Integrating Performance Measurement System with Enterprise Risk Management
-A Comprehensive Model for Trafigura

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Abstract

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Title: Integrating Performance Measurement System with Enterprise Risk Management - A Comprehensive Model for Trafigura

Background: Trafigura's commercial business analyst alleges that Trafigura misses a comprehensive model and claim for the vital importance in developing one which integrates PMS linked to ERM. PMS could offer overview of financial and non-financial performance through sets of performance indicators to guide the organization's decision-making processes. By other hand ERM could contribute to boosting the consciousness of all sources of risks and decision making throughout the whole organization. Integrating PMS nature and goals connected to ERM into a comprehensive model lacks theoretical contributions.

Research Questions: How can a comprehensive model which integrates performance measurement system with enterprise risk management be developed for Trafigura?

Purpose: The purpose of this thesis is to suggest and design a comprehensive model in which ERM is integrated with PMS for Trafigura in order to improve and support company’s performance and decision making process under an efficient way. The advantages and challenges behind integration are exploited based on literature review.

Method: The primary data of this thesis are only collected from the interviewee, who is commercial business analyst at Trafigura Chinese office in Shanghai. The
secondary data are based on Trafigura’s published and unpublished reports. For this thesis is approached the qualitative method with a deductive approach to focusing in integrating ERM with PMS under a comprehensive model for Trafigura.

**Conclusions:**

The authors proposed and developed comprehensive model for Trafigura which is divided in different steps: strategy and firm structure; performance and risk integration; performance measure; risk management; and target setting and evaluation. The authors of this thesis perceived PMS and ERM integration under comprehensive model can provide a holistic perspective for Trafigura. Moreover, the model suggested can contribute to provide better decision-making, creating value and improve efficiency at Trafigura.
Acknowledgements

After some troubles at the beginning of this course, which have endangered the performing of the thesis, we finally could accomplish it. First of all, we would like to show our gratitude to Ms. Petra Andersson, the tutor for this thesis, as well as to the examiner Ms. Helena Forslund. Without their assistance, suggestions and positive criticism, it would be much more difficult for us to conduct this assignment.

Furthermore, we want to say thank to Ms. He located at Trafigura Shanghai office in showing herself to be available in support us to develop this thesis together with the company. Besides, the company case problem exploited by her to guide this thesis proved to be interesting and challenging in analyzing.

Finally, we also would like to thank to our opponents for the outputs provided during the seminars throughout the course which contribute for the improvement of our paper.

Växjö

August, 2014

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Bo Chen        Eduardo dos Santos        Yiwen Qi
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APPENDICES
1. Introduction

The framework behind developed by the authors of this thesis guidelines introduction chapter. It starts to introduce the management accounting control system. Hence the two main topics in discussion are illustrated. The last arrow leads to the research question of this thesis. At the end, the purpose and the limitations behind this paper are explained.

![Diagram: Overview of the introduction topics behind background, problem discussion and research question]

Figure 1 - Overview of the introduction topics behind background, problem discussion and research question

1.1 Background

In recent years, scholars hold the view that management accounting and control systems (hereafter MACS) should be introduced to today’s firms, in order to adapt to the fast and developed social and organizational environment (Hoque, 2011). MACS convert relevant and accurate information to support senior managers within organizations to take better decisions and actions (Kaplan, 1995; Krishnan, 2005; Drake and Haka, 2008). A study conducted by Kaplan (1995) point out under high competitive situations, much more timely and accurate information about companies’ activities, products, services, processes and customers reveals to
be very important in support managers to establish processes more efficiently and focus on customer needs. Moreover, MACS can be used for management control purposes (Merchant and Van der Stede, 2007; Malmi and Brown, 2008; Kastberg and Siverbo, 2013). MACS contribute to ensure the employees perform their best for the organization and help to carry out the vision and strategy of the organization (ibid).

Performance measurement can be seen as a tool to analyze the efficiency and effectiveness of processes (Valmohammadi and Servati, 2011). Performance measurement has turned to be a critical method to make sure the different organization’s processes can be kept on trace (Alfaro et al., 2007). One purpose of performance measurement is to offer reliable information to support the decision making of organization (Ukko et al., 2007). Kaplan and Norton (1996) suggest that performance measurement system (hereafter PMS) is changing into more sophisticated system which includes both financial and nonfinancial performance measures to expound the strategy of organization. Based on several scholars’ opinion, a PMS can be defined as a balanced and dynamic system which offers a concise overview of financial and non-financial performance through sets of performance indicators to guide and support the organization's decision-making processes, improvement of strategy deployment and alignment of critical business processes (Neely et al., 2002; Franco-Santos et al., 2007; Gimbert et al., 2010; Taylor and Taylor, 2013; Garengo and Sharma, 2014).

Wongrassamee et al. (2003) claim organizations can efficiently reach their goals by prioritizing their actions in order to fulfill corporate visions and by incorporating effective performance management. Many attention have been paid on developing and implementing PMS for the organizations (Neely, 2005; Franco-Santos et al., 2007; Taylor and Taylor, 2013). Taipaleenmäki and Ikäheimo
(2013) point out that both management accounting and financial accounting are materially integrated into PMS.

Recently, risk management has turned to be an important part of the organizational life both on public and private sectors (Soin and Collier, 2013). Lam (2014) adds in current business environment, enterprise risk management (hereafter ERM) has turned to be a key topic. Due to the financial crisis and Eurozone debt crisis happened in the recent years, business managers have paid lot of attention at risk management issue (Paape and Speklè, 2012; Soin and Collier, 2013). Moreover, the interrelation between management accounting, control practices and risk management has received some attention from academics (Soin and Collier, 2013). ERM was developed as a management tool concept for firms during middle 1990s (Arena et al., 2011). ERM can be defined as a systematic and comprehensive approach and it has been heavily recommended to be applied by companies (Gates et al., 2012). ERM could contribute to boosting the consciousness of all sources of risks, and decision making throughout the whole enterprise (Nocco and Stulz, 2006). What is more, Wu and Olson (2010) mention that risks in the enterprise environment should be controlled and undertaking risks is essential for any kinds of business. In lots of companies, the risk management aspects are managed by senior executives with the title of chief risk officer (CRO) (ibid). Daud et al. (2011) state the ERM risks could be divided into hazard risk, financial risk, operational risk and strategic risk. Wu and Olson (2010) add ERM aim is to offer methods which support the company in identifying and mitigating these risks.

Trafigura Beheer B.V. is a Dutch multinational commodity trading and logistics company founded in 1993 (Trafigura Group Annual Report 2013). It is one of the world’s largest independent traders of oil and petroleum products (ibid). Trafigura is a private company owned by their employees. It operates at 167 offices, in 58
countries, spread by the 6 continents delivering services in a seamless, resilient, compliant, responsive and responsible manner (ibid). Their business activity is advancing trade for a growing array of customers and counterparties around the world (ibid).

1.2 Problem Discussion

The interviewee He [Commercial business analyst at Trafigura Trading Chinese office located in Shanghai, 27th March] alleges the company misses a comprehensive model which integrates PMS linked to ERM claiming for the vital importance in developing one. Karahalios (2014) state the reason for implementing an integrating model is to verify if the company could manage different risks associated to activity business model. Trafigura believes integration among PMS and ERM could help the company to evaluate and manage its strategy accordingly [He, 27th March]. Trafigura perceives a model which integrates PMS and ERM into a coherent set of understandable and measurable operational target and that fits the risk characteristics of the company is the most appropriate approach (ibid).

Neely et al. (2002) define performance as the efficiency and effectiveness of actions within a business context. Berrah and Clivillé (2007) add the process of quantifying efficiency and effectiveness consists in a set of actions which take part of an entire system in relation to a pattern or target. Banker et al. (2004) write that company often seek a combination of measure that lead managers and employees take right action or make right decision in order to create a long-term value. But financial measures are often not sufficient to motivate optimal management. To overcome this problem, company should measure a set of drivers of future financial performance also using non-financial performance measures (Kaplan and Norton, 1996; Gimbert et al., 2010).
Dickinson (2001) defines ERM as a systematic and comprehensive approach to managing all the risks which organization faces. Celik et al. (2010) describe that most trade companies are exposed to high risks situation when they do business in buying and selling commodities, such as financial risk or operational risk.

Paladino et al. (2009) affirm that separating PMS and ERM fails to optimize value for the company. The effect of both PMS and ERM is to enhance the performance of organization (Hall, 2008; Pagach and Warr, 2010). Acharya (2007) argues that linking ERM with PMS is one effective method for company to know the value of ERM. Rasid et al. (2012) hold the view that PMS could be complemented with ERM contributing to identify and mitigating risks within organization to achieve the strategic objectives. Arena and Arnaboldi (2014) conclude the nature and the goals of PMS illustrate connections to risk management despite theoretical literature is still poor in contributions in addressing this connection.

1.3 Research Question

How can a comprehensive model which integrates performance measurement system with enterprise risk management be developed for Trafigura?

1.4 Purpose

The purpose of this thesis is to suggest and design a comprehensive model in which ERM is integrated with PMS for Trafigura in order to improve and support company’s performance and decision making process. The advantages and challenges behind integration are exploited based on literature review which could contribute to be efficiently used by Trafigura.

1.5 Limitations
Despite PMS and ERM are topics substantiated developed by academics, there are still few relevant scientific articles which focus in integrating both domains at the same time under an efficient way within a comprehensive model. Thus, the outputs and conclusions generated could lack a better sustained literature support.

Through a literature review to figure out which model better fits the purpose of this thesis, the authors decide to introduce Kanji Business Scorecard (hereafter KBS) to support the framework model and the analysis to carry out the model claimed by Trafigura. All the literature found thus far applies Balance Scorecard adding risk management perspective or including risk measures on PMS. For that reason the authors decide to introduce another perspective in order to add value by a different angle. The choice for KBS is because this one is based on Balance Scorecard and it is perceived as reformed model from Balance Scorecard.

The specific choose of appropriate Key Performance Indicators (hereafter KPIs) for the company is not the scope of this thesis. Thus, financial and non-financial KPIs which are illustrated have just the objective to support a better comprehension and illustration behind the main purpose of this thesis and to combine with empirical data possible to obtain from the company. Since the model is to be proposed to Trafigura the authors of this thesis consider illustrating with some indicators from the company add value to the model.

What is more, data collection and information process about the company is only based on one staff member at Trafigura’s Chinese office. Due to this fact, the empirical chapter at this thesis lacks deeper and more relevant information. The preferential contact also mentions because of sensitive and confidential information policies adopted by the company others members have not been willing to provide data information. Trafigura’s risk management data is under Confidential Information which limits the explanation and illustration of the company situation and the analysis/discussion regarding this topic. Therefore,
despite the purpose of the thesis is based on a company case problem the model followed at analysis and discussion chapters could be perceived as a theoretical approach due to the lack of relevant empirical information.

1.6 Disposition

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2. Methodology

Throughout this chapter is illustrated the scientific approach applied for this thesis. Different scientific perspectives regarding positivism and hermeneutics; inductive/deductive; and quantitative/qualitative methods are introduced. Furthermore data collection (including literature study and interview), data analysis, validity and reliability are illustrated as well. Each method approach is motivated according to specific characteristics of this thesis based on thesis authors’ judgment and on literature review.

2.1 Scientific Perspective

Based on the definition of Greener (2008), the scientific perspective is divided into positivism and hermeneutics. The differences between these two scientific perspectives are that researchers pay more attention on objective statements than subjective under the positivist research. While hermeneutic research aims at subjective view and using multiple angles of fact compared with single fact of positivist research.

2.1.1 Positivism

Positivism is commonly and widely used in the natural and social science area (Biggam, 2011; Bhattacherjee, 2012). Hunt (1991) point out that research carried out by positivism is looking for the real facts instead of making assumption about causation. Positivism is based on the existing theory to conduct the study (Bhattacherjee, 2012). Howe (1988) adds positivism can be used to support the quantitative research method. Under the positivism, researcher holds an objective and independent viewpoint to carry out measurements (Uddin and Hamiduzzaman, 2009)). Moreover, unpredictable human behaviors will not affect a positivist research and the researcher could get more reliable results through positivism
2.1.2 Hermeneutics

Hermeneutics is developed as a method to analyze and explain the meaning of texts when the meaning is confusing (Dowling, 2004). Slattery et al. (2007) argue that hermeneutics is mainly applied in the philosophy and social science. The purpose of hermeneutics is to reformulate the meaning or intent of text (Slattery et al., 2007). Under hermeneutics, researchers are based on subjective standpoint to conduct the study (Van der Pijl, 2009).

