Governance Mechanisms and Opportunism during the COVID19 crisis within the European Chemical Bulk Industry

Part-time Master Business Administration
Operational Excellence

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Preface

This research has been conducted as a final project of the Part-time Master Business Administration at the Erasmus University Rotterdam. The purpose of the project was to give insight in how methodologically correct research is done, resulting in this master thesis.

Many small steps have been taken to complete this master's thesis which has not always been an easy route. At the end of 2019, it became clear to me that, I would be professionally moving from the Europoort harbour, Rotterdam to Farmsum, Delfzijl within the Chemical Cluster Eemsdelta, which has had a huge impact on my spare time, because the travel time, as I did not prefer spending my evenings in an abandoned hotel near Farmsum but with my wife in The Haque, resulted in some serious numbers.

Within my industry the Argus Media Group (AGM) is followed in order for keeping up with the most important feedstock Methanol and their publications provides a good insight of what has happened during the coronavirus which resulted in a worldwide crisis.

When the impact of `China´s` coronavirus became clear in December 2019, it remained silent in other parts of the world, until the first signs were published in the Argus Media Group news channel (AGM). AGM issue 20-5, Friday 31-01-20, traditional week-long Lunar New Year's holidays, have now been ex-tended due to the coronavirus. AGM issue 20-4 Friday 24-01-20, unexpected methanol unit outages in southeast Asia. Issue 20-6 Issue Friday 14-02-2020, logistical bottle constraint, road closes, lack of labour, inventory-built ups.

Issue 20-9 Friday 28-02-20, coronavirus outbreak on the petrochemical demand continues to be seen, with impact spreading to South Korea, Iran and Italy. Issue 20-10 Friday 6-03-20, The increasing spread of the virus across Asia-Pacific and the rest of the world dramatically increases bearish global sentiments.

The Dutch lockdown followed on March 23rd and the home-office became the new standard, which was quite a change, besides missing the daily catch-up with the workforce, I was rendered to all kind of new irritating stressful communication types, WhatsApp, Skype, WeChat etc., the stress which it gave to me has officially been classified as technostress (Van den Eerenbeemt, TNO). Technostress was not completely new for me, as I became always a little bit stressful from techno in previous occasions.

During the project several persons provided me with help, advice, useful insights and support. Therefore, I would like to thank Erick Johan Haag for his positive telephone calls and guidance, Finn Wynstra for guiding me in the right direction, Louise Lu, my sister-in-law, for pointing me at the core of the research purpose and of course all the respondents for cooperating in my survey.

A special note for my wife, Lia, who continuous supported me during the last two course years, provided me with mental support and kept my private life well-balanced.

Den Haag, August 21, 2020.

Maarten Pieter Jongeboer

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Abstract

According to Steinle, C., et al., 2019 and Luminineau et al., 2020, it is assumed that opportunism should be present in every inter-firm relationship and that opportunism should be treated as a given fact. But what does the literature tell us about opportunism, what is opportunism, and what could we do in order to prevent it, are there any safe-guards in order to reduce the effects of opportunism in an inter-firm relationship within the European chemical bulk industry? This sector has been left underexposed in previous research according to my best knowledge.

First of all, what is opportunism, the literature refers to activities including breach of contract, cheating, stealing, dishonesty and the miss presentation or withholding of information (Steinle, C., et al., 2019 and Williamson, 1979). Opportunism is a sticky concept as a buyer or seller could not know if opportunistic behaviour appears until the transaction has actually been completed (Lumineau et al., 2020). The question arose how to smoothen the transaction and Williamson, 1979, referred to the transaction costs approach and the main idea was for ensuring a match between the used governance mechanism in order to smoothening the transactional process by achieving the highest possible economic outcome. A written contract, governance as a safe-guard, is mainly used as a response to transaction hazards, opportunism, in an inter-firm relationship (Mellewigt et al., 2018). The literature led to the main research question: *What is the impact of the applied governance mechanism on opportunism experienced by buyer from the supplier and opportunistic behaviour of the buyer its selves in inter-firm relations within the European chemical bulk Sector?*

This research implied a theory-testing research and the proposition implied a probabilistic relation and tested in SPSS with a regression analysis. Governance, the dependent variable, has been classified as Formal, Relational and the mix of formal and relational governance. The variables, Asset specificity, Uncertainty, Ambiguous expectations were classified as predictors for the main variable, opportunism. Opportunism is categorized according to the article by Steinle, C., et al., 2019, in buyer opportunism and seller opportunism. A survey was hold among n=30 chemical European companies with different values of governance, the influence of the applied governance mechanism on the dependent concept opportunism was measured.

