WHEN BUSINESS ETHICS AFFECTS QUALITY: THE CASE OF CHEMICALS IN ASEAN MEMBER STATES

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Abstract

The objectives of this study were to examine possible ways of addressing quality issues in relation to chemicals used for the manufacturing of product in Asean countries in three different industries of coatings and paints, adhesives, household and cleaning, which essentially result assumes from the lack of ethics of most stakeholders.

Research Methodology: A case study of qualitative research method is a form of words by using methods of structured interviews of 9 open-ended questions, informal discussion, personal observations, secondary data, and research questions. Three different raw materials are chosen of Labsa, phenolic resin, and TiO2. Total sample consisted of eight participants who are manufacturers and productions based as large organizations in ASEAN member states. The critical criterion has chosen based on each manufactures and productions and branches are located more than one country in ASEAN. Each participant was provided consent form before and after an interview was taken place. Data collection was from face to face of structured interviews and noted taken in words in timely manner. All participants were accepted and willing to display data information. The research study started in January till August 2014.

Research Findings were as follow: The most active suppliers who consisted of business ethics, consistent quality, competitive price, long-term relationship, and willingness to support customers either normal or crises conditions. Total quality concept and management are significant became the leading suppliers who are participants wanting to continue business. Reach law is becoming key supporting participants to export the finished products to European countries member states and other regions. Most participants are resolved the quality issues by maintaining to existing raw materials in which people and leadership in quality is become significant in daily routine working.

Keywords: Asean, Business Ethics, Cost of Poor Quality, Leadership in Quality Management, Quality Management, Reach Law, Self-Assessment Model Quality, Strategic Quality Management, Total Quality Management, Waste

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CHAPTER 1
INTRODUCTION TO THE RESEARCH

This chapter provides the background to this research. It first considers the chemical industry and then focus on the cleared and including areas product an overview of the global chemical industry. Then, focus on (1) An overview of the Chemical Industry in Asean, (2) Problem Statement, (3) Objective of Study, (4) Significant of the Research, (5) Scope and Limitation of the Study, (6) Research Questions, (7) Basic Assumption, and (8) Definition and Terms.

1.01 An Overview of the Chemical Industry

1. The Chemical Industry

The chemical industry consists of many organizations manufacturing industrial chemical raw materials that are then converted into semi-finished products and finished products for different applications on a local, regional or global Industry (ICCA, 2014). In order to understand chemical Industry in Asean, it is necessary to look at the Chemical Industry globally. The chemical industry is seen through as "central to mankind's effort" (ICCA, 2013, p. 2) and "unique in its ability to enable other industries and society at large" (p. 6).

Starting in the mid-1980s, the global chemical industry has grown steadily by 7 percent annually to reach €2.4 trillion in 2010 (AT Kearney Vision 2030, 2014) "About 20 million people around the globe have a job connected to the chemical industry (directly and indirectly)" (ICCA, 2010). Almost half of global chemical sales already in Asia, the Asean connected as can be seen in Figure 1.1 (AT Kearney Vision 2030, 2014, p. 4).

Asia will also see the highest percentage growth give the high level of merger and acquisitions in the region (Young, 2013, p. 30). European and U.S. manufacturers in particular plan to shift more of them to Asia, and keep offering the same consistent quality under the EU and U.S. standard, method, and remaining leaders in TiO2 manufacturing.

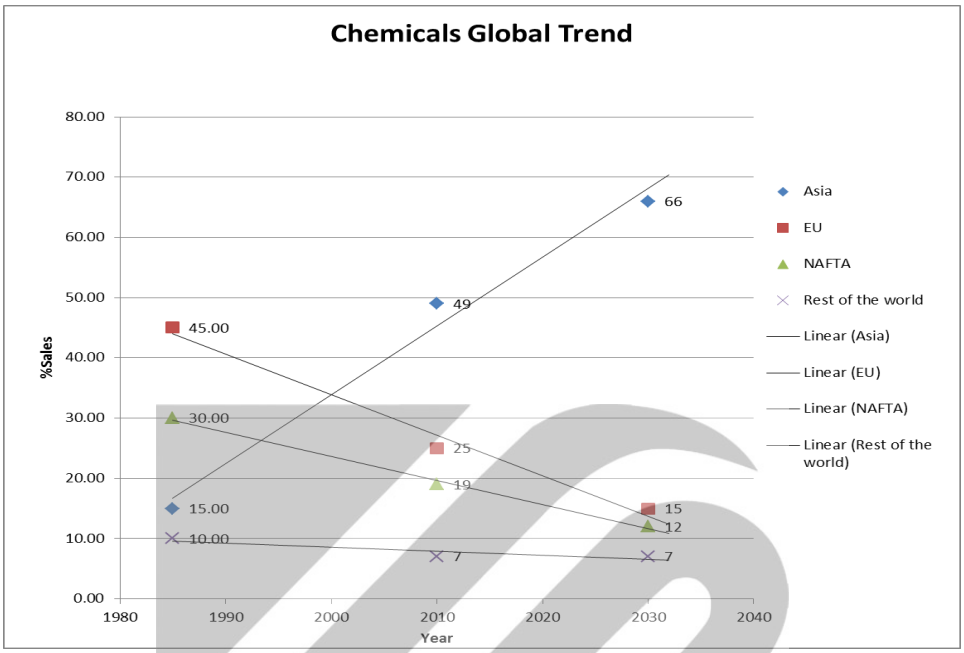

Figure 1.1. The Core of the Chemical Industry is Shifting to Asia, and by 2030, at Least Half of the Top 10 Chemicals Companies will be Asian or Middle Eastern

Source: ATKearney.com Vision 2030 European Perspective p. 3.

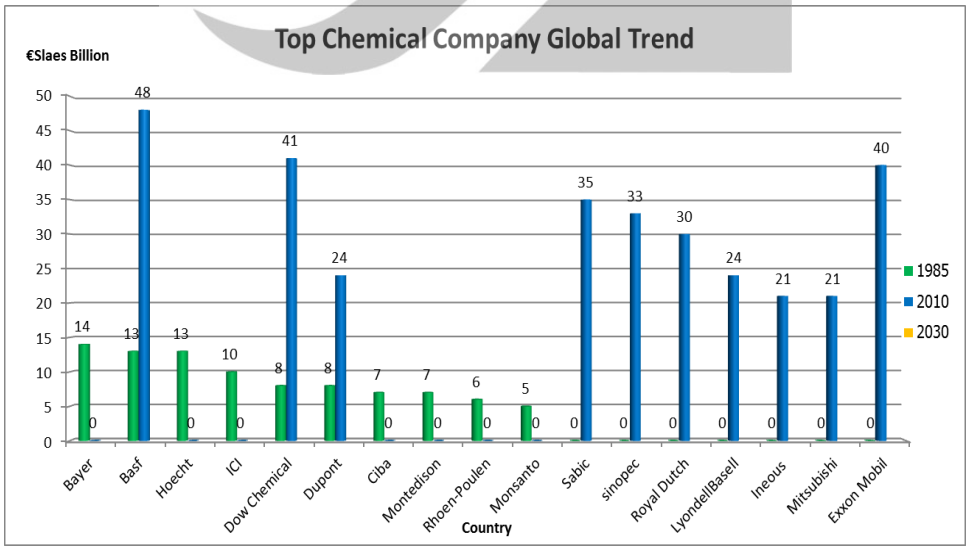

Figure 1.2. Top Chemical Company Global History in 1985-2010 and Trend in 2030

Source: ATKearney.com Chemical Industry Vision 2030: A European Perspective p. 3

In 2012, the chemical industry was one of the largest manufacturing sectors in the world, with a reported value by "The global sale of US$ 4 trillion and more than seven million employees" (ICCA, 2013, p. 3). There are seen through all manufactured products rely on chemistry over 95% (ICCA, 2013). The main 6 leading countries in the chemicals such are: (1) the United States of America; (2) the United Kingdom; (3) Japan; (4) Canada; (5) Germany; and (6) France; as consequently the number of companies and global key players (Chemical industry, n.d.)

2. The Chemical Industry in Asean

Association of South East Asian Nations (Asean) as to Thailand in August 1967, include 10 south east Asian countries: (1) Brunei Darussalam; (2) the Kingdom of Cambodia; (3) the Republic of Indonesia; (4) the Lao Peoples Democratic Republic; (5) Malaysia; (6) Union of Myanmar; (7) the Republic of Philippines; (8) the Republic of Singapore; (9) the Kingdom of Thailand; and (10) the Socialist Republic of Vietnam. Internally, corrected for seeking purpose in the name of the Vietnam War by five more cases (Dautrey, 2009; Asean Charter, 2008, p. 1; Phoklang, Sartnu, & Suwanvanichkij, 2013, p. 16). The Associations goal has single market and production based aiming to reach the level of "stable, prosperous, highly competitive and economically integrated countries with effective facilitation for trade and investment" (Asean Charter, 2008).

With a total population of 600 million, GDP is US$ 1,858 billion, a total trade of US$ 2,045 billion, a total export value of US$ 1,070 billion and a total import value of US$ 974 billion. Asean top twenties commodities export is US$ 463 billion and top twenties commodities import is US$ 381 billion. Average tariff rate on import of Aean dipped into 0.05%. Asean FDI flow is US$ 76.2 billion. In this result, the tax was lowering at custom since 1992, Asean Free Trade Area (AFTA) (Phoklang at el., 2013, p. 19; Dautrey, 2009). Asean Charter is new legal for Asean to boost its community building agreement among 10 Asean members.

3. The Main Key Players in the Chemical Industry in Asean

In 1985, the main key players were still in EU countries and the U.S. Since 2010, the main key players were shared by Japan and China from Asia in which one of the EU members was still maintaining the world's largest manufacturers as measured by sales turnover at € 48 million, the market share was shrunk from 2.8% down to 2% in 1985 and 2010 consequently.

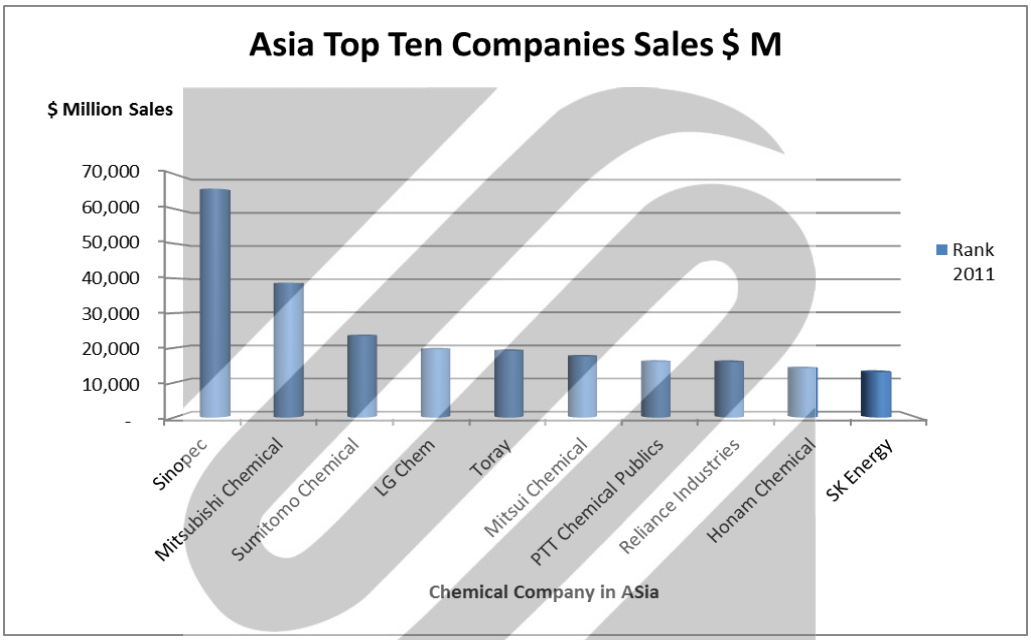

Figure 1.3. Asia Top Ten Companies Sales $ Million

Source: ICIS.Com Asian-Chemical-Connections 2012 by Richardson (2012)

In Asean, key players are namely the Japanese, South Korea, China and India. Thailand is becoming one of the key players because of the mergers of PTT chemicals and PTT aromatics, which are still ranking amongst top 30 companies from ICIS. A Korean company recently strengthened the position in sales by its acquisition of Titan Chemicals as one of Malaysia chemicals companies.

4. Asean Member States Countries: Thailand an Example

Currently, no Asean country has the capability to produce TiO_2, which must be imported from Australia, China, India, or Japan or from, outside the Asia-Pacific area (U.S.; a number of EU countries; and Saudi Arabia). Yet, all Asean countries use TiO_2. Since it is not available in any of the member states, Asean-based manufacturers need to import it directly either from TiO_2 manufacturers or through Asean-based distributors acting as sole agents for the suppliers.

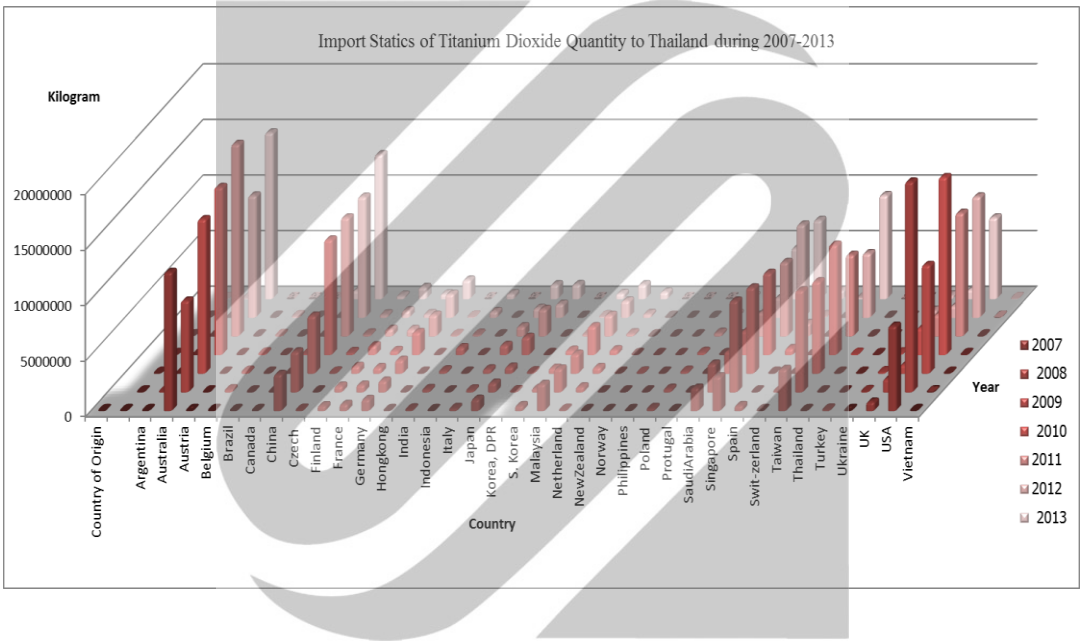

Figure 1.4. Global Key Manufacturers of TiO2: Importing Direct to Thailand by Manufacturers of Paint and Indirectly Through Sold Distributors, Authorized Agencies and Dealers in Quantity (kg)

Source: Import Statics of the Customs Department of Thailand 2007-January 2014

5. The Trends of Chemicals Industry in Asean Countries

Asean, recently suffered from energy cost because most of the companies are small which are affected by a lack of financial stability, also the price increase, overcapacity, and excess supply that caused a reduction in the market margin. “Few chemicals companies were immune from the worst economic crisis in generations.

Indeed, many regional players were hit particularly hard in 2009 as market demand collapsed and the export market faltered" (ICIS, 2010)

Beacham (2012) stated China would be the most important engine country of global chemical industry growth by the Asean member states. China has grown swiftly to become the world's largest chemicals market, this means the trends affecting might cause a lot of manufacturing to shift further afield, which may impact the short long term future of the chemical industry.

1.02 Problem Statement

Obviously, dealing with all the materials used in the industry, chemical by chemical, would require a lot more space than a thesis allows. Therefore, for practical purposes, this study will look at three types of chemicals as an illustration of industry-wide issue: three types of chemical; (1) Linear alkyl benzene sulfonic acid (Labsa); (2) Phenolic resin for adhesives; and (3) Titanium dioxide (TiO_2). More detail will be in chapter 2 to capsulate the main issues, which this study seeks to address.

Prior to considering these three chemicals and the quality issues associated with them, it is necessary to have an overview of the chemical industry in Asean so that the role-played by the different member states. The distinction between the sources of import is critical as the origin or the channel through which these three chemicals raw materials are imported can greatly impact its quality. Indeed, some importers imported ends up being of not the same quality when it reaches Asean buyers.

1. Problem with Quality. These three raw materials, TiO_2 is not the only chemicals with quality problems, phenolic resin for adhesives, and Labsa for house hold Industry. Although are used in different industries and by different customers, they point to the same issues and problems of inconsistency of quality where the original manufacturing sources matter, especially those imported from China and India.

The consequences of inconsistent quality of the raw materials caused the manufacturers to be unable to formulate and production to deliver the finished goods to their customers, while distributors lost business and evaluates as unreliable suppliers. Banks and financial institutions would not guarantee the quality in the letter

of credit for each opening sales order. The illustrate the problems in which are using them to produce in the production process with different industries, such as the paints, coatings and construction industry, adhesives industry, and household and cleaning industry. Three of them require consistency of quality from the customers' manufacturers shown in standard specifications of the particular raw material.

2. Ethical Issue. Clearly, it thought that is not just an ethical issue but rather that is relevant to the chemicals laws and regulations those manufacturers shall follow. The production was planning not stated in the sales agreement or sales contract signed under the specification of the goods requirement from substitution of low cost raw materials under the same type but rather that provided low qualification to pursue the price as customers' requirement in order to be competitive in the market.

1.03 Objective of the Study

This study is aiming to examine possible ways of addressing quality issues in relation to chemicals used for the manufacturing of products in Asean countries, which essentially result assumes from the lack of ethics of most stakeholders.

This quality-related ethical issue assumes that may have dramatic consequences for the industry. The researcher opinions thought that a solution can only come from Asean as a group and not from members acting alone since most of the transactions and the problem arising from them are cross-border transactions.

1.04 Significant of the Research

The results of this qualitative research study will benefit who are interested in synthesize of academic and professional in chemicals industries as below;

1. To Students and Professionals. The qualitative ways and analyze the data to see why the number would not be helpful in some cases but rather than be blinded by the sales number in which avoidance of exploring further details.

2. To Asean Member Countries. Chemical businesses are aiming for better working condition in ethical ways of doing business. It will also benefit to people in chemical

business industry not only to sales management function roles but also it draw the business strategies alignment to global, regional and local requirement in effect of what to do and how to be done efficiency in the first time.

1.05 Scope and Limitation of the Study

This study looks at three chemicals, TiO_2, phenolic resins and Labsa. The companies involved are international manufacturers of raw materials and finished products, local manufacturers of finish products, all of which relating to the researcher's real life experiences in the chemical industry.

1. The Qualitative Research Case Study - is incorporative of both researcher and participants. It looks at previous literatures as guidelines to address the researcher questions and incorporate interviews with people involved in quality control and with commercials decision makers, and various other stakeholders in the chemical business. Three managerial levels are involved in face-to-face interviews.

2. This Study Looks at Quality - in terms of meeting industry specifications and at the ethical issues that are involved in an intentionally not meeting the standards. It only involved a few companies across Asean even though the solution is argued to be across region. It considers issues of quality, no other problems of importing chemicals.

1.06 Research Questions

1. RQ1: What are the Quality Issues Asean Member States Face Importing Chemicals Raw Materials?

2. RQ2: What Steps Have Been Taken to Resolve the Quality Issues?

3. RQ3: Have the Step Taken So Far Met with Success and Why not?

4. RQ4: What Else Do Stakeholders Think should be done?

1.07 Basic Assumption

Three raw materials are Labsa, phenolic resins, and TiO2 explored the quality is the most critical matter to manufacturers resulted to the whole process from production through customers. It is affected to manufacturers and trading organization as for commercial, financial, their customers and to name a few.

Some trading companies had to stop doing business. Some manufacturing are continuing but it requires to restructuring the whole process from sourcing raw materials, selecting suppliers, sample evaluation, research and development of each formulation, production trial scale, stability testing time consumed, and retesting. Finally, there is not competitive advantage from the low cost raw material but also cost of operation is getting higher for testing of new raw materials.

CHAPTER 2
LITERATURE REVIEWS

This chapter defines the key concepts used in this study to discuss the issues raised in chapter 1. This study is focused the quality relevant of real life case study are considered of (1) Labsa; (2) Phenolic resin; and (3) Titanium dioxide (TiO2). Specifically, chapter 2 looks at the concepts of (1) Business ethics; (2) Certificate of analysis; (3) Quality assurance and quality control; (4) Cost of poor quality; (5) Quality and quality management; (6) Strategic quality management; (7) People and leadership in quality management; (8) Self-assessment model quality; (9) Customer and quality; (10) ISO series standards; (11) Waste; and (12) Reach law.

2.01 Problem of Quality

Three products are illustrated the problem. Let us consider three types of chemical raw materials: (1) Labsa; (2) Phenolic resin for adhesives; and (3) TiO2.

The distinction between the sources of import is critical as the origin or the channel through which three products are imported can greatly impact their quality. Indeed, some importer imported three products end up being of not the same quality when they reach Asean buyers.

1. Labsa - is an anionic surfactant raw material, which is found in a light color or in a dark brown color, depending on the end use. Labsa is used as a raw material to produce Linear alkylate sulphonate (Las) (UNEP, 2005) to manufacture powder detergent, liquid detergent, dishwashing and cleaning products. The low cost and high performance of Labsa to produce Las means that the household industry requires largest volumes of it. The main purpose of Las is decontamination in light to heavy stains with remaining acid, alkali resistance and preventing oxidation reaction.

Labsa is considered a commodity raw material, which means it has a low cost and high performance and is consumed in larger volume to make detergents and cleaning products. Producing Las still requires consistent Labsa quality. The

difference in the quality and appearance of the finished products thus results from the use of different and cheaper material.

These Asean-based manufacturers also import Labsa from China, India, South Korea, and Taiwan for the Asia Pacific Region. Either a manufacturer or Asean-based distributor is acting as sole agent or exclusive distributor for the supplier, from wherever these may be.

2. Phenolic Resins - is another specialty raw material. It is used as an additive in the production of solvent rubber-based adhesives applied to laminated furniture, shoe soles, leather, packaging, cement, and a whole array of other purposes and applications. When manufacturers buy it, it has the appearance of a pale yellow solid lump and needs to be mixed with either "chloroprene rubber" (CR) (Pilato, 2010, p. 438) and or "nitrile butadiene rubber" (NBR) (p. 441) in order to be turned into an adhesive for any of these uses. If CR or NBR is not used with the phenolic resin (but some other kinds of rubber instead), then the heat and chemical resistance will be lower. If the final adhesive is not CR- or NBR-based, its heat and chemical resistance will be lower than it would be if CR or NBR were used with the phenolic resin, that is, provided the resin itself have a softening point above 100 ◦c.

Phenolic resin contains a higher softening point than 100 ◦c is considered a specialties additive. It cannot be substituted with another less costly raw materials lower softening point or other raw materials with similarly chemical properties and structure to compatibility with the main raw materials of CR and or NBR to obtain as above-mentioned key features' properties.

There is the researcher's experience in which some customers informed the manufacturer about the adhesives could not use. Because when applied on substrate surface or during the transportation to deliver the finished product of adhesives to the high temperature countries such as Middle East whiles it is in the full container load by sea, the finished-product is condensed to become gel or rigid. The solvent-based adhesives mainly use the compatible CR and or NBR that as mentioned above requires higher heat resistance and stronger adhesion while other rubber based are unable to be compatible to obtain chemical resistance.

Asean has the capacity to produce premium phenolic resin as the host country to a US-based company with a subsidiary in Thailand. The problem though is shortage of supply of premium phenolic resin even though it is highly priced. As a result, customers have to find other sources outside Asean.

3. Titanium Dioxide - is "rutile crystalline form" (Weismantel, 1981, p. 324-325) which has the appearance of white powder and fine particles obtained through the "chloride" or "sulphate" processes. TiO2 is mostly used as an additive to obtain a white color that provides the highest "opacity or hiding power"(Weismantel, 1981) that can be found in automotive, decorative , industrial, heavy duty, and marine paints as well as in the cosmetic and plastic industries to name a few. IARC Monographs v.93 (2010) stated TiO2 has been manufactured since '1923' (IARC) for commercial. Most of TiO2 for commercial must be coated with inorganics and organics compound to significant control and improve surface properties (p. 272).

Rutile TiO2 is considered a 'specialty raw material,' which means it cannot be substituted with another less costly raw material in a formulation seeking high opacity. Rutile TiO2 is different from "anatase TiO2" (Weismantel, 1981). Even though both are TiO2 raw materials, the latter provides only 75 % opacity or hiding power as compared to 100 % opacity or hiding power obtained with the rutile grade. The cost of anatase TiO2 is lower, which accounts for the lower quality grade.

The differences in the quality and appearance of the finished products are not just the result of the use of different - and cheaper - materials but also of different processes. The chloride process ensures higher chemical resistance and color strength than the sulphate process. It also requires less pigmentation. The sulphate process cost, however, is lower. As a result, some industries less concerned about the appearance of the finished products tend to use the sulphate process.

2.02 Relevant Concepts

1. Business Ethics

Business ethics is defined as the principles, standards, and norms of conduct that govern individual and firm behavior (Coulter & Robbins, 2012, p. 158). In essence,

business ethics is about determining what is right and wrong. It deals with the choices those individuals are to make in their personal and professional lives. One's choice is influenced and guided by values, standards, rules, principles, and strategies associated with the organizational activities and business situations (Little, 2014). Management ethical behavior is mounded by five main factors: the business situation itself; the task to be performed; the group of peers; leadership style; and past experience (Stainer & Stainer, 1995). The important for managers are working in foreign cultures to recognize the social, cultural and political-legal determinants of what is appropriate and acceptable behavior. Employees must know what is expected of them while working in a foreign location. Thus, ethical guidelines add another dimension to making ethical judgments. What could be ethical in one country may be unethical elsewhere.

One aspect of business ethics especially relevant to this study is the relationship between quality and ethics. According to Stainer & Stainer (1995), quality and ethics should be connected. As Peng (2011) stated quality must be practical and moral whereas ethics can nurture a quality culture in which employees are encouraged to think, speak up and improve key business processes. Business ethics also relates to corruption, which is defined as an abuse of public power for private benefits, usually in the form of bribery either in cash or in kind. The benefit of ethics helps to combat corruption. Lindfelt & To¨rnroos (2006) stated there are some complexities and the side effects of the rise of ethical concerns in business. The negative image will be spread globally. Ethics in this sense include issues on "sustainability of finances, environment, and society and in short mankind" (Lindfelt & To¨rnroos, 2005). Klimsza (2014) stated about the issue of right or wrong while the business situations, activities, decisions is expected to be addressed either from right or wrong. The right and wrong are defined as "morality right or wrong rather than financial and business strategies (Ng, 2012)" (p. 52).

Research ethics by Denscombe (2011) stated research ethics should present and pursuit for general to public rather than own interest. It requires prior approval for the investigation from an ethics committee where in this case the interview and collecting data direct contact from personal to people and the approval from ethics

committee in this sense is reinforced by the researcher and also becomes the "fundamental feature" of good research (p. 328).

2. Certificate of Analysis (COA)

A COA is a document uses to certify something required either by the importer or by regulations in the importing country (Brown, 2008). A COA can also been defined as a document indicating the essays performed on the product and the associated results. As an authenticated document, a COA assures that a regulated product matches its product specifications (Ask, 2014). Standard specifications include the test methods, analytical procedures, and appropriate acceptance criteria in numerical limits, ranges (Sigma-Aldrich, 2014). The COA system helps customers get the right product and contributes to meeting high quality requirements (Peck, 2014).

In the chemical industry business, the concept of COA relates to quality assurance. A COA contains the actual results obtained from testing performed as part of the quality control of an individual batch of a product (Sigma-Aldrich, 2014). It is a specific document sent by the supplier to convey the characteristics and test results based on the specifications. In short, a COA indicates the quality of the raw material (Elimica, 2014).