2.1.3 Scientific Perspective of Thesis

This thesis is based on the positivism perspective to carry out research. This thesis begins with the search of relevant theory about PMS, ERM, KPIs, risk indicators, Kanji Business Scorecard and framework models. Hence, empirical data is collected from Trafigura. The theory and the empirical data support study conduction into the development of a comprehensive model which integrates PMS with ERM for the case company.

2.2 Scientific Approach

Bryman and Bell (2011) state inductive and deductive approach are two scientific approaches applied for business research. The differences among these two approaches are that while inductive approach begins with the specific and ends with the general, deductive approach works from general to the specific (Burney, 2008).

2.2.1 Deductive Approach
Deductive approach can be defined as a process which begins with an established theory and try to figure out how this one is applied to a specific circumstance (Hyde, 2000). The process of deduction normally can be divided into these steps: begins with the theory; hence develops hypothesis; collected data; get findings; confirm or reject previous hypotheses; and review theory (Bryman and Bell, 2011). Burney (2008) adds rules and accepted principles tend to be used for deductive approach. Bryman and Bell (2011) hold the view deductive approach indicates a prevailing idea of the relationship between the research and theory. Informally, deductive approach is called a top-down approach (Burney, 2008).

2.2.2 Inductive Approach

According to Hyde (2000) inductive approach can be described as a theory building process. Inductive approach begins with the observation of a specific situation and intends to build a relevant universalization to the phenomenon based on the investigation (William and Donnelly, 2006). Observations are generally used for inductive approach (Burney, 2008). What is more, Burney (2008) argues inductive approach is likely to be based in premises. Moreover, inductive approach contains a certain degree of uncertainty (William, 2006). In contrast with deductive approach, inductive approach is called a bottom-up approach (Burney, 2008).

2.2.3 Scientific Approach of Thesis

For this thesis is applied deductive approach. This approach is supported by the empirical nature of this thesis in which the authors build it on a company case problem. Therefore, the theory is applied for a specific circumstance. At the theory chapter are illustrated definitions about PMS, ERM, how to integrate these topics, KPIs, risk indicators, Kanji Business Scorecard and framework models. Hence, empirical data from the company is introduced. The analysis and
discussion is developed in order to verify if the theory certificates the company problem considered for this thesis.

2.3 Research Method

Quantitative approach and qualitative approach are defined as two basic research methods used in research (Bryman and Bell, 2011; Greener, 2008). Proper research method is chosen by researcher based on the purpose of study. The key difference between qualitative and quantitative research methods is that qualitative approach is easily influenced by subjective factors compared with quantitative approach (Greener, 2008).

2.3.1 Quantitative Method

Creswell (2013) states the researchers and investigators who mainly implement post positivist claim for developing data under the quantitative method. McLaren (2012) affirms quantitative research method includes the measurement and computation of matters and statistical analysis of a variety of numerical data. Smith (1988) claims quantitative research method is treated by researchers as the most suitable method to carry out investigation. Jack and Clarke (1998) sustain the acquisition of numerical data is perceived as a way to distinguish features among quantitative research method. Meanwhile, the exclusion of contextual details consists in one of the disadvantages in the use of quantitative research method (McLaren, 2012).

2.3.2 Qualitative Method

The qualitative research method focuses on discovery qualities of thing including phenomena, situations, people, properties of objects and events (Van Aken, Berends and Van der Bij, 2012). Bryman and Bell (2011) defend qualitative research method includes mainly six steps: setting general research question;
selecting relevant sites and subjects; collection of relevant information; interpretation of information; conceptual and theoretical work; and writing finding and conclusions. One feature of qualitative research method is that it helps researchers to focus on a specific perspective during the research process and its outcomes (Hara, 1995; Trochim, 2006). Another characteristic of qualitative research method is the use of a more accessible and opportunistic sample (ibid). Moreover, it inhibits the possibilities of generalization and contributes to implement a deeper information and relevant data regarding a specific area (Duffy, 1985; Trochim, 2006).

2.3.3 Research Method of Thesis

At this thesis the method used is qualitative. The authors focus on integrating PMS combined with ERM using a comprehensive model for Trafigura. The empirical data information is collected through by interview and from documents of the company. According to the definitions previously illustrated comparing quantitative to qualitative research method, this last one seems more suitable and related to the purpose of this thesis. Qualitative research method offers a clear and accessible framework for the authors of this thesis to carry out research. This method could help the authors to focus on the research area and look deeper into theory and relevant empirical data.

2.4 Data Collection

Data collection includes the gathering of primary data and secondary data. (Walliman, 2005). “Primary data is the data observed, experienced or recorded closest to the event. It is the nearest one can get the truth, and distortions inevitably occur as the proximity to the event decreases” (ibid). The primary data are directly collected through interview by researchers with high veracity and accuracy (Rugg and Petre, 2006; Christer, 2009). Compared with primary data,
secondary data is collected by reused information (ibid). For example: literature study, content analysis of documents, and commercial bodies (ibid). These authors affirm once more multiple sources of data on the same phenomenon are used; higher reliable the thesis is.

2.4.1 Literature Study

Literature study is a valid and essential part of all kinds of researches (Seuring and Muller, 2005). “A literature study is a systematic, explicit, and reproducible design for identifying, evaluating, and interpreting the existing body of recorded documents” (ibid). Ridley (2010) mentions literature study was adopted to identify previous research and theories which have influenced the research topic and methodology. In addition, Seuring and Muller (2005) state literature study contribute to identify general ideas for the research; for the conceptual field content; and to summarize existing research identifying patterns, themes and issues and to develop theory. Ridley (2010) claims literature study could also provide an insight for the research area with theoretical and practical implications. What is more, literature study contains textbooks for research methodologies and methodological papers for quality journals (Seuring and Muller, 2005).

At this thesis and taking in consideration Trafigura's problem and the research question the authors decided to focus on the integration of PMS and ERM. The literature study is the driving force and preliminary step for this thesis and it is used to support and identify the research problem. Moreover, different literature perspectives provide inspiration to build up a framework model for Trafigura in order to integrate the two main topics in discussion. The literature applied for this thesis includes scientific articles, books, and journals. Search database such as Linnaeus University library, “One Search”, “Google Scholar”, and “Science Direct” is used to explore for relevant theory. The key words searched are “performance measurement system” and “enterprise risk management” in order to
find relevant theory to support this thesis, beside theoretical frameworks, Kanji Business Scorecard, KPIs and Key Risk Indicators (hereafter KRIs). ORBIS database is used to collect Trafigura’s financial. Moreover, the authors of this thesis make use of Trafigura’s Annual Report of 2013 and corporate brochures as secondary data.

2.4.2 Interview

Blaxter et al. (2006) affirm interview is a common and efficient method to use primary data. Walliman (2005) states interview is a flexible and wide range approach to apply for qualitative research. When applying a case study approach, the authors prefer using interviews as their main data collection technique (Biggam, 2011). Interviews can be conducted by face-to-face, phone, e-mail or other communication media (Cohen et al., 2013). Compare to face-to-face interview, E-mail interview is a faster and a more workable method (ibid). E-mail interviews are not restricted by time and place and it is easy to contact the interviewee who can have enough time to consider answer questions (Biggam, 2008).

Furthermore, according to the characteristic of structuring, there are three types of interview: the structured interview, semi-structured interview and unstructured interview (Zhang and Wildemuth, 2009). A structured interview has prepared a group of questions and questions will be asked for each participant in same order aim to acquire consistency, thus easily getting comparable responses (ibid). For the semi-structured interview, major questions are asked by interviewer in same way every time (Tinsley and Lynch, 2001). But the interviewer has freedom to change the order of questions and to seek for furthermore information (ibid). Compared with structured interview, semi-structured interview provides enough freedom for researchers to access to the different participants individually meanwhile still focusing on the same part of data collection (Noor, 2008). Under
the unstructured interview, both questions and predefined framework will not be prepared by researchers (Biggam, 2008; Robert, 2009). Researchers will observe the feedback from the respondents, and generating relevant questions based on participants’ narrations (Zhang and Wildemuth, 2009).

Both primary data and secondary data are used in this thesis. In this thesis, two types of interviews are used to gather the relevant primary data. Semi-structured interview method is used into Skype-meeting. This method could contribute to maintain the interviews relevant, create informal and relax atmosphere for participants to answer the questions. Furthermore, the authors of this thesis can flexibly to alter the order of questions and avoid some sensitive questions based on the feedback from the respondents. On the other hand, structured interview is conducted with the e-mail method. The authors of this thesis hold the view that in order to get accurate information the questions should be arranged in logical way and the framework of this interview need to be defined clearly.
# The Summary of Data Collection

## Primary Data

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## Secondary Data

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<td>Trafigura Beheer B.V. Annual Report</td>
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Figure 2 The interview information

The authors have the opportunity in realizing a deep-interview with Trafigura through the collection of data information from the company which supports the empirical study. The interviewee is Yunlei He who plays a commercial business analyst role at Trafigura Trading department located at the Chinese office of Shanghai. The authors of the thesis use email interview and Skype meeting with Miss He on 27th March, 8th April, 2nd May and 9th May. What is more, the authors of this thesis use both structured and unstructured interviews. At structured interviews, the list of questions is planned before email interview. This list about Trafigura is based on theoretical knowledge and the purpose of this thesis. Nevertheless, the authors of this thesis also conduct unstructured interview questions during the Skype meeting, in order to get a better understanding about this subject. The authors of this thesis carry out a literature review and deep-interview with Trafigura to gain holistic information. The detail information of interviews can be found in the Appendix.

2.5 Data Analysis

Nettleton (2014) defines data analysis as the cumulative process towards the project objective. Data analyses rely on feedbacks from several question responses combined with cross referencing of related findings from the literature review (Biggam, 2011). In order to analyze the qualitative interview data, firstly, the data can be divided into different subset themes which can be easily identified (ibid). Hence, comparing the answers from the staff and related to the questions of each theme group (ibid).

For this thesis, the authors mainly collect relevant data mainly through interviews with the commercial business analyst at Trafigura Chinese office and Trafigura Beheer B.V. 2013 Annual Report. The collected data is introduced and divided
into different perspectives and is used to support and provide a better illustration behind the purpose of this thesis.

2.6 Scientific credibility

Yin (2003) defends, in order to reach high quality, the credibility judgment is related to the number of different criteria used. Adams et al. (2007) suggest the criteria measurements should be supported by data quality to test and evaluate accurately the results obtained. Kumar et al. (2009) claim scientific credibility towards objectivity and the procedures should be replicable and verifiable and the steps into the results justified. Patton (2002) points out the verification and validation approaches should pursue credibility to ensure the quality of the analysis.

2.6.1 Validity

The validity is related in what extent reality is reflected on the research requiring for that the right measures based on the right data (Mirriam, 1998). According to Gummesson (2000) validity means that a theory or a model provides a description of the reality. Grønmo (2004) adds validity connects empirical findings and theory focusing on the validity of the collected data regarding the research question. What is more, based on Ghauri and Gronhaug (2005), the three types behind validity are: construct, internal and external. Yin (2003) also writes that construct validity is important to assure an objective judgment respect to collected data. Therefore many sources should be used to collect information (ibid). Ghauri and Gronhaug (2005) point out to construct validity is necessary to operationalize measures through different questions and variables.

Internal validity perspective is approached to determine a cause and effect relationship and away from bias (Yin, 2003; Higgins et al., 2011). To sustain this
view a set of observations should be implemented in order to the final conclusion does not be sustained only in assumptions (ibid). According to Bleijenbergh et al. (2011) internal validity is commonly applied to certificate causal reasoning or causal conclusions. The amount of involved people, the social interaction among researcher and the participants may influence internal validity (ibid).

External validity deals in what extent the finding outputs could be generalized to particular persons, settings, and times (Ghauri and Gronhaug, 2005). The external validity is considered to be high if the results could be used and implied at other cases with similar circumstances. According to Yin (2003), case studies mostly do not contribute a basis for generalization.