The findings showed that there is no correlation with governance and opportunism within the European bulk industry. Besides making a contribution to the current literature, this research gave a practical insight into which safeguard you could apply by which predictor, to prevent opportunism in inter-firm relations and answers the question; *what is the correct safe-guard against opportunism?* In order to prevent supplier opportunism, from the buyer point of view, the best governance mechanism to apply would be relational governance and from the supplier point of view, in order to prevent opportunistic behaviour from the buyer formal governance mechanisms should be applied in inter-firm transactions.

In inter-firm transactions there will always be a buyer and a seller and uncertainty is a predictor for both, buyer opportunism and seller opportunism, and if one is involved in this situation, the governance type mixed, relational and formal governance must be applied in intercompany transactions within the chemical European bulk sector.

1 Research design

1.1 Introduction

After getting some feeling regarding the topic of interest, further research was needed to identify and develop a research question. In this chapter this further research is described and how it led to the final research question. Started with an exploration of the scientific literature resulting in a description of the final concepts, the topics regarding these concepts ultimately led to the final research question. Only the concepts which are relevant to the final research question have been stated.

1.2 Positioning

Relevance: In several papers, e.g. Mellewigt, T., et all., (2018) & Stevens., (2015), the role of governance mechanisms and the presence of opportunism has been discussed, the studies found were done in the automobile sector and the European chemical bulk sector have, according to my findings, been left underexposed.

1.3 Conceptual model

The following two concepts are important in this research:
Governance mechanisms: defined by formal governance (very complete contracts), and the softer form, defined by relational governance mechanisms (less complete contracts or no contracts at all).
Opportunism: the degree of opportunism present within an inter-firm relationship between buyer and supplier, based on the perceived supplier opportunism by the buyer (a) and the opportunism of the buyer its selves (b). This will be defined by looking at ambiguous expectations, asset specificity and environment uncertainty.

The conceptual models are presented in figure 1.1;

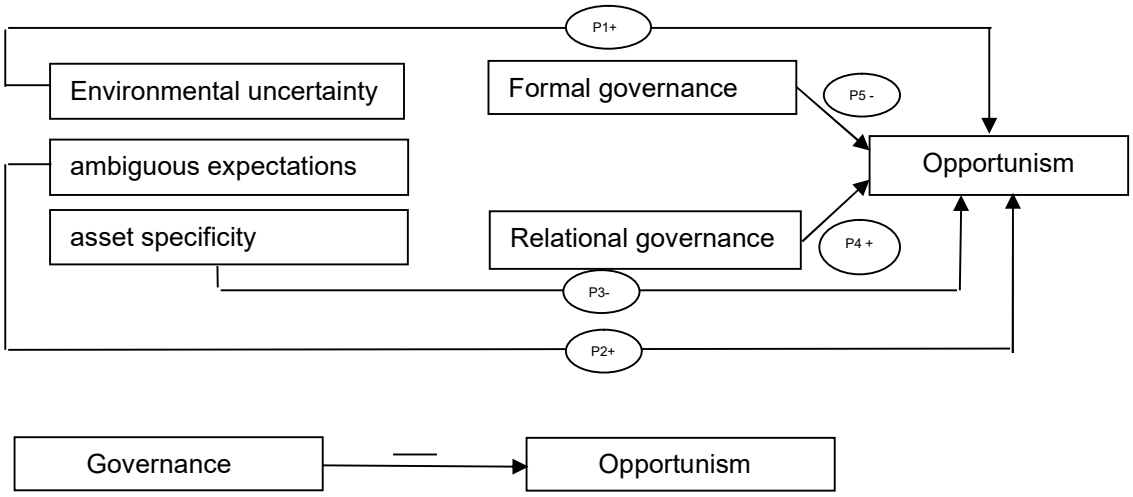


Figure 1.2

1.4 Research question

This research is focussed on two concepts: governance mechanisms and opportunism as the research question.

The research question that will be addressed is:

What is the impact of the applied governance mechanism on opportunism experienced by buyer from the supplier and opportunistic behaviour of the buyer its selves in inter-firm relations within the European chemical bulk sector?

1.5 Technical design

Research objective and strategy

According to Dul and Hak (2008) there are two research types, a practice-orientated research and the theory-orientated research. The objective of this research project was to contribute to the development of theory by investigating the role of governance mechanisms and opportunism within the European chemical bulk industry. The academic community is the primary user of the research findings. The applied research type is a theory-orientated research.

The relation I suspected between governance mechanisms and the levels of opportunism found is a probabilistic relation. A probabilistic relation is a relation in which both A and B on average increase or decrease at the same time. It is assumed that A causes B. If there is more governance, then it is likely that the levels of opportunism are lower.

Different research strategies (e.g. in relevance or best method to apply, experiment, survey, comparative case study) can be used in theory-testing research.

Experiment:
The experiment manipulates the independent concept and measures the effect on the independent concept.