A standardized COA must be accompanied a certified reference material (CRM), that is, material characterized by a metrological valid procedure for one or more specified properties. Those who have experienced the COA system find that the COA systems help customers get product that meets the high quality requirements. Once a COA has issue to a customer, he will typically examine it in details. The COA tells the QC and QA teams what to do.

3. Quality Assurance and Quality Control

Both quality control and quality assurance are processes intended to make sure that the product or the service meet the quality requirements and standards define for the product or the service (Tutorial point, 2014).

Quality Control (QC)

The purpose of QC is to ensure the product conforms to consumers' requirements and is acceptable. QC refers to the process of making sure that the stakeholders are ensured of the define standards and procedures (Barbin, Carr, Griffin & Zigmund, 2013). QC involves a verification process (Tutorials point, 2014). The volunteer monitor's guide to quality assurance project plans (2014) refers to QC as the routine technical activities whose purpose must be essentially error control (QAPP, 2014). 'Error control' is conducted through scanning, which occurs either in the field, the laboratory or in the office.

QC includes both internal and external measurements, with the existing used for internal QC and the latter for external QC. Internal QC refers to a set of in-house measures taken among its own samples and within its own lab to identify and correct analytical errors, external QC is set of a measure that involves laboratories and people outside the program (QAPP, 2014). The decision to accept data, reject them, or accept only a portion of them should be made after analysis of the QC data (VWMC, 1996).

Quality Assurance (QA)

QA aims to assure the quality of products or services. It establishes a process for achieving and improving quality (Tutorial point, 2014) and enhances the quality practices in the organization.

QA is rather than just meeting minimum standards. The level of quality must be able to see a good or service is truly seen good or bad (Zigmund et al., 2013). QC objective is to provide the information needed to ascertain the quality of the data and determine whether it meets the requirements. QA is a strategic management function concerned with the establishment of policies, standards and systems for the maintenance of quality (Walley et al., 1999).

4. Cost of Poor Quality (CoPQ)

Quality cost means any cost that the company would not have incurred if the quality of the product or service had been perfect. Total quality cost refers to the sum of prevention costs, appraisal costs, and internal and external failure costs (Financial map of world, 2014). CoPQ concept refers to the process measuring; the cost of control and the cost of failure of control (Knowles, 2011).

The CoPQ includes all the activities and processes that could not meet agreed performance and/or expected outcomes. Costs would disappear if every task were always performed without deficiency (JuranInc, 2014). The CoPQ includes the total cost of repair, rework, scrap, service calls, warranty claims and write-offs from obsolete finished goods. Miguel & Pontel (2003) stated quality costs should not exceed 20 % of the total sales turnover and a well-planned and suitably implemented cost of quality programme could reduce quality costs to 2.5% of the total revenue. If the organization is unable to clarify the cost of poor quality, it cannot focus on improvement. It needs a tool to assess the cost associated with quality failure and to focus on the most important areas for improvement (Knowles, 2012).

5. Quality and Total Quality Management

Quality Management (QM)

QM yields high quality products and services from the customer's point of view. It is costs a lot to produce a bad product and that it is better to try to manage all aspects of the organization in all dimensions that are important to customers (Augustine, n.d.).

QM involves three stages and styles; "firefighting", "conventional" and "total quality" (Domingo, 2014). During firefighting stated the company receives too many customer complaints and product returns for three reasons are; the lack of discipline neither inspection nor inaccurate; process yield resulted low due to high internal rejects, rework, and scrap; and the lack of neither minimal nor preventive measures. This stage is short-lived and usually is the type of companies. They blamed culture in which people were blamed for reporting problems. The correction needed to be explored from hidden problems.

During the conventional type of QM indicated customers are happy and satisfied with the product's quality but the company product cost may be too high due to internal failures and inspection costs. Therefore the high price will be passing through the customers and decedents the market price down and affected to market share. It could be resolved to get zero defects in to the market place by using multiple inspection. If there is the lack of prevention measures have taken from prevention internal rejects, it will be no improvement yield or quality. Total quality and QM

mean that the right things have done for the first time to ensure extensive and preventive quality (Domingo, 2014).

Total Quality Management (TQM)

Broadly speaking, TQM defines as a business strategy that emphasizes market-driven quality as a top priority. It involves implementing and adjusting the firm's business activities to assure customers' satisfaction with the quality of goods and services (Zigmund et al., 2013). TQM aims to reduce costs, improve quality, and use as a program to implement an overall low-cost or a different business strategy.

TQM requires personal involvement at the top management level and their commitment to continuous quality improvement (Lipovatz, 1998). Not all TQM programs have been successful. TQM and SQM are viewed as an extension of TQM and the driving force for survivability and competitiveness (Leonard & McAdam, 2002).

6. Strategic Quality Management (SQM)

SQM refers to what managers must do about QM, TQM, QC, and QA (Coulter & Robbins, 2012). Manificus (1998) defined SQM as the development of a good set of standards, procedures and tools that is monitored. SQM includes four functions: quality, inspection, statistical quality control, and quality assurance (in text Garvin, 1998).

SQM needs to be effectively implemented and treated as a strategic priority the same way marketing, finance and operations strategic are treated (Knowles, 2011). This requires a willingness to manage quality at a strategic level. SQM is implementing when strategic planning and quality planning is merged into one seamless process, a free flow of information between strategic planners and quality planner (Leonard & McAdam, 2002). It is critical to develop operational strategies that continuously improve the quality of products and services (Tang & Tummala, 1994). SQM is the process by which strategies and policies put into action through the development of program, budget and procedure.

Implementing SQM is done through the development of programs that continuously improve quality. Information and measurement are critical. So is the involvement and empowerment of all employees (Srinidhi, 1997). People should know what should be done. Drastic changes should be required and the responsibility for changes should rest on management (Tang & Tummala, 1994). Congruence management must be required at all levels and is possible only if the top managers are fully committed to a holistic approach. Management input is necessary to ensure that the implementation team will not to be "bogged down." Once the implementation is completed, a validity step is required to ensure that the project is successful in meeting its goals (Beecroft, 1999).

7. People and Leadership in Quality Management

Dautrey (2012) stated a leader is someone who can influence others and have managerial authority. Leadership is regarded as the most important factor in any organization. No organization without high quality leadership is likely to experience significant success (p. 1-4).

Tineke & Maddy (2008) indicated the difference between the global and expatriate manager. The expatriates managers need to integrate with local people and make friends in the host country, the competencies tend to refer to cultural-specific skills. The global managers need to work with multiple cultures to develop in different types of knowledge competencies, focusing less on hierarchical network connection (p. 518). Coulter & Robbins (2012) wrote three leadership styles are as such "autocratic", the leader is dictated by work method; "democratic", the leader involves employees in decision-making; and "laissez faire", the leader allows the group to make decisions and complete the work in whatever way they see fit (p. 490). Michaelson (2011) stated a great general is regarded as the most important role of the leader with exceptional and difficulty to finding one person who possesses all the necessary qualities (p. 19). Jones (2012) stated leadership is the ability to influence a group towards the achievement of a vision or a set of goals.

Several authors (in text Palmer et al., 2001; Angelo et al., 2004); Jessica & Roland (2011) have examined and identified the roles of effective leaders, the experiment found the overwhelming majority of respondents expressed more negative

feeling than positive feeling with the intention between one's expectation and job related wellbeing. Romie (2002) suggested the models of leadership are outside of their own country.

The leadership aspect in this study focused on quality management. European foundation for QM (EFQM) defines the concept of leadership in quality management as such, leadership being the behavior of all managers driving the organization toward total quality (Lipovatz, 1998). Leadership should be visible involvement in total quality. It is expressed by the accessibility of management to the staff and communication and aids the process of changing existing attitudes towards quality that sets the basis of the corrective action and error-cause-removal step (Lipovatz, 1998, p. 195).

8. Self-Assessment Model Quality

Sheffield Hallam University (2003) stated self-assessment is regarded a key driver for improving performance in an organization and considered a key concept for European foundation of quality management excellence model (EFQM) and others who know our existing status, where we are heading and to improve how we are getting there.

The key feature benefit to who are using EFQM is considered as an excellence model (p. 6). Knowles (2012) stated it is important that an organization pursue quality excellence to form a clear path such as the model that set out broad principles and direction without imposing unnecessary constrains on how exactly to move forward. Liu & Xu (n.d.) stated improving the quality of an organization's products and services is fundamental to business success by knowing what customers require desire at the time of the customers demand and clear understanding of the customer's expectation and their wishes is likely to significant affect long-term success (p. 112). Ehling & Korner (2007) stated no organization activities without self- assessment in a comprehensive, systematic and regular review is likely to achieve significant results against model and or framework (p. 33). Davies (2004) stated the self-assessment process allows the organization to discern clearly its strength and areas in which improvement have made planned improvement actions, which is likely monitored for progress (p. 19).

Hefce (2003) finds 8 fundamental concepts of the EFQM model are customer focus; results orientation; leadership and constancy of purpose; management by processes and fact; people development and involvement; continuous learning innovation and improvement; partnership development; and corporate social responsibility (p. 4). Liu & Xu (n.d.) stated a self-assessment process for new product introduction is essentially adapted and applied by organizations to evaluate their performance against best practice, and improves conformance through rigorous application (p. 113). While Bergdahl et al., (2007) stated it is the most powerful approached that allows organizations to check and review their processes or products with an important element of the "Plan-Do-Check-Act cycle" (p. 33).

9. Customer and Quality

The first principle of an effective business is to honor the customer. The customer is essential to every business in Asean community and all over the world. The customers have a demand then we have a job to meet their demand. It is because of "customer" that business still exist (Michael & Michael, 2004, p. 5).

Knowles (2011) stated customer satisfaction is expected as an absolute minimum. Only when the customer sees value in our product, will they actively choose it over others (p. 40). Therefore, to remind customers what he or she lacks and receives acknowledgement and agreement that their lack exists, and then to be addressed the lack. (in text Zeithaml, 1998) customer perceived quality is seen as perception of the customer in the overall quality or superiority of a product or service with respect to its intended purpose and relative to alternatives (Li, 2011, p. 52). (in text Kolter, 2000) stated customer satisfaction is the expectation of the relative the product and service through an individual emotional complacency and discontent (Muhammed, 2013, p. 45-46).

Peng (2011) stated those customers focuses are seen as two types, the global account structured and a solution based structured (p. 393). In the opinion of Hunger & Wheelen (2012) stated customer satisfaction is the need of the customer, which gives everyone a job to do. The job requires a thorough understanding and approach to be reach a level of customer satisfaction. There are two types of customers in one organization, characterized as internal and external customer (p. 367).

Gould (1995) believed in the perception of customer loyalty, the company can stay in the business because the company has attained customers' satisfaction and loyalty. The most effective and cheapest method used for the customer loyalty and satisfaction seemed to be 'word of mouth recommendation' (p.15-16). Know your customer by Lime house (1999) stated the quality and customer revolution means the closer to the customers and understand their needed. How to meet their needed are more direct and personal in order to improve our performance and profit. All industrial and commercial sectors are required to apply this concept across the border (p. 100).

Taylor (1994) stated customer driven quality is essentially a strategic concept. The customer is searching for the quality to act as a judge of the quality. The concept of quality includes the product and service as the very basics to meet customer requirement, and includes how to enhance the customer experience differently from rivals 'offerings'. Galloway (1998) stated quality perceptions of internal and external customers: qualities are the most important factor for educational institutions. The faculty office has a vital role because it impacts directly on students and will, to a greater or less extent; color their perception of the quality of the whole situation (p. 23).

10. ISO Series Standard (ISO)

ISO stands for 'international organization for standardization. It has a member ship of almost 160 countries with national standard institutes from all over the world.

Since this study focuses on quality, there are ISO series; each referring to different purposes only the ISO 9000 series is considered as part of a QC system in general (REMCO, 2009). ISO 9000 series represents a set of QA standards consisted of ISO 9000 to 9004. ISO certification is regarded as a certain minimum quality standards in any organization. No organization without ISO certification is assured of a consistent quality of products, service and processes. No ISO certification with a given quality guarantees of product or service of one organization is significantly better than other organizations because of the mandated ISO representing a higher level of product quality (Singels, Ruel & Water, 2001). The ISO concept is regarded as giving mutual benefit to suppliers and customers. It is significant in being a

required quality management system, and usefully standardized at certain minimum characteristics (Tang &Tummala, 1996, p. 27). ISO concept by Pereira & Tari (2013) is regarded as an internalizing ISO practices in which a management tool entails both explicit and implicit forms of embedded knowledge (p. 458). An ISO aim is to provide an effective quality system reflecting a company's practice of producing goods and services (Tang & Tummala, 1994).

11. Waste Management

Waste is regarded as referred to any substance, or other not wants surplus substance arising from the application of any process and any substance or article, which is significant important required to be disposed of as breaks, worn out, contaminates or otherwise spoils (Wills, 1995). The concept of waste management is regarded as a prevention and significant the most important to environment and people. It is requirement for handling and treatment of the waste for hazardous and non-hazardous in which both are totally differences (IOMC, 2013).

Waste is one of cost of quality concerned as the cost of failures that causes the wastes related to flow and efficiency as opposes to accuracy. No improvement process is included the waste will unhelpful. Waste is in the positioned as the war in such a way that depends on each organization culture and behavior (Knowles, 2012). Waste management concept is important considered as the process of sustainable production and consumption, cleaner production, resource efficiency, life cycle approach, cradle-to-cradle, eco innovation, product as service, green economy, resource efficiency (IOMC, 2013, p. 49).

Waste is considered that includes, as one of the improvement processes (Knowles, 2012). The core important concept of waste management is regarded defined as the reduction amount of the waste that produces and reduces cost for disposal with the environmental (Brown et al., 2002). It is seen to represent dangers or inconveniences for local in term of health, safety, public health, agriculture, and protection of nature or the environment (UN Waste Management, 2014). The waste management is aimed to minimize of the generation of waste at source, and the divert materials to re-use, recovery, and recycle in order to minimize the amounts of waste going to waste-to-energy and landfill (IOMC, 2013).

12. Reach Law

Reach of chemicals stands for “regulation, evaluation, authorization, and restriction” (Ablekop, Botos, Graham & Wise, 2012; Heyvaert, 2008; UK Reach Competent Authority Information, 2012).

European uses Reach as a system to control chemicals substances which includes “safety data sheet” (SDS). The UK has been taken as a law since June 2007. Chemicals substances are required to be registered at the European chemicals agency (ECHA) located in Helsinki, Finland (a technical management of the Reach system), once they are imported 1 metric ton or excess to EU countries. The chemicals substances are required registering by individual without combination or blend to one another in those finished products of each formulation (Ablekop et al., 2012; Heyvaert, 2008; UK Reach Competent Authority Information, 2012). Abelkop et al., (2012) wrote Reach is a regulation that generates to people involved in chemicals substances that uses in manufacturer’s processing. Bergkamp & Penman (2013) stated Reach aims to ensure particular into safe management of risk associates with chemicals substances throughout supply chain and also applies to all chemicals uses in industrial processes and chemicals present in products. Three different processes for evaluation are included “testing proposals”, “compliance check”, and “substance evaluation” (p. 7).

Cefic (2009) stated there doesn’t neither have any correlation nor does relationship to other legal requirements related to import activities such as custom or tax in describe to chemicals substances. Cefic (2010) stated Reach intends to guide and help people who involve in Reach activities rather than competition law. The over all of Reach is covering through legal remedies, enforcement, intellectual property right and civil liability for damages arising from chemicals substances.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter "introduces" the methodology used in this study to investigate the research questions. It first discusses the concept of qualitative approach, background which includes criterial selecting participant, participants, and the researcher, and then explains the data collection methodology, in this case, structured interviews, informal discussions, personal observations, and documents. Finally, focuses on the data analysis.

3.01 Qualitative Approach

For this study, a qualitative case study approach was chosen as the research methodology. While there is no single approach to the collection and analysis of qualitative data that covers all types of research, all share some general common characteristics. The collection and analysis of date tends to be an evolving process as opposed to just a one-off event-taking place at a single point in time. As emphasized the analysis also tends to be inductive, i.e., "to work from the particular to the general" (Denscombe, 2010), to lead to generalized statements about the topic.

A qualitative case study approach can also provide additional depth and denotation derived from individuals' familiarity with the topic (in this case three different chemicals raw materials used in different three industries as the sales and technical functions) and from their beliefs and feelings.

One significant advantage of a qualitative analysis allows for 'spontaneity' and draws on the interpretive skills of the researcher and qualitative research data is "grounded in reality" (Bell & Bryman, 2007). The disadvantage is influenced by the researcher experience "the interpretation" (Denscombe, 2010). In addition, there is a risk of oversimplifying the explanation. Bearing these risks in mind, the researcher was cautious not to disregard data that may not have fitted with the generalization and approach the analysis with an open mind. Qualitative case study is referred to Arksey & Knight (1999) stated it should capable to understand the quality issue related to

case study that needs to be addressed simple describing (p. 5) rather than measuring for all participants.

As Silverman (2006) pointed out, the credibility of a research project, however, applies as much to qualitative research as it does to quantitative research. The main point to keep in mind is that good research does not ignore data that may disconfirm the researcher's analysis (the so-called outliers). Good research strives to be impartial and neutral and relies on data collection and data-analysis processes that are fair and even-handed (Patton, 2002).

There are two types of qualitative data; words and images. Words can be spoken or written and images observed or produced (Denscombe, 2010). Qualitative data can be produced by open-ended questions as part of a survey questionnaire or a discussion/interview. This research uses qualitative of open-ended questions for the structured interviews where the participants are allowed to quick answers (Arksey & Knight, 1999, p. 8, table 1.3) and those simple "respond in their own words" (p. 5) in order to understand in timely manner where the all questions proposes before meeting. Structured interview aligned to Bolch et al., (2011) that wording the question must "standardising" (p. 183) in the same way to each participant and "scheduling" (p. 183) to ask question in the same order, unlike semi-structured interview is non-scheduled with partly standardized. Qualitative data uses in this study illustrated in Table 3.1.

3.02 Background (Carber, 2013**)**

Case Study Location

The location of each participant is taking place based on manufacturing and production sites located in one of Asean member states. It is easily to visit as regarding to Asean member states aim to have a "single market and production based" (Asean Charter, 2008) to have competitive products, services and prices that align to the research study objective. Manufacturers and productions are mostly located in industrial estate area or isolated from residences.

The locations are nearby Bangkok in five different provincials located in central, east and south areas by using 1-2 hours' drive where cost is effective that fit

to schedule and set of standardized questions aligned to Bloch et al., (2011) stated of an organizing time, place, and convenience response as relevant to research problems.

Table 3.1. Types of Qualitative Data Uses in this Study

Primary & Secondary Sources	Methods	Retrieval
□ Interviews Talk	Interviews	Noted and Recorded talk in word and text
□ Structured Talk	Face-to-Face Interviews	Noted and Recorded talk in word and text
□ Semi-Structured	Informal Discussion to relevant industries	Noted and Recorded talk in word and text
□ Facts and Figures Reports □ Media programs online Blog, Newspaper, etc. Brochures □ Journals □ Scripted, □ Leaflets, Magazines □ Thesis □ Books	Documents	Electronic Version Digital Photograph Printed text
□ Interaction between participants and other people relevant to chemicals industry □ Events (seminars, workshops, official meeting, chemicals promotional events, sports club, lunch, dinner, parties etc.)	Observations	Electronic Version Recorded Digital Photograph Printed Texts Notes
□ Answers to open-ended questions	Short explains	Electronic Version, Printed Text, Notes

Source: Created by author for this study based on Denscombe (2010)

Participants Demographics

Criteria Selecting Participant

The APA Manual (2010) states how to write about participants in the case study in the way that acknowledges the participants are dealing the business in the field. The interviewees were selected based on participants' working experience and works in their organizations. The participants are the decision makers have contacts with manufacturers across the world, and deal with customers, banking institutions, government etc. They take part in exhibitions and events domestically and internationally (Carber, 2011). A qualitative approach differs from a quantitative approach in that it is smaller in terms of frameworks and scale and is less statistically oriented (Silverman, 2012, p. 5).

Participants

In this research, eight structured interviews were conducted during working hours in May 2014 to address the research questions. Interviewees include:

Vice President – works at coatings and paints manufacturer. He is one of shareholders of the two companies in Thailand, and is in charge of quality matters among others.

Managing Director – works at an industrial adhesives manufacturer. He is one of shareholders. The company exports finished products to Asean countries and the Middle East.

Deputy Factory Manager – works at coating and paint manufacturer, who is directly involved in quality control and quality assurance.

Technical Manager – works at a coating and paint manufacturer. The company is a joint venture with Japanese. The manager has been with company for twenty years.

Technical Manager – works at a coating and paint manufacturer. He is one of shareholders and decision makers for technical and production matters.

Purchasing Manager – works at a coating and paint manufacturer. He is second generation owner. He started working as purchasing manager.

Purchasing Supervisor – works at an OEM for a household and cleaning manufacturer. The company is a joint venture with Japanese for exporting to Europe and others regions.

Purchasing and Financial Officer – works at an industrial adhesive manufacturer. The company is supply local and international.

The Researcher

The researcher is a MBA international program student at Stamford International University (a partner of Laureate University). The researcher has background in educational bachelor degree in chemistry, in this used to work as a chemist. The researcher has changed career path from chemist to technical sales , later to multi roles of manager in sales management, business development, regional management, business developments in different organizations both national and international levels with trading and or manufacturers in chemical industry. English language is always favorite communication tool in business international level.

3.03 Data Collection Method

Qualitative data is collected for this research in two forms; spoken and written. It includes interviews, personal observations, and documents. Primary data is gathered through structured interviews; informal discussions; personal observations. Secondary data is gathered through documents.

The research interviews for qualitative data relate "real-life" working experiences (Guest et al., 2013, p. 14) and basic conversations about "daily life" (Brinkmann & Kvales, 2014). As knowledge is constructed between interviewer and interviewee (p. 4). Roulston, (2011) stated closed questions are used when participants need to make short answer. Open-ended questions were used participants freely answered in their own words (p. 9). King & Horrocks (2010, p. 2, table 1.1) points out the style of the questioning in the qualitative case study interview is mainly focusing on personal experiences of an interviewee.

There are three types of interviews. There are structured, semi-structured, and unstructured. How to choose these types depends on the purposes and possible designs. Qualitative data "can be collected via interview, open-ended written

questions, focus groups, journals/diaries, observation, meeting transcripts, literatures or art works" (Andrew & Halcomb, 2009, p. 68). Structured interviews are suitable in this case study. They are required a high response rate in a timely manner.

Structured Interviews

A structured interview is a set of predetermined questions in a sequential order without additional questions during neither interview taken place nor follow up questions after finishing the interview (Brinkmann & Kvale, 2008). The participants answer question by question asked (Denscombe, 2010).

Structured interviews have prearranged set list of questions to which the respondent is encouraged to provide restricted choice responses (Denscombe, 1999). Questions are controlled in particular order from open-ended questions. It is more "controlled" (Bradley & Harrell, 2009) as questions are organized in a specific order. Roulston (2011) stated the interviewees are allowed to formulate in their each answer. Unlike closed questions that generate short one-word of answer (either yes or no without explanation) (p. 11). Open-ended questions are also likely to produce a very high response rate when compared to questionnaires and face to face interviews. A meeting is verbal and latter in written texts format protect participants "privacy and welfare" (Arksey & Knight, 1999, p. 129) and give them the choice either to participate in the study or withdraw. However, as Denscombe (2010) observed, a face-to-face interview can be an "invasion of privacy" (p. 194).

In this study, all the questions covered quality issues pertaining to Labsa, phenolic resin, and TiO2. As the data collected during each interview was written in a standard format (participants responses from talks and interview are the shown in appendix B.). The materials used included 11 open-ended questions, consent forms of participants and organizations, STIU written text for answering form as self-administration (see appendix B, and Table 3.2). The interviews were schedule for May 2014. The questions were used in the same order for each participant.

Informal Discussions

Typically, informal discussions or unstructured interviews do not involve pre-set questions but are based instead on the natural invention of questions in a natural interaction (Gall et al., 2003). The interviewer converses with people in the field informally and builds questions as he/she moves forward.

The researcher's responsibility is to be as inconspicuous as possible once the ball gets rolling and the subject is introduced and allow the interviewee to build up his/her thought and pursue them. This kind of interview is therefore somewhat unpredictable dues the changeability in the interview questions (Creswell, 2007). The interaction with the interviewee very much determines the interview development (McNamara, 2008).

Personal Observations

In addition to the interviews, both formal and informal, the researcher has forged her own opinion of the issues involved through her own personal experience and observations in the course of her years working in the field as well as during this research.

Personal observation signifies that the researcher observes and pays attentions to the world around him/her and tries to draw conclusions from what he/she observes (Thomas, 2003). Observations can be made in a variety of contexts and surroundings and can be planned or unplanned. The researcher can take advantage of the interview to observe the interviewee but also any other person in the vicinity and also the area the interviewee works. As Yin (2003) argued, visiting the areas where the interviewees work can be a great source of information as it offers opportunities for direct observation. This technique also empowers the observer to comprehend the situation and get a feel for the surrounding; how people act together, what newspapers are available (any international ones), etc. (Patton (2002). Observation gives the observer the benefit of being able to obtain data from intrinsic situations without planning.

1. **Field Observations**

For qualitative data, collection to be more effective, field observation needs to be conducted. It is clear from the above definitions that field observations can take place

in many places. Moreover, they can happen in many situations, including on the spur of the moment. Many of the observations made for this study belong to the latter category as they were made of circumstances; a discussion sports club friends, dinner's group of people, participants' officers, suppliers, and some friends who are in chemical industry. The researcher was previously employed in the industry as sales manager. The researcher had to have industry knowledge and read news and journals keep updating oneself.

2. Participant Observations

Participant observation is the most natural and the most challenging of qualitative data collection methods (Guest, Mitchell & Namey, 2013). It is about discovering through immersion and participation information about how people behave with regard to quality matter. Participant observation is the most useful. It can take place in any place and location (Guest, Macqueen, Mack, Namey, & Woodsong, 2011, p. 13). Becker and Geer (1957) defined participant observation as activity relevant to daily life by observing, listening, questioning to people around.

Moreover, the nature of participant observation allows the researcher to place greater emphasis on depth rather than breadth of data. It also provides a solid platform for gaining insights into processes (Denscombe, 2010). Participant observations were made when people were interviewed at the companies' head offices and factories.

Secondary Data

Documents can be defined as material that provides knowledge. It comes as additional material that complements the data collected through the interviews and personal observations. As Yin (2003) stated, "the most important use of documents is to substantiate and supplement confirmation as of other sources."

Although documents are usually created for particular objects other than those of the research, they can be employed via the researcher for cognitive purposes (Corbetta, 2003). The benefit of a document can sometimes be larger than other research methodology as it is a non-reactive technique; the information given in a document is not subject to a possible misrepresentation. Still, as Patton (2002) pointed out, documents might have some limitations in terms of exactness and

comprehensiveness of the information. Documents are seen as invaluable as sources of background knowledge and for crosschecking the data compare to others research methods. As Denscombe (2010, p. 221) argued the document sources should be established to gain value and validity rather than taken for granted at the face value.

For the purpose of this study, the term ‘document’ refers to publications (e.g. magazines, newspapers, articles, and books and various websites such as Emerald Insight website. Bell & Bryman (2007) stated the main advantage of using secondary data is less time to get access. Table 3.1 is illustrated the case.

3.04 Data Analysis

Qualitative data analysis is “the process of bringing order” (Marshall & Rossman, 1999). Unlike quantitative data, which are amenable to being presented in a concise fashion, qualitative data analysis involves a relatively large volume of data. Some of this data needs to be aggregated and edited. It is a creative process. It does not proceed in a linear fashion (Marshall & Rossman, 1999).

As mentioned earlier, every interview recorded in written words and text in the format form was arranged. An exact recording of the interviews is helpful in that it leads the researcher closer to the information (Halcomb & Davidson, 2006). All the interviews were then transcribed into computer files name to analyze. Therefore, the structured interview method used and completed from prearrangement in standard format open-ended questioned as above described. To guarantee that the interview transcripts correctly reflected the meaning of the interviews, the researcher reviewed each questions and answer before continue to next consequent question. During the procedure stage, the data, which has noted down and recorded, is reduced, simplified and compiled (Huberman, Miles, & Saldana, 1994). Many personal observations that the researcher made have supported by documents.

CHAPTER 4
RESEARCH FINDINGS AND ANALYSIS

Chapter 4, data analyzed and discussed the data collected for this research. As method in chapter 3, the data was collected thereby: (1) Finding from structured interviews; (2) Finding from informal discussion; (3) Finding from personal observation; and (4) Finding from documents.

4.01 Finding from Structured Interviews

The interviews show the following question-by-question is as following. Q1 & Q2 is combined to Q1, and Q 7 & Q 8 is combined to Q6. Total 9 open-ended questions are used in this finding from structured interviews.

1. Q1: What do Quality Brand Name that Satisfied the Participant Adequately to Influence to the Decision to Use it in Their Production as the Commercial? How Come?

Findings brands and reasons to choose for commercial will be based on processing & manufacturers.

Processing

Manufacturers are required one specific raw material can use in multiple formulations to obtain for applying in various applications. The high impact was emphasized in the process of choosing quality raw materials made from the original sourcing, especially European standard manufacturers. They provided theories, methods, practical, and references. The COA concept was applied to ensure each raw material is met standard specification. The QC concept was applied for testing each raw material individuals and combined ingredients in each formulation. If the samples pass three to five testing times, the final stages will apply to their customers' applications. This is to ensure their customers have always got the right products for the right applications. After consistent time of the stability testing, the production scale was started.

Manufacturers (Suppliers)

Finding USA brands total quality and service reached consistent quality from laboratories through end users. The relationships were useless in the opinion of some participants but it was useful in other participants. It could because of that brand is the most expensive one. They were not interested to trial or purchase for their commercial due to production cost would be too high.

All participants had only ideal about quality issues. The participants have always learned from all people around them. They kept matching ideals and thought that it should be the best for their businesses and customers. These mean all participants are looking for resolving to reach zero defects in the market place for their customers by using multiple inspections from external and internal quality control.

Some participant's experienced Asia brand has broadened quality specifications, which were not high quality as Europe. The most preference to the least were used in the last five years found that Asia had provided consistency and stable quality of both physicals and chemicals properties. Korean brand for adhesives was the most satisfied and second ranked from Europe. Korean was in the market and provided consistency quality and competitive price. It has shown the different high performance compare to others. The TQM and SQM concepts play a key part.

The Europe & Japanese brands of household and cleaning industry, Europe brand was the first decision had made to purchase and Japanese was the second because of the quality and Reach law was provided of each quality raw material. The critical reason was because of current participants businesses exist by exporting their finished products to Europe. They required each finished product certified of each ingredient.

2. Q2: What Would Happen When the Customer Changed the Raw Materials from Suppliers Outside of the EU, USA, Australia or Saudi Arabia with the Original Manufacturer's Name, Especially from EU?

Findings when raw materials substituted as measured by details as below;

The process of selecting raw material - was aimed to substitute of current raw materials by following the same steps as mentioned in Q1. It is the company priority to find alternative sources for TQM and cost down. So, when new suppliers or current suppliers were tried to replace the current raw materials for commercial, there were finding results of;

1. Physicals and chemicals properties - the concept of internal QC/QA were applied to use in the same process mentioned in Q1. The quality result was not the same as the participants own standard specification expected.

2. The production process –it was getting difficulty of grinding and taken such a longer total times compared to current uses such as particles were encountered bigger than EU. So, those raw materials samples were 'out of specification'.

3. The supervision production process - It was required too close supervision with substantial amount of attention, times, and energy consumed compare to current uses was not.

4. The production stage – in the same dosage and methods to make semi-finished and finished products; found that physicals and chemicals testing result were lower than EU.

5. The limitation application – one raw material was used in the same of multiple formulations for various applications; found that physicals and chemicals properties were not able to reach to EU as mentioned Q1.

3. Q3: How do the Customers Make Decision about the Quality?

Findings were made decision about quality as;

Consider using the same testing methods and procedures - to get result of substitute's raw materials as measured side by side. If raw material had obtained the best, stable and consistent qualities from lab through their customers when apply to each application as mentioned in Q1 processes, it would have taken.

The quality was mattered most – as individual and combination with other ingredients to produce semi-finished and finished products result were measured total performance of finished products with zero defects and without return from the customers.

There were no technical issues after sales – as measured by participants were assured the waste and goods return would not occur when quality qualified of those raw materials used as ingredients in each formula at production.

Quality significantly changed - once QC team started testing, they detected the quality were changed when compare to current performance. Then it would no longer use in the laboratory and in the production process. The negotiations were started to return.

Research and development results – as measured by the quantity in percentage uses in various formulations of substituted raw materials, it should obtain at least the minimum quality that satisfied the participants' customers and against the standard quality performance. The quantity to be substituted was aimed to reach 100%.

Ideal requirement - participants were ideally required high quality of each raw material, competitive and steady price, rather than fluctuation. It expected suppliers or distributors have raw material when requires in any condition. The expected importing ideally was to get willingness from suppliers services before and after each purchase order or contractual.

Reach law requirement - each raw material was required quality, environment and a health, an especially household and cleaning industry.

4. Q4: Why do the Customers Prefer EU or US Standard Quality?

There are summarized the reasons of preference as;

When it came to crisis and the raw materials had kept for long time – the qualities of the raw materials were still consistency. Participants asked for help from Europe manufacturers to get competitive price, quality, service, and payment in

flexible conditions. Unlike the US, it became inconsistency quality when it kept in the same period. The US brands were unwillingness to help those participants at all cost and worst case were that some distributions channel reduced credit term and credit limited in half.

The Europe manufacturers had continued training for technical matters of existing and new products to all customers in regular basis as flexible schedule at events or chemicals conferences, exhibition, trade show etc.

Quality of raw materials - when added an ingredient in each formulation result was obtained better chemicals and physicals properties by internal QC and their customers' quality satisfaction. When compared to other suppliers, Europe brand were likely significant high quality performance and easily noticed.

Asean brand quality standard specification- were broaden and widely uses in industrial applications. The supplier also provided competitive price and available stock most of the time. US brand was not preference supplier because it was the most expensive raw material. It made the participants unable to produce competitive products to the market place.

5. Q5: How Do the Price and the Quality Assist the Customer Making the Decision?

Findings the price and quality related that;

Bought - the quality raw material as the key issue to annual consumption.

Suppliers - had always explained the price was changed because of the exchange rate and freight cost in which affected raw material price. Participants had final decision after the quality was qualified. It would require one standard price for each purchase order by accumulating to annual consumption that would help in short and long term purchase products and service.

Not only quality- was survived but also participants expected more of quality and service of available stock when required in any time; financial conditions; logistic conditions such as exactly delivery quantity, label visible on each packaging etc.;

documents such as MSDS, COA, specifications; people who delivers the goods to participants' warehouse must follow their rules; and stable price**.**

Conclusion - the cost of the raw materials from suppliers that participants had always negotiated to get the best price in large or small consumptions should be flexible and counted as total annual consumptions with the same price.

6. Q6: How often do Suppliers and Participants Cancelation the Shipment Because of the Quality?

Findings cancelation shipments because quality reasons as below;

Suppliers and participants - rarely canceled the shipment. If it had happened, it would have replaced of a new shipment or raw materials in new different lot numbers by using COA to identify specific lot number.

Most of participants - if participants had preference canceled with whole lot of shipment, the raw material would have missed out of specification. None of participants were like to take the risk. The raw materials won't notice in the beginning unless they find some specific lot number below an expectation. Participants would return all the goods to the suppliers.

Russia and India - suppliers had always found the quality problem and off specification for commercial but qualified for sample tested; in this case, their shipments were at the commercial stage at participants factories with unable to return because they did not response. If participants' QA/QC team were noticed the raw material out of specification, they would stop further testing.

7. Q7. Why do Customers have to Store the Raw Materials in Large Quantity?

Finding were summarized the reasons as below;

The main reasons were encouraged - participants to store large quantity as to assure their own used raw materials quality consistency to serve their customers orders in short and long term agreement and or contracts. They had to inform their customers for each changed in an appropriate time. If the price fluctuates, the participants will

have higher production cost. If suppliers shortage of supply, participants will take times longer than three months to get new shipment. The long distant was affected dramatic. If participants 'customers require finished products in urgent matter, the participants will prevent shortage of their own finished product. If suppliers close manufacturing without notice, the participants will prevent the crisis from demand and supply. Participants' customers did not store large quantity of the finished products as participants did. If participants have steady and stable price, they will achieve TQM concept. Participants wanted to be the leader in their market share. If participants deliver performance products; they will be a leader in quality.

Participants guaranteed their customers - of available stock's finished products.

Raw materials had always shortage - without prior noticed from suppliers. Suppliers also increased prices. The raw material prices were changed every day that affected their production cost. Participants were unable to increase the price at their customer because they kept verbal agreement of one steady price.

This was a different reason not required - to store in large consumption. Because OEM (original equipment manufacturing) participants' customers provided purchase order in advance with contract and agreement to accept all inventories of each purchase order quantity from each producing. No purchase order without contract and agreement are accepted all quantity inventory is likely successful acceptance of each order.

8. Q8. How do Degree of When the Production Processing Use the Raw Materials to Produce the Semi-Finish and Finish Products that Utilizes Manufacturing Outside of the EU and USA Zone Especially from Either China or India?

Findings the affected when changed raw materials in the production as below;

Participants trialed sample lot – at production and commercial scales one time. The results of quality were not consistency, later the price fluctuated and then shortage of supply sequential. Participants had to maintain relationship with current Europe suppliers that obtained zero quality defects.

The differences - were noticed compare to current raw material. Each quality problem was taken longer time than current raw material to resolve while the current raw material had never provided quality problem. Participants were found total cost of production and quality control increased when compare to premium quality.

Some participants continued further testing - because there had many formulations for various applications and broaden specifications which able to seek the qualified quality to some non-premium-finished products.

Some participants were unable to change - to any new supplier because the qualities of raw materials that they wanted to substitute were un-qualified from their internal QC.

It made participant-finished product - out of specification and noticed from actual result and COA. It neither cannot use nor sold-out. It was become waste and caused participants cost of poor quality to destroy because industrial raw material were not allow to throw away like any other waste does.

Each changed of raw materials - that offered from many suppliers were accepted for testing and kept records for alternative suppliers, but there was no intention to use for the commercial.

9. Q9. What if the price of the raw material is the same all over the world, which one would customers decide to buy?

As described in Q 1 to Q 8, finding all participants wanted to buy in particular order from most preference to least were Europe, USA, and Asia.

4.02 Findings from Informal & Discussions

In line with the aforementioned-characteristics of unstructured interviews or informal discussion were discussed for other relevant industries concerned about the thought, views, and opinion on quality matters at the casual setting, clubs, sports, parties, dinners etc.

It is finding that others relevant to chemicals industry encountered to quality issues for substitution of raw materials to current uses, quality out of specification, warranty claims caused of poor quality, reliability. All of which were discussed with the top management level.

4.03 Findings from Personal Observation

During informal discussion and interviewed all participants, the research have noticed all participants were busy with many phone ringing and working employees came to their offices. All top management had done so many things during these times. Each interview was taken almost two to three hours. Even though participants have their own office with doors locked still busy with their working employees came around to get their things done as their schedule such as the production, purchasing etc. No employees were afraid to come, see their top management, and ask questions in timely manner in the busy working hours with many people around. All working employees who came to their top management were very concentrated with questioning and expected their top management to answer every question. The top management had immediately responded to them in such a way of asking question backward and forward before release of each task in daily. Employees are motivated to work and speak up at their work with their top management. All participants were offered beverage and soft drinking. The researcher perceived the friendliness since began to arrange the specific participants for the interview.

To get each answer take quite longer time than expected. The data in words and text may not get closer to all truth as mentioned from most participants said that we were thought everything that came to us such as information that we don't know it really either fact or idea from our suppliers and customers. In which the participants assumed and believed at least it was starting with an idea.

All participants were willingness to answers for each question as measured by the tone of voice with an openness to answer all questions were feeling of sincerity and required the integrity to conceal all the company's name to be used in this case study. There were still others people come around to top management office who was expatriate manager came only for the questioning about their work and left soon as

discussion finished. Most participants manufacturing looked quieter than previous seen. There is allowed to be published in details but preferred no company name, no addresses to be appeared. This thesis was requested to be read.

4.04 Findings from Secondary Data

Participants experienced about their ethics from their suppliers when each purchase had placed order without delivered to their factories. The connection between quality and business ethics were happened that suppliers who tried to substitute the current raw materials by lower quality than participants current used, which it was out of specification, and sometimes inconsistent quality.

Regarding to Asean China Free Trade Agreement (Asean+1) and Asean Free Trade Area (Afta) concluded, if COA and quality meet standard specification, the business in Asean will boom. In opposite, If China or India provides low quality, it will become threats to Asean consumers (Dautrey, 2009). The COA from suppliers of each raw material is important to their business. Most of participants aim to be reliable suppliers in quality. The internal QC examined the raw materials and their finished products. Some participants were examined by external QA of their finished products for exporting market. These also apply to cost of poor quality concept, which used as the tool to detect a failure of quality at their laboratory before the production and commercial would take place.

Top management involved and aimed in quality to reduce cost by expanding warehouses to store consistent quality and extended safety stock. The improvement quality was using the same consistent quality in various formulations for multiple applications to ensure their customers satisfied consistent quality goods and services. Therefore top management have known their customers', received feedback, negotiated with suppliers, and involved quality implementation of adhesives, coatings & paints, and household industries**.**

All participants assured their products not only meeting minimum standard but also high quality as customers expected to get as premium finished products can perform. All participants finished products obtained customers' requirement, satisfaction, and including services. Participants have always looked for alternative

sources that provide qualified quality and also the same as household industry that required Reach law and competitive price. If suppliers provide Reach law and qualified quality, it will have a chance to do business.

CHAPTER 5
DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Chapter 5 discusses the four research questions, one by one, on the basis of the findings reported in chapter 4. It then highlights the key points of this research. Recommendations are made next.

5.01 Discussion of Research Questions

1. RQ1: What are the Quality Issues Asean Member States Face Importing Chemical Raw Materials?

Based on the data collected, the quality issues Asean member states face importing chemical raw materials can be divided into four major categories: out of specification; inconsistency; failure to comply with Reach law; and reliability.

'Out of Specification - As explained in chapter 2, 'out of specification' is an Industry-wide term used across the region to refer to the quality of chemical raw materials below 'standard specifications.' All the companies interviewed have reported having encountered problems with 'out of specification' raw material, which suggests that this is a chronic industry-wide issue, and not simply an occasional problem limited to a few firms.

The problems associated with 'out-of-specification' quality are the same in the three industries (the coating, adhesive, and household and cleaning industries) and the respective chemicals considered (Labsa, phenolic resin and TiO2). Even though remedial action is taken once it has been determined that any of these chemicals are below specifications (which of course increases the cost of production), it never fully address the quality problems as the after-adjustment quality remains below expectations.

Inconsistency: A majority of the interviewees also mentioned problems with inconsistency, with some deliveries (same lot numbers) meeting all the requirements

and some not. It was also mentioned that even if only part of a delivery did not conform, the entire delivery would be rejected. If, for example, TiO2 lot no. 0001, which includes 20 bags in total, has 10 bags that pass the internal quality control checked and approved to be used for production and 10 bags unqualified and not approved for production and commercial use, the entire lot will be rejected.

There were no difference among the three raw materials and the industries. The adhesive, household and cleaning, and coatings industries encountered the same quality inconsistency issues. However, it was reported that there was a higher rate of inconsistency for chemicals imported from China and India.

Moreover, inconsistent quality of the raw materials often causes delivery delays of the finished goods to customers and result in distributors being regarded as unreliable suppliers.

Failure to comply with Reach -law (only in the case of Labsa for the household and cleaning industry) - as explained in chapter 2, Reach law is following four steps ensures higher quality and provides additional safety (environment and health). On the other hand, not going through these steps compromises the quality and safety. In the industry jargon, chemicals are referred to as Reach law chemicals or non-Reach law chemicals. Obviously, Reach law material is good quality material as compared with material from suppliers who do not follow the Reach law procedure. As one of the basic raw materials used for finished products exported to Europe, it is critical for Labsa to comply with Reach law since Europeans are very strict about quality, safety, and environmental issues. In short, Reach law compliance adds value to exports. Europeans require Reach law Labsa as also is the case with all the other raw materials that are part of the finished products exported there. Reach law compliance applies to every formulation and ingredients.

Reliability - the term ‘reliability’ used in the context of this study refers to the fact that even though the materials present all the physicals and chemicals properties required and qualified for production, they create problems in other ways. According to the interviewees and as observed by the researcher, one of the issues is that good quality materials can be difficult to obtain. Some of the reasons reported include a shortage of raw materials (real or alleged) or the last minute cancellation of an order,

which means that, once an order is cancelled, a new sales contract has to be negotiated, which increases transaction costs.

Another related problem is the substantial price increased that often follows a cancellation or a shortage. Also perceived as a factor affecting "quality" is the delivery delay and postponement of orders, which as reported by the interviewees may mean a three-to-six-month wait and the risk of damaging customer relations.

2. RQ2: What Steps Have Been Taken to Resolve the Quality Issues?

A number of steps have been taken to resolve the quality issues discussed above. While some of the measures adopted pertain to all quality issues, a few of them are quality-specific, that is, they are only meant to solve one specific quality problems as with Reach law Labsa or reliability. Some have been implemented for years, some came up more recently. Needless to say, some have been more successful than others have. The following is a list of the steps taken as reported in the interviews and observed by the researcher and an assessment of their success or lack of so far.

Using COA - One of the first measures adopted to quality issues were to extend the use of COA to the whole industry. As we saw in chapter 2, a COA is a document that indicated and certified the tests performed and the results. As a detection device, the COA is meant to act as a deterrent; the expectation being that if suppliers know, they will be "caught" if the quality is beyond par, they will improve the quality. While obviously quality problems remain, the sentiment among the interviewees is that it has help diminish its scope.

Using Quality Control and Quality Assurance - this procedure is used in conjunction with the COA. As another form of detection of out-of specification chemicals, it also acts as a deterrent. When quality control and quality assurance teams determine that the raw material is out of specification, they will stop further testing and the cargo will be returned to the suppliers. Again, in some instances, this measure has helped reduced quality issues but problems remains, especially Russia and India who tend to ignore customers' complaints and still fail to take responsibility for 'out of specification' chemicals.

Stressing the Costs, which Poor Quality involves - clearly, detecting poor quality has a cost to suppliers that can be high, especially when the return of the cargo is involved. Making it clear to suppliers that the penalty for failing to deliver the expected quality will be stiff has been seen as a way to reduce incidences of out-of-specification, inconsistency, and reliability issues. While it may have helped lowering the volume of quality issues in some way, there is no real evidence that this has been an efficient measure.

Emphasizing Good Business Practice - all those interviewed are manufacturers who buy raw materials either through distributors or directly from raw material's suppliers. The latter has a vested interest in maintaining strong relations with their customers and promoting customer loyalty. This is good business practice. Interviewees report effort to make their suppliers aware of the gains on both sides (a win-win situation) but to little avail at this point. Some of the suppliers do not seem to value repeat sales and establishing strong relations.

Adopting Quality and Total Quality Management and Strategic Quality Management - similar to the previous step, this measure calls for the probity of suppliers, which may be somewhat of an idealistic goal, as proven many times in the course of doing business as reported by the interviewees.

Requiring Reach law materials - when customer looks for new suppliers as alternative sources of materials, they require the new suppliers to provide Reach law materials. If they cannot guarantee compliance with Reach law, the customers will end the negotiations right there. Reliability issues have generated responses of their own. The following three specific steps have taken:

1. Expanding warehouses- It had mentioned that, in response to sporadic failure to deliver, some manufacturers have expanding their warehouse capacity to ensure a steady supply (safety stocks). One of the problems with this measure is that while European deliveries can be stored for up to expiry date (typically 2 years), this is not the case with Chinese and Indian deliveries whose quality deteriorate quickly.

Their shelf life does not exceed 6 months. Yet, most of the reliability issues are related to Chinese or Indian suppliers. This renders this measure ineffective.

2. Building up Safety stocks - Another way reported in the interviews and observed by the researcher is the build-up of safety stocks for a minimum of three month and up to six months. This is a costly measure, which for the same reasons discussed above is largely ineffective as a deterrent.

3. Using stiffer contractual clauses - Customers have also tried to "beef up" their contracts and include stiffer penalty clauses but so far the impact of these contractual arrangements has been minimal given the lack of emphasis on contract in business relations in China and India. This is also a limited step on that some of the customers have only verbal contracts that largely rely on long-standing customer practice in the trade.

3. RQ3: Have the Steps Taken So Far Met with Success and Why Not?

As discussed above as part of addressing research question 2, none either of the measures taken alone (or on aggregate) has been successful in eradicating quality issues. Perhaps that should not even be expected to start with, as it seems to be an idealistic goal to expect all problems to disappear. So short of getting rid of the problem fully, have these measure help to decrease the number of quality incidents? As we just saw, some have reduced the magnitude of the problems, some also have has little effect.

Several reasons account for the failure of the solutions proposed to overall significantly improve the quality issues in the industry. Again, many of them have already been discussed as part of RQ2, especially with regard to the specific problems which China and India involve (less regard for contractual and moral obligations). A few more need to be discussed:

Some suppliers feel that maintaining strong customer relations with their customers are not important given the demand for their chemicals. In short, they think it is easy to find new customers especially when they can compete on price.

Some suppliers also feel that customers may prioritize price over quality and

thus feel they are responding to their needs accordingly; in their view, demand for lower prices means lower quality.

The failure to offer Reach law material may also be part of the perceived needs of customers and their focus on price as complying with Reach law are costly for suppliers.

4. RQ4: What Else Do Stakeholders Think should be done?

The interviewees emphasize procedural solutions, that is, solutions requiring more commitment in writing from suppliers in terms of promising to deliver quality and specific remedies for non-performance of their contractual obligations. Specifically, they would like to see the following measures implemented:

Negotiating one-year contracts incorporating quality-related clauses - Manufacturers and suppliers should negotiate longer-term contracts that would guarantee deliveries as well as consistent quality and possibly Reach law Labsa. The contract should include very clear language as to quality expectations and the consequences for not performing according to the terms of the contract, especially with regard to quality, quality control, deliveries on time, and any other breach of contract. Penalties, stiffer than the current ones, should also be imposed. As one participant, a template contract with specific terms, suggested both a team of suppliers and manufacturers should set up it and conditions this would lower transaction costs.

All this of course requires much willingness on the part of suppliers, which as observed by the researcher, often feel – and behave – as if they were in the driver's seat and could command the terms and conditions of the transactions. It would also necessitate open and clear communication between parties.

Marking quality compliance one of the conditions for payment in the letter of credits - Most suppliers and manufacturers use financial support from their banks as well as letters of credit (LC), which typically have customer satisfaction as one of the terms and condition. Participants could negotiate and request the raw materials quality specification to be added. This may take some convincing as not all those involved may agree to this.

Adopting a Code of Business Ethics - All the stakeholders in the transactions should get involved in the draft of a code of conduct, which they would have to sign prior to conducting business. The code would emphasize good business practices.

Seeking more Governmental involvement and Support - The Thai government should give more support to the industry and use its bargaining power to influence the conduct of some foreign actors.

5.02 Conclusion and Recommendations

It is quite clear from the interviews, personal observations, and documents that the three industries considered in this study, adhesive, the coating, and household and cleaning industries, suffer from a lack of consistent quality of the chemicals supplied, in this case, Labsa, phenolic resin, and TiO2. While this research focused on these three chemicals, quality issues affect the entire chemical supply to manufacturers. These three chemicals provide a good illustration of these endemic problems affecting those respective industries. The chemicals' lack of consistency and reliability and failure to comply with Reach law and meet specifications are not only hurt manufacturers in the course of their operations. But also, consumers who may end up with finished products with quality standards below par and suppliers who may be involved in "war prices" at the detriment of quality and eventually their bottom line. These quality issues may also be a health hazard to consumers, affect their safety, and be threat to the environment.

It is also clear from the participants' comments and personal observations that no sustainable solution can come from one group of stakeholders alone. The magnitude of the problems that these quality issues cause is such that it requires comprehensive solutions involving all the stakeholders (suppliers, manufacturers, relevant government agencies, and consumer protection groups) and not just piecemeal remedies that have proven time and time again to be largely insufficient and ineffective. Suppliers, manufacturers, governments must work together toward solutions satisfactory to all. By the same token, counting solely on the good will of one of the parties involved is not a viable avenue. Short of cooperation across the

board and some sort of enforcement mechanism or monetary punishments, any measures adopted are likely to remain largely inefficient and be nothing more than a Band-Aid on a wound that requires much more intensive care.

Another conclusion to be drawn from the data is that any solution should also involve players at the regional level, that is, at the level of Asean since at the end of 2015 there will be a single market and production base. Although regional groupings promote both competition and cooperation, the emphasis should be on cooperation as in the end quality issues affect the industry across the region and not simply in one country or another.

With the expected increase in the competition among manufacturers across the region, the demand for lower prices and thus the risk of low quality material inundating the market as a result is high. The answer does not lie in low prices or manufacturers' moves to low-labor-cost countries in the region as such short-term solutions would only take the problems away from one place to another. The answer essentially comes down to cooperation and harmonization of the relevant rules and regulations.

In addition, as a regional grouping comprising ten Southeast Asian nations, Asean has bargaining power and reach than none of the countries' government taken separately can match. But Asean as a way to solve quality issues does not just mean the government of each member states, it also pertains to the suppliers, manufacturers, local industry associations, to name a few, who should get together at the regional and join forces. In short, for quality issues to be drastically reduced, cooperation is needed at both national and regional levels and between both the public and private sectors.

It goes without saying that any viable, effective, and sustainable long-term solution will take time, first, and foremost, goodwill and much resolve on the part of the private sector as well as political determination on the part of governments. Thus, in light of the above, the following recommendations can be made:

1. Working as partners – More cooperation and communication is needed among all those involved in quality issues, most notably cooperation between manufacturers and suppliers of raw materials who should act as partners. Open, clear and precise

communication about the stakes involved and the difficulties each side face will go a long way in finding solutions suitable to both and ensuring long-term benefits.

2. Acquiring State-of-the-Art Technology to perform Efficient Customs Checks - Customs officers should be equipped with upgraded, efficient, and reliable chemical analytical instruments and technology that allow for clear and transparent working conditions and can detect defects and contamination of chemical materials that enter the Asean territories. Local and regional authorities should allocate a budget for such expenses, which could be financed by a small tax on all chemicals, something like 0.03%. While the proceeds from the tax would annually amount to a significant sum of money, the burden of the tax on end-users would hardly be felt. In short, the benefits are out weight the costs.

3. Adopting Asean -wide Legislation - Any legislation related to chemical raw materials should be Asean-wide. This includes Reach law. All domestic laws should be harmonized accordingly. As part of the harmonization process, an Asean-wide contractual template should be agreed upon and its use enforced across the region so as to avoid discrepancies in quality control clauses and any other contractual arrangements.

4. Investing in the latest technology available to ensure the best quality possible - Suppliers should use the best technology available to ensure consistent quality of the chemicals and manufacturers should look into quality-enhancing technology.

5. Creating tax incentives for Innovative companies - This recommendation comes in support of the preceding recommendation. Tax breaks or rebates should be granted to innovative suppliers and manufacturers. They would operate as incentives.

6. Enhancing intellectual property protection - If suppliers or manufacturers know that their effort to come up with innovative quality-enhancing solutions will be protected through a vigorous enforcement of their intellectual property rights, it is likely that they will engage in innovative endeavors. The enforcement of intellectual property rights should therefore be strictly implemented.

7. Institutionalizing more collaboration among suppliers - Suppliers across should set up some sort of association in support of one another and as a way to engage a dialogue with all the stakeholders in the improvement of the quality.

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APPENDIX A
NAME OF DOCUMENTS

About the International Council of Chemical Associations

Addressing the Avoided Emissions Challenge by ICCA on October 2013

Asean Charter Asean Political-Security Community Blueprint

Association of Southeast Asian Nations, The founding of Asean

Association of Southeast Asian Nations One Vision,
One Identity, One Communication

Association of Southeast Asian Nations, Overview

Chemical Industry Contributions to Energy Efficiency and Mitigating
Climate Change by ICCA-Worldwide Voice of the
Chemical Industry on November 2013

Chemical Industry from Wikipedia, the Free Encyclopedia

Chemical Industry Vision 2030: A European Perspective

Chemical Industry/Company

Chemical M&A Rebound Continues

Chemistry world 2012 Chemical Industry Review

Extending Quality Concepts to Cope with the Needs of a Global World by Tito

Industry Highlights Benefits of Chemistry, Commitment
to Sound Chemical Management

International Council of Chemical Associations

Outlook 2014: Looking Forward by Chemical Week

Productivity, Quality and Ethics- a European Viewpoint by Alan & Lorice, 1995

Qualitative Data Analysis

Quality of Chemical Measurements by Chemistry International (2001), 23, (1)

Research and Concepts Business Ethics in TQM the Qualities and Spectrum Zones of
a Case Illustration by Goran Svensson et al. 2005

The Future of the European Chemical Industry by KPMG

The Impact of Quality Management in European Companies

The Knowledge Value of Customers and Employees In Product Quality

Thesis/IS Handbook Stamford International University Revised 2

Titanium Dioxide 2013 World Market Outlook and Forecast

APPENDIX B

CONSENT FORMS

AND INTERVIEWS QUESTIONS

Research Organization Informed Consent Form 1

Research Participants Informed Consent Form 2

Table 3.2. Opened-ended 11 Questions Uses Face-to-Face Structured Interviews

Research Organization Informed Consent Form

Stamford International University

Completion of this form is required whenever research is being undertaken by STIU staff or students within any organization. This applies to research that is carried out on the premises, or is about an organization, or members of that organization or its customers, as specifically targeted as subjects of research.

The researcher must supply an explanation to inform the organization of the purpose of the study, who is carrying out this study, and who will eventually have access to the results. In particular, issues of anonymity and avenues of dissemination and publications of the findings should be brought to the organizations' attention.

Researchers Name:

Staff/Student ID No. (if applicable):

Researcher's Statement:

This research aims… Please fill out this section

Any organization manager or representative who is empowered to give consent may do so here:

Name:

Positions/Title:

Organization Name:

Location:

Anonymity must be offered to the organization if it does not wish to be identified in the research report/academic article/conference paper. Confidentiality is more complex and cannot extend to the makers of student work or the reviewers of staff work, but can apply to the published outcomes. If confidentially is required, what form applies?

[ ] No confidentiality required

[ ] Masking of organization name in research report

[ ] No publication of the research results without specific organizational consent

[ ] Other by agreement as specified by appendix

Signature:_____ Date:_____

This form can be signed via e-mail if the accompanying email is attached with the signer's personal e-mail address included. The form cannot be completed by phone, rather should be handled via post.

Research Participants Informed Consent Form

Stamford International University

Research Participants Informed Consent Form

Title of Study	
Person(s) conducting the research	
Program of study	
Address of lead researcher for correspondence	
Telephone	
E-mail	
Description of the broad nature of the research	
Description of the involvement expected of participants including the broad nature of questions/topics to be answered or events to be observed or activities to be undertaken, and the expected time commitment	

Information obtained in this study, including this consent form will be kept strictly confidential (i.e. will not be passed to others) and anonymous (i.e. individuals and organizations will not be identified *unless this is expressly included in the details given above*).

Data obtained through this research may be reproduced and published in a variety of forms and for a variety of audiences related to the broad nature of the research detailed above. It will not be used for purposes other than those outlined above without your permission.

Participation is entirely voluntarily and participants may withdraw at any time.

By signing this consent form, you are indicating that you fully understand the above information and agree to participate in this study on the basis of the above information.

Participant's Name:

Participant's signature_____ Date_____

Researcher's signature_____Date_____

Please keep one copy of this form for your own records

STAMFORD INTERNATIONAL UNIVERSITY

INTERVIEW QUESTIONS

Table 3.2. Opened-ended 11 Questions Uses Face-to-Face Structured Interviews

Question	Purpose
Q 1. What Quality Brand Name Satisfied the Participant Adequately to Influence to the Decision to Use it in their Production as the Commercial?	►To ascertain the customer's perception about the quality of the raw materials that he/she is currently using and will be using in the near future. ► 'Brand name' means the manufacturer's name from original production and specific location.
Q 2. Why has the Customer Decided to Use that Brand?	► To obtain details about how the participants 'decision make when sees the quality as the key choice.
Q3. What would happen When the Customer Changed the Raw Materials from Suppliers Outside of the EU, U.S., Australia or Saudi Arabia with the Original Manufacturer's Name, Especially from EU?	►To gain the details the process when the raw materials that they are trying to substitute from existing one during the laboratory ad production processes.
Q 4. How do the Customers Make Decision about the Quality?	►To find out the answers from the effects of the quality in the past and present
Q 5. Why do the Customers Prefer EU or U.S. Standard Quality?	►To know the reason in details of materials that customer have chosen because of the quality.

Q 6. How do the Price and the Quality Assist the Customer Making the Decision?	►To know if the price is the key to customers when making decision to buy in short-term to long-term.
Q 7. How often does the Supplier Cancel the Shipment Because of the Quality?	► To know the responsibility from the suppliers when out of specification at the customers' places.
Q 8. How often does the Customer Cancel the Shipment Because of the Quality?	►To know the responsibility from the suppliers when the raw materials are out of specification when detected at the customers' places.
Q 9. Why do Customers have to Store the Raw Materials in Large Quantity?	►To know deeply reasons.
Q 10. How Degree of When the Production Processing Use the Raw Materials to Produce the Semi-Finish and Finish Products that Utilizes Manufacturing Outside of the EU and U.S. zone especially from either China or India?	►To know the cost effectiveness and the quality during the process of production in details.
Q 11. What If the Price of the Raw Material is the Same All Over the World, Which One would Customers Decide to Buy?	►To know and prove the quality and relationship of the suppliers and customers when the raw materials performance is as strength and satisfied customers.

APPENDIX C

DATA COLLECTION RECORDED

DATA COLLECTION RECORDED P1L1

DATA COLLECTION RECORDED P1PA1

DATA COLLECTION RECORDED P1PA2

DATA COLLECTION RECORDED P1PA3

DATA COLLECTION RECORDED P1PH1

INTERVIEWS DATA COLLECTION RECORDED

FILE NAME: P1L1

There are consisted of eleven questions for this interview for each participant as follow;

Q 1. What Quality Brand Name Satisfied the Participant Adequately to Influence to the Decision to Use it in their Production as the Commercial?

● The satisfied brand is European. The first decision had made to purchase due to quality and Reach laws provided of each raw material quality.
● This customer exists business by exporting their finished products to European countries member states.
● The second brand priority is Japanese due to quality.

Q 2. Why has the Customer Decided to Use that Brand?

● The European brand has provided stable quality raw materials when are adding ingredients in each formulation and by itself quality.
● The European brand has provided the Reach laws of the raw materials that support their business to be able to export to European countries member states and others region that require high standard in quality and compliance with Reach laws.
● The European brand has always provided the competitive and stable price.

Q3. What would happen When the Customer Changed the Raw Materials from Suppliers Outside of the EU, U.S., Australia or Saudi Arabia with the Original Manufacturer's Name, Especially from EU?

● It would happen that it is unable to change from European brand to others because it is enforcement by Reach laws for export market and domestic market are required the letter confirmation of the Reach laws that has always used as ingredients in each formulation to produce finished products.

● In order to change to other brands of raw materials, it can be done only when each supplier is able to provide letter confirmation that each raw material to be used as ingredients to make finished products consist of Reach laws.

● It can be accepted for testing in sample stage in the laboratory to see the chemical and physical properties in which affects that may influence their finished products in the production process.

● It is also testing total performance of the raw material as ingredient and itself when it is stored for quarterly, half year and annually.

Q 4. How do the Customers Make Decision about the Quality?

● The customer has made decision by using practical Six Sigma rule to find quality with the least problem compare to other brands in the same condition.

Q 5. Why do the Customers Prefer EU or U.S. Standard Quality?

● The customer prefers EU brand with three main reasons are (a) consistency and stable quality in which found the least problem; (b) Reach laws has always provided; and (c) competitive price in which stock is available kept in local warehouse.

● It can be ordered daily, any day, and any time or timely manner.

Q 6. How do the Price and the Quality Assist the Customer Making the Decision?

● The customer has made decision with first two main reasons are (a) total cost down; and (b) reliable supplier.

Q 7. How often does the Supplier Cancel the Shipment Because of the Quality?

● The customer mentioned that it rarely happened.

● When it happened, supplier negotiated to return the shipment with an offered the same raw material in different lot number in which is shown in COA.

● The purchase order number is remaining without unchanged or canceled. The price is remaining the same.

Q 8. How often does the Customer Cancel the Shipment Because of the Quality?

● This customer mentioned that it rarely happened.

● When it happened, customer negotiated to return the shipment with a requested the same raw material in different lot number and required the lot number to be shown in a COA when deliver the raw material to customer warehouse.

● The purchase order number is remaining without unchanged or canceled. The price is remaining the same.

Q 9. Why do Customers have to Store the Raw Materials in Large Quantity?

● This customer has not wanted to store in large consumption because its Original Equipment Manufacturing's customer provided purchases order in advance with contract and agreement stated to accept all inventory of each purchase order quantity and provide payment as agreed.

● This customer is not accepted their customers purchase order without acceptance of inventory contract and agreement stated to accept all inventory with payment agreement.

Q 10. How Degree of When the Production Processing Use the Raw Materials to Produce the Semi-Finish and Finish Products that Utilizes Manufacturing Outside of the EU and U.S. zone especially from either China or India?

● This customer mentioned that each change of raw materials that offered from many suppliers were accepted for testing to keep record in the purpose for alternative suppliers only. There is no intention to use in the commercial.

● Most of new suppliers are unable to provide Reach law.

● This customer mentioned that quality of raw materials that some suppliers submitted for testing were found the quality caused their finished products problems such as out of specification.

Q 11. What If the Price of the Raw Material is the Same All Over the World, Which One would Customers Decide to Buy?

● The customer would buy European brand without hesitation.

INTERVIEWS DATA COLLECTION RECORDED

FILE NAME: P1PA1

There are consisted of eleven questions for this interview for each participant as follow;

Q 1. What Quality Brand Name Satisfied the Participant Adequately to Influence to the Decision to Use it in their Production as the Commercial?

● The quality brand those satisfied are ranking from the most preference to the least as of (a) Asia (Middle East & Australia); and (b) European.

Q 2. Why has the Customer Decided to Use that Brand?

● Because Asia and European brands have chosen to use as first priority in their production are due to these brands have always provided quality consistency and stable in the last five years till nowadays.

● Second priority to consider is the willingness of reliable suppliers have always unconditional supported in normal and tough situations such as crisises, natural disasters, political protested, and to name a few.

● The last priority to consider is competitive price. Above mentioned are comparison to all suppliers who offered the raw materials deals in which based on negotiation.

● There are including the customer perceived of ethical or unethical from all suppliers.

Q3. What would happen When the Customer Changed the Raw Materials from Suppliers Outside of the EU, U.S., Australia or Saudi Arabia with the Original Manufacturer's Name, Especially from EU?

● It would happen that the customer is immediately noticed from first appearance such as physical properties visible of the differences.

● The customer tested chemical properties of this sample in the laboratory that result had shown the quality of the raw material is totally different from existing raw material that is unable to compare.

● It is as if testing different raw material. It is finalized after chemical properties testing in the laboratory that unqualified for the quality matter, and then there is no further testing and action to be done such as none reachable to production or other specific properties.

● Those cases of new suppliers were closed. The standard of the existing quality from internal quality control is used as the control of quality.

Q 4. How do the Customers Make Decision about the Quality?

● The customer has made decision based on the conditions of the raw materials when added as ingredients in each formulation and as raw material itself. They have always provided the consistency and stable quality both physicals and chemicals properties when compared to existing standard of raw materials performance, finished products, and customers responded.

Q 5. Why do the Customers Prefer EU or U.S. Standard Quality?

● This customer prefers Asia brand due to their standard specifications are broaden and widely use in industrial applications.

● U.S. brand is not preferred to test due to the uncompetitive price.

● EU brand were tested and resulted had shown stable quality but uncompetitive price.

Q 6. How do the Price and the Quality Assist the Customer Making the Decision?

● This customer is considered the quality, willingness to make a deal with unconditional and the competitive.

● The price is considered after the willingness of the suppliers.

● This customer experience of the price is competitive but suppliers are not willingness to do as required this means that the competitive price is useless.

Q 7. How often does the Supplier Cancel the Shipment Because of the Quality?

● The customer mentioned that it does not happen because of

(a) This customer has own self- assessment quality model to measure from raw materials in the laboratory scale before the production scale can be taken place for further action.

(b) The quality control is their strength to limit of suppliers who offered the un-qualify material even with the very low price. There is no problem found of quality matter from existing suppliers.

(c) This customer has always accepted sample of raw materials from any supplier but most of them have not been selected to use in the production with no intention to use for any commercial regarding as the chemical and physical properties, willingness and uncompetitive price.

Q 8. How often does the Customer Cancel the Shipment Because of the Quality?

● It does not happen because there are no problems found of quality matters of raw materials from existing suppliers.

Q 9. Why do Customers have to Store the Raw Materials in Large Quantity?

● Because this customer aims to prevent shortage of raw materials of existing suppliers that affects their customers who have consumed of quality-finished products.

● The customer aims to get the steady raw material price to control the production cost.

● The customer aims to be reliable supplier to their customers and prevent shortage of their finished quality products.

Q 10. How Degree of When the Production Processing Use the Raw Materials to Produce the Semi-Finish and Finish Products that Utilizes Manufacturing Outside of the EU and U.S. zone especially from either China or India?

● This customer is unable to change to any new supplier because the qualities of raw materials that they submitted were un-qualified from laboratory scale. There was no further action to be tested in others chemical properties nor production trial.

● Based on this customer skills, experiences, knowledge in the chemical industry to their own finished products and applications have taught them easily to manage any new supplier who tried to offer the lower price.

● This customer used to trial and found the raw material made their finished products out of specification and wasted too much time for testing. The results were kept record without intention to be used in commercial.

● The new suppliers made this customer wasted of their laboratory time, resource allocated with no commercial result to be uncompetitive in finalized stage of cost calculation.

● Total cost calculation for new suppliers were found un-competitiveness compare to existing suppliers.

Q 11. What If the Price of the Raw Material is the Same All Over the World, Which One would Customers Decide to Buy?

● The customer would buy EU brand without hesitation for the consistency quality and the stability.

INTERVIEWS DATA COLLECTION RECORDED

FILE NAME: P1PA2

There are consisted of eleven questions for this interview for each participant as follow;

Q 1. What Quality Brand Name Satisfied the Participant Adequately to Influence to the Decision to Use it in their Production as the Commercial?

● The satisfied brand stated by the participant ideally mentioned that European and some other brands influence to make decision to buy as commercial reason.

Q 2. Why has the Customer Decided to Use that Brand?

● Because European brand has always provided raw material consistency and stable quality that are adding as ingredients in each formulation and itself.

● The European brand has always satisfied their customers who have always purchased of the finished products quality with competitive price.

● The European brand has always accepted the large consumption purchase order that requires competitive price and remained the consistency quality. It happened only one time that the existing supplier was unable to deliver the large consumption and was paused communication even the letter of credit was opened through an existing bank. There was an explanation of political protested and the price was increased after the negotiation made before the political protest happened from supplier.

● The participant mentioned that this is not only raw material using but it is unable to remove from each formulation in order to produce quality-finished products.

● The bottom line of the decision has made to purchase European brand is that because their customers satisfied the consistency and stable quality and competitive in one price for some time with unchanged able.

● This participant mentioned that relationship with existing suppliers who have always supported when normal and crisis's conditions. Some other suppliers such as USA are unwilling to support at all conditions in which kind of ethical affects to this participant.

Q3. What would happen When the Customer Changed the Raw Materials from Suppliers Outside of the EU, U.S., Australia or Saudi Arabia with the Original Manufacturer's Name, Especially from EU?

● There would happen immediately to quality control cost was increased.

● The quality of the finished product was unable to reach the company quality standard specification that requires from their customers.

● The production cost was immediately increased due to longer time consumed and cautious watched and tested for each step.

Q 4. How do the Customers Make Decision about the Quality?

● The participant's customers have always satisfied of the finished products.

Q 5. Why do the Customers Prefer EU or U.S. Standard Quality?

● Because the quality of raw materials when adds as an ingredient in each formulation with the result that obtains better chemical and physical properties for their customers mentioned and from their internal quality control laboratory records.

● When compares to other suppliers, the European brand is significant quality performance and able easily be noticed.

Q 6. How do the Price and the Quality Assist the Customer Making the Decision?

● The price assists quality in term of the consistency and stable quality that remains competitive price and willingness to supply at almost all conditions that require from the participants.

● This participant mentioned that USA brand is the most expensive raw material with unwillingness to supply with any condition. This made participant ignores USA brand.

Q 7. How often does the Supplier Cancel the Shipment Because of the Quality?

● There is none of any shipment cancelation because of the quality.

● There was happened one time only that the existing supplier unable to deliver the raw material with an explanation of political protested that caused the price of the raw material increased even though it was already opened an LC through an existing bank in which the price and the quantity was negotiated before the political protest happened.

Q 8. How often does the Customer Cancel the Shipment Because of the Quality?

● There is none of any shipment cancelation because of the quality but with other reasons.

Q 9. Why do Customers have to Store the Raw Materials in Large Quantity?

● There are six main reasons that the participant has made decision to buy in large quantity as of (a) to get the competitive price ; (b) to get raw material consistency and stable quality when it is stored that last at least two years; (c) to prevent any crises may happen such as political, natural disasters, financial crisis; (d) to be able to supply their customers in ASEAN member states ; (e) to keep production running as usual; and (f) to prevent shortage of raw materials when supplier cancels any shipment without prior notice and with any reason may raise.

Q 10. How Degree of When the Production Processing Use the Raw Materials to Produce the Semi-Finish and Finish Products that Utilizes Manufacturing Outside of the EU and U.S. zone especially from either China or India?

● There is noticed that the cost of production and quality control increased. The quality is unable to compare to European brand especially premium quality.
● The participant requires some times in order to be able to find the right applications that suitable quality to their customers who are accepted those qualities.
● Because the participants have many formulations for each application for their customers those satisfied quality and competitive price that may not be premium.
● There are some formulations broadening specifications.

Q 11. What If the Price of the Raw Material is the Same All Over the World, Which One would Customers Decide to Buy?

● The customer would buy that brand based on conditions to be considered that particular supplier must have consistency and stable quality, willingness to service before and after each purchase order and relationship that have built when normal and crises conditions.

INTERVIEWS DATA COLLECTION RECORDED

FILE NAME: P1PA3

There are consisted of eleven questions for this interview for each participant as follow;

Q 1. What Quality Brand Name Satisfied the Participant Adequately to Influence to the Decision to Use it in their Production as the Commercial?

- The satisfied brand is European due to consistency and stable quality and competitive price.
- The participant also mentioned that USA brand is the most expensive with sometime the quality unstable.

Q 2. Why has the Customer Decided to Use that Brand?

- Because the main reason has chosen the European brand due to quality consistency and competitive price.
- The stock is available when requires in which supplier warehouse is nearby.

Q3. What would happen When the Customer Changed the Raw Materials from Suppliers Outside of the EU, U.S., Australia or Saudi Arabia with the Original Manufacturer's Name, Especially from EU?

- There would happen that noticed the quality inconsistency and unstable.
- There is consumed longer time in production in which finally increased the production cost.

Q 4. How do the Customers Make Decision about the Quality?

● This participant ideally requires high quality of each raw material with competitive price.

● The competitive price is required steady rather than fluctuates.

● There is required no shortage of raw material in normal and crises conditions.

● There is willingness to service before and after each purchase order or long- term purchase orders.

● The requirement of the payment term and credit term are flexible.

Q 5. Why do the Customers Prefer EU or U.S. Standard Quality?

● Because that brand is provided of high and consistency and stable quality of raw material.

Q 6. How do the Price and the Quality Assist the Customer Making the Decision?

● The price assists quality in term of the consistency and stable quality that remains competitive price with available stock when requires.

Q 7. How often does the Supplier Cancel the Shipment Because of the Quality?

● This participant mentioned that it rarely happened.

● When it happened, that suppliers negotiated to the participant to return the raw materials of this lot number.

● The supplier provided new lot number, if there is any stock available with remaining the same price as per original negotiation.

Q 8. How often does the Customer Cancel the Shipment Because of the Quality?

● This participant mentioned that it rarely happened.

● When it happened, the participant negotiated to the supplier to return the raw materials of this lot number.

● The supplier provided new lot number, if there is any stock available with remaining the same price as per original negotiation.

Q 9. Why do Customers have to Store the Raw Materials in Large Quantity?

● This participant mentioned that the reason of buying in large consumption because of the prevention of shortage of quality consistency raw materials.
● There is mentioned that to get the competitive price.
● The participant mentioned that sometime they guarantee available stock to their customers.
● There is sometimes, supplier had no stock available when required.

Q 10. How Degree of When the Production Processing Use the Raw Materials to Produce the Semi-Finish and Finish Products that Utilizes Manufacturing Outside of the EU and U.S. zone especially from either China or India?

● This participant mentioned that it is noticed the differences compare to existing raw material.
● There is also mentioned that its consumed longer time to resolve each problem from the quality matter.
● The cost of production from each testing raw material time consumed, and required quality control resources.

Q 11. What If the Price of the Raw Material is the Same All Over the World, Which One would Customers Decide to Buy?

● The participant mentioned that it would buy European brand because of the quality consistency and stable without any additional cost of adjustment even when there are changing formulations in variety applications, those formulations are still remaining provided consistency quality and obtained high quality of finished products.

INTERVIEWS DATA COLLECTION RECORDED

FILE NAME: P1PH1

There are consisted of eleven questions for this interview for each participant as follow;

Q 1. What Quality Brand Name Satisfied the Participant Adequately to Influence to the Decision to Use it in their Production as the Commercial?

● The quality brand those satisfied are ranking from the most preference to the least of (1) European; (2) Korean; (3) Japanese; (4) USA; and (5) China.

Q 2. Why has the Customer Decided to Use that Brand?

● European and Korean brands have chosen to use in their production are due to these brands have always provided quality consistency. The reliable suppliers and the logistic wide have provided better service compare to USA are also the second priority reasons after quality.

Q3. What would happen When the Customer Changed the Raw Materials from Suppliers Outside of the EU, U.S., Australia or Saudi Arabia with the Original Manufacturer's Name, Especially from EU?

● It would happen that Korean, USA, and Japan have always provided consistency quality of the raw materials. The result has shown from laboratory, production and stability testing after stored finished products sample in each lot number for almost one year that checked and tested by external quality control of SGS or external quality

control in domestic laboratory institutions who accepted the finished product for testing.

● Research and development manager has trial in many formulations. There found that Japanese brand where opened a manufacturing branch in China of raw materials in which referred to use the same standard in Japan's manufacturing that can be replaced one hundred percent that gained benefit of zero import duty from China Free Trade Zone.

Q 4. How do the Customers Make Decision about the Quality?

● The customer makes decision that based on the research and development results in many formulations and various dosages and percentage of raw materials to reach one hundred percentage of replacement in the formulation. The trials were applied in practical of finished products at their end users substrates with the satisfied performance.

Q 5. Why do the Customers Prefer EU or U.S. Standard Quality?

● This customer prefers Korean brand and stated that it had recently taken over by SI group. Because of the Korean has always provided more stable and consistency quality and even better quality result than others have.

Q 6. How do the Price and the Quality Assist the Customer Making the Decision?

● The price assists quality in term of less fluctuated with competitive price and provided consistency and stable quality that gains zero import duty from Free trade zone. Most of their customers received the stable price for three to six month without any increase price.

Q 7. How often does the Supplier Cancel the Shipment Because of the Quality?

● None of suppliers do not cancel of their shipment due to the quality issue. The customer encountered and experienced from quality out of specification. Suppliers were especially Russia and India ignored the customer complaint and took no responsibility about raw materials that out of specification.

● USA supplier changed the price even though customer had already opened LC through a bank by words and text in the form of documents.

● European supplier reduced the quantity with unable to delivery as agreed even words and text has been signed and accepted for both parties.

● China and Japanese suppliers kept promise by words without text.

Q 8. How often does the Customer Cancel the Shipment Because of the Quality?

● None of shipment does not cancel. This customer mentioned that European, USA and Japan suppliers have never found quality problem for forty years.

● China supplier has never found quality problem for more than twelve years.

● Russia and India suppliers have always found the quality problem and off specification for commercial but qualified for sample tested.

Q 9. Why do Customers have to Store the Raw Materials in Large Quantity?

● Because the customer guarantees to their customers that finished products stock will be available that able to consume for three to four months. Their customers can order as much as they can and any time in each month.

● The raw materials have always shortage without prior noticed. The price would be increased in every time the raw materials were shortage.

● The raw materials price were changing in every day that affected their production cost.

● The customers are unable to increase the price to their customers and fixed one price for three to six months.

Q 10. How Degree of When the Production Processing Use the Raw Materials to Produce the Semi-Finish and Finish Products that Utilizes Manufacturing Outside of the EU and U.S. zone especially from either China or India?

● It made the customer finished product out of specification. It cannot be used nor sold out. It will become waste.

Q 11. What If the Price of the Raw Material is the Same All Over the World, Which One would Customers Decide to Buy?

● The customer would buy Korean brand because of the quality more stable and consistency than others would.

APPENDIX D

DEFINITION & TERMS

1.08 Definition and Terms

Some important terms require stating which are not explained in the context.

1. "Authorization" means an allowance to manufacturers, importers and or downstream to use a substance of very high concern (SVHC) listed on annex XIV of Reach and able to place to the market place for regular uses as end users (UK Reach Competent Authority Information, 2012, lv. 13).

2. Calibration - is "the process where metrology is applied to measurement equipment and processes to ensure conformity with a known standard of measurement, usually traceable to a national standards board" (Calibration, 2014).

3. "Evaluation" means chemical substances after successful registered is authorized a formal process for a quick evaluation within 48 hours on technical completeness checks and financial completeness checks (Ablekop et al., 2012).

4. Industry - is "the production of a good or service within an economy" (Industry, 2014) and top level often means as sector. See more details of industries classified into five sectors.

5. Intermediate - is the processes in which any substance produced during the conversion of some reactant to a product involve transformation of readily available and substance to some desired product through a succession of steps and including the substances that generated by one-step used for other steps (Chemical-Intermediate, 2014).

6. Laboratory - "facility that provides controlled conditions in which scientific or technological research, experiments, and measurement may be performed" (Laboratory, 2014).

7. Measurement Uncertainty - is "a parameter associated with the result of a measurement that characterizes the dispersion of the values that could reasonably be attributed to the measurement '(VIM 1993-RefB6)' " (CITAC, 2002).

8. Metrology - is "the science of measurement. Metrology includes all theoretical and practical aspects of measurement" (Metrology, 2014).

9. "Register" means the specific chemicals substance is required to provide total information of technical chemicals and hazard in which the valid after successful registration is limited for some period of year (UK Reach Competent Authority Information, 2012, lv. 3).

10. "Restriction" means prohibition of manufacturers' are used of place to the market under the conditions that Reach states. "Substance" means a chemical ingredient and its compounds in the natural states or obtains from manufacturing process UK Reach Competent Authority Information, 2012, lv. 13).

11. Standard - is "a level of quality, achievement, etc., that is considered acceptable or desirable" (Merriam Webster, 2014). Recently, it means the adopted of the procedures, specification, and technical recommendation in which for the chemicals or physical standard used for calibration purposes and is used only written standards (CITAC Eurochem, 2002).

12. "Substance of very high concern" (SVHC) means substances are hazard and serious consequences for human health or environment (UK Reach Competent Authority Information, 2012, lv. 13).

13. Technical - is "a very detailed description of a term, process or phenomenon" (Technical Definition, 2014).

14. Traceability - is "property of the result of a measurement or the value of a standard whereby it can be related to stated reference, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties '(VIM 1993-Ref B6)' " (CITAC Eurochem guide, 2002).

15. Quality - in manufacturing is an excellent as measured by being free from defects, deficiencies and significant variations in which represented the strict and consistent commitment to certain standards in achieving uniformity of a product and or service to reach level of satisfy specific customers or users requirements (Quality online, 2014).

BIOGRAPHY

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