The validity of this thesis could be considered as medium. The authors of this thesis are objective during the interviews and on collecting data processes and the data given by Trafigura combined with the outputs suggested to put in practice are analyzed and discussed based on literature review. Nevertheless, the construct validity could be much higher if the authors would have been able to interview more different people within the company and collected more and relevant information. Regarding to internal validity the authors considered as low. Despite assumptions are avoided in the cause and effect relationship and an objective approach was followed regarding the information collected from the company, the authors of this thesis could not dismiss and noted the information collected is based on one single staff member with all the inherent risk assumptions. In authors’ point of view the external validity is low since this thesis is elaborated based on one specific company.

2.6.2 Reliability

Reliability is defined in what extent the findings of the thesis can be replicated to other situations (Mirriam, 1998). For that reliability depends on the number of
random errors or mistakes which are identified during the collection of empirical data (Gummesson, 2000). Reliability also depends on measurement consistency and in order to be considering reliable the measurement process and the outputs obtained must be always the same under equal conditions independently the number of times studied (Adams et al., 2007).

Taking in consideration the research question and the purpose of this thesis the reliability of it could be considered as low since the context, a company case problem, is extremely specific. Nevertheless, since among academics the main topic behind this thesis is not fairly developed the analysis regarding the integration among PMS with ERM under a model could constitute a base for a future theoretical research. Furthermore, with a greater access to different Trafigura’s staff members and more relevant information about company’s risk management this thesis might be replicable as a single case company approach in order to validate and sustain the suggestions and outputs now proposed. Finally, in a medium-long term perspective some PMS figures illustrated could not be more feasible. Despite do not be a scope of the thesis this situation contribute, in some way, to dismiss the level of reliability.

2.7 Research ethics

The argumentum about research ethics is noticed at the each step when conducting the research (Greener, 2008). Based on the opinion of Bryman and Bell (2011), ethical issues involve how participants need to be treated by the researchers and how the relationship among researchers and participants will be affected by these activities during the research. Bryman and Bell (2011) point out four ethical principles should be taken into consideration in business research: (1) harm to participants; (2) lack of informed consent; (3) invasion of privacy; and (4) deception.
For the first ethical principles, harm to participants including both potential and real harm. There are physical harm; mental stress; harm to participants’ future employment and career development. Researchers should take all possible actions to lower the possibility of harm which respondents will face in the research program (ibid). Lack of informed consent is the principle which received most attention in research ethics. This principle reflects the idea that enough information should be given to the potential respondents by the researchers and to help potential participants make decision whether they would join in the research project. Furthermore, participants should be informed that they have rights to keep anonymity (ibid). For the third principle, researchers have to ensure the right to privacy should be treated as a tenet. Research participants have the rights to refuse to reply certain questions when they feel sensitive or they do not want to public the answers (ibid). Deception exists when researchers show something differ from what it should be. Researchers should carefully keep the balance between the benefits and the dignity of participants. Moreover, the outcome of the research should be fully explained to the participants and hides some aspects if necessary (ibid).

2.7.1 Research ethics of this thesis

The authors of this thesis have put ethical issue into consideration when accessing to a respondent. The respondent of the case company has been fully informed the purpose, background and what are being studied of this research. The participants of this research have explained that the relevant information what we got are only used as empirical data to answer the research questions of this study project. Furthermore, the participants have been asked whether it’s possible to use their names and titles in the company or they want to keep anonymous. All the materials about case company which used in this thesis are sent back to the respondent for checking the confidential information will not be published. The
The purpose of this study is to develop a comprehensive model which integrates PMS and ERM for the case company. The outcome of this study will give back to the respondent, in order to acquire the approval for the outcome, ensure all the information is reliable and there are no deception about the outcomes.

2.8 Summary of Methodology

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Figure 3 Summary of thesis methodology (Composed by authors)
3. Theory

The first sub-chapter of the chapter literature approach theoretical definitions regarding PMS. Furthermore, a KBS is illustrated for the development of the comprehensive model for Trafigura. Besides, financial and non-financial KPIs are illustrated to provide a better comprehension for the model in discussion and to link with risk perspective. Moreover, ERM and KRI definitions, integration among PMS and ERM are explained. At the end, the framework model to support the research question is presented.

3.1 Performance Measurement System

PMS provide a concise overview of financial and non-financial performance through sets of indicators to guide and support the organizations decision-making processes (Kaplan and Norton, 1996). PMS have evolved from a collecting and processing action to a analyze information system about company’s performance (Taticchi et al., 2010). PMS have been used through the time as a key success tool for organizations (ibid). In this way, PMS provide a succinct overview enabling the review and improvement of strategy deployment and alignment of critical business processes (ibid). Bourne et al. (2000) state PMS must be linked with company’s strategy; be part of an integrated control system; have internal validity; and enable proactive management. In an operational perspective, PMS can be defined as the process of quantifying the efficiency and the effectiveness of an action (Neely et al., 2002). Effectiveness is the indicator that measures how targets are reached and it is related to the expected values of a firm (Voorhees, 2000). While efficiency involves financial ratios as well as non-financial measures in order to monitor a cause-effect of business decisions (Frøkjær et al., 2000).

PMS must be dynamic, intra-connectable, focused and usable (Morgan, 2004). Within PMS information-based routines and procedures managers are used to
maintain or alter patterns in organizational activities (Simons et al., 2000). Anthony and Govindarajan (2007) defend, from the managerial perspective, the overall goal of a performance system is to implement the strategy. Manager’s set up a system with accurate measures that represent in the best way an organization strategy (Neely, 2005). PMS satisfy the needs through providing strategic measures in financial and non-financial perspectives, and internal and external perspectives. In addition, Kanji (1998) claim KBS is part of PMS.

Atkinson (2006) argues for existing pitfalls within PMS. For instance, PMS do not lead to an effective strategy implementation without a clear communication and coordination across the group. PMS also raise operational problems making a dynamic from internal and supply chain perspective (Morgan, 2004). Furthermore, an excessive relies on financial factors and an incongruent match between managers’ view and strategic objectives contribute to an unclear strategy implements (ibid). Additionally, a greater focus on a non-financial view and intangible values lead to employees’ involvement and commitment (ibid). Finally, it is necessary to coordinate the company’s departments about what are, in fact, the key success factors (Bourne et al., 2000; Simons et al., 2000).

3.2 Kanji’s Business Scorecard

Organizations need a comprehensive, flexible and easy framework model to measure business excellence (Kanji, 2002a). Aiming at the current discussion about the low cost opportunities, quickly expand globally markets and personalized customer service, there is an increasing focus in business excellence within organizations (Kanji, 2001).

Through business excellence model is possible to obtain a comprehensive evaluation regarding organizational performance, which can guide organizations in the right direction to achieve excellence (Kanji, 2001). Kanji and Moura (2007)
claim performance measurement is essential in the quest for business excellence. Kanji (1998) and Kanji and Sá (2002) affirm “KBS are made up of four critical success factors, which adequately covers the main requisites of a good PMS.”

KBS integrates organizational values, process excellence, delight the stakeholders, along with the organizational learning (Figure 4). For the development of the final model to propose to the company the authors of this thesis explore the different perspectives to combines with PMS.

Figure 4 Kanji’s Business Scorecard (KBS)  [Source: (Kanji and Sá, 2007)]

- **Organizational Value**

Kanji and Sá (2002) stress organizational value must consider balance cash generation, future growth, risk and return in a long-term perspective. The organizational values can foster cooperation among stakeholders; reflect concerns with them and reflect into organization’s mission (Kanji and Sá, 2007).

- **Process Excellence**

Process excellence guides organization in identifying the origins and causes of problems when rise up. The measures linked to process excellence require from
the organization the use of benchmarking policies to improve processes and making services to run efficiently (Kanji and Sá, 2002; 2007).

**Delight the Stakeholder**

Kanji and Sá (2007) affirm a close relationship with stakeholders facilitates information sharing and could increase loyalty. Delight the stakeholders who are directly affected by an organization’s pursuit of its goals might increase company’s performance (ibid). Thereunto, companies need to identify current and future stakeholders’ needs and expectations; effectively deals with their complaints; and uses feedback from them to improve company’s products and services (Kanji, 2001). For instance, regarding employees the organization must provide conditions to expand their knowledge, skills encouraging to assume responsibility for the quality of the work developed by them (Kanji and Sá, 2007).

**Organizational Learning**

According to Kanji (1998), organizations need to invest in products and processes improvements and innovations. Within organizational learning, reveals to be essential having training and education at all levels of the organization which could lead to a continuous improvement (Kanji and Sá, 2002). Continuous improvement could be reflected on the use of quality improvement methods to better develop products, services and processes. According to Parmenter (2010) the most well-succeed PMS are learning systems because supports the company in identifying personal knowledge, skills and talents.

**3.3 Key Performance Indicators**

Commonly, PMS is associated to strategic objectives complement with a set of KPIs which provide relevant information about whether objectives are being achieved or not (Rodriguez et al., 2009; Horta et al., 2009). KPIs can be defined
as the measure of performance which focuses on the important outcomes or outputs (Liu et al., 2010; Konsta and Plomaritou, 2012). Janeš and Faganel (2013) point out KPIs reveal a remarkable managerial tool to identify and monitoring critical initiatives for strategy fulfilment. KPIs contribute to identify the optimal solution among alternatives, which can improve the decision making for the organization (Xu et al., 2012).

Through KPIs identification and monitor, the strategy implementation can be measured, necessary amendment adopted in order to achieve strategic objectives, and the sustained improve of performance ensured (Wu et al., 2009). Once a set of indicators is established, the effort should be put into reviewing processes, make sure the indicators implemented are measured frequently, and pursue a constructive dialogue among the different levels and functions within the company, in order to achieve improvements recognized by the different stakeholders (Keeble et al., 2002).

3.3.1 Financial Key Performance Indicators

In general, financial KPIs contain market value added, market-to-book ratio, economic value added (EVA), return on capital (ROC), return on equity (ROE), net profit margin, current ratio, inventory turnover, total debt to asset ratio, times interest earned ratio (Brealey, 2012). Financial KPIs are mainly focus on improving the firm’s values in short term, and lack of direct connection with company’s specific strategy (Johnston and Pongatichat, 2008). Following the authors of thesis illustrate profitability aspect; liquidity aspect; and financial leverage.

- **Profitability Aspect**

Profitability reflects the information about the firm’s ability to generate profit in a
period of time (Alexander and Nobes, 2004). The higher profitability the more earning which investors can obtain and firm can pay the interests for the creditors (ibid). In this thesis, return on equity ratio and net profit margin ratio are chosen to measure the profitability.

\[
ROE = \frac{Net\ income}{Shareholders'\ equity}
\]

Return on equity is a measure of how the shareholders fared during the year. It measures firm's efficiency at generating profits from every unit of shareholders' equity (Alexander and Nobes, 2004). ROE shows how well a company uses investment funds to generate earnings growth (ibid). Alexander and Nobes (2004) point out that return on equity can be treated as most comprehensive financial indicator to show the profitability of firm. A high or improving return on equity can let shareholder know that firm using their investment to grow the business (ibid).

\[
Net\ profit\ margin = \frac{Net\ income}{Sales\ revenue}
\]

The net profit ratio expresses the relationship between net profit (after tax) and income (Alexander and Nobes, 2004). It indicates the overall efficiency of the firm (Kalra, 2013). Alexander and Nobes (2004) point out that net profit margin can provide more accurate information about the net profit which company earned and measure the ability of gain profit more effectively

- **Liquidity Aspect**

Liquidity indicators are implemented to measure whether a firm can successfully cover its liabilities. The performance of liquidity can determine the short term success of a company (Ryan, 2004).
Current ratio is the commonly used ratio for measuring the liquidity position of the company. Current ration can be called as working capital ratio (Kalra, 2013). Current ratio measures the ability of company to pay short term obligations as they come due (Riordan and Riordan, 2009). This ratio informs whether the company has sufficient short-term resources to pay off its current liabilities (Ryan, 2004). The higher the ratio is the better ability to repay the current liabilities (Alexander and Nobes, 2004). Moreover, the profitability of firm also will be affected by too much cash are occupied to repay the liabilities (Ryan, 2004).

\[
Current\ ratio = \frac{Current\ assets}{Current\ liabilities}
\]

Quick ratio works with the assumption that it takes longer to turn inventory into cash (Gowthorpe, 2005). Therefore, it leaves inventory out of the analysis (ibid). Quick ratio is used to measure the company’s ability to pay the short-term liabilities with cash or near-cash assets (Halim et al., 2011). Quick ratio can be seen as a supplement to the current ratio. Quick ratio is more intuitive and credible than the current ratio (Alexander and Nobes, 2004).

- Financial Leverage

Financial leverage can be defined as the method which company can apply its debt to adjust the capital gains of equity (Innocent et al., 2013). Financial leverage ratios are used to reflect the debt financing of company (Gowthorpe, 2005).

\[
Total\ debt\ to\ equity\ ratio = \frac{Total\ debt}{Total\ shareholders'\ equity}
\]
Total debt to equity ratio is the ratio between enterprise's liabilities and shareholders' equity (Gowthorpe, 2005). This ratio is used to measure how the firm is funding its growth and how effectively use shareholder investments (Innocent et al., 2013). This ratio is used for risk assessment and also widely used to assess the decision-making. The higher the ratio is the weaker protection on the debt capital (Gowthorpe, 2005).

\[
\text{Times interest earned ratio} = \frac{\text{EBIT}}{\text{Interest expense}}
\]

Times interest earned ratio equals is obtained dividing earnings before interest and taxed by interest expense measuring corporate ability to meet interest payment (Megginson and Smart, 2008). Times interest earned ratio not only reflects the ability of company to generate profit but also shows the level of guarantee to repay maturing debt (ibid). The higher the ratio is the stronger ability to repay the long-term solvency (Gowthorpe, 2005).

3.3.2 Non-Financial Key Performance Indicators

According to Parmenter (2010) KPIs’ management models map should be divided in different perspectives. According to theory previously explained non-financial measures should be also considered to evaluate company’s risk. Based on the model in development the authors of this thesis divide non-financial KPIs in 2 perspectives: Delight Stakeholder and Process Excellence. At the end a Figure is illustrated (Figure 5) with the set of non-financial KPIs exemplified.

I-Delight Stakeholder

- Customer Satisfaction
Customer satisfaction is intrinsically perceived together with customer value. In purchase and service contexts, customer satisfaction appears as the successor of perceived value (Setijono and Dahlgard, 2007). Customer satisfaction could be used as an important indicator whether the customers, during the use of the product, respect to the attributes of the product are valuable or not (ibid).

- **Customer Retention**

Coenen et al. (2013) state the level of customer retention could be measured through different indicators. Nevertheless, these ones reveal the most accurate way to evaluate measure the performance regarding this measure: repurchase intention in case of free supplier choice; switching intention in case of free supplier choice; and recommendation intention (ibid).

- **Employee Benefits**

Employee benefits represent an important portion of any company’s operating budget and require an ongoing evaluation (Neely et al., 2005). Employee benefits could be defined as form of reward provided by the organization for the work developed by the employees for the company (ibid). The benefit’s major function is to keep employee motivation and should be used as an instrument for their commitment and loyalty to the organization (ibid). There are several ways to classify and categorize employee benefits and how is perceived by the individuals (ibid). In order to compile results the companies should carry out surveys among the employees (Parmenter, 2010). In order to encourage the employees companies must implement a bonus policy (Compton et al., 2009).

**II-Process Excellence**

- **Pricing Accuracy**
Herrmann and Richter (2003) affirm pricing accuracy policies could better sustain company’s operational risk. The authors present a set of possible approaches in order to reach an higher pricing accuracy: selecting similar firms in terms of size, transactions in the same industry; focusing in relevant measures which can be applied to compare with target firms; and match market prices in order to increase market capitalization.

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<th>Name of Measure</th>
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<td>Customer Satisfaction</td>
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<td>Pricing Accuracy</td>
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Figure 5 Set of Non-Financial KPIs [Adapted from: Parmenter (2010)]

3.4 Enterprise Risk Management

ERM consists in a process of identification and managing risks with a continuous basis (Abrams et al., 2007). According to the definition provide by the Committee of Sponsoring Organizations of the Treadway Commission (COSO, 2004), ERM is defined as ‘a process, effected by an entity’s board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives’.

Paape and Speklé (2012) claim ERM implementation reveals to be particularly important for companies which face relevant growth. Due to bigger uncertainties the requirement for ERM is higher to control emerged risks and opportunities in
company’s decision-making. Larger sizes companies have a bigger tendency to apply ERM since can afford to implement an entire functional ERM system and are more structured which lead to get economies of scale (ibid). The kind of industry/sector related characteristics influences ERM decision implementation (ibid). For instance, volatile markets in which financial services and energy industry companies operate are more willing to embrace ERM system since ERM could help to identify company’s risk exposure and might reduce earnings volatility (ibid). Companies which have different investments business opportunities can make use of ERM towards a more accurate risk-adjusted rate (Hoyt and Liebenberg, 2011).

Arena et al. (2011) suggest ERM implementation is done to achieve information about company’s risk and to support decision-making; to implement an internal control mechanism to comply regulatory requirements; and to introduce internal auditing. ERM highlights the idea risk management is a transversal process across all company (ibid). Nevertheless, there is still a lack of empirical evidence about ERM implementation in practice (ibid). In recent years, ERM has received a lot of attention from the scholars. Several scholars argue that the performance of organization could improve after ERM implementation (Gephart et al., 2009; Power, 2009; Hoyt and Liebenberg, 2011).

ERM allows companies to manage a huge variety of risks into an integrated model (Hoyt and Liebenderg, 2011). ERM aids companies in decreasing earnings and stock price volatility, dropping external capital costs, growing capital efficiency, and generating synergies among different risk management activities (ibid).

The purpose of ERM is to identify and consider the coactive effects of risks on the enterprise in sum (McShane et al., 2011). Under the ERM approach, every risk is treated as part of the whole risk portfolio of one company (Cumming and Hirtle,
Risk shows the potential loss due to uncertainty and enterprise activities failure (Foley and Moss, 2010).

Hoyt and Liebenderg (2011) state “corporate executives are justifiably uncomfortable in making a deeper commitment to ERM without a clear and quantifiable business case.” ERM in integrating decision-making across all risk types contribute to avoid different risk management expenditures by developing natural hedges (ibid).

According to Culp (2002), ERM not only pay attention to the company’s risk aspect, also concerning company’s performance and consolidation when managing risks. Some recent practical studies about ERM identify the majority of ERM functions are operated by accounting units (Blaskovich and Taylor, 2011). The nature of the ERM puts more attention anticipating future needs rather than developing crisis response ability (Weitzner and Darroch, 2010).

According to Daud et al. (2011), risks can be mainly divided into four types under ERM: hazard, financial, operational and strategic. Hazard risks mainly related to the natural disasters and human errors like fire, theft, earthquake, pollution, and health and business interruption. Then, financial risks include interest rates, exchange rates, liquidity, credit risk and commodity prices. Thirdly, operational risks involve customer satisfaction, quality of product, information technology, information risks and corporate leadership. Moreover, strategic risks cover product innovation, political obstacles, customer preference and completion (Daud et al., 2011). According to Zhao et al. (2013) tools developed by scholars can be used to managing the risks. For example, company can avoid the risks through choosing to forbear from some business activities and transfer the risk to the third parties by insurance and hedging. What is more, some operational risks can be mitigated by precautionary and reliable control ways (Bainbridge, 2008).

In addition, company has to accept some certain risks to obtain the suitable return level for creative risk financing solutions (Wu and Olson, 2009).
After ERM implementation, companies could obtain a systematic cognizance of the codependency and relationships among the different risks (Hoyt and Liebenberg, 2011). Appointing a chief risk officer can contribute to enhance organization’s performance (ibid). A strong ERM capability could be used as a critical source of competitive advantages for organization (Stroh, 2005).

Arena et al. (2011) address three different approaches for ERM implementation: risk management model; risk evaluation method; and process coordination/ownership. The management model includes comprehensiveness and integration covering different risk categories and extent to all functional business areas of the company. The evaluation should consist in a combination of qualitative and quantitative techniques. The process might be coordinated by chief risk officers (CROs), internal auditors and management accountants.

Paape and Speklé (2012) add designing an ERM system/framework and implementation obey to a set of procedures. Nevertheless, comprehensive ERM theories and empirical studies which embrace ERM practices and effective implementation do not exist. Thus, ERM adoption by companies faces slight tangible guidance at operational level. ERM framework aggregates all risk management activities under one single structure which contributes to identify different risk issues (Hoyt and Liebenberg, 2011).

3.5 Key Risk Indicators

KRI s could be defined as measurable metrics or indicators which developed by the organization can be applied as an early warning signal for the increasing risks in various business environment (Monahan, 2008; Hwang et al., 2010; Scarlat et al., 2012). In order to manage strategic objectives successfully, a well-defined KRI s could offer useful information to potential risks and it is critical for organization to monitoring and measuring KRI s (Monahan, 2008; Zhao et al., 2013). It is important to put the objectives of firm and stakeholders into
consideration when developing the KRIs (Scarlat et al., 2012). KRIs could provide a sustainable framework for the organization to build a suitable warning system (Delcea et al., 2013).

Beasley et al. (2010) point out through KRIs implementation can support to enhance process environment and organization performance. KRIs do not just induce proactive management position, in addition organization risk profile continuously (Frigo and Anderson, 2011; Monahan, 2008; Beasley et al., 2006). KRIs would be used in financial perspective, operational perspective, strategy perspective, customer perspective, innovation perspective and hazard perspective (Tarantino and Cernauskas, 2009). One critical point should be stressed since KRIs are applied to point risks instead of mitigating or managing risks (Nogueira dos Santos, 2013).

The basic idea of KPIs is similar with KRIs since both of them are used to identify measures which can help to figure out internal and external environment changes (Arena and Arnaboldi, 2014). Both KPIs and KRIs are two kinds of indicators which can be applied within companies (ibid). Nevertheless, KPIs could be sometimes confused with KRIs (ibid). KPIs pay more attention on perform previous company’s measures (Viscelli, 2013). While KRIs offer the forward-looking indicators providing relevant data about emerging risks (Scarlat et al., 2012; Arena and Arnaboldi, 2014). Beasley et al. (2010) argue the major difference among KPIs and KRIs is the first one fails in providing an early warning signal for potential risks. The reason behind is KPIs are mainly based on the historical information to measure in which manner company has been performed (Arena and Arnaboldi, 2014). Aureli and Salvatori (2012) hold the view that KRIs can be used to predict whether KPIs achieved the goals. Moreover, KRIs can work together with KPIs to clear the performance aims, monitoring performance and enhancing accountability (Aureli and Salvatori, 2012).
3.6 PMS and ERM Integration

Arena et al. (2011) defend ERM could be used as tool to integrate with PMS to monitor company’s strategic uncertainties. The linkage among risk management performs to PMS should be implemented under a control model. According to Palermo (2011) ERM and PMS focus on company’s goals, intend to be pervasive within the company, support interdependencies across department and manager’s decisions, prevails risk exposure for the companies and could improve their performance. Nuttasophon et al. (2013) state the association among PMS and ERM contribute to evaluate company’s strategy. While through PMS is possible to monitor the strategic progression, ERM identify issues at external and internal perspectives. Rasid et al. (2012) sustain risk management complement PMS in pinpointing and mitigating risks into an achievement of the strategic objectives; PMS and ERM when linked could augment organizational performance; and an operational way for the companies to recognize the value of ERM towards to a linkage with their PMS.

McWhorter et al. (2006) identify similar characteristics among ERM and PMS. Both can be understood as two kinds of strategic management control systems (Rasid et al. 2012). Arena and Arnaboldi (2014) highlight the potential of ERM to achieve performance management when compare risk management to organizational objectives. For these authors, companies should pursue a fully integration in which concern to risk management with their operating model, performance goal and decision making. For that, McWhorter et al. (2006) state, at first, both ERM and PMS can offer a holistic view of the organization. Next, implementing PMS and ERM can build a connection with organization’s strategy of organization. Moreover, ERM and PMS are driven from the top of the firm which can contribute to work more effectively and can help employees to know the strategic objectives of the organization (Beasley et al., 2006). Calandro Jr. and
Lane (2006) affirm PMS is usually performed by high entrepreneurial staff while ERM is executed by financially analytical people. Rasid et al. (2012) state if PMS and ERM could be efficiently integrated, the companies have better condition to enhance shareholders’ value.

Calandro Jr. et al. (2008) state “enterprises must begin to move toward risk-adjusted performance management; that is, the convergence of performance and risk management”. Arena and Arnaboldi (2014) affirm management accountants are focusing in a bigger preponderance to relate PMS with risk management. Nevertheless, when these personnel are not entirely responsible for ERM, proper mechanisms should be developed into a better coordination among these two functions in order to ensure appropriate flows (ibid). Calandro Jr. et al. (2008) affirm selecting PMS is important to stress ERM. Nevertheless, the risk management is broader than a set of measures (ibid). Therefore, ERM must be managed effectively and considering unexpected events (ibid). Business environment is multi-dimensional which implies a larger diagnostic control system (ibid).

Arena and Arnaboldi (2014) point out PMS integrated with ERM could awake the attention by the managers on key data. Thus, possible advantages about decision-making (with a more efficient response to external strains) are generated and stakeholders’ confidence increase in consequence of that (ibid). Both PMS and ERM are perceived as control systems, a part of accountability framework, and have progress from a technical tool into a strategic one which better support managers and allow to create value (ibid). Paladino et al. (2009) affirm due to the similarities among PMS and ERM have contributed for the development and use of KPIs and KRI.

Acharya (2008) argue when it becomes clear the type of PMS applied for ERM must be directly related to company’s strategy and goals and the outputs should
deliver information in order to shape firms’ objectives. Since ERM is a management system, its performance should translate from a cognitive and behavioral learning process into a tangible value. An isolated PMS appears to be inadequate, do not contribute to interact and integrate with ERM characteristics, and reveals to be difficult in targeting the key business areas. Beasley et al. (2006) stress PMS could offer a suitable framework to implementing ERM. Moreover, the integration of ERM can help PMS to capture more information about risk management affairs and performance measures (ibid). Therefore, for an effective integration PMS with ERM companies should make use of a number of figures from finance, accounting, operations management, marketing, strategy and organizational behavior (ibid).

According to Nuttasophon et al. (2013), notwithstanding for the recent demand by academics in combining PMS and ERM under an integrated tool to better support decision-making, there is a lack of relevant research in this area due to the shortage of empirical examples which integrates PMS indicators, comprehensible theoretical frameworks, reliable cases of analytical risk measurement techniques, and excess of variations about PMS designs. Another reason is because PMS and ERM entail different computation processes and these ones are performed by people with different responsibilities (ibid). Nevertheless, the academics have contributed with some approaches: a risk measure perspective incorporating PMS related to strategic goals and KPIs; and an additional perspective on Balance Scorecard containing risk measure (ibid). Palermo (2011) claim entailing PMS, especially the non-financial ones, could better evaluate risk analysis and constitute an important risk information tool in mitigating unpredictable events. Palermo (2011) alert ERM and PMS integration is not totally developed, despite the recent trend, and should consider simplification costs associated.

3.7 PMS and ERM Integration Framework Model
In order to respond the research question in discussion behind this thesis the authors of this thesis introduce the following theoretical framework model settled by Nogueira dos Santos (2013) (Figure 6). Nevertheless, the lack of theoretical examples of frameworks which could be consistently applied, the authors of this thesis suggest this model accordingly to Trafigura own characteristics and to the purpose in discussion within this thesis.

Behind this PMS and ERM integrated approach model, Nogueira dos Santos (2013) introduces general perspectives around the company such as the external environment and the culture. Hence, strategy and core values followed by the company reveals vital to determine which kind PMS and ERM must be implemented within the company. The author focuses on the importance of the PMS in implementing the strategy and modifies it through the time which
contributes to better evaluate the risk management.

In order to sustain the implemented model Nogueira dos Santos (2013) figures out performance and risk integration and firm structure and particularities perspectives. According to the author these two domains afford in modelling the organization as an all and both are significant elements to control the system and impelling in which way the different measures should be settled.

Following, Nogueira dos Santos divide the model is divided in five steps. The first one includes key success factors. These key factors are defined by activities, attributes, competencies and capabilities which are vital for the success of the company to reach its goals.

Next, both KPIs and KRIs must be considered to support company’s analysis. KPIs evaluate the performance of the company while KRIs are designed to point out risks. The importance of these two domains for the model to propose to Trafigura is developed at both 3.2 and 3.4 chapters.

Furthermore, the rest three steps include target setting and evaluation; build reward system; and updating and learning. The step of target setting and evaluation leads to the possibilities in reach the metrics formerly established and an additional evaluation process which is accompanied after these indicators are acknowledged. According to Nogueira dos Santos (2013) the settled of specific targets for the KPIs and KRIs allows managers to constantly monitoring the strategy implementation and definition. The evaluation stage is applied to compare which defined targets are obtaining results and act accordingly. Besides, reward system is commonly considering a form of recognition and approval by the managers regarding to the outcome of performance evaluations in form of financial compensation and promotions (Nogueira dos Santos, 2013). It is an essential requirement of the PMS and ERM once what is measured gets attention.
by the managers especially when is tied to rewards. Finally, the updating and learning step get able the opportunity for the company in evaluating the efficacy of the PMS, and therefore amending them to new perspectives and adjusting with the current strategy. What is more through the feedback arising by the PMS enables the company to validate the business model implemented, which could be based on a set of assumptions which might not be valid since organizational learning is the act of realize and correct errors.
4. Empirical Data

The empirical chapter introduces information regarding case company background. Following Trafigura’s financial indicators and non-financial information are illustrated. At the end, it is presented company’s risk management.

4.1 Company Background

Trafigura Beheer B.V. is a Dutch multinational commodity trading and logistics company (Trafigura Brand Guidelines, 2014). Its business activity started in 1993. The company has a registered head office based in Amsterdam, Netherlands. Trafigura operates at 167 offices, in 58 countries, spread by the 6 continents delivering service in a seamless, resilient, compliant, responsive and responsible manner (Trafigura Beheer B.V. Annual Report, 2013). Trafigura is owned exclusively by its management and employees. This ownership structure promotes prudent risk management, long-term business success and management stability of management [He, 27th March]. Trafigura is recognized as the world's third largest independent oil trader and the second largest independent trader in the non-ferrous concentrates market (Trafigura Brand Guidelines, 2014).

Trafigura’s vision is to play a leadership role in the global commodities business and to thrive on opportunities for growth in a responsible manner (Trafigura Brand Guidelines, 2014). The philosophy of Trafigura is operating and growing their business activity in a responsible and sustainable way (Trafigura HSEC Policy, 2014). He [27th March] also mentions that the generic strategy of Trafigura is to offer customized services for the customers.

Trafigura trades in fuel oil, crude oil, gasoline, naphtha, LPG, mid distillates and biodiesel; purchases and supplies ferrous raw materials on a principal-to-principal basis; and offers logistics, storage, crushing, and blending services (Trafigura
Brand Guidelines, 2014). Trafigura also provides non-ferrous products which can be divided into raw materials, such as concentrates and alumina; intermediate products, including semi processed metals; and refined metals for industrial applications (ORBIS; Trafigura Beheer B.V. Annual Report, 2013). Trafigura is engaged in the supply, storage, and transportation of petroleum products; and the distribution, retail, and wholesale of refined petroleum products [He, 27\textsuperscript{th} March]. Moreover, Trafigura provides thermal coal, coking coal, and coke products tankers; offers tankers and dry cargo vessels for charter, freight services to third party external customers, and index linked/fixed rate commercial management of vessels to owners (Trafigura Brand Guidelines, 2014). Trafigura also operates in the asset management services; mining and exploration activities; and warehousing operations (ibid). Based on the Trafigura’s 2013 Annual Report, oil and petroleum products occupied 76\% of total revenue and non-ferrous and bulk contributed 24\% of total revenue.

4.2 Financial Information in Trafigura

In order to support model illustration at analysis chapter, three Trafigura’s financial aspects are collected for this thesis: profitability, liquidity, and financial leverage. Under profitability perspective, net profit margin and return on equity are used. Current ratio and quick ratio belong to liquidity perspective. Total debt to equity and times interest earned ratios are used to measure Trafigura’s financial leverage of. Through ORBIS database and Trafigura Beheer B.V. Annual Report (2013), the author of this thesis select have selected financial data from 2008 to 2013 to embrace global financial crisis and Euro Zone debt crisis.

<table>
<thead>
<tr>
<th>Profitability/Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net profit margin (%)</td>
<td>0.61</td>
<td>2.03</td>
<td>0.96</td>
<td>1.04</td>
<td>0.93</td>
<td>1.63</td>
<td>1.2</td>
</tr>
<tr>
<td>Return on equity (%)</td>
<td>26.73</td>
<td>40.09</td>
<td>26.08</td>
<td>30.63</td>
<td>24.62</td>
<td>41.13</td>
<td>31.55</td>
</tr>
</tbody>
</table>

Figure 7 - Trafigura’s Profitability from 2008-2013
<table>
<thead>
<tr>
<th>Liquidity/Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current ratio (X)</td>
<td>1.19</td>
<td>1.20</td>
<td>1.18</td>
<td>1.17</td>
<td>1.17</td>
<td>1.14</td>
<td>1.18</td>
</tr>
<tr>
<td>Quick ratio (X)</td>
<td>0.86</td>
<td>0.79</td>
<td>0.79</td>
<td>0.85</td>
<td>0.82</td>
<td>0.86</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Figure 8 - Trafigura’s Liquidity from 2008-2013

<table>
<thead>
<tr>
<th>Financial leverage/Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total debt to equity ratio (X)</td>
<td>8.54</td>
<td>7.09</td>
<td>7.68</td>
<td>6.73</td>
<td>6.94</td>
<td>6.55</td>
<td>7.25</td>
</tr>
<tr>
<td>Times interest earned (X)</td>
<td>2.13</td>
<td>4.50</td>
<td>1.95</td>
<td>3.14</td>
<td>2.96</td>
<td>2.31</td>
<td>2.83</td>
</tr>
</tbody>
</table>

Figure 9 – Trafigura’s Financial leverage from 2008-2013

4.3 Non-Financial Information in Trafigura

According to Trafigura Beheer B.V. Annual Report (2013) and Trafigura Brand Guidelines (2014), the organization structure can be mainly divided into trading activities, industrial activities and asset management. Trading, shipping and chartering division belong to the trading activities. All the PUMA energy, IMPALA terminal, mining group and DT group comprise of the industrial activities in Trafigura. The last is GALENA asset management division (Trafigura Beheer B.V. Annual Report, 2013; Trafigura Brand Guidelines, 2014).

Due to the dimension and diversity of business areas and since the preferential contact use by the authors is allocated to trading department, the analysis and discussion of this thesis are mainly focusing on Trafigura’s trading activities. The authors of this thesis also think the main topic in discussion fits better to this kind of activities. Therefore, at this subchapter the authors of this thesis just describe activities performed at Trafigura’s Trading Department.
Figure 10 Organization structure of Trafigura (Trafigura Beheer B.V. Annual Report, 2013; Trafigura Brand Guidelines, 2014)

- Trading Activities in Trafigura

Trafigura's trading activities combine in-depth market knowledge with operational expertise on sourcing, grading and logistics [He, 27th March]. In each transaction, trade is based on customer’s requirements to determine variety, quantity, transport and type of products [He, 27th March]. Trafigura’s business model is essentially indifferent to price – indeed, one of their principal roles is to hedge price risk so that they can profitably deliver services regardless of the absolute level or direction of prices (Trafigura HSEC Business Principles, 2014). Besides, Trafigura's shipping and chartering division load commodities in port and at sea from their worldwide network of terminals and bulk logistics facilities (Advancing Trade Marketing Presentation in Trafigura, 2014). Trafigura charters special-purpose vessels to store and transport LPG, butane and propane in pressurized or refrigerated containers.

In addition, Trafigura's shipping and chartering division at Trafigura trading consists in one of the most important activities [He, 27th March]. Trafigura operates in an efficient, safe and high quality logistics network. Commodities are transported by third parties through barge, truck, rail and pipeline; by dry cargo
vessels; and by tankers supporting Trafigura’s core trading activities (Advancing Trade Marketing Presentation in Trafigura, 2014). Trafigura's trading activities, which lie at the heart of the business model, involve the physical movement of commodities to demand places (Trafigura Beheer B.V. Annual Report, 2013; Advancing Trade Marketing Presentation in Trafigura, 2014). Shipping and Chartering Department acts as Trafigura’s trading desk service center. [He, 27th March]. Management risk is shared with freight derivatives and trades physical with third parties (How Trafigura Manage Risk, 2014). Trafigura's industrial assets, which support their trading interests, include oil storage facilities, fuel service stations, vessels, warehouses and mines (Trafigura Beheer B.V. Annual Report, 2013).