Survey:
The survey establishes the statistical relation between the independent and the dependent concepts in a population of instances of the object of study.

Case study:
The case study determines the relation between the independent and the dependent concepts in one instance or a small group of instances of the object of study as it occurs in its real-life context.

Due to practical limitation of time, costs and the COVID19 crisis, it was not possible for applying the experiment as a research strategy and therefore, I suggested the second-best strategy the survey.

Domain

The cases are a mix of companies, active within the domain European chemical Industry and it was the aim for selecting cases shattered around Europe. The data was collected by conducting a survey with buyers active within the European chemical bulk Industry, with different values of the independent concept, companies who are active in formal or relational governance mechanisms, the theory has been tested.

2 Theory and object of study

2.1 Introduction

In this chapter, I briefly review the literature on the general concept inter-firm relations and the two concepts of interest, opportunism and governance mechanisms.

2.2 Opportunism

When referring to opportunism the literature commonly discussed activities including breach of contract, cheating, stealing, dishonesty and the miss presentation or withholding of information and is considered as to be inherent to many inter-firm relationships (Steinle, C., et al., 2019 and Williamson, 1979).

It was also found that not all behaviour, which has at the beginning been thought as being opportunistic, was opportunistic e.g. hard bargaining, intense and frequent disagreements (conflicts), situations in which partners for modifying the agreement, partner compensations or avoiding or neglecting a responsibility and shirking, should not be considered as opportunistic behaviour (Das and Rahman, 2009).

Functional conflicts refer to evaluative appraisal of a partner attempt to manage disagreements, if parties solve the conflict, it would benefit both parties in the long term and is therefore not considered as a sign of opportunistic behaviour as the results are contrary (Wang & Yang, 2013).

Even the role of opportunism in inter-firm relationships was debatable, as it was believed that trust or the lack of trust influenced the economic exchange and opportunism was not the correct item (Lumineau et al., 2020 and Das and Rahman, 2009.). Within the article of Stevens et al., 2015, it was told that, based on the trust repair literature, that excessive trust could lead to a situation where the organisation gets inert and will be blind for, simply not noticing, partners opportunism.

On the other hand, too less trust will lead to an ongoing state of seeking for misbehaviour, performance decline and for potential opportunistic behaviour. Mellewigt et al., 2018 also descripted that if a seller and buyer became too cosy and if there is a lack of formal contracts as a safeguard, opportunistic behaviour could appear. Within the study of Wang & Yang (2013) it was found that goal congruence had the largest influence on inter-firm opportunism and trust with commitment acted as a mayor moderating construct between inter-company opportunism.

The inter-firm relationship which has been investigated within this research is based on the transactions made between buyers and sellers. Within the transaction costs analysis, a blend of economics and organizational theory, opportunism is seen as a cornerstone, it is assumed that opportunism should be present in every inter-firm relationship and that the professionals treat opportunism as a given fact (Steinle, C., et al., 2019 and Lumineau et al., 2020). Opportunism has a negative impact on organizational performance, whether the performance measure is cost-based, revenue-based or overall business-based (Wang & Yang, 2013).

It has been thought that only sellers would act opportunistically in order for getting a contract and it has been found that the same can hold true for buyers. If buyers perceive opportunistic behaviour from a seller, it will not immediately lead to opportunistic behaviour as a counteraction. Opportunism goes against the development of mutual trust and the cooperative spirit, accentuating the perception of risk and jeopardizing the relationship (Das and Rahman, 2009).

There are cases that tolerating opportunism would be cheaper than destroying the relation and there are cases in which buyers could not always prove the prise act of opportunism, as they not possess the complete and reliable facts strengthening their perception of opportunism. (Steinle, C., et al., 2019).

The findings of the study from Steinle (2019) also provided an interesting insight that buyers regarded their own opportunistic behaviour against sellers as less vulnerable for a sound relationship, but if it turned the other way around, suppliers acted opportunistically, it was considered as not beneficial for the relationship. Steinle (2019) gave the explanation as it might be that buyers are more outside focussed and put more emphasis on managing their suppliers, than addressing the impact of their own opportunistic behaviour.

The remark which was made in the article by Steinle (2019) was that signs of opportunistic behaviour depends on the environmental surroundings and the same became clear in the article of Mellewigt et al., 2018.

It was given in the study of Mellewigt (2018) that the decision for working with another firm was based on one specific component, on a technical novelty, and the buyer and seller were forced to work with each other, the selling company could easily increase their rates. Another example given, was the fact that a supplier signed the contract even though they could not meet the wished quality norms. The quality norm descripted by the buying company was hard to measure in practice and by signing the contract, the selling company showed opportunistic behaviour as they were aware beforehand that they could not meet the standards as being requested by the buying firm.

Opportunism is a sticky concept as a buyer or seller could not know if opportunistic behaviour appