesis which includes general information on the thesis topic as well as its relevance in the theoretical and practical context. It then goes in more details by introducing the thesis's research question (RQ) and the investigative questions (IQs). In addition, readers can also find in this chapter the demarcation, which clearly states how the author limits the thesis focus. The international aspect of the thesis is also specified in this chapter, followed by benefits for the stakeholders. Lastly, the chapter ends with some key concepts explained and an introduction of the case company.

## **1.1 Background**

Supply chain performance measurement is a crucial part of supply chain management. When the actions of participants in a supply chain are measured and compared against standards, performance improvement can be achieved (Gunasekaran, Patel & McGaughy 2004, 333). In fact, not only can supplier performance measurement measure and enhance the performance quality, it can also help the organization address a supplier's potential to grow in terms of performance delivery (Yeung & Chin 2004, 99). Even though performance measurement system designing and implementation has been of higher interest these years (Tangen 2005, 4), they have been originally more profit-focused and lack the needed balance (Gunasekaran et al. 2004, 335). This hinders the effectiveness of the measurement system.

Restaurant chain X identifies their mission as to deliver high-quality food and experience to diners. Greatly contributing to the achievement of this mission is their efforts in sustaining the supply of high-quality raw and semi-ingredients as well as other food and beverage products. Unfortunately, the case company has been struggling with the managing of their suppliers' performance. They often find themselves unsatisfied with how suppliers perform, but are unable to get support from its currently exercised supplier performance measurement practices since they are neither useful nor systematic. The author hopes to deliver some recommendations to resolve this problem.

## **1.2 Thesis topic**

This thesis aims to develop recommendations for the process of measuring supplier performance for restaurant chain X. The idea behind this is to first look into if the case company has any supplier performance measurement system implemented, and if yes, what it is like. In the second step, the author tries to get an idea of what supplier performance

related issues are most strongly present as perceived by the case company. Next, the author looks to find out what kinds of practices the case company thinks fit their situation the most, along with obstacles they think they might face implementing such a measurement system. Lastly, based on the findings, recommendations are proposed regarding how to enhance the effectiveness when it comes to measuring supplier performance in restaurant chain X.

In line with the objective stated above, the research question (RQ) is formulated as: How can restaurant chain X boost their business through supplier performance measurement?

RQ is divided into investigative questions (IQ) as follows:

IQ 1. What is the currently implemented process of supplier performance measurement in restaurant chain X?

IQ 2. What are the main issues related to supplier performance from the perspective of the Operations team and SCM department?

IQ 3. What are the most suitable practices in supplier performance measurement from the perspective of the SCM department?

IQ 4. What are some recommendations for restaurant chain X to develop an effective supplier performance measurement system?

Table 1 presents the theoretical framework, research methods and results chapters for each investigative question.

Table 1. Overlay matrix

Investigative question	Theoretical Framework	Research Methods	Results (chapter)
IQ 1. What is the currently implemented process of supplier performance measurement in restaurant chain X?	Supplier management, supplier performance measurement	Qualitative interviews	4.1
IQ 2. What are the main issues related to supplier performance from the per-	Supplier management, supplier evaluation, performance measurement, sup-	Qualitative interviews	4.2

erspective of the Operations team and SCM department?	plier segmentation, supply base reduction		
IQ 3. What are the most suitable practices in supplier performance measurement from the perspective of the SCM department?	Supplier management, supplier performance measurement, supplier segmentation, supply base reduction	Qualitative interviews	4.3
IQ 4. What are some recommendations for restaurant chain X to develop an effective supplier performance measurement system?	Supplier management, supplier performance measurement, supplier segmentation, supply base reduction	Observations, Desktop research	5.1

### 1.3 Demarkation

The thesis scope is defined based on three criteria: the purchasing category chosen, the company branch that is studied, and the aspects studied.

The company purchases goods in many categories, but the author decided to only focus on the Food and Beverage category for three reasons: one, this is the only category where suppliers are contracted and purchases are systematically recorded; two, the Food and Beverage category is the most important when it comes to the catering industry; and three, working as a purchaser in this category, the author possesses personal experiences that can positively support the thesis conducting process.

Restaurant chain X is currently operating with three main branches in three major Vietnamese cities: Hanoi, Ho Chi Minh City, and Da Nang. As the supply base managed by each branch has some differences which would inevitably lead to differences in empirical data, the author decides to focus entirely on the Hanoi branch.

Lastly, to be able to deliver meaningful results while still keeping the thesis scope appropriate, the author does not place equal emphasis on every element of supplier perfor-

mance measurement but instead concentrates on two key aspects: the subject of the measurement (who to measure?) and the aspects where measurement takes place (what to measure?). The other elements are discussed but with less depth.

#### **1.4 International aspect**

Restaurant chain X currently operates within the borders of Vietnam. However, it has set the plan to open the first store in Tokyo, Japan in 2020, as well as to expand to Southeast Asia countries like Thailand, Malaysia, Singapore no later than 2022. Moreover, the case company has been doing business with some foreign suppliers, mostly from Italia.

#### **1.5 Benefits**

Supplier performance management is a very relevant topic for the case company. Supplier performance measurement in particular is something that would greatly benefit the company at the moment. Working here, the author observes a large part of the problems arising come from the supplier side. Poor supplier performance such as low-quality products, late deliveries, unresponsiveness leads to unsuccessful operations unsatisfactory diner experience, thereby hindering the company's business and damaging its reputation. Therefore, perfecting the supplier performance measurement system can do wonders to the case company. This in turn boosts employee satisfaction overall and contributes in creating a better working environment. Moreover, as the case company is being invested in by a private equity firm and a Japanese restaurant chain, its success ensures the investors' success too.

With specialisation being supply chain management, the author is keen on building her career as an SCM professional. Combined with the fact that the author is currently working as a purchaser, she plans to further gain knowledge and sharpen her skills in this field. While diverse experiences are necessary, the author also believes that solid competence in a certain department is beneficial for her regarding career development. More specifically, supplier management is something that the author wants to understand more. By planning and completing this thesis, the author has the chance to cultivate field knowledge, enhance various skill, and strengthen her relationship with the colleagues at work.

#### **1.6 Key concepts**

The key concepts of this thesis include supplier management, supplier performance measurement, supplier segmentation and supply base reduction.

**Supplier management** is defined by Lysons and Farrington (2012, 94) as the practice of a company interacting with its suppliers. Different kinds of suppliers call for different management strategies.

Performance measurement, according to Neely et al. (1995, 80), is the quantification of “the efficiency and effectiveness of an action”. Based on this definition, Hald and Ellegaard (2011, 890) state that **supplier performance measurement** is the act of quantifying how effective and efficient a supplier action is. Supplier performance measurement is an essential part of supplier performance management and helps enterprises achieving reduced cost, minimized risks, and improvements (Gordon 2008, 4).

**Supplier segmentation** is addressed by Day, Magnan & Møller (2010) the process of grouping suppliers into segments according to traits and behaviours, each of which calls for unique relationship management strategies (Brown 2017, 12).

**Supply base reduction** is defined by Ogden & Carter (2008, 6) as the process of as well as all activities relevant to consolidating a supply base to a manageable base that consists of suppliers that an organization attentively handles.

## 1.7 Case company

Restaurant chain X is a fine-dining restaurant chain based in Vietnam which sells Japanese-style pizza and Italian dishes with an Eastern twist. Its headquarter is located in Ho Chi Minh City. Currently, the chain consists of seven stores in Ho Chi Minh City, four stores in Ha Noi, and another store in Da Nang. It also sells house-made cheese to big hotel chains such as Sheraton, Park Hyatt and Intercontinental. Additionally, in Ho Chi Minh City, it runs two cafes and one ramen restaurant as part of a Japanese franchise. The case company plans to open five more stores in the latter half of 2019 around Vietnam and launch its first store in Tokyo in 2020. In 2018, the company gained 52 billion VND in profit, making the gap of profit between 2018 and 2017 a leaping 65%.

What sets the chain apart from other competitors is its firm orientation toward sustainability, more specifically the ‘farm to table’ philosophy. The case company positions itself as a chain that strives to provide fresh, safe and delicious food with reliable origins and easy traceability. It has its own cheese factory which makes fresh burrata, mozzarella, camembert, blue cheese, and mascarpone, among others using high-quality cow milk from local farms. Moreover, it has been maintaining partnership with an organic vegetables farm to get daily supply of organic produce such as rocket leaves and tomato.

The case company's success relies a lot on how its suppliers perform. However, restaurant chain X has been facing a lot of issues regarding suppliers' unsatisfactory performance. Problems range from product quality, delivery timeliness, document and rules compliance and so on. This partly has to do with how the company does not have an effective system for monitoring, more specifically measuring supplier performance. Therefore, the author believes that the recommendations given in this thesis would assist the company in improving its business.

## 2 Supplier performance measurement in a restaurant chain

A theoretical framework demonstrates how the theoretical part of the thesis is formed: which theories are included, and how they are connected. The figure below visualizes the framework:

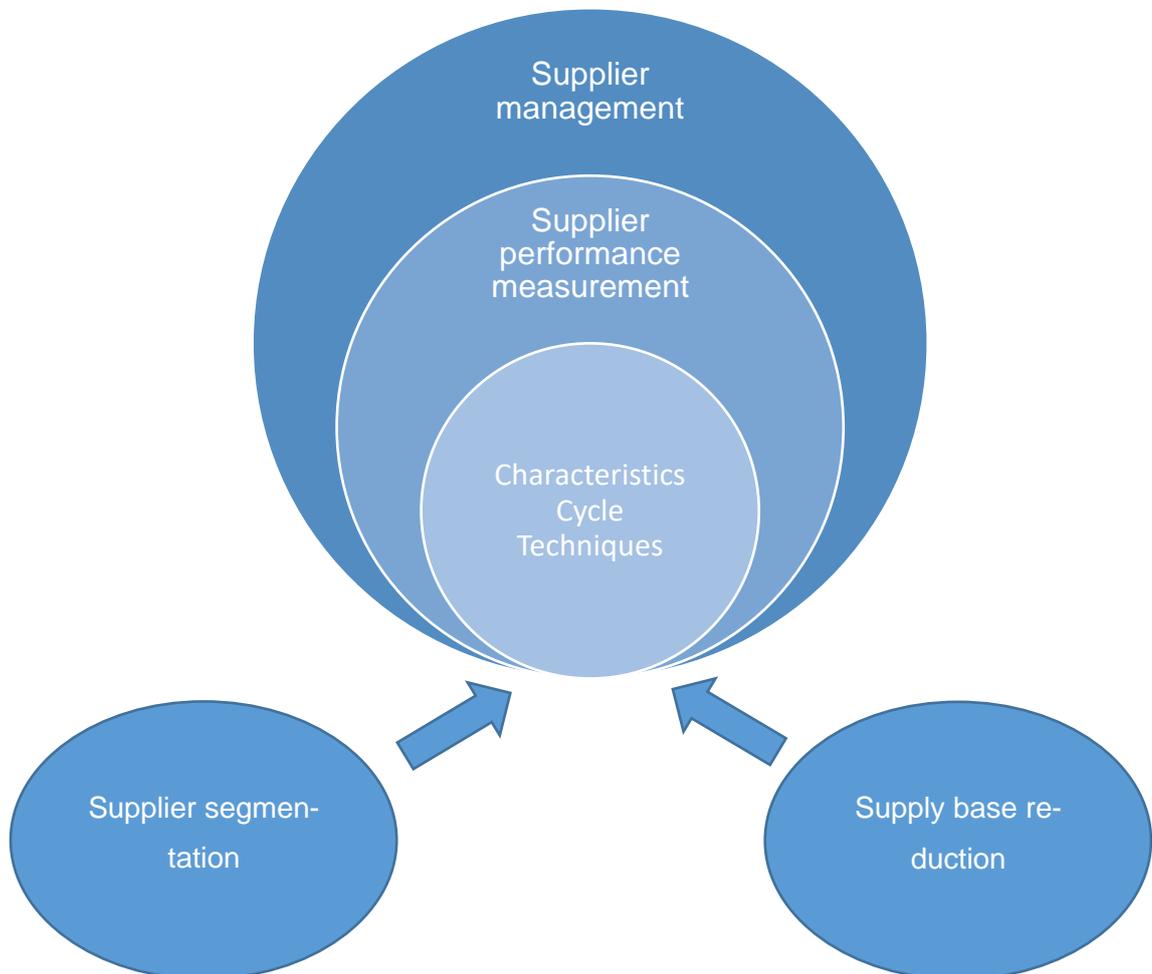


Figure 1. Supplier performance measurement in a restaurant chain

The theoretical framework is composed of three main parts. Firstly, supplier performance measurement is thoroughly discussed in section 2.2 with some background literature on supplier management provided in section 2.1 as well for the purpose of establishing a big complete picture. Regarding supplier performance measurement, the author goes through the concept, roles and characteristics of measurement, measurement cycle, measurement categories, and measurement techniques.

Supplier segmentation and supply base reduction both influence the measurement of supplier performance, which is why they are investigated too in this thesis. Section 2.3 consists of theories surrounding supplier segmentation including definition, role and models. In section 2.4, the author discusses supply base reduction.

## **2.1 Supplier management**

The role of supplier management was first realized in the 1980s through 1990s when organizations saw a need to not only focus on their own business activities and internal communication but also properly manage the relationship as well as the flow of information and materials alike between themselves and other members of the supply chain, among which are suppliers (Cherry 2006). The more complex the supply chain is, the more impactful supplier management is regarding how well a company fares in terms of both profitability and sustainability (Kumar, Clemens & Keller 2014, 127).

There have been a number of different definitions for supplier management provided by researchers in the field. Lysons and Farrington (2012, 7 & 94) define supplier management as a procurement-related process that involves organizations' interactions with its suppliers, ranging from selection and contracting to coordinating, performance management as well as the forming, developing and sustaining of relationship. This is supported by Monczka, Handfield, Giunipero & Patterson (2009, 308), who states that supplier management includes actions taken to "manage and improve a worldwide network of carefully screened and selected supply chain partners or suppliers". From a more manufacturing-centric perspective, Pulles et al. (2016) terms supplier management as a process that concerns the organization of the flow of good-quality materials from a suitable supply base to a manufacturer (Salam & Khan 2018, 4085). Nevertheless, it is agreed that supplier management plays an undoubtedly crucial role in securing smooth operations and guaranteeing the development of an organization both profit and sustainability wise. In fact, Salam and Khan (2018, 4085) suggest that in order to gain long-term competitive advantages, companies cannot disregard the importance of effective supplier management. As firms have been switching gradually from integrating vertically (acquisition of suppliers, for example) to focusing on core competences only, suppliers in turn play an important part in securing an edge in the upstream part. Suppliers delivering high performance can contribute to the buying firm's product development and other core processes, foster improvements and enhance cost saving. (Goffin, Szwejczewski & New 1997, 423.)

Supplier management has been continuously transforming ever since it first came to light. According to Gordon (2008, 1), behind supplier management's transformation are the following forces:

- Outsourcing goods and services taking a more of a front position
- Globalization
- Technology development that can elevate supplier management
- Time and market responsiveness
- The systems of methods concerning performance improvement

## **2.2 Supplier performance measurement**

In this section, the author first explains the concept of supplier performance measurement as well as its roles and key characteristics. Next, the measurement cycle is discussed, followed by commonly used measurement categories. Lastly, the author goes through different supplier performance measurement techniques.

### **2.2.1 Supplier performance measurement: concepts, roles and characteristics**

Monczka et al. (2009, 308) identifies supplier performance measurement as a crucial part of supplier management. According to Neely, Gregory & Platts (1995, 80), performance measurement refers to the quantification process of "the efficiency and effectiveness of action". From this definition, it can be said that supplier performance measurement is the quantification process of the efficiency and effectiveness of suppliers' action.

Conceptualized a little differently, the term supplier performance measurement is also stated to cover the means (methods and systems) used by organizations to gather, organize and display information for the purpose of measuring and rating or ranking supplier performance (this depends on techniques employed). This should be carried out on a regular basis. (Monczka et al. 2009, 308.)

As suggested by Bhote (1991), it is only possible for an organization to manage the performance of the supply chain if they see the measurement of performance as vital and carry out the measuring in an active manner (Chen, Yeh & Yang 2004, 600). This statement indicates that only what is properly measured can be properly managed. Similarly, the ultimate purpose of supplier performance measurement, as stated by Neely, Richards, Mills, Platts & Bourne (1997, 1135), is to foster a change, ideally an improvement, in the supplier's performance through the addressing of aspects that need development. Proper supplier performance measurement helps identify the TCO (Total Cost of Ownership), which is the sum of not just price but other costs related to the buying from a certain supplier too (Minahan & Vigoroso 2002, 5). On top of that, it also facilitates improvements in the relationship between organizations and its suppliers, as mutual

understanding is achieved through frequent discussions and negotiation (Gordon 2008, 6). To further specify, supplier performance measurement may play a role in: giving a detailed picture of how suppliers are performing, identifying underperformed areas of suppliers, providing data for future supplier evaluation and selection, achieving mutual understanding, and eliminate subjectivity-related issues.

Study by Kaplan and Cooper (1997) identifies the growing need to switch from conventional administration-style performance measurement to measurement that actually influences the performance itself (van Hoek 1998, 190). On top of that, performance measurement systems have also becoming less about cost measuring and more about value-creation measuring. Study by De Toni and Tonchia lists out key characteristics of traditional performance measurement systems and innovative performance measurement systems with the most remarkable differences lying in the basis of the system, the orientation, and the nature of the measures used (De Toni & Tonchia 2011, 47).

Table 2. Differences between traditional PMS and innovative PMS (De Toni & Tonchia 2011)

Traditional PMS	Innovative PMS
Based on cost/efficiency	Value-based
Trade-off between performances	Performance compatibility
Profit-oriented	Customer-oriented
Short-term orientation	Long-term orientation
Prevalence of individual measures	Prevalence of team measures
Prevalence of functional measures	Prevalence of transversal measures
Comparison with standard	Improvement monitoring
Aim at evaluating	Aim at evaluating and involving

Neely et al. (1995, 80-81) suggest in their widely cited research paper that a performance measurement system can be explored on three levels: the individual measures that make up the measurement system, the measurement system itself, and the way in which the measurement system interacts with the environment it is built in. The authors then proceed to explain the key concepts:

- A performance measure is “a metric used to quantify the efficiency and/or effectiveness of an action”.
- A performance measurement system (or PMS) is “the set of metrics used to quantify both the efficiency and effectiveness of actions”. (Neely et al. 1995, 80-81.)

According to White (1996), a performance measurement system is formed by choosing the measures and the measurements, or what to measure and how to measure (De Toni & Tonchia 2011, 53).

Typically, individual measures are classified based on two criteria: leading or lagging and objective or subjective (in other words, quantitative or qualitative).

### **Leading indicators versus lagging indicators**

Leading indicators are predictive, future- and potential-oriented in nature. They can also influence the performance results. Examples can be supplier performance issues, supplier's willingness to comply with firm's contract terms, or supplier's business practices. On the contrary, lagging indicators are the ones that tell about what has already happened, or to put it in another way, the results themselves. Lagging indicators in the context of supplier performance measurement may include on-time delivery, number of defects, delivery cost, and so on. Lagging indicators are typically much easier to measure, but only give the organization an idea of what has already taken place and cannot promise the same results over time. Therefore, they do not hold as much power as leading indicators do when it comes to taking proactive actions. (Gordon 2008.)

### **Objective/quantitative measures versus subjective/qualitative measures**

Objective/quantitative measures refer to those that produce factual data. Some frequently used objective measures in supplier performance measurement could be lead-time, defects, or inventory. On the contrary, as the name suggests, subjective/qualitative measures seek judgement, opinions, viewpoints. For instance, supplier's responsiveness or supplier's willingness to comply with buying firm's standards are among those that are put under subjective measure group. While objective measures are normally perceived as more reliable, more accurate than subjective measures are, that is not always the case. Furthermore, subjective measures can come off as more favourable as they can reach the core of the problems through insights that cannot be produced by using the objective counterpart. As a result, it is suggested that organizations should use a mix of objective and subjective measures for best outcome. (Gordon 2008.)

Bourne, Neely, Mills & Platts (2003, 3) point out that the set of measures used for performance measurement should consist of financial and non-financial, internal and external, as well as lagging and leading measures.

Gordon (2008) lists in her book the qualities that good supplier performance measurement should have as follows:

- Meaningful (properly aligned with the organization's strategies and objectives)
- Valuable (only activities that affect both suppliers' and organization's business are measured)
- Balanced (consists of metrics from different categories, both externally and internally, both past performance and potential in the future, both leading indicators and lagging indicators)
- Linked (between organization and its suppliers)
- Practical (affordable, offers ease of data collecting, not overly demanding in terms of data handling)
- Comparable (enables effortless comparison between data)
- Credible (accurate information)
- Timely (the handling of data gathered should not expand over an appropriate time frame, otherwise it may become unusable)
- Simple (easy to use for all participants)
- Robust (well-thought out with references from best practices, not out-dated)
- Reasonable number of metrics (avoid over-measuring).

This viewpoint is supported from a broader scope by Beamon (1996), who identifies vital traits that are found in a successful performance measurement system: inclusiveness (measures should span across all relevant aspects), universality (enables ease of comparison regardless of conditions under which the system is implemented), measurability (no need for immeasurable data), and consistency (measures in line with firm's objectives and goals) (Beamon 1999, 276).

On the individual measure level, Cormican & Cunningham (2007, 354) name objectivity and relevance to organizations as two of the most important traits that supplier performance measures should possess. In addition, organizations should also come up with measures that are easy to quantify, achievable, sufficiently facilitated and able to produce results in a timely manner.

### **2.2.2 Supplier performance measurement cycle**

Supplier performance measurement phases as described by Hald & Ellegaard (2011, 809) are elaborated as below:

- Supplier performance measurement system design. Main tasks include determining and measuring key objectives as well as choosing measures.
- Supplier performance measurement system implementation. In this phase, the team in charge sets up the system and related procedures so that the implementation can be carried out swiftly and results are generated without disruptions.
- Supplier performance measurement system employment. This refers to every activity involving information gathering, reviewing as well as every follow-up activity taken after information is received and processed.

Forslund & Jonsson (2007), as mentioned by Forslund (2014) introduces a five-step process of performance management. In her article with references to the works of Lohman et al. (2004), Brewer & Speh (2001), Forslund & Jonsson (2010), Papakiriakopoulos & Pramataris (2010), Bourne et al. (2002), Soltani et al (2004), Holmberg (2000), Theodoras

et al. (2005), and Forslund & Jonsson (2007), Forslund (2014) elaborated on the five steps:

- Selecting metrics: the metrics should reflect what the main focus is concerning the organization strategies. In other words, organizations should make sure that their strategies and the metrics are aligned. Moreover, to guarantee mutual understanding and effectiveness, these metrics are not only determined by the organization but are discussed and selected with the participation from relevant external organizations as well (in this case, suppliers). On-time-delivery is mentioned as one of the most commonly-used metrics, along with some others, for example: service, defect ratio, urgent order handling... It should be noted, however, that keeping an appropriate number of metrics used is important. This point is supported by Gordon (2008) as she considers it one of the desired traits of a successful performance measurement system as mentioned above.
- Defining metrics: Despite being often overlooked, defining metrics in fact is crucial when it comes to data garnering. A set of well-defined metrics should possess the following qualities: the terms are adequately elaborated, and definitions are shared among all relevant actors of the supply chain. A metric normally is defined by the measurement object (lead time, service, or defect ratio?), the unit (percentage or day/week/month?), and the measurement point (where along the supply chain does the measuring happen?).
- Setting targets: First of all, targets should never be laid out without acknowledgement and agreement from every party. They should also be sufficient, clear, and coherent. In addition to that, timely communication is very important in setting and monitoring targets. Changes in targets previously set should be shared within the circle of involved actors so that adjustments can be made to the measurement system and procedure.
- Measuring: The measuring should be carried out with every aspect carefully thought out and made known among the parties: the people in charge, the frequency of measuring, the methods employed, and the manner in which reporting takes place. It was suggested that automatic reports (which generally equal higher frequency) lead to better performance management than reports done manually.
- Analyzing/acting: This step consists of actions taken upon the data gathered in the previous step. Collaboration between actors of the supply chain should be emphasized as it is the key to successful performance management.

### **2.2.3 Supplier performance measurement categories**

Neely et al. (1995, 84) address the four major categories that should be included in performance measurement: Quality, Time, Cost, and Flexibility. Gordon (2008), on the other hand, advises that measurement categories should be the firm's business drivers: Cost, Quality, Time, and Technology/Innovation. A similarity between the two theories is observed here. For a broad view, the author will discuss five categories in total: Quality, Time, Cost, Flexibility, and Technology/Innovation.

#### **Quality category**

When a supplier underperforms in terms of quality, the buying firm suffers disruptions in operations, extra inventory, and customer dissatisfaction among others (Gordon 2008). Therefore, it is of great vitality that quality measures are included when measuring suppli-

er performance. Measures under the quality category typically deal with the compliance from the supplier side with contracted or agreed specification (Neely et al. 1995, 84). Quality-related measures may include: performance measures, conformance measures, durability measures...

### **Time category**

Time is a core element in performance measurement systems in general (Neely et al. 1995, 85). When it comes to supplier's impact on the buyer organization, time has to do with mainly two aspects: lead time and product development cycle. Responsiveness also is considered a noteworthy element (Gordon 2008). Some examples of time-based measures are: lead-time, on-time delivery, delivery frequency, responsiveness to buyer's feedback (Neely et al. 1995, 83; Gordon 2008).

### **Cost category**

Traditionally the dominant, if not only, element measured, cost obviously but not only has to do with unit price. In order to properly measure costs associated with buying from a certain supplier, the organization must identify different costs other than buying price, for example service cost, and inventory cost (Neely et al. 1995, 83) among others. In other words, it is important that the organization find out what their cost drivers are and measure them so that they can eliminate them (Gordon 2008). The change in cost over time may also be used as a measurement (Gordon 2008). It should be noted that normally cost-based measures require an accounting system to accompany.

### **Flexibility category**

By flexibility, Neely et al (1995, 92) refer to how fast and efficient the supplier can make changes to its process in response to buying organization. Similarly, Bhagwat & Sharma (2007, 47) explain the flexibility element as the ability to "making available the product/services to meet the individual demand of customers".

### **Technology/Innovation category**

It is suggested by Gordon (2008) that although buying organizations most of the time only pay attention to a supplier's technology capability, it is no less crucial to also look at their processes from a technical standpoint. Gordon (2008) lists out some measures that firms can include in their supplier performance measurement system regarding the technology/innovation aspect: R&D, best practices, number of suppliers, e-sourcing potentiality.

## 2.2.4 Supplier performance measurement techniques

As discussed in a study by Chen et al. (2004, 600), Madu (1998) suggests that supplier performance management, supplier rating models have been long used, and widely advised are the rating models that include the measurement of various key performance indicators. There have been a number of models developed around this subject. When it comes to supplier performance measurement, organizations mostly employ one of the three supplier rating models introduced by Timmerman in 1986 (Chen et al. 2004, 600). They are the categorical system, the weighted-point system, and the cost-based system. This subchapter mainly elaborates on these three methods. Aside from these, the author also discusses briefly about other methods as well.

### Categorical system

This is considered the most simple, easy-to-put-together method (Humphreys, Mak & McIvor 1998, 29). With this method, organizations define a set of supplier performance categories and determine how well a certain supplier performs in each category. Typically, suppliers are rated as excellent, good, fair or poor, from which one can tell that the categorical method is very subjective in nature. A simplified supplier performance measurement sheet using categorical method could look like the table below:

Table 3. Example of categorical system

		Supplier A	Supplier B
Category 1	Measure a	good	fair
	Measure b	excellent	excellent
Category 2	Measure c	fair	good
	Measure d	good	good
Category 3	Measure e	good	poor
	Measure f	fair	good

As aforementioned, this method of measuring supplier performance is the easiest to employ as it does not demand complicated procedure or data collection and is not costly. Small firms with limited capital and personnel especially would find this method fitting. (Monczka et al. 2009, 311.) However, the subjectivity of such qualitative ratings is considered to give way to ambiguity and offers very little room for insightful understanding or useful, relevant and significant proposals for improvement (Beamon 1999, 275). Another major disadvantage of this method is that categories are given equal weight indicating equal importance while in reality that is not the case, which makes it for the most part impossible to obtain accurate and meaningful results. Furthermore, measurement using cat-

egorical method is typically done manually, suggesting a lower frequency of measuring. All in all, it can be said that this approach in general offers no to very little chance to achieve performance improvements and is an unreliable method (Chhabile & Dalu 2014, 1558).

### Weighted-point system

This is the most used method when it comes to supplier performance measurement as it suits the most organizations regardless of size and resources (Monczka et al. 2009, 311). True to its name, in weighted-point system, suppliers are still measured and evaluated based on various categories, but the categories are weighted. The more critical the category is, the more weight it is given. For example, a set of categories established for supplier performance measurement can be assigned the weight as follows: out of 100%, the most crucial one gets 30%, next two ones get 20% each, and the three least important are given 10% each. The performance score in each category is then multiplied with its weight, and the sum of scores across the categories is the overall score of the supplier. (Humphreys et al. 1998, 29.) Below is an illustration of the example:

Table 4. Example of weighted-point system

		Weight	Supplier A		Supplier B	
			Score	Weighted score	Score	Weighted score
Categories	Categ.1	30%	5	1.5	4	1.2
	Categ.2	10%	4	0.4	3	0.3
	Categ.3	10%	2	0.2	3	0.3
	Categ.4	20%	3	0.6	4	0.8
	Categ.5	10%	4	0.4	1	0.1
<b>Overall</b>			<b>3.1</b>		<b>2.7</b>	

Calling for higher implementation cost, this method proves to be more reliable than the categorical method in the sense that it offers more insights into the performance measured, more structure and more objectivity because despite the inevitable subject nature of weight assignment, the process still fosters productive, meaningful discussion and results in an outcome that has the mutual agreement from every relevant party (Monczka et al. 2009, 313). This method also provides organizations with a higher level of flexibility as the weight for each category can be adjusted according to the change of situation. Moreover, since suppliers are given scores, organizations can rank their performance as well (Monczka et al. 2009, 311). On the downside, the weighted-point system suffers from a significant possibility of an over-emphasis on unit price. Humphreys et al. (1998, 29) also

point out that by using the weighted-point method, units across different measures must be standardized. Furthermore, this method requires a certain level of technical support. (Monczka et al. 2009, 311.) Chhabile & Dalu (2014, 1558) also argue that implementing this method may suggest a difficulty in including qualitative attributes in the system.

### Cost-based system

This is considered the most objective and reliable approach out of the three. It has to do with the quantifying of “the total cost of doing business with a supplier” (Monczka et al. 2009, 313). This total cost consists of not only purchase price but also other costs possible to identify that arise when a supplier fails to deliver the promised and contracted performance. This type of costs is called nonperformance costs. Organizations should decide which nonperformance costs to be added to the total cost with the product type in mind. (Chhabile & Dalu 2014, 1558.) At the center of this method is the use of the supplier performance index, or SPI. It represents the index of total cost of doing business with a supplier per item. Monczka et al. (2009, 313) gives the formula of this index as below:

$$\text{SPI} = (\text{Total Purchases} + \text{Nonperformance Costs}) / \text{Total Purchases}$$

The table below demonstrates a simplified example of the calculation of SPI of two suppliers:

Table 5. Example of cost-based system

Item: pizza flour		Supplier A	Supplier B
Total purchases in the first three months of 2019		\$30,000	\$45,000
Nonperformance costs	Late delivery	\$5,000	\$6,000
	Defects	\$4,000	\$6,000
Total nonperformance costs		\$9,000	\$12,000
SPI		1.3	1.27

Given that the supplier A offers pizza flour at \$3 per kilogram and supplier B supplies the same type of flour at \$3.05 per kilogram, total cost of buying flour from supplier A would be  $3 \times 1.3 = 3.9$ , while that of supplier B amounts to  $3.05 \times 1.27 = 3.87$ . It then can be concluded that even though supplier A offers a lower unit price, buying pizza flour from supplier B more beneficial than buying from supplier A.

This method considerably minimizes the subjectivity comes with other methods like the categorical system and to a lesser extent, the weighted-point system (Chhabile & Dalu 2014, 1558). The calculation of SPI also allows organizations to have a detailed view of

how the total cost has been over the time, which helps them determine the best suppliers to develop a long-term relationship with (Monczka et al. 2009, 315). However, one notable drawback associated with cost-based system is that it is required of an adequate accounting system together with proper computer efficiency, both of which usually are found only in large organizations. The implementation cost of this system is also higher than the other two methods previously mentioned. Furthermore, the supplier performance index does not always show the complete picture.

### **Other methods**

According to Humphreys et al. (1998, 30), Willis et al. (1993) introduced the dimensional analysis method where different criteria are combined into one single index regardless of units or levels of importance. This is achieved by calculating a dimensionless value indicating the gap between actual supplier performance and buying organization's expectation. These dimensionless values are then used to produce the vendor performance index (VPI). With weight of each criterion taken into consideration as well, this index serves to help organizations evaluate individual supplier performance and compare performance of suppliers too. While this method overcomes significant disadvantages of many other methods including the three discussed above, it is relatively complicated.

A number of methods have been developed based on the Analytical Hierarchy Process approach (AHP), which is designed for decision making where a lot of criteria are involved. For example, Jain (2013) proposes the Fuzzy AHP approach, a model that promises more accuracy in terms of process description. (Humphreys et al. 1998, 30.)

## **2.3 Supplier segmentation**

In this section, the author looks to investigate the segmentation of suppliers, especially in relation to supplier performance measurement. Firstly, section 2.3.1 explains the concept of supplier segmentation as well as its role to the firm. Next, in section 2.3.2, models of supplier segmentation are discussed with the Kraljic model examined in depth.

### **2.3.1 Supplier segmentation: definition, roles, and process**

Supplier segmentation has been a less studied field compared to, for instance, customer segmentation (Rezaei & Ort 2013a, 507). Nevertheless, this is still considered a "mature topic" (Brown 2017, 12). There's barely a gap in definitions of this term provided by researchers. Supplier segmentation is conceptualized by Day, Magnan & Møller (2010) as the process of grouping suppliers into segments according to traits and behaviours, each of which calls for unique relationship management strategies (Brown 2017, 12). Gordon

(2008) says that supplier segmentation is the categorizing of supplier done in order to enable fitting resources allocation.

Svensson (2004, 12-13) points out the fundamentality of supplier segmentation regarding an organization by emphasizing its role in strengthening a firm's position in the market along with helping with customer segmentation and marketing. In terms of supplier performance measurement, the segmentation of suppliers also proves its cruciality. As elaborated by Gordon (2008), a buying organization needs to have different segments for its supply base in order to develop suitable strategies and assign appropriate resources into managing them. Not all suppliers are required of performance measurement, and an identical measurement level for all measured suppliers is also not realistic nor effective. This opinion is agreed by Rezaei & Ortt (2013b, 75), who state that a uniform management strategy applied to all suppliers is simply impossible.

Parasuraman (1980) introduces a process consisting of four steps to segment suppliers, which provides a link between customer segmentation and supplier segmentation. The four steps are as below:

- Address key traits of customer segments
  - Address key traits of each supplier
  - Select criteria for segmenting suppliers
  - Segment the suppliers based on the criteria
- (Rezaei & Ortt 2013, 508.)

### **2.3.2 Supplier segmentation models**

There have been a number of models developed over time directed at supplier segmentation. While varying in criteria, most models revolve around a two-dimension portfolio (Rezaei & Ortt 2013a, 508), hence the name "portfolio model". This portfolio model for segmenting suppliers was first proposed in 1983 by Kraljic, and other two-dimension models that were later developed are more or less considered an extension of it (Hudnurkar, Rathod & Jakhar 2016, 623). In this section, the author will discuss in depth about the Kraljic model then briefly talk about other existing methods as well.

#### **The Kraljic portfolio model**

One of the most well-known and widely implemented is the Kraljic Portfolio Purchasing Matrix where Kraljic (1983, 111) categorizes items that an organization purchases into four different groups on the basis of the level of the importance of purchasing and the level of the complexity of supply market. The matrix is illustrated below:

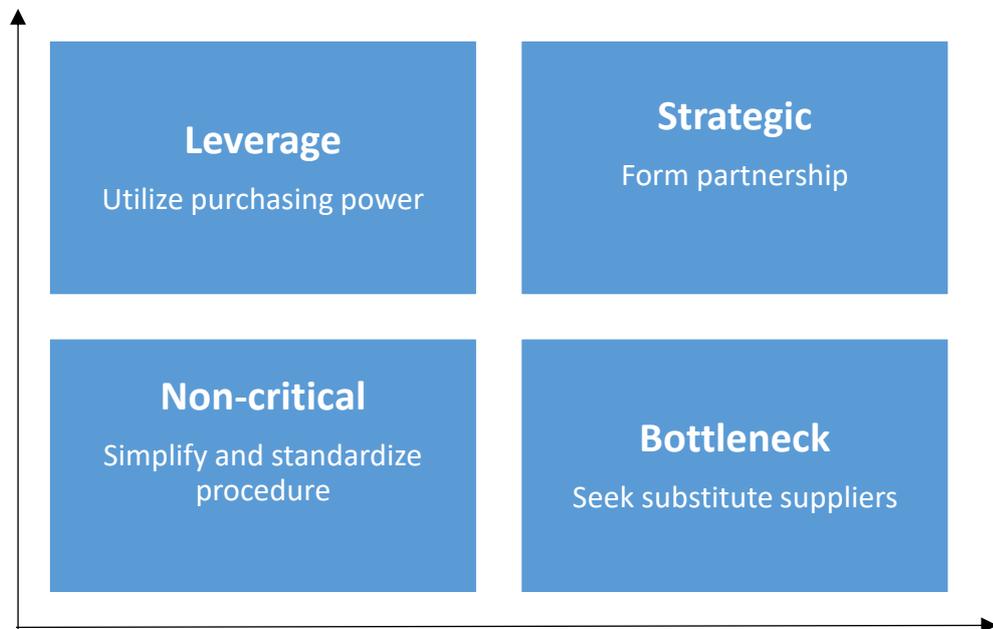


Figure 2. The Kraljic Portfolio Purchasing Matrix (Kraljic 1983, 111)

To be more specified, the importance of purchasing refers to how much a certain item affects the business: does it contribute significant or little value to the products, and/or if it accounts for a big figure in terms of costs. Meanwhile, the complexity of supply market mainly has to do with the following: the uniqueness of the item (if it can be easily substituted or not), and the nature of the market (if there are many players in the market or there is only a limited number of suppliers capable of offering the item, and if the market is easy or hard to enter). Based on these two criteria, Kraljic introduces four categories of purchase items: Non-critical, Bottleneck, Leverage and Strategic.

- Non-critical items: low level of purchasing importance and low level of supply market complexity. These can include, for example, office supplies (just everyday items, huge market with many different suppliers offering the same thing, generally do not add value). In catering industry context, non-critical items can also be gas and bottled water for cooking. For these items, there should be product standardization and simplified purchasing process to minimize time and effort.
- Bottleneck items: low level of purchasing importance but high level of supply market complexity. A prime example of items of this type would be ERP software. While it may not have much of a presence on the bottom line, once implemented and familiarized within the organization, it is highly time-consuming and overall just really challenging to replace it with another software or supplier. Purchasing department should secure the supply availability of items in this category while also looking for possible substitutes.
- Leverage items: high level of purchasing importance but low level of supply market complexity. Examples are carton and nylon for packaging, screws and nuts, chemicals used in manufacturing... Still in the context of restaurants, items that can be defined as leverage are napkins, take-away boxes, dry pasta or caster sugar. They all share common traits: high volume but little to no risk involved. Leverage items call for

price-optimizing strategy since a small difference in price can cause a big difference in cost due to big volumes.

- Strategic items: high level of purchasing importance and high level of supply market complexity. For a company making laptops, their strategic item could very likely be chips, as the technically sophisticated nature of the item coupled with a market dominated by only a few players suggests a difficulty in substituting. Strategic items typically require the highest level of effort regarding buying management. On the other hand, if situation permits, companies should also consider switching from buying to making.  
(Kraljic 1983.)

With purchase item categorized as above, suppliers can also be segmented accordingly with each category calling for different supplier management strategies. On the basis of Kraljic's theory, Monczka et al. (2009) introduces a tool called "portfolio analysis" where suppliers are categorized in line with the four aforementioned categories of purchase items (or in the authors' word, "commodity"). The portfolio analysis is presented as below:

Table 6. Portfolio analysis (Monczka et al. 2009)

	Strategic supplier	Preferred supplier	Transactional supplier	Approved supplier
Commodity type	Critical	Leverage	Bottleneck	Routine
Management strategies	Form partnership, support supplier's business, frequent and prioritized information sharing	Quality, service monitored, alignment with organization's objectives is important, cost reduction emphasized	Work with supplier to secure goods availability, service quality prioritized	Arm's length relationship, suppliers that offer automated, quick and simple solution are preferred

Gordon (2008) specifies on the level of performance measurement an organization should give and what they should measure regarding each type of supplier. It is worth to note here that she uses different terms for supplier categorization compared to Kraljic and Monczka et al., all of which is put down below.

Table 7. Supplier measurement level based on Kraljic matrix (Gordon 2008)

	Strategic supplier	Collaborative supplier	Custom supplier	Commodity supplier
Commodity type	Critical	Leverage	Bottleneck	Routine

Measurement level	Highest	Medium to high	Medium	Low
Focus	Continuous improvement	Financial and operational performance	Services level and operational performance	Operational performance basics
Information type	Cost, quality, delivery, responsiveness, practices and processes, innovation level, continuous improvement results	Cost, quality, responsiveness, financial	Services, delivery, responsiveness	Contract compliance level, fill rates

Hudnurkar, Rathod & Jakhar (2016, 624) argue that the Kraljic's model, although complimented and widely used for its balanced consideration of risks and potential along with contribution to the establishment of strategies for the purchasing function as well as the way it enables better cooperation among internal functions, received criticisms from researchers due to how only two criteria are taken into account, the subjectivity associated with how the two criteria are evaluated, and the lack of a grounded basis (Padhi et al. 2012, Hallikas et al. 2005, Rezaei & Ortt 2012). Moreover, as stated by Dubois & Pedersen (2012), in general, portfolio models like Kraljic's do not have the flexibility needed in the context of the constantly changing supply management (Bygballe & Persson 2015, 66).

### Other models

As mentioned above, the two-dimension approach has been proving its dominance in the field with the introduction of various models applying the porfolio method. Some of the two-dimension models that have been developed are presented below:

Table 8. Two-dimension supplier segmentation models

Researcher(s)	Year	Dimensions
Olsen & Ellram	1997	Purchasing situation management difficulty & Purchase importance
Bensaou	1999	Supplier's specific

		investments & Buyer's specific investments
Kaufman, Wood & Theyel	2000	Technology & Collaboration
Svensson	2004	Supplier commitment & Commodity importance

Dyer et al. (1998) propose a supplier segmentation method where organizations develop relationships with suppliers based on if the item or items supplied by a supplier is considered strategic. With suppliers of strategic items, organizations aim to develop strategic partnership. In case the items are not strategic, it is advised that organization keep the relationship at arms' length. (Rezaei & Ortt 2011, 6.)

## **2.4 Supply base reduction**

In this section, the author looks to provide a closer look at supply base reduction: what it is, how much importance it holds, what the pros and cons of implementation are, the supply base reduction process, and the approaches proposed over the time.

### **2.4.1 Supply base reduction: definition, advantages and disadvantages**

An organization typically has many suppliers chosen to do business with. This number of chosen supplier is termed the supply base (Lemke, Goffin, Szejczewski, Pfeiffer & Lohmüller 2000, 46). This base of suppliers poses complexity issues which generally fall on three aspects: the number of suppliers, the extent of differentiation among the suppliers, and the extent of their interrelation, as pointed out by Choi & Krause (2006, 638). Holmen, Pedersen & Jansen (2007, 179) take a similar stance by citing Baily & Farmer (1990) on the importance of supply base size in the context of supply chain management, through which they re-emphasize that every organization should carefully manage the number of suppliers in its supply base.

Supply base reduction is defined by Ogden & Carter (2008, 6) as the process of as well as all activities relevant to consolidating a supply base to a smaller base that consists of only suppliers that an organization attentively handles. This definition is widely adopted across studies and researches of this topic.

A major advantage of supply base reduction that can be realized in a relatively short period of time is its costs saving benefits. To be more specific, Mitchell & Sawchuk (2012, 1) identify three benefits that possibly come with reducing the supply base to a manageable base:

- Reduced purchased costs: when an organization starts to buy a certain item from only supplier A instead of a number of different suppliers, the purchasing volume they make to supplier A naturally goes up, which in turn advances the organization's buying power. Additionally, all costs involved will be lowered as well since the organization deals with only a small number of suppliers. These costs may include handling fee, shipping fee, tax, and so on.
- Reduced procurement and supplier management costs: Reducing the number of suppliers to do business with also creates a significant chance for organizations to cut down on its resources spent on the whole purchasing process such as: transaction costs, management expenses and efforts.
- Reduced noncompliance – and increased stake-holder satisfaction: limiting the number of suppliers to only a small base that consists of those that have the ability to deliver high quality performance and comply with the contracted terms and requirements and managing them properly contribute to the overall performance of the buying organization. It also helps bring more ease to supplier performance management.

Supply base reduction also has a close relationship with supplier performance management, hence supplier performance measurement as well. As stated by Monczka et al. (2009, 316), establishing a well-sized base of suppliers is the first step of successful supplier management. Additionally, a positive effect realized when it comes to supply base reduction is that it allows for better opportunities to sustain a close, collaborative relationships with the suppliers in the reduced base, which then can foster good price, higher quality performance and product development as well as innovation (Goffin, Szejczewski & New 1997, 426). Harland (1996) suggests that reducing the number of strategic suppliers, or suppliers that provide firms with important, highly impactful products, is especially crucial in the context of supplier management and can contribute greatly to firms' efforts to improve supply chain performance and save costs (Theodorakioglou, Gotzamani & Tsiolvas 2006, 149).

To summarize, when it comes to supplier performance management and supplier performance measurement, supply base reduction helps to firstly reduce unnecessary management efforts, which means better focused performance management and secondly, maintain close relationships with an easily manageable number of suppliers, which translates to better chance to monitor their performance.

It is, however, without a doubt that supply base reduction also is accompanied by a number of drawbacks. This is well discussed by researchers. Monczka et al. (2009, 319) present in their book possible risks that associate with supply base reduction:

- Supplier dependency: This refers to how a supplier's dependence on the buying organization increases when the organization consolidates the purchasing of a certain item to just that supplier. Since the purchasing amount goes up, it is possible that the supplier would have to secure the business with the buyer at the expense of other buyers. This creates a dependence on the buyer that threatens to backfire in case the buyer stops purchasing the item from the supplier.
- Absence of competition: supply base reduction presents the possibility of the decrease or even the disappearance of competition among suppliers. When fewer

suppliers compete to get to supply a specific item, they tend to realize the power they hold over the buyer and may try to exploit that by applying higher price or demanding terms beneficial for them. Supplier performance may degrade too since the suppliers no longer feel the need to deliver good performance to secure the buyer. This is particularly likely to happen if supply risk is high. Nevertheless, it is believed by many that careful selection of suppliers and well-termed contracts can help organizations avoid this situation.

- Supply disruption: Switching from multiple sourcing to single sourcing can pose a threat to the buying organization if unexpected situation happens, keeping the supplier from operating normally. Consequently, buyer's operations will be affected too, and if there are other suppliers offering the same item, the organization will have to accept increased price since the suppliers have the upper hand. To mitigate this risk, organizations are advised to select suppliers with different facilities for production or supplier that have capabilities enabling cross-sourcing.
- Overaggressive supply reduction: what can also happen with an organization attempting to reduce its supply base is that it does so too abruptly and aggressively without considering what may entail regarding the remaining suppliers' capabilities. In case those remaining suppliers do not have capacity or capability required, the operations of the buying organization will suffer. The key here is for the organization to thoroughly assessing the suppliers they wish to keep to guarantee smooth shifting.

Choi & Krause (2006, 640) take a similar stance by indicating that with exercising supply base reduction, buying organizations may have to face with an increase in its dependence on remaining suppliers. The buyer's operations are easily affected by its suppliers' own operations, and the suppliers' capacity and capability turn into something that the buyer must closely monitor and assess. In addition to that, Böris & Hall (2015, 17) quote Porter (1997) on disadvantages of supply base reduction including, among others, the time-consuming nature of developing a supply base reduction strategy as well as of "building consensus and breaking down cultural barrier among corporate divisions". Regarding this aspect of organization preparations, Cousins (1999, 147) additionally argues that firms should not let themselves too indulged in the idea of lowered transaction costs that entails supply base reduction to the point that they neglect the importance of equipping the organization with necessary measurement system and skills sets for the new strategy. If lacking these elements, the organization may find themselves spending even more in the long term.

#### **2.4.2 Supply base reduction process**

Ogden & Carter (2008) conducted an empirical research on supply base reduction where they investigated ten organizations that had reduced their supply base. The result of this research is a six-step process that is visualized below:

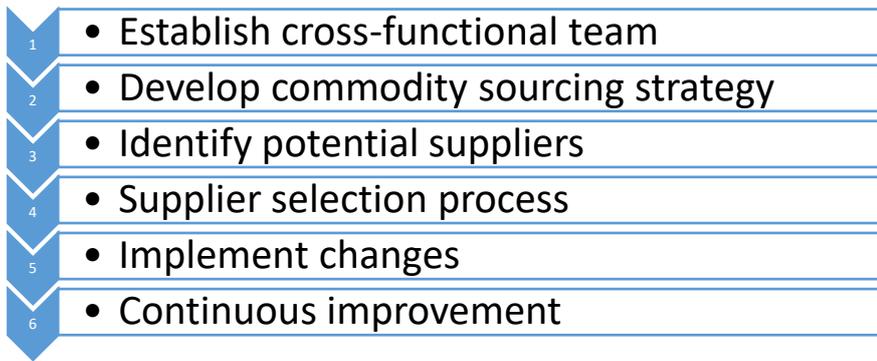


Figure 3. Supply base reduction process (Ogden & Carter 2008)

Firstly, the organization creates a team consisting of personnel from different functional departments. The purpose of this is to involve all functions in the process and also gain diverse, objective information and understanding needed for the process. Next, the team develops a strategy for sourcing that aligns with firm objectives and has the financial element engaged. In the third step, the team comes up with a list of suppliers that qualify for doing business with the organization. This step requires supplier profile compilation from different sources of data. Next, from the list developed in the previous step, the team selects suppliers that best suit its needs and requirements. The selection process may vary between companies. In the next step, changes are executed: unqualified suppliers exit the supply base and qualified suppliers assume the now empty position. This should be planned out thoroughly with appropriate timeframe to ensure that the process is not rushed and suppliers have time to prepare. It is reported to be particularly challenging if suppliers that supply strategic items are involved since the switching, if not done properly, can harm the operations of the buyer. Lastly, monitoring and measuring are carried out on a regular basis. (Ogden & Carter 2008, 15-22.)

### 2.4.3 Supply base reduction approaches

In this section, the author describes some commonly adopted supply base reduction approaches suggested in Ogden & Carter's study (2008, 8-9) and in the book by Monczka et al. (2009, 320-322). The first three approaches are explained by Ogden & Carter and the remaining five are adapted from Monczka et al.'s book.

#### **Systematic elimination approach**

The systematic elimination approach concerns the action of limiting the number of suppliers taking part in a bidding for a certain contract by systematically removing suppliers that the buying organization wishes to not include in the bidding. The elimination criteria also vary: sometimes firms just eliminate suppliers that they have not interacted

with for a long time; sometimes they eliminate suppliers based on performance. (Ogden & Carter 2008, 8-9.)

### **Standardization approach**

This approach requires the standardization of purchase items by either reducing the number of items through product simplification or reducing the number of suppliers supplying the same or similar, interchangeable items (Ogden & Carter 2008, 9). For example, a restaurant can switch from making tomato sauce from scratch, which requires a combination of fresh tomato, tomato paste and canned whole tomato to using canned tomato sauce. This way, they may no longer have to source tomato paste and possibly remove the paste supplier from the supply base. On the other hand, if the restaurant is buying two brands of canned tomato sauce from two different suppliers and they can be used exchangeably, they can also consider making one of the two the standard one and only buy that item.

### **Tiering approach**

The idea of this approach is that the buying organization passes the handling of a supplier to another supplier of theirs. This way, two first-tier suppliers become one first-tier supplier and one second-tier supplier. As indicated by Ogden & Carter (2008, 9), by applying this method, organizations do not reduce the total number of suppliers but actually reduce the number of suppliers they directly interact with. However, since a smaller number of directly handled suppliers does mean less efforts and resources spent on supplier management, it can also be considered a means of supply base reduction.

### **Twenty/Eighty rule approach**

Organizations employing this approach determine the 20% of their supply base that account for 80% of the purchase expense or 20% of their supply base that cause 80% of the purchasing-related problems. This generally leads to a large number of suppliers removed from the base and suits firms that are urgently in need of supply base reduction. The major drawback of this approach has to do with the presumption that better suppliers account for more money spent when in reality the spend depends on a lot of factors other than performance. As a consequence, it potentially eliminates suppliers with good performance just because the money spent on sourcing goods from them are not as much. (Monczka et al. 2009, 320.)

### **“Improve or Else” approach**

This approach involves the buying organization giving existing suppliers a notification containing a pre-determined period of time to improve their performance in order to reach

requirements set out by the buyer. These requirements may range from delivery performance to quality of goods supplied and selling price. Suppliers that fail to deliver the expected performance level are removed from the supply base. This approach creates opportunity to enhance supplier performance in a short period of time but at the same time poses a risk at losing suppliers due to the intense nature of the approach. (Monczka et al. 2009, 321.)

### **Triage approach**

According to this approach, the buying organization assigns its suppliers into three groups on the basis of performance. The first group comprises suppliers that deliver low quality performance and has low potential to enhance their performance in the future. They are set to be eliminated from the supply base. Suppliers in the second groups are those whose performance at the moment are not stable but are capable of development. These suppliers may receive support from the buyer for the purpose of better performance. The last group consists of high-performing suppliers with good stability presented. The buyer will take initiatives to strengthen relationships with them and sponsor further performance. (Monczka et al. 2009, 322.)

### **Competency staircase approach**

The competency staircase approach refers to the implementation a multi-milestone course of improvement suppliers have to pass to be able to stay in the supply base. All suppliers are first required of compliance with a basic standard determined by the buying organization to be regarded as potential suppliers and proceed further. After that, they pass the milestones set up for them one at a time, each being a performance expectation such as responsiveness or timely delivery. The number of suppliers is expected to lower after each milestone, and those that successfully finish this will stay in the supply base. The ultimate base now consists of suppliers that consistently deliver high quality performance. (Monczka et al. 2009, 322.)

In conclusion, in the context of this thesis, the main takeaways from all theories presented above can be identified as: the importance of a supplier performance measurement system to an organization; how supplier segmentation and supplier base reduction can help make the establishment of such measurement system easier; and how supplier segmentation and supplier base reduction can be achieved through various ways.

### 3 Research methods

In this chapter, the author elaborates on how the research method is chosen: the difference between methods and what reasons lead to her choice of method. Next, the author explains the means of collecting data for the thesis.

#### 3.1 Research design

The figure below demonstrates how the research is designed.

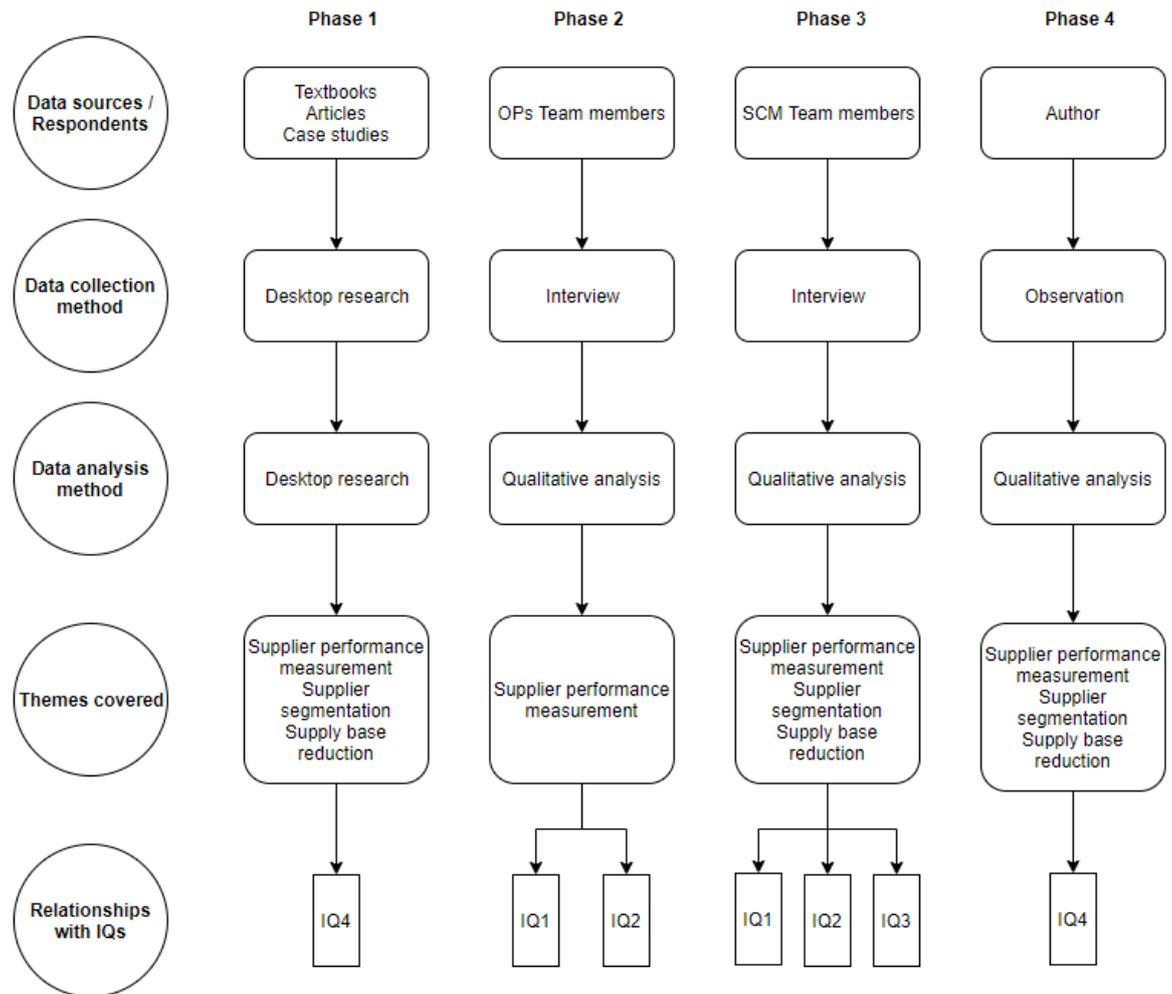


Figure 4. Research design

Researches typically are conducted using either quantitative method or qualitative method. Major differences between the qualitative and quantitative method include:

- Aim: qualitative research is effective for gaining understanding of respondents' thoughts, beliefs, perception, experience; quantitative research is mainly used to examine causality.
- Approach: qualitative method typically indicates broad focus and emphasizes on process plus the engagement of context; in quantitative research, the focus is narrower,

emphasis tends to be placed on the final product, and context is normally non-existent.

- Data collection: quantitative researchers usually use questionnaires, surveys or standardized interviews to collect primary data; qualitative researchers, on the other hand, mostly rely on in-depth or semi-structured interviews
- Data analysis: for qualitative data, comparative analysis is mostly employed; for quantitative data, the dominant analysis method is statistical analysis.
- Relationships: in qualitative research, the researcher is much more involved and engaged in the process than in quantitative research. (Blackwell Publishing 2019, 16.)

As the two methods have distinct characteristics, the data generated from each method is different too. To specify, unlike quantitative method which focuses on numerical data, qualitative method mainly revolves around text and image data (Creswell 2014). Another major difference is that data gathered through qualitative method is non-standardized, which suggests the need of cleansing and organizing, and data analysis involves the formulation of idea; on the contrary, the data generated through quantitative method is generally standardized, and data analysis possesses the statistics nature. (Saunders et al 2009, 482.)

In this thesis, the author employs the qualitative research method for a number of reasons. First of all, the data needed is non-numerical: description of processes, perception of supplier performance, preferences, which indicates the need to explore in-depth using qualitative method. Moreover, as the sample size that the author manages to get is small, quantitative method would not be very meaningful. Last but not least, qualitative research method allows the author to form a closer relationship with the respondents, thereby supporting the data collection process. The author can also provide assistance along that process too, which is very important considering that the respondents may need further explanation regarding interpreting the questions or decoding the terms.

The research comprises of four phases. The first one concerns desktop research for the purpose of gathering necessary literature on the topic based on which the tool for the empirical research part is built. The second phase (answering IQ1 and IQ2) is interviewing staff of OPs team, followed by the third phase (corresponding with IQ1, IQ2 and IQ3) is interviewing the SCM department staff. Both are qualitative interviews involving collecting data on current process, issues identified and preferences for future improvements. In the last phase, the author employs uses own observation along with the data and findings gained from the previous three phases to answer IQ4.

### **3.2 Data collection**

For the thesis, the author gathers empirical data by means of conducting interviews. The manner in which interviews take place is face-to-face. The author believes that this data

collection method is the most suitable in this case for two reasons. First of all, interview is the most effective method when it comes to gathering qualitative data concerning people's viewpoints (Roulston & Choi 2018, 14). Additionally, face-to-face interview enables the interviewer to give timely explanation and needed support to the interviewees should misinterpretation or misunderstanding of the questions occur.

There are three types of interview: structured interviews, semi-structured interviews, and unstructured or in-depth interviews. In structured interviews, also called interviewer-administered questionnaires, the interviewer presents to the respondents a set of prepared standardized questions in a standardized manner. With semi-structured interviews, the interviewer prepares a list of questions beforehand, but depending on the actual situation at the interview, the interviewer can make changes such as question order adjusting, question omitting, extra explanation, among others. On-site addition of certain questions may also be called for. The last type of interview is unstructured interview. When employing this interview type, although general ideas of the interview topic should be established in advance, question list is not required. Instead, the interviewees can express their opinions, perceptions and anything relative to the topic. (Saunders, Lewis & Thornhill 2009, 321.)

The author gathers data for the thesis using the semi-structured type of interview. This type of interview has high level of flexible while still maintaining good accessibility and effectiveness. In fact, Kvale and Brinkmann (2009) suggest that semi-structured interview is the best interview type when it comes to qualitative data collection. (Qu & Dumay 2011, 246.) The respondents are 2 Operations team members including a Kitchen leader from store 3, a Services leader from store 4, and 2 staff from the SCM department of the Hanoi branch. The 2 OPs team members are presented with the same set of questions (see Appendix 1), and the SCM department staff also are interviewed using two identical sets of questions (see Appendix 2), but small modifications for the purpose of optimizing the data collection can be made along the way.

## **4 Empirical findings**

### **4.1 The current supplier performance measurement practices at restaurant chain X**

In this section, the author provides some background information, then describes the ordering process and supplier performance practices that the restaurant chain is currently implementing. It is important to have an understanding of how the case company interacts with its supplier on a daily basis in order to see how it affects supplier performance management here.

#### **4.1.1 Background information and the ordering process at restaurant chain X**

Two main components of the personnel of each store under restaurant chain X, branch Hanoi are the Operations team and the back office. The Operations team (OPs team) consists of two smaller teams: Kitchen team including kitchen leaders, cooks and trainee cooks under the supervision of a Food Supervisor, and Services team including services leaders, servers and trainee servers supervised by a Services Supervisor. The restaurant manager oversees all activities taking place in the store. On the other hand, the back office is composed of different departments in charge of support activities including Supply Chain Management department (SCM). The HN back office takes care of all stores located in Hanoi.

When it comes to purchasing activities, the SCM department is in charge. Food and beverage purchasing take place on both daily and weekly basis: fresh food, soft drinks, high selling wine and beer are ordered every day; dry food products and other types of wine are ordered once a week. The Operations team directly makes purchase order request to SCM department: The Kitchen team makes request in food category while the Services team mainly orders items from Beverage category. Currently, order requests are made on two platforms: online google sheets and an inventory management system for restaurants called Marketman. The practice of inputting order requests on google sheets has been existing from the start of the company. According to SCM staff C, this comes with several advantages: easy to implement, very low implementation cost, user-friendly for staff from Ops team, most of whom are not very tech-savvy. However, she also acknowledges the obvious drawbacks: it requires too much manual work and is entirely separate of the financial system that the Account department is using. Since the restaurant chain is continuously extending in size and the need to have a more cohesive management system has been realized, the use of the Marketman system was proposed and has been put to selec-

tive use in some stores as a trial run. Examples of what the two platforms for order requesting look like are presented below:

									LQS		CK-LQS		TRANGTIEN		PKB		LOTTE		CK	
	Standard stock					Inventory unit	Remark	Order unit	Order date	31										
	LQS	CK-LQS	PKB	CK	LOTE				TRA	Current stock	Order	Current stock								
Supplier A																				
Contact information																				
Fresh salmon	20			20		kg	Size 6-7	kg											12	20
Frozen salmon	15		10		10	15	Price change by weekly	kg	16.5				11	5	5	15	2,5	18		
Top blade beef	3		10		10	10	2mm thick	kg	12				6	5	5	10	3	10		

Figure 5. Example of order request through google sheet at restaurant chain X

OPs team members from each store input the stock amount and order amount for each item on the sheet like above. The order amount will be linked to another sheet for ordering like below:

Order date	05/May/2019					Delivery date					
Remarks	Supplier Code	Item Code	Order unit	Unit price (ex VAT)	Monday		06/May/2019				
					STORE						
					LQS	CK-LQS	TRANGTIEN	PKB	LOTTE	CK	
Kiwifood 0979827666 - sales.k2@kiwifood.net thanh.dao@kiwifood.net tra.dau@kiwifood.net											
Fresh salmon		Size 6-7	NCHN0034	FRE0020	kg	405,000					20.0
Frozen salmon		Price change by weekly	NCHN0034	FRE0019	kg	320,000			5.0	15.0	18.0
Top blade beef		2mm thick	NCHN0034	FRE0164	kg	170,000				10.0	10.0

Figure 6. Example of ordering sheet at restaurant chain X

The person in charge from SCM Department checks the orders and confirms it by placing the order to the suppliers via an order email.

When ordering through the Marketman system, the OPs team members input the order amount for each item on the system platform and send the request to SCM. The SCM department member in charge checks the request and approves it by clicking the Approve Order button. The purchase order then is automatically sent to the suppliers. When goods arrive, the OPs team confirms the receiving of goods by inputting back the actual amount of goods received into the system. An extracted order from the Marketman system is presented below:

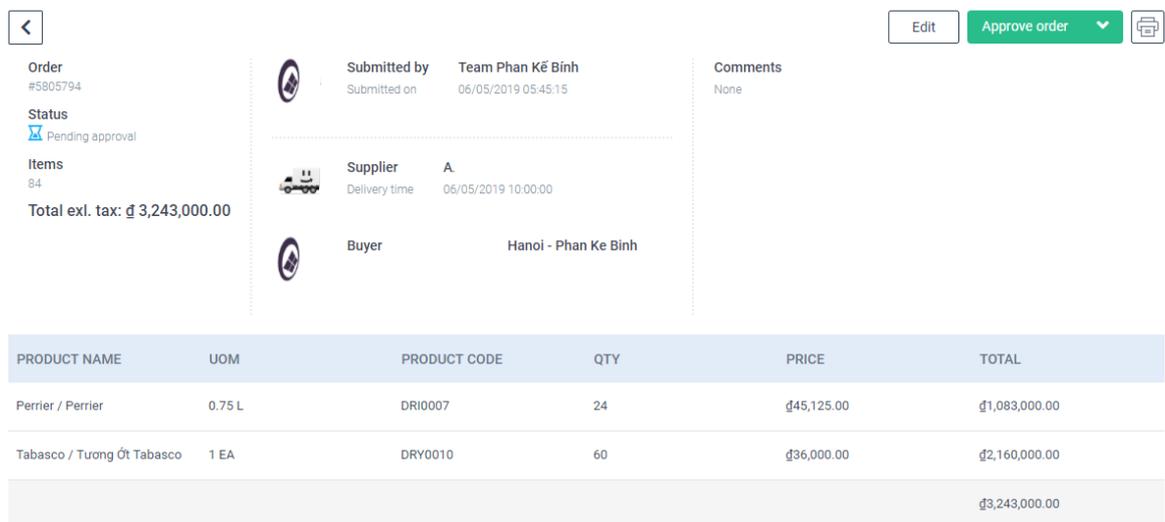


Figure 7. Example of making ordering request through Marketman system at restaurant chain X

Despite the use of different platforms, the ordering process of restaurant chain X remains the same. This process is described in the following chart:

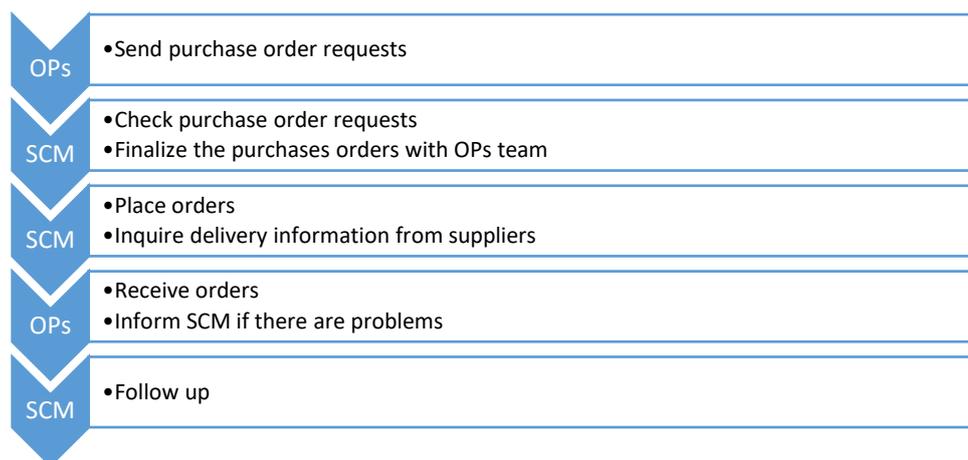


Figure 8. The ordering process at restaurant chain X

It can be seen from the graph above that both the SCM department and the OPs team take part in the ordering process, but each is in charge of different steps. As a result, both parties experience different aspects concerning supplier performance and both parties' participation is needed when measuring such performance.

#### 4.1.2 Supplier performance measurement practices at restaurant chain X

Regarding supplier performance measurement, it has been agreed by both SCM staff interviewed that there is no formal system employed at the moment. As a result, the team has always been reactive rather than proactive with the monitoring of their supplier. When

asked, the staff were able to list out the suppliers that deliver good performance or the suppliers that deliver low quality performance in specific areas, but details could not be provided since almost nothing is recorded and measured. The only practice that comes slightly close to supplier performance monitoring is the use of an excel file for tracking weekly purchase orders. The reason for the exclusion of daily orders is because since there are around 20 orders per day per stores, which amounts to 120 daily orders per day all stores combined, it is very time-consuming to do the same thing for those orders.

SUPPLIER NAME	PO DATE	SUPPLIER CODE	ITEM CODE	ITEM NAME (VN)	Unit	PO PRICE	REMARK	ORDER QUANTITY						Performance	Status	1ST DELIVERY			2ND DELIVERY			3RD DELIVERY			LQS		
								LQS	CK	LA	IN	AC	CU			RA	TE	LO	W	QU	AL	INVOICE PRICE	DATE	QTY		DATE	QTY
A	08/01/2019	NCHN0031	DRY0005	Mũ Tết Min	jar	125,875		2		2					LATE	DONE	125,875	08/01/2019	2								DONE
A	08/01/2019	NCHN0031	DRY0007	Mì Ý Lasagna	box	95,220		2		3					INAC	CONT											INT
A	08/01/2019	NCHN0031	FRE0204	Quả Phức Bốn Tử (Mâm Xứ) Đồng Lành	pack	251,750				3					LOW	CONT											DONE
B	08/01/2019	NCHN0283	DRY0272	Ô Liu Xanh Tô Nguyễn Huệ	tin	713,000		2					6			CONT	713,000	08/01/2019	2								DONE
B	08/01/2019	NCHN0283	DRY0557	Puff Pastry pack 2kg	pack	312,000		2	5							CONT	312,000	08/01/2019	2								DONE

Figure 9. Example of order tracking at restaurant chain X

On this PO tracking file, the person in charge keeps track of delivery time and actual amount received of each item. There is also a column for indicating general supplier performance quality with a drop-down list including options such as Late (late delivery), inaccurate (wrong amount or wrong product), low quality (product not meeting standard). It is updated every week after orders are placed and goods start to arrive but there is no specific schedule. The data comes from the OPs team as well as the suppliers directly. Both staff A and staff B of the OPs team confirm that the OPs team report to the SCM department via virtual platforms like Viber or via phone calls as soon as possible whenever problems arise. On the other hand, the SCM department also obtains information from the suppliers about the order status, for instance most suppliers inform by email if they have a certain item out-of-stock or their delivery would come later than the expected lead-time.

According to SCM staff D, although this file helps record part of supplier performance, no measuring is done. It is more of a tool to track supplier delivery to handle time-related issues on time. When it comes to the quality area of supplier performance, the fact that only relatively vague terms are used to indicate the performance level and details are not included in the file means that it is not assisting the case company in monitoring the performance. Another drawback of this is the lack of indicator variety. Gordon (2008) specifies the two types of measures: lagging and leading. This has been elaborated in section 2.2.1. The timeliness of delivery and quality of goods delivered that are recorded at the case company all belong under the lagging measure category, which means that there

has yet to be a more predictive, future-oriented measure employed. Staff D also mentions the lack of the measurement of other important areas such as suppliers' level of compliance regarding document issues, price stability or the level of responsiveness.

## **4.2 Supplier performance-related issues perceived by restaurant chain X**

In this section, the author investigates how the people working at restaurant chain X identify issues related to supplier performance, both from the viewpoint of the OPs team and the SCM department. Section 4.2.1 describes the issues perceived by OPs team with the respondents being two leaders from the Kitchen team and the Services team. In section 4.2.2, opinions coming from the 2 SCM department staff in charge of Food and Beverage are shown. The information cultivated from both sides are then compared to highlight similarities and differences.

### **4.2.1 Supplier performance-related issues: Operations team viewpoint**

In order to gain an understanding of how OPs team perceives existing supplier performance in general, the author conducts interviews with two members of the team: one is the Kitchen leader at store 3 (staff A, concerned with food items) and the other is the Services leader at store 4 (staff B, concerned with beverage items). The set of questions presented to both interviewees is included in Appendix 1.

The interview with staff A reveals that from the perspective of Operations team members, for suppliers of food items, time and quality are the two areas where issues mostly arise. It is stated in every contract signed by the case company and its suppliers that suppliers should only deliver goods in a specific time frame to guarantee ease of goods receiving from the restaurant side; goods delivered at late or busy hours is considered noncompliance. However, a lot of times, suppliers deliver goods in an untimely manner. Daily fresh food suppliers are more prone to late deliveries as fresh food orders are supposed to arrive no later than 9 am every day. On the other hand, weekly food suppliers mostly fail to deliver goods within the accepted time frame. Regarding quality-related issues, staff A mentions in the interview that most of the problems have to do with products not meeting the requirements specified in the contracts as well as other forms of agreement. It ranges from fresh food (fruits not as ripe, pork with too much fat on, or salmon fillet a little smaller than usual) to dry food (white wine vinegar with dark colour, canned olives sourer than accepted or wet brown sugar...). Another very pressing issue that staff A emphasizes is the situation of items going out of stock. This has been happening a lot, especially with imported dry food and around the festive seasons.

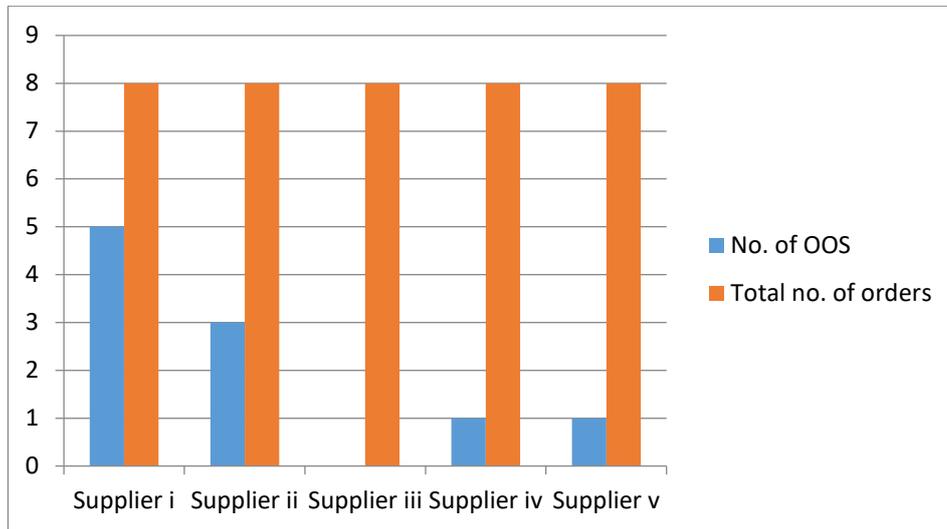


Figure 10. Food item out-of-stock (OOS) situation regarding the 5 largest suppliers from January 1, 2019 to March 1, 2019

The figure above demonstrates the out-of-stock situation of food items concerning five largest suppliers in the span of two months. Out of eight orders sent within the two months, supplier i notified the case company a total of five instances of OOS items, which is 62.5%, followed by supplier ii with three instances (37.5%) and supplier iv and supplier v with one instance (12.5%) each. Only supplier iii was able to successfully complete all eight orders timely and in full. In most of the cases, restaurant X has to wait for a few days for the items to be back in stock again and the suppliers would have them delivered immediately once they are in stock. When the OOS item takes a longer time to be back in stock, the restaurant has to order from a second supplier. Staff A refers to this situation as affecting the restaurant's operations the most.

When it comes to the Services side, the interviewed staff (staff B) says that time-related issues are the most dominant. Unlike food, especially fresh food of which quality can fluctuate a lot, beverage products generally are stable in quality. In-time delivery, however, is something that suppliers of restaurant X often fail to deliver. There are two major types of issues relating to this: late delivery and delivery outside of the time frame. Late deliveries usually occur when suppliers miss the orders or they cannot arrange deliveries due to order overload. Delivery outside of the accepted time frame can happen when there are unexpected problems such as traffic jam, broken truck or warehouse problems. Untimely deliveries cause significant inconvenience to restaurant since during busy hours the Services team is strictly occupied. In addition, there sometimes can be problems with quality of beverage products. Among the product range available at restaurant X, it is more likely to happen with craft beer. On the other hand, out of stock items are more associated with wine suppliers, in which case the case company has to temporarily switch to another type

for replacement. Depending on the situation, an item can be out of stock for as short as a few days or as long as several months. Lastly, staff B mentions customer services of suppliers as an area that needs improvement too. There are instances where delivery men from suppliers appear to be not very cooperative (refusing to support delivering goods to higher floors, unpleasant attitude...), which affects the whole goods receiving process.

#### 4.2.2 Supplier performance-related issues: SCM department viewpoint

When interviewing with staff C and staff D of the SCM department, the author realizes the similarity in their viewpoint when compared to that of staff A and staff B from the OPs team. It is agreed by both SCM staff that quality and delivery are the two biggest issues that are perceived regarding supplier performance at restaurant X. Staff C highlights the out of stock problem as the one that causes great difficulties to the operations of the case company. Very few suppliers manage to notify the case company of the out of stock situation and offer a solution. Most of the time, they only inform the SCM department after receiving an order consisting of an OOS item. In rare cases, some suppliers do not give any notification and just delivery the order with the exclusion of the OOS item. This puts the case company in a passive position where preventive actions are no longer possible.

Another significant issue that surfaces through the interview with SCM staff is the cost. The case company has been suffering from not only high price due to the scarcity of goods but also the fluctuation of price. This mainly has to do with fresh products like salmon, crab, squid, shrimp, pork and beef while produce like vegetables and fruits often remain stable price-wise.

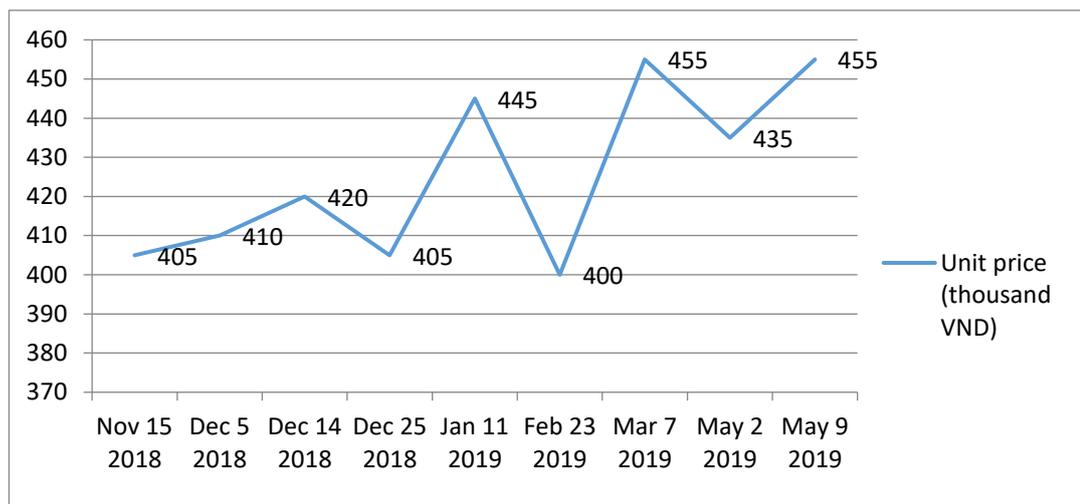


Figure 11. Fresh salmon unit price change from November 15, 2018 to May 9, 2019

The chart above depicts how the price of fresh salmon fluctuates over the course of 6 months from November 2018 to May 2019. It can be witnessed that the price has been

changing on a regular basis, and the price particularly had gotten from 400,000 VND to 455,000 VND (an increase of nearly 14%) and had stayed the same for two months before dropping to 435,000 VND then went back up to 455,000 VND again after just one week. The salmon supplier usually notifies the case company 1 to 3 days before the price change takes effect, which is considered too short. Given that the case company's fresh salmon volume is consistently high, this situation poses challenges to restaurant X concerning spending forecast and optimization. Regarding many imported products, the prices offered are not very competitive. This stems from small purchase volume, but constraints involving product specifications also play a part. According to staff C:

There are very strict requirements when it comes to food quality and preparations too. For example, short plate beef has to be trimmed very carefully and sliced into exact thickness before getting delivered to restaurants. Since not all suppliers have the ability and agree to do this, we have to settle for the one that provides the best combination of quality and price.

(Staff C 7 April 2019.)

Aside from product price, the SCM department staff generally find other costs reasonable. There is barely any services cost.

Staff D notes that compliance with case company's document requirements also is something that most suppliers struggle to achieve. Contracted suppliers are requested to provide full documents such as new signed contracts every year, business license, hygiene certificate, declaration of quality standard of product and goods plus test reports among others. Although these documents are mandatory, save for contracts and business license, suppliers in general do not provide the other documents unless continuously asked. There have been many cases where the case company got fined by auditors from the city due to the lack of necessary documents. Furthermore, small suppliers sometimes do not have required declaration of products since they buy directly from farmers. On the other hand, some suppliers do not renew their certifications and declarations when those expire. Both staff additionally mention the issue relating to VAT invoice. Small suppliers from which the case company buys only a small volume of goods can refuse to issue VAT invoice. Despite the fact that it is legally acceptable if the amount does not exceed 200,000 VND, the lack of VAT invoices still put the case company at risk regarding tax issues.

Lastly, flexibility and technical ability are mentioned. Due to the nature of the catering industry, there are many urgent cases where the suppliers are asked to react quickly and

deliver the goods in a speedy manner. Furthermore, since the case company is on its way to transform the working process, a prime example being the newly implemented Marketman system, it is required of suppliers to adapt themselves. However, not many suppliers can successfully exhibit this level of flexibility. The inability and hesitance to using Marketman of some suppliers, especially small-scale suppliers are also considered not technology-wise capable by the staff. Overall, this may hinder the case company's own improvement potential since it has been striving to make its processes more automatic.

To conclude, the interviews with OPs team members and SCM department members show that the two teams share the same opinions when it comes to supplier performance at restaurant chain X. Moreover, it can also be observed that what the staff from both teams identify as supplier performance issues actually are supported by existing theories mentioned in chapter 2, section 2.2.3. Comparison in more details is presented below:

Table 9. Supplier performance issues perceived by the Operations team and the SCM department

<b>OPs team</b>	<b>SCM department</b>	<b>Supporting theories</b>
Delivery	Delivery	Neely et al. (1995)
Quality	Quality	Neely et al. (1995)
Services		Monczka et al. (2009)
	Cost	Neely et al. (1995)
	General compliance	
	Flexibility	Neely et al. (1995)
	Technology	Gordon (2008)

### **4.3 Suitable practices for supplier performance measurement**

This section serves to reveal what might be the practices best fitting as well as supporting the establishment of a supplier performance measurement system at restaurant chain X. The qualitative data is gathered through interview with the SCM department staff.

#### **4.3.1 Suitable supplier performance measurement practices**

##### **What to measure**

Through the interviews with staff C and staff D, a list of measures that they identify as necessary are addressed.

- Product quality
- OOS situation
- Late delivery
- Delivery outside the accepted time frame
- Product price
- Price stability
- Document compliance
- General responsiveness

Both staff share the opinion that since the case company has no supplier performance measurement system to begin with, it would be preferred if they start simple and measure the most fundamental factors first, then extend the system later on. To be specific, for quality, quality of the products and the out of stock situation should be closely monitored. Quality of the product is interpreted as if the quality delivered matches the quality mutually agreed, while OOS situation is the frequency of one or more items provided by a certain supplier going out of stock. For delivery, the timeliness of the deliveries is the most important. In this category, late deliveries and deliveries outside of the accepted time frame are to be separated. Relative to cost, product price should be included in the set of measures as well as price stability. Furthermore, as document compliance is an area where suppliers generally underperform and entails a lot of problems, the staff express the need to measure it. Lastly, general responsiveness refers to how well suppliers respond to the case company's sudden requests, changed processes, complaints, and so on.

### **How to measure**

It is thought by staff C that performance of food and beverage suppliers at restaurant chain X should be recorded and measured regularly. The recording should take place continuously and for every order. Data is collected through OPs team concerning quality of product, delivery timeliness. For the other factors, SCM department would directly obtain the information from their daily activities and from interactions with suppliers.

Staff D mentions that monthly reporting is ideal for taking actions and making decisions at restaurant chain X. In other words, data collected within one month should be used to evaluate supplier performance once per month. On the contrary, staff C thinks that the frequency of bi-weekly would better benefit the case company as it promises more in-time measurement and evaluation. Additionally, since the case company holds regular bi-weekly meetings among different functions and the OPs team, supplier performance can be reported and discussed there too.

Regarding measurement methods, both staff express that a simple approach is favourable considering that this is the first time they employ such a system. Furthermore, the accounting system currently implemented at the case company is fairly simple too and might not be able to support a more complex, sophisticated system of performance measurement. It is noted by staff C that when it comes to areas of quality and delivery, quantitative measures might be the better choice. By quantifying the level of compliance relative to these two areas, she believes that the results produced are more objective and easier for ranking suppliers as well as reporting. However, factors such as document compliance and responsiveness are hard to measure using quantitative metrics. Instead, qualitative metrics would be better fitting.

### **Supplier segmentation**

It is mentioned by the interviewees that not every supplier should be measured, and not every measured supplier should be given the same level of measurement. According to staff D, suppliers of key items are to be closely monitored and measured. Examples of key items are crab (main ingredient of the best selling menu item, very high buying volume, few suppliers in the market), organic rocket leaves (key ingredient in many menu items, a selling point in terms of the sustainability aspect that the case company has been promoting, scarce in supply sources), whipping cream and spaghetti (important ingredient in many menu items, very high buying volume), or coke (very high buying volume). On the other hand, for suppliers of items not regularly bought or items of limited importance, the level of measurement should not be as high. For instance, canned tomato paste is an item that is widely available at many supermarket chains and imported food stores and restaurant chain X only orders them once every a few months, 10 cans per order. As a result, this is considered a less important item and its supplier, as suggested by the interviewees, only needs basic measurement focusing on delivery. The same goes for black tea (very low buying volume, only used to serve waiting customers) or oyster sauce (regular brand, very low buying volume). For this type of suppliers, delivery is the single most important.

#### **4.3.2 Challenges of implementing supplier performance measurement system**

One of the major challenges that the SCM department staff identify relative to implementing a system for measuring supplier performance is that there are too many suppliers to begin with. As of May 2019, there are a total of 83 suppliers in the Food and Beverage supply base. It is noteworthy, however, that a medium proportion of the base consists of suppliers that the case company has not made any purchase from for a long time or made few purchases over the time.

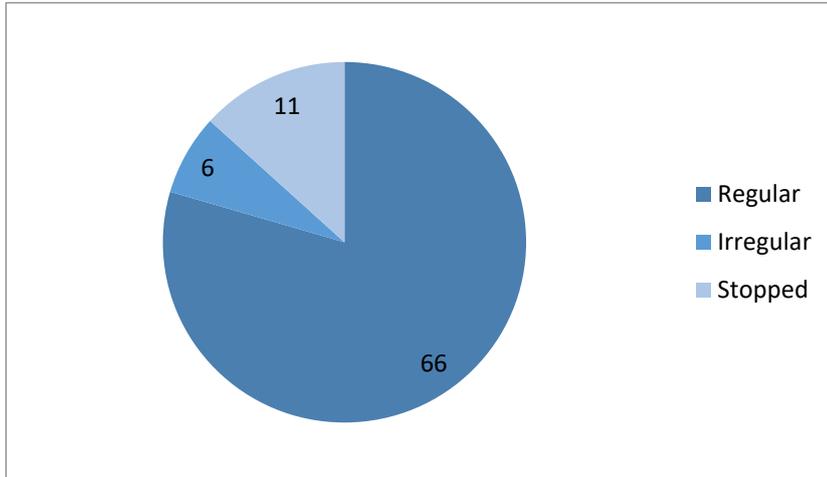


Figure 12. Supply base of restaurant chain X broken down by frequency of interactions

The graph above visualizes how the Food and Beverage supply base at restaurant chain X can be broken down based on how the interactions between them and the case company are. Out of 83 suppliers, 66 are suppliers from whom the case company purchase goods on a regular basis, accounting for 79.52%. The irregular category is composed of suppliers that the case company only purchases from once every few months but the frequency is stable. Regarding the remaining 11 suppliers or 13.25% of the base, the interactions have stopped for at least 6 months.

When it comes to the 11 suppliers with no interactions for at least 6 months, reasons include the supplied item no longer used, the supplied items staying out of stock, or the supplier's performance not meeting the standard among others. These suppliers are still kept in the base and recorded information not removed because the case company wants to have a source to refer to when working with past data. Also, they like to have extra information of suppliers in case unexpected situation comes up. For these suppliers, it is agreed that removal from the supply base is the most reasonable choice. Concerning the suppliers that the case company buys from irregularly, the interviewees think measuring their performance is not very meaningful since the frequency of purchasing is so low. They suggest that these suppliers can be omitted from the measurement system, or alternatively, it would be good if the case company can consolidate their purchasing more. For example, the supplier of canned tomato paste can be removed from the base, and the case company shifts to buying that item from another supplier already in the base that can supply it. This of course requires thorough market research and negotiation. Lastly, according to the interviewees, the 66 suppliers under the regular category should also be considered thoroughly since that is still a big number. Staff C mentions that supplier con-

consolidation should also take place here. For instance, suppliers providing only a small number of items or suppliers provide items of similar nature are possible for consolidation. In this category, supplier number adjustment should be handled very carefully since the items are in general regularly used, which indicates moderate to high volume as well as the need for consistent supply source.

Another risk addressed by the interviewees related to supplier performance measurement system implementation at restaurant chain X is the increase of total cost without absolute probability of improved performance from suppliers. Staff D expresses his worry about the extra resources the case company would have to spend on management. Regarding the implementation cost, typically the simpler the system and method, the less costs are realized. As mentioned above, it is thought that the case company should start out with a simple one at least in the beginning, so the mere implementation cost might not be as high as when a complex one is applied. However, there are other costs resulting from this other than the implementation cost. For instance, human resources and time spent on running the system can add to the total cost. This is particularly visible in the context of a restaurant chain that is continuously extending. In fact, restaurant chain X plans to open three new stores within the latter half of 2019. Data collecting would be much more time-consuming then.

The last challenge that is talked about is the issue of collaboration from the Operations team. As the recording and collecting of data cannot be carried out without the participation of the actual people that receive and use the goods, a supplier performance measurement system implemented at restaurant chain X will rely a lot on kitchen team members as well as services team members. However, not everyone is willing to take on more responsibility. There have been discussions at the case company where the OPs team representatives express their wish that the OPs team will only strictly focus on operations tasks. Therefore, the process should be designed in a way that is simple enough so that the OPs team do not feel burdensome taking part in it. Furthermore, in order to successfully measure supplier performance, the participants have to be trained. As mention in section 4.1.1, OPs team members are generally not tech-savvy. This again points to the simplicity of system and process. Furthermore, the communication between the SCM department and the OPs team can pose a risk too. The two teams normally communicate through virtual platforms and phone, but information exchange often is delayed since the OPs team cannot be on their phone much due to the nature of their work. This delay is likely to cause also delay in issue handling. Overall, it is concluded that productive collaboration from the OPs team regarding the implementation of a supplier performance measurement system requires clear communication about the benefits of such system and tak-

ing the OPs team's opinions and expectations into account. Additionally, during the process of designing and running the system, if the SCM department do not work closely with the OPs team for the information flow to be smooth, the implementation will fall through.

## **5 Discussion**

In this chapter, the author first presents some recommendations relative to supplier performance measurement at restaurant chain X. Next, research limitation that is realized upon doing the thesis is discussed, followed by suggestions for further research. Lastly, the author describes her personal learning attained through the process of completing the thesis.

### **5.1 Recommendations**

The author delivers in this section some recommendations for measuring supplier performance at restaurant chain X. These recommendations are formed on the basis of the theoretical materials studied in chapter 2 as well as the empirical findings cultivated from the interviews that are elaborated in chapter 4.

#### **5.1.1 Supplier performance measurement at restaurant chain X**

As explained in chapter 2, section 2.2, in order to successfully carry out supplier performance measurement, the company should design the system in such a way that incorporates organizational objectives and goals while taking the organization's resources and processes into account, among others. In the case of restaurant chain X, improving productivity and performance quality are the main objective identified by case company. Furthermore, the case company has limited resources and has never systematically measured their suppliers' performance. All of these indicate that a simple approach is the most appropriate. The author suggests the weighted-point approach for its simplicity yet moderate objectivity and reasonable implementation cost. With the set of measures identified by the interviewees, an approach that has room for both objective measures (in this case, delivery timeliness and quality) and subjective measures (for example, suppliers' responsiveness might need to be measured based on judgement) like the weighted-point approach is ideal. To overcome the disadvantage of this approach being that units across measures must be standardized, the case company can design the measurement system so that the result from the measurement of each factor is converted into the standardized unit. For example, one measure can be the percentage of in-time delivery out of total deliveries per 15 days, the unit being percentage. If the percentage is 90% or higher, it is given a 5 for excellent; if the percentage is between 80% to 89%, it is assigned a 4 for good, and so on. To measure responsiveness, a subjective measure can be used through which suppliers' performance is given a score from 1 (poor) to 5 (excellent). This way, all measures have the same final unit and data can be then further multiplied with individual weights to produce final results.

Even though the initially developed system may be simple, the case company should make sure to make modification to the system to adapt to changes when needed so that the system serves its purpose well and is in line with the company's situation. This is especially important considering that the company has plans to rapidly extend within the country and also abroad, plus the switch to new management systems.

The process of designing the supplier performance system should be joined by the OPs team as they are the key participants. There should be meetings between the two teams to discuss about relevant elements of the system. As mentioned above, cooperation from the Operations team side could be a little hard to achieve, so communication about the benefits and responsibilities is crucial. Moreover, training sessions for the OPs team members are essential for ensuring swift running.

### **5.1.2 Supplier segmentation**

It is confirmed by multiple researches that supplier segmentation is significantly fundamental when it comes to allocating supplier performance management efforts, which includes supplier performance measurement. As can be observed from the information provided by the SCM department staff, highest efforts should be spent on key suppliers that either considerably impact the performance of the case company or supply items that are hard to replace. According to this, it can be said that a more detailed segmentation of suppliers can benefit the case company greatly. The Kraljic model can be a good start since it's simple enough to be applied without too much support from other systems in the company, especially the accounting system, but still offers a structured way to segment suppliers, which is very important for first-timers like the case company.

The decisions regarding which suppliers to put into which categories should be made with sufficient information provided by not just the SCM department but also the OPs team and possibly the Accounting department too. While the OPs team helps to provide important information on product specifications, which item is irreplaceable and which item is more flexible in relation to final menu item quality, the Accounting team has valuable data concerning the financial aspect. Sharing opinions and function-specific information enables the case company to form a complete picture of their suppliers and proceed to segment their suppliers in the most appropriate way that supports the measurement system well.

Similar to how the supplier performance measurement system needs to adapt to changes, supplier segmentation should also be subjected to changes when necessary to guarantee success. This calls for continuously updating and modification.

### **5.1.3 Supply base reduction**

For the purpose of effectively managing supplier performance, a manageable supply base is vital. A small number of suppliers promises less management efforts but with better results. As explained in section 4.3.2, it is the case company's wish to remove some suppliers to consolidate the supply base. It would be beneficial if the company develop a plan to re-assess all of their current suppliers to determine which suppliers should be eliminated from the base, and which ones should be kept. Ideally, a cross-functional team that consists of members from the OPs team and the SCM department should be formed for the plan development and execution, but given the fact that the OPs team members normally work in rotating shifts and are occupied with their own operations tasks, it might be more convenient for the SCM department to take the main responsibility but keep the OPs team posted on the process. Regarding the approach, it is noteworthy that the case company has been designing a plan to form partnership with the most strategic and capable suppliers, and on top of that, assist still underdeveloped but potential suppliers in enhancing their own business. For example, the case company has been having meetings with the vegetables supplier to discuss about improving their inventory and business processes as this supplier, though among the most important ones and has high level of responsiveness and flexibility, is not very competent. However, their potentiality is present, which with enough support can grow into capability in the future. This leads to the decision for the company to help them to improve. This suggests that the triage approach might be the suitable one for the case company thanks to its compatibility with the company's strategy.

It is important for the case company to be reminded that the process of reducing the number of suppliers should be planned out and carried out very carefully. The transition from one supplier to another should be as smooth as possible to not disrupt the operations. Furthermore, timely and sufficient communication is key. The removed suppliers should be fully informed of the situation well in advance so that they can be prepared on their side.

## **5.2 Research limitation**

The main limitation realized by the author in the process of the thesis conducting is the focus on certain aspects of the designing of a supplier performance measurement system while placing less emphasis on the others. To be more specific, in this thesis, the author

looks to elaborately deliver recommendations that relate to the establishment of the supplier base that is subject to measurement (hence the examination of the topic of supplier segmentation and supply base reduction), and the selection of individual measures that fit the case company's purposes and situation. In other words, the author wants to focus on the two fundamental elements: who to measure and what to measure. As a result, other elements of the system such as process, frequency or personnel are not studied as much.

Additionally, the number and diversity of respondents in terms of locations could have been better. The author manages to gain insights from both kitchen team personnel representative, services team personnel representative, and the SCM department personnel. Nevertheless, the fact that only two of the OPs team members are interviewed indicates limitation in viewpoints.

### **5.3 Further research**

Supplier performance measurement is a broad topic that has increasingly been receiving attention in the recent years. In this thesis, due to constraints relative to research scope and unfamiliarity with other branches, the author only studies the Hanoi branch of the case company. However, as the company is expanding to various cities in Vietnam and also to other countries in the near future, a system that works well for all branches is very important. Therefore, a topic that might prove helpful to the case company is the integration of the supplier performance measurement system across all branches.

This thesis tackles on the topic of supply base reduction but only gives general recommendations based on the case company's opinions. In fact, a consolidated base of capable, high-performing suppliers is required of appropriate strategies and joined efforts from the organization. Great attention should be paid to the assessment of currently suppliers in order to generate accurate evaluation and make meaningful decisions. It would be interesting if a research is done on designing a supply base reduction strategy for the company.

### **5.4 Personal learning**

First of all, conducting this thesis has given the author the opportunity to improve her professional competence. While the desktop research process, which involves lots of reading, analyzing, theory breaking-down and organizing, serves to enhance the author's specialized knowledge, the empirical data gathering helps make the link between theories and reality and really put the literature in practical context. This is particularly valuable considering the fact that the author wishes to develop herself as a professional in the

purchasing field. In addition, the author also is able to sharpen her skills, namely interviewing skills, office skills, and academic writing skills. These skills contribute to her competency as a professional.

Upon completing the thesis, the author also gains important insights and in-depth understanding about her own company and work. Most significantly, the process of conducting this thesis helps to increase her understanding regarding the work, viewpoints, and expectations of the Operations team. This newly cultivated knowledge promises to assist the author in her current job at the case company as well as in her future career.

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## **Appendices**

### **Appendix 1. Interview questions for Operations team staff**

1. On which platform do you make order requests for F&B items?
2. How often do you make order requests for F&B items?
3. How do you input the order requests on the platform?
4. Which problems do you often face when receiving and using goods delivered by the suppliers? And how do they affect your performance?
5. Do you report those problems to the SCM department staff? If yes, please elaborate the procedure.

### **Appendix 2. Interview questions for SCM department staff**

1. What is the ordering process at restaurant chain X?
2. How does F&B supplier performance measurement take place at restaurant chain X?
3. Please elaborate whether you think the current supplier performance measurement practices are sufficient and efficient? If not, what problems do you think are associated with the current practices?
4. What are the issues realized regarding F&B supplier performance? And how do they affect the company performance?
5. What are the areas of F&B supplier performance that need measuring?
6. Which are the types of F&B suppliers of which performance needs measuring?
7. How frequently should F&B supplier performance measurement be carried out?
8. What are some possible challenges associated with the implementation of a supplier performance measurement system?

### **Appendix 3. Abbreviations**

SCM: Supply Chain Management

OOS: Out-of-stock