- **Pricing Accuracy**

The prices for Trafigura’s products are based on current market conditions and on supplier’s inventory situation [He, 9th May]. Nevertheless, an hedged price range is applied [ibid]. Trafigura sells as a loss in order to reduce the inventory, if the suppliers have inventory in excess. Since stock huge backlog of surplus goods and the funds occupation make increase business costs [He, 27th March]. Instead, if the product is in short supply, Trafigura takes advantage of the price negotiations.

Regardless, customers do not choose to continue cooperating with Trafigura if the price for the product is too divorced from the reality [He, 9th May]. Customers also do not ask for unrealistic prices [ibid].

- **Customer Satisfaction**

The interviewee He [2nd May] refers that Trafigura distinguishes customers in major and minor ones according to transaction volume size. He [2nd May] adds due to Trafigura’s high service level has the capacity to attract new customers and maintain the loyalty with the current ones. Performing safety transport and
delivery on time demand turn to be critical for Trafigura [ibid]. In order to meet these requirements and ensure a process excellence, Trafigura carries out the strict vessel screening policy (Building Long Term Growth in Trafigura, 2014). Trafigura could support their customers with advanced and end-to-end logistics approach [He, 2nd May].

- **Customer Retention**

Trafigura’s approach regarding customer retention is to offer customized services (Trafigura Brand Guidelines, 2014). All transaction parts, such as variety and quantity of goods, pricing, payment and transport of goods are mainly negotiate based on customer requirements (Building Long Term Growth in Trafigura, 2014). In order to maximize profits at each order and maintain customer retention, Trafigura is accountable for material completeness and truthfulness in each order [He, 2nd May]. Trafigura focuses on physical trade to deliver increased value for their customers and develops trading expertise and market awareness [He, 2nd May]. Trafigura listens closely to their customers to match their requirements more precisely and the company is constantly looking to improve their services in response to changing circumstances (Building Long Term Growth in Trafigura, 2014).

- **Employees Benefits**

Since Trafigura operates in 58 countries, the policy about employees’ benefits differs from country to country [He, 2nd May]. Trafigura in China offers to their employees annual bonuses at the end of the year and organizes tour once a year as an employee incentive and reward policy [He, 2nd May]. What is more, Trafigura in China uses individual achievement and evaluation from customers’ satisfaction indicators to provide for their employees fringe benefits which includes, for instance, extra three-week paid vacation per
year. [He, 2nd May].

- **HSEC Business Principles**

The aim of Trafigura is to be recognized as a leader on Health, Safety, Environment and Community (HSEC) matters within commodities trading industry (Trafigura HSEC Business Principles, 2014). In order to achieve these goals, Trafigura has developed and carries out HSEC Business Principles. Trafigura has adopted HSEC Business Principles in four core areas, which outline their philosophy and the standards they uphold: health and safety; environment; human rights and labor practices; and community relations (Trafigura HSEC Business Principles, 2014).

Implementing HSEC business principles, Trafigura can offer to their employees a safe and healthy work environment. The HSEC business principles could contribute to increase employee's work efficiency and assist company to increase competitiveness in the market (Trafigura HSEC Business Principles, 2014; Trafigura HSEC Policy, 2014).

### 4.4 Risk Management in Trafigura

Since within global commodities traders the market volatility is high, Trafigura pursues to be conservative in which concerns to risk management (How Trafigura Manages Risk, 2014). Due to the approach played by Trafigura the company perceived to have low risk participation at this market while at the same time intends to preserve trading profitability [He, 8th May]. The policy implemented by Trafigura regarding its risk management is categorized in five tiers (ibid).

**Tier I – An Effective Framework for Global Risk Management**

Trafigura’s CRO has the responsibility to define the policy to adopt and
coordinating the company risk management (How Trafigura Manage Risk, 2014). Hierarchically the CRO reports to his superior such as the Chief Operating Officer and the Management Board (ibid). The CRO is considered as a fundamental member of the Risk Committee (ibid). This committee is composed by company directors and senior traders meeting weekly to evaluate overall exposures, impacts on changing market dynamics assets, and limit risk exposures and concentrations (Trafigura Beheer B.V. Annual Report, 2013; How Trafigura Manage Risk, 2014).

Trafigura’s continuous investment in risk management systems is supported by a report system which through an automatic way advises the risk management presented to trading teams always when a commodity reaches its risk limits (How Trafigura Manage Risk, 2014). The CRO works together with trading teams to evaluate changing market conditions and the hedging strategies focus on market dynamics (ibid). The team coordinated by the CRO tries to identify new dynamics which reveals to be an important issue on commodity markets (ibid).

**TIER II – Hedge Flat Price Risk**

Trafigura’s objective is to figure out equilibrium among supply and demand sides of global commodities (Trafigura Brand Guidelines, 2014). Thus, company tries to balance assets and liabilities according to client requirements (ibid). Nevertheless, there is an exposed price risk (How Trafigura Manage Risk, 2014). The contracts established with buyers and sellers follow different procedures (ibid). Thus, transactions could not be agreed at the same time [He, 8th April]. For instance, revenue and payment streams presented in a specific operation obey to benchmark prices [ibid]. In order to eliminate flat price risk the company hedges the trading desk [ibid].
TIER III- Manage Basis Risk

Identifying and managing basis risk is the cornerstone of Trafigura’s business model (Trafigura Beheer B.V. Annual Report, 2013). The company’s trading area tracks opportunities across the world both on supply and demand sides (ibid). Trafigura provides in-house logistics and other logistics resources to deliver commodities under cost-effectively practices (How Trafigura Manage Risk, 2014). This area evaluates and manages exposures continuously to the different exchanges and financial markets and commodities [He, 8th April]. Company’s trading activities are maintained by systems which controls operational risks (How Trafigura Manage Risk, 2014).

TIER IV- Diversify the Portfolio

Trafigura operates globally which contributes for a business commodities trade in diversified markets (Advancing Trade Marketing Presentation in Trafigura, 2014). Apart of the high focus on financial assets, trading different kind of commodities contributes to lower the exposure to the risk and provides a more adjusted performance (How Trafigura Manage Risk, 2014). To sustain this approach Trafigura illustrates an example in which the risk associates to pay for copper in China is totally different that the liquefied petroleum gas pricing relationship among Europe and USA ((How Trafigura Manage Risk, 2014); [He, 8th April]).

TIER V – Reduce Risk Concentrations

Trafigura implements a risk management method to identify and analyze different exposures (How Trafigura Manage Risk, 2014). The concentration risk is mitigated by constant reviews about to market context and dynamics (ibid). CRO accomplishes strategic hedging activity in order to moderate risk concentrations and company’s exposure (Trafigura Beheer B.V. Annual Report, 2013; How Trafigura Manage Risk, 2014).
4.5 Risks in Trafigura

- **Market Risk**

“Trafigura holds positions primarily to ensure the ability to meet physical supply commitments to customers, to hedge exposures arising from these commitments, and to support investment activities.” (Trafigura Beheer B.V. Annual Report, 2013). Market risk is the risk of loss in the value of Trafigura’s positions due to changes in market prices (ibid). According to different customer requirements and investment opportunities, Trafigura's market prices change on a daily base (ibid). In addition, market risk which Trafigura is exposed are commodity price risk, currency rate risk and equity price risk (Trafigura Beheer B.V. Annual Report, 2013).

- **Credit Risk**

Trafigura’s objective is to seek continuously revenue growth while minimizing losses incurred due to increased credit risk exposure (Trafigura Beheer B.V. Annual Report, 2013). Trafigura has a formalized credit process with credit officers in all major geographic regions around the world, which can use appropriate, guarantees, insurance and letters of credit to reduce payment or performance risk (ibid).

- **Liquidity Risk**

In order to managing liquidity risk, Trafigura ensures sufficient cash available to meet anticipated and unanticipated funding needs (Trafigura Beheer B.V. Annual Report, 2013). For instance, Trafigura manages its liquidity risks through committed unsecured credit facilities, limited distribution of profit and subordination of repurchased equity (ibid). Trafigura has immediately-available in cash around USD 500 million to manage unexpected conditions (How Trafigura Manage Risk, 2014).
Interest Rate Risk

Trafigura is not exposed to significant interest rate risk (Trafigura Beheer B.V. Annual Report, 2013). Interest rate risk is mainly applicable on Trafigura’s long-term fund (ibid). Trafigura enters into interest rate derivatives transactions to lock-in current interest rate levels (ibid). For instance, interest rate swaps provide Trafigura a method of reducing floating interest rates, which arising from its corporate funding programmes (Trafigura Beheer B.V. Annual Report, 2013).

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5. Analysis

The analysis of this master thesis is conducted by using a framework model adapted from KBS and the theoretical one illustrated in the theory chapter towards PMS and ERM integration. Furthermore, the theoretical definitions combined with the company information are approached in order to develop in detail the model proposed by the authors of this thesis and requested by the company. At the end, it is developed a theoretical reflection about the integration of PMS and ERM.

The analysis model followed to respond the research question is illustrated below (Figure 11). The analysis is conducted using and connecting different theory and empirical outputs to build up each towards the final model.
Figure 11 - The Analyze Model of This Thesis
5.1 Analyze Research Question

*How can a comprehensive model which integrates performance measurement system with enterprise risk management be developed for Trafigura?*

Regarding the research question in analysis at this thesis the lack of relevant literature which approaches with concrete examples in how to integrate PMS and ERM under a comprehensive control model do not allow a narrow conclusive answer. There is a necessity for more empirical examples complemented by scientific articles which explain how to proceed to this integration in order to better support the analysis. Thus far, most of the literature is more focus on exploiting the advantages behind this integration rather than how to develop a control model. Nevertheless, Arena et al. (2011) state PMS and ERM should be implemented making use of a control model. Therefore, a specific model is presented by the authors of this thesis as a suggestion for Trafigura providing a set of guidelines.

The proposed and developed comprehensive model in discussion at this thesis for Trafigura is illustrated in figure 12. This integrated model is developed based on KBS and the theoretical framework model proposed by Nogueira dos Santos (2013). This ERM and PMS integrated model is divided in five different steps. Strategy and firm structure is the first one. The purpose to introduce this step is to make clear what are the strategic objectives and vision applied for Trafigura. In the second step, the company could figure out the benefits of implementing an integrated PMS and ERM model. At the third step is proposed to Trafigura considering performance measures issue allocated to KBS’s different perspectives and based on the judgment of the authors of this thesis according to specific features of the company which are illustrated with some KPIs. Then, in the next step, it is suggested the introduction of Trafigura’s risk management perspective. Finally, is recommending by the authors of this thesis a target setting and
evaluation step for Trafigura to continuous monitoring their performance and risks.

Figure 12 - The PMS and ERM Integration Model for Trafigura [Adapted from Nogueira dos Santos, 2013; and KBS]

5.2 PMS and ERM Integration Model Illustration

At this subchapter, the authors of this thesis analyze each steps of the model proposed. Through the following analysis, the authors of this thesis bring up outputs to support Trafigura’s necessity and guidelines to integrate PMS with ERM under a comprehensive model.

According to the purpose of this thesis the analysis is mainly focused on PMS and ERM perspectives and their integration (Blue Steps). At the first step (Green Step), aside the importance for strategy’s connection sustained at PMS and ERM
theoretical chapters, the authors of this thesis complement with firm structure perspective. The integration of this model could require a time gap to be efficiently used and company case problem is based on one single staff member from a specific department. Therefore, this first approach is only considered for trading activities within the company. Due to the lack of information possible to collect from the company the last step (Yellow Step) is briefly explained. Nevertheless, the authors of this thesis decide to include since could constitute a base for future development research and be considered for analysis by Trafigura. Moreover, a total integrated model might reveal feasible.

5.2.1 Strategy and Firm Structure

According to Arena et al. (2011), Palermo (2011) and Nuttasophon et al. (2013) the integration among PMS and ERM should be linked to company’s strategy in order to monitor, evaluate uncertainties and focus on the goals and objectives of the company. Therefore, the authors of this thesis decide to introduce the strategy issue in the first step of the model besides into an ultimate performance improvement of the company. Nevertheless, it is not our purpose to define company’s strategy. Moreover, the firm structure perspective should be considered. Trafigura’s organizational structure is divided in accordance to the different business management activities (Trafigura Beheer B.V. Annual Report, 2013; Trafigura Brand Guidelines, 2014). Since the preferential contact used is allocated to trading activities area and the company case problem is bring about by this contact the authors of this thesis perceived this model should be initially considered to this specific area based on Trafigura’s organizational structure. Nevertheless, the key indicators entails the all company. Furthermore, the authors of this thesis believe it is a good approach to implement this model gradually and evaluating continuously its applicability throughout the all company. After pondering both Trafigura’s strategy and organizational structure, the model could
turn into PMS’ perspective and risk management.

5.2.2 Performance and Risk Integration at Trafigura

The problem claimed by Trafigura finds expression among academics. The authors of this thesis perceived PMS and ERM integration is a trend topic. Nevertheless, Nuttasophon et al. (2013) affirm there is still a lack of relevant research on this area and this integration is not sufficiently developed (Palermo, 2011).

Acharya (2008) affirm the kind of PMS combined with ERM must be related to the strategy followed by the company and the results obtained sufficiently according to shape company’s objectives. Beasley et al. (2006) add PMS should embrace a set of measures from different perspectives such as finance, accounting, operations management, marketing, strategy and organizational behavior. The authors of this thesis, despite the lack of information collected from the company, perceived apart of the focus on financial issues it is also important to evaluate other measures to better analyze other risk measures. This idea is sustained by Palermo (2011) when suggests to put more attention on non-financial figures since these ones could consist in a relevant risk information tool for unexpected events.

The reason to entail PMS and ERM is to make clearer and monitoring performance aims (Aureli and Salvatori, 2012). For that reason the authors of this thesis explained possible risk effects linked to specific measures for Trafigura. KPIs pay more attention on measure the performance developed to monitor progress and the ultimate creation of stakeholder value (Viscelli, 2013). While KRIIs offer the forward-looking indicators and relevant data about emerging risks (Scarlat et al., 2012; Arena and Arnaboldi, 2014). Therefore, both of them should consist in the primary incomes to communicate business results across Trafigura.
For this reasons the authors of this thesis believe there is a potential to explore by Trafigura regarding this integration and perceived that a company with the business model of Trafigura and, in particular, to trading activities, this approach would reveal feasible to implement.

5.2.3 Performance Measures

Kaplan and Norton (1996) and Neely (2005) mention PMS offer a succinct overview about financial and non-financial strategic measures for the company. KPIs provide a relevant managerial tool in monitoring critical aspects of the company’s strategy (Janeš and Faganel, 2013). Through the implementation of financial and non-financial KPIs can support companies in enhancing decision-making process (Kaplan and Norton, 1996). Keeble et al. (2002) claim when an indicator is implemented a reviewing process should be considered to employ a connection within different levels at the company towards a stakeholders’ valorisation. According to these ideas the authors of this thesis implement a step for performance measures combined with KPIs angle. Moreover, PMS and KPIs provide information about company’s performance (Taticchi et al., 2010); improve the strategy development (Wu et al., 2009); measure critical business process accurately (Neely, 2005). Therefore, in the opinion of the authors the introduction of this step reveals to be essential for the model proposed.

Since the range of financial and non-financial measures is fairly broad, the authors of this thesis decide to allocate these measures under different perspectives adapted from KBS and own judgement according to Trafigura features. Kanji (2001) defend the use of a comprehensive model which evaluate organizational performance provides a relevant tool to achieve excellence. Selecting some critical factors from KBS, the authors of this thesis implement a complement for this step. Financial perspective introduced in the model is based on the opinion of the authors of this thesis. For Trafigura financial issues are a critical factor due to
the kind of business performed. For that reason, the authors of this thesis pick up financial perspective in the model. The other two perspectives embrace non-financial figures. Delight Stakeholder perspective introduces internal and external views which could increase company’s performance. Process Excellence perspective towards company’s efficiency. In order to offer a better comprehension the authors of this thesis illustrate with some financial and non-financial indicators collected from the company.

I-Financial Perspective

Generating revenues and managing finances in responsible way is the keystone for the company to achieve the success. According to Kanji and Sá (2002) financial performance measures consist in an important technique to implement and execute company’s strategy. Johnston and Pongatichat (2008) add financial KPIs increase firm’s value. Therefore, the authors of this thesis bring up some illustrative indicators to exemplify the model implementation behind this perspective. Within financial perspective the authors of this thesis divided in three different aspects: profitability; liquidity; and financial leverage. Moreover, the range of years exhibited (from 2008 to 2013) encompasses the global financial crisis and Euro Zone debt crisis.

- **Profitability**

Profitability can offer the information about the firm’s ability to generate profit in a period of time. Return on equity illustrates how the company makes use of investment funds to obtain generate growth. Alexander and Nobes (2004) and Kalra (2013) affirm net profit margin shows overall firm efficiency and relates net value and income.

Through using net profit margin and return on equity that can help to catch the
key information for the profitability. Moreover, the consecutive data can be analyzed in one time through this to measure the trends of developments and changes. Moreover, through using profitability KPIs, Trafigura can obtain some signals about market risks.

![Graph showing profitability from 2008 to 2013](image)

**Figure 13 Trafigura's Profitability Illustration 2008-2013**

- **Liquidity**

Current ratio shows company’s ability to pay short term obligations (Riordan and Riordan, 2009). The high ratio which means company has enough ability to repay the current liabilities. On the other hand, the higher current ratio the more cash will be occupied and the profitability will be affected. Company fails to utilize cash in efficient way. Manager should keep the balance between profitability and ability to repay the liabilities. Quick ratio illustrates company’s capability to pay the short-term liabilities with cash or near-cash assets (Halim et al., 2011). Compared with current ratio, quick ratio provides more conservative view of short term solvency ability than current ratio and quick ratio will not include the inventories in assets. Because of its difficulty to convert inventories into cash in
short time, the assets which are calculated in quick ratio can convert into cash quicker than current ratio. Based on situation, both current ratio and quick ratio should be implemented. Moreover, Trafigura can obtain the relevant information about potential liquidity risks through implementing these liquidity KPIs.

![Liquidity Chart](image)

**Figure 14 Trafigura’s Liquidity Illustration 2008-2013**

**Financial Leverage**

Financial leverage reflects company’s debt financing (Gowthorpe, 2005). Total debt to equity ratio shows firm’s financial leverage metrics (Innocent et al., 2013). Though using this ratio, case company could get clear view about the situation of debt. Moreover, Trafigura could not only compare its own performance on total debt to equity ratio in the past years, but also compare with the other companies in the same industry to adjust its leverage level. Times interest earned ratio illustrates company’s ability to pay their interests (Megginson and Smart, 2008). This ratio can be seen as the premise of leverage of company and important indicator to measure the ability to solve the long term solvency of company. If the ratio is too low, the case company will face to loss and risk about declining of security and
stability. Through using these two ratios which can help to enhance the ability of decision making and lower the interest rate risks.

![Financial Leverage Chart]

**Figure 15 – Trafigura’s Financial Leverage Illustration 2008-2013**

**II-Delight Stakeholder Perspective**

Kanji (1998) and Kanji and Sá (2007) present towards a business excellence measuring stakeholders’ satisfaction within organization could increase company’s performance. KBS integrates internal data from employees and external data from customer into delight stakeholder concept, which adequately covers the one of requisites in PMS (Kanji, 2002; Kanji, 2005). These reasons support the decision of the authors of this thesis in introducing ‘Delight Stakeholder’ perspective under performance measures step in the model proposed for Trafigura.

It was necessary for Trafigura to exceed customers’ expectations and also prove employees’ knowledge and skills to do a good job under human resource management support. Trafigura could use non-financial KPIs to measures the
delight stakeholder performance. In order to illustrate this model, the authors of this thesis exemplify with customer satisfaction, customer retention and employee benefits measures. These non-financial indicators are aimed at monitoring Trafigura’s long-term success factors. Moreover, these non-financial KPIs can be directly reflected in determines current and future stakeholder’s requirements and expectations and also uses feedback from stakeholders to improve its products and services.

- **Customer Satisfaction**

Many organizations focus on operational risks, but they often ignore to consider risks related to strategy, markets, and reputation, all of which be affected by customer satisfaction. Customer satisfaction illustrate whether the customers are valuable or not (Setijono and Dahlgard, 2007). Having customer satisfaction indicator can improve product/service quality and on time delivery and also improve customer perception of value.

Trafigura differentiates customers based on transaction volume size and each customer is followed up by specific traders [He, 2nd May]. Performing a safety transport and delivering on time demand are critical issues for Trafigura to ensure a process excellence [ibid]. In order to increase the customer satisfaction, different customers can implement different performance management by each trader. Traders can grants major customer’s order preference in delivery to minor customer’s orders. Traders can counts the number of product shipped by air or sea according to order priority. Furthermore, Trafigura should increase satisfaction “after the sale” in depth of customer relationship and collect satisfaction survey from major customers and minor customers.

- **Customer Retention**

Coenen et al. (2013) affirm measuring customer retention could be proceeding
through many different indicators. The generic strategy of Trafigura is to offer customized services for the customers (Trafigura Brand Guidelines, 2014). In order to maximize profits on each order for customers and maintain customer retention, Trafigura should accountable for the completeness and truthfulness of the material for each order.

Trafigura’s customer retention approach includes providing customized services (Trafigura Brand Guidelines, 2014). Traders in Trafigura should visit loyalty customers regularly in order to increase customer feedback about market threats about product and service delivery product/service delivery. Trafigura cultivates trading expertise and market awareness together with their customers [He, 2nd May] and pursues constantly to improve their services (Building Long Term Growth in Trafigura, 2014). Furthermore, Trafigura should also constantly look to improve their services in response to changing circumstances.

- **Employee Benefits**

Employee benefits could be defined as form of reward provided by the organization for the work developed by the employees for the company (Parmenter, 2007). In order to encourage the employees, Compton et al. (2009) suggest implementing a bonus policy. Trafigura’s employees benefit reward policy differs from country to country [He, 2nd May]. Trafigura in China organizes tour for employee once a year as the employee’s incentive and reward [He, 2nd May]. For traders in China, Trafigura based on their individual achievement and the evaluation from customers’ satisfaction to provide extra benefits such as three-week paid vacation a year [ibid].

What is more, Neely et al. (2005) affirm that carry out bonus policy can keep employee motivation and could increase his/her commitment and loyalty to the company. Trafigura’s Chinese office through indicators regarding employees’
performance induces fringe benefits [He, 2nd May]. Employee benefits obeys a continuously evaluation (Neely et al., 2005). Trafigura is responsible for their employees with serious attitude. Based on the Trafigura’s philosophy, Trafigura develops HSEC business principles aim to provide their employee a health and safety environment (Trafigura HSEC Business Principles, 2014). The HSEC business principles can improve employee workplace environment, lead to fewer episodes of crisis management and allows for a more stable and smoothly functioning Trafigura. Trafigura could also ask employees to attend risk management training to increase employee awareness of risk. Under a safe and health work environment, the employee in Trafigura could work more efficiency and assist company to increase competitiveness in the market.

III-Process Excellence Perspective

In order to meet customers’ expectations, customer-based measures must be translated into Trafigura internal measures. What is more, managers should pay more attention on those critical internal measures that enable Trafigua to satisfy customer needs. Kanji and Sá (2002) identify process excellence as one of the critical success factors. For that reason, the authors of this thesis decided to implement this factor in the model proposed for the company under performance measures step.

For an efficient implementation of this a good information system (IS) reveals to be fundamental (Kanji and Sá, 2007). The authors of this thesis assume Trafigura adopts a good IS. The set of measures applied to this critical factor request from the company the use of benchmarking policies towards processes and services efficiency (Kanji and Sá, 2002; 2007). To consolidate this perspective the authors of this thesis exemplify with pricing accuracy measure at Trafigura.

- Pricing Accuracy
Trafigura establish the prices for their products according to current market conditions [He, 9th May]. If the price for the product is too divorced from the reality the customers do not choose to continue cooperating with Trafigura. In order to increase market capitalization, it’s necessary for Trafigura to match the market prices. Accuracy could be reached selecting target firms within the same industry and similar size dimension (Herrmann and Richter, 2003). Herrmann and Richter (2003) exemplify through pricing accuracy measure the operational risk of the company is better sustained. Pricing accuracy policies contribute to sustain Trafigua’s operational risk and reduce customer defections risk due to price competition. Trafigura also could avoid backlog stock and decreased business costs through carry out pricing accuracy policies.

5.2.4 Risk Management

According to Paape and Speklé (2012) the industry/sector where the companies operate influence the decision about ERM implementation adding volatile markets are more willing to adopt this approach. Since Trafigura’s commodities traders market is characterized by an high volatility, the authors of this thesis state the company pursues the literature in implementing a risk management policy. The idea advocated by Paape and Speklé (2012) towards company’s approach since ERM could reduce earnings volatility in order to retain trading profitability and enables to evaluate risks through an integrated model (Hoyt and Liebenderg, 2011).

The hierarchy structure adopted by Trafigura chases exactly the definition process illustrated by COSO (2004) and Arena et al. (2011). ERM procedure at Trafigura is coordinated by the CRO assisted by the company directors and senior traders who have the mission to manage potential risk exposures and market dynamics which might affect Trafigura’s objectives.
The continuous process of identifying and managing risks, new dynamics at commodity markets, and evaluating different exchanges and financial markets implemented by Trafigura meets the definition introduced by Abrams et al. (2007) in which ERM should be administrated under a continuous basis.

The policy adopted by Trafigura about hedge flat price risk follows the definition claim by Hoyt and Liebenderg (2011) since an integrated ERM allows the development of natural hedges. Since Trafigura adopts benchmark prices adding a trading hedge desk to eliminate flat price risk, the decision-making proves to be much more accurate.

Trafigura operates globally contributing to a trade business performed at different markets with inherent risks accordingly. Hence, an ERM adoption could aware a set of risks and contribute to evaluate operational and strategic issues (Stroh, 2005). Diversifying the portfolio and mitigating risk concentration is a measure adopted by the company which goes into Bainbridge’s (2008) statement.

The division in four risks (financial, hazard, operational and strategic) types under the ERM model illustrated by Daud et al. (2011) cannot be analyzed by the authors of this thesis due to confidential rules applied by the company regarding the release and use of reports by third party. Notwithstanding, the authors of this thesis can affirm the kind of financial risks introduced by Daud et al. (2011) are the same applied by the company: market, credit, liquidity, interest rate and currency risk. Regarding the other kind of risks, since there is no data information available from Trafigura, the authors of this thesis cannot discuss.

Although, taking in consideration the non-financial figures previously exemplified and since KRI s could be applied for different perspectives such as hazard, operational, strategic (Tarantino and Cernauskas, 2009) the authors of this thesis proposed that measures to evaluate the risk, since KRI s foresee whether KPIs achieved goals (Aureli and Salvatori, 2012). KRI s provide and point useful information regarding potential risks (Monahan, 2008; Zhao et al., 2013); monitor
company’s risk profile (Frigo and Anderson, 2011; Monahan, 2008; Beasley et al., 2008); evaluate internal and external changes (Arena and Arnaboldi, 2014); offer a forward-looking for emerging risks and an initial warning (Scarlat et al., 2012; Arena and Arnaboldi, 2014; and Beasley et al., 2010).

Aside financial assets risks mentioned by Wu and Olson (2009), the authors of this thesis defend other company’s risks should be taken in consideration. Trafigura mitigates the risk by frequent reviews about market context and dynamics. Nevertheless, despite the few and relevant information obtained in which concern to risk indicators and how they are managed, the authors of this thesis perceive Trafigura’s enterprise risk approach has an excessive focus on financial issues. Therefore, the authors of this thesis follow the idea claimed by Culp (2002) in which ERM also embrace other risks aspects.

Through the reasons above illustrated the authors of this thesis sustain the implementation of risk management step within the model. After the implementation of performance measures step seems a logical approach introduce this step since risk indicators predict whether performance indicators have been succeed.

It is perceived by the authors of this thesis that ERM implementation at Trafigura applies, in general, the best practices according to the theory, despite the lack of relevant information provided by the company.

5.2.5 Target Setting and Evaluation

The authors of this thesis ponder to introduce target setting and evaluation step based on the theoretical framework and on company’s data information. After the effective implementation of the model and in order to fulfill the objectives behind it, Trafigura should assign a continuous evaluation regarding performance and risk measures in a proper approach to enhance company’s efficiency. Moreover,
Trafigura's managers and staff could contribute with their expertise for that purpose.
5.3 Theoretical Reflection

McWhorter et al. (2006) have identified similarities since either PMS and ERM provide an holistic perspective of the company. Arena et al. (2011) and Palermo (2011) add this integration contributes to monitor and evaluate uncertainties regarding company’s strategy. Palermo (2011) complements behind an integrated model among PMS and ERM interdependencies across departments are supported to improve company’s performance. What the authors of this thesis claim if this integration is feasible for every kind of companies and in what business sectors suits better. Thus far, the literature just exploits possible advantages accordingly without identifying specific business areas.

Among the various possible advantages illustrated at the theoretical chapter about ERM and PMS integration, the authors of this thesis stress ideas mentioned by Beasley et al. (2006), in which an integration might contribute to work more efficiently; enables a better knowledge for employees regarding strategic objectives; by Rasid et al. (2012) in augmenting shareholder’s value; and by Arena and Arnaboldi (2014) in awaking attention by the managers on key data. Calandro Jr. et al. (2008) and Arena and Arnaboldi (2014) conclude a convergence of PMS and ERM could progress into a strategic tool which provides a better support decision to create value since business environment is multi-dimensional and entails larger diagnostic control system. Without dismissing the advantages behind the PMS and ERM integration, the authors of thesis claim literature lacks a better explanation about how to bring up and to lead in concrete with these ideas.

Apart of the possible advantages in integrating PMS and ERM under a comprehensive model, there is no empirical examples which illustrate possible
approaches. Nuttasophon et al. (2013) assign this idea to the lack of comprehensible theoretical frameworks and consistent analytical risk measurements; the huge variants of PMS designs; and PMS and ERM evaluation is still mainly conducted by different people within companies. Most of the literature adopts a framework where risk management is added as the fifth perspective of Balance Scorecard or risk measure is integrating under PMS perspectives (ibid). The authors of this thesis claim for the necessity in developing more different kinds of model.
6. Conclusion

At this final chapter the research question behind this thesis is concluded. Hence suggestions for future research based on this thesis are presented. At the end, the authors of this thesis carry out own criticism regarding the work developed for this thesis.

6.1 Answer to the Research Question

*How can a comprehensive model which integrates performance measurement system with enterprise risk management be developed for Trafigura?*

Notwithstanding the lack of empirical examples, which cannot provide a narrow answer, the authors of this thesis have developed a comprehensive model integrating PMS and ERM for Trafigura (Figure 16). The integration model requested by the company is divided in five steps: strategy and firm structure, performance and risk integration, performance measures, risk management, and target setting and evaluation.

Strategy and firm structure step entails the connection among PMS and ERM to Trafigura’s strategy and the importance for a gradual implementation according to organizational structure.

The following three steps are the cornerstone of this comprehensive model. At performance and risk integration step, the authors of this thesis sustain the benefits of integrating PMS and ERM under a control model for Trafigura. Furthermore, allocated with the performance measures step the authors of this introduce different perspectives: financial, delight stakeholders and process excellence. The first one is based on Trafigura’s features and the others adapted from KBS. Due to the variety of different performance measures the authors of this thesis believed it is important to divided perspectives. For that, some KPIs are illustrated to provide a better comprehension. Through implementing financial
KPIs like profitability ratio, liquidity ratio and financial leverage ratio that Trafigura could capture the signal for the potential liquidity risks, market risks and financial risks. Non-financial KPIs can contribute to reflect in determines stakeholder’s requirements and expectations and also uses feedback from stakeholders to improve its products and services. Moreover, risk management step is suggested as the next stage for the model. After performance measures consideration could be possible for Trafigura to evaluate as a risk indicator prediction.

At target setting and evaluation step points out the importance for Trafigura in carrying out a proper approach and a continuous evaluation regarding performance and risk measures to accomplish the purpose of the model implementation.

The authors of this thesis perceived PMS and ERM integration under comprehensive model can provide a holistic perspective for Trafigura. Moreover, this model can contribute to provide better decision-making, creating value and improve efficiency at Trafigura.

6.2 Future Research

For future research and investigation the authors of this thesis suggest the conduction of field studies which through empirical examples could better provide better with more approaches PMS and ERM implementation through an integrated model. Thus far, most of the literature is just focus in exploiting possible advantages behind the integration of PMS and ERM. In order to sustain this trend topic the authors of this thesis also propose to develop theoretical approaches about which kind of industries/sectors are more feasible for this integration.

6.3 Criticism

The authors of this thesis perceived which interviewing more different staff from
the same and others Trafigura’s department would contribute to a better accuracy and more relevant information regarding the empirical data of the company. Another aspect is about the topic in discussion for this thesis. Integrating PMS and ERM reveals to be a trend topic among academics. Therefore, a theoretical approach applied for this thesis could have contributed to a richer analysis although the topic has been exploited by a case company problem. Moreover, this idea is sustained by the lack of information collected from Trafigura. It could have been interesting to search for other companies which have the same kind of business model and operate in the same kind of sector to accomplish if this is, in fact, an issue beside to other similar companies.
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Appendices

Interview I
Interviewee: Yunlei He (yunlei.he@trafigura.com)
Department: Deals Desk
Occupation: Commercial Business Analyst
Interview Method: Skype Meeting
Interview Date: 2014/3/27
Content: Basic Information about Trafigura
Interview Questions:

1. What kind of image that company want to set up?

2. What’s the philosophy of your company?

3. What’s the vision of your company?

4. What’s the generic strategy of Trafigura?

5. What’s the business model of your company?

6. What’s working processes of your company?

7. What’s the competitive advantage of your company?

8. What’s market share condition for the company?

9. What’s position of your company in your industry?

10. Can you introduce the organization structure of your company?

11. How many divisions in the company? What’s duty for each division?

12. Did company produce the products?

13. What’s goal for the future development?

14. What’s the future planning for the company?

15. Did company using MCS or PMS to measure the performance of internal perspectives?

16. How company to judge the performance and effectiveness?
Interview II
Interviewee: Yunlei He (yunlei.he@trafigura.com)
Department: Deals Desk
Occupation: Commercial Business Analyst
Interview Method: Skype Meeting
Interview Date: 2014/4/8
Content: ERM in Trafigura
Interview Questions:

1. Did company using ERM to measure the risk?

2. Could you describe the framework of your company to manage the risk?

3. How do your company to manage the risk in your company?

4. Whether Trafigura set the Chief Risk Officer to handle the risk management?

Interview III
Interviewee: Yunlei He (yunlei.he@trafigura.com)
Department: Deals Desk
Occupation: Commercial Business Analyst
Interview Method: Skype Meeting
Interview Date: 2014/5/2
Content: Non-Financial Perspective in Trafigura
Interview Questions:

1. What’s the customer process in Trafigura?

2. How company to distinguish the customer?

3. How to attract new customers?

4. How to maintain the loyalty from the customer?

5. Will company always maintain cooperative relations with customers? If not, what are the reasons?

6. How to setting responsibilities in the company?

7. Could you describe the incentive plans or reward system in your company?

8. Whether company offer after-sales service? If have, what kind of service will offer?
9. How Trafigura to choose and judge your supplier? What’s standard for your judgment?

10. How to choose the way of transport?

11. What are reasons caused the delay on delivery?

12. How company to ensure the safety on transport and delivery on time?

13. What’s process for the delivery?

14. What’s the delivery time of goods?

**Interview IV**
**Interviewee:** Yunlei He (yunlei.he@trafigura.com)
**Department:** Deals Desk
**Occupation:** Commercial Business Analyst
**Interview Method:** Email Interview
**Interview Date:** 2014/5/9
**Content:** Financial Perspective in Trafigura

**Interview Questions:**
1. Compared with other companies in the same industry, what’s price level for your company?
2. What kind of payment will be accepted by the company?
3. What’s pricing strategy company will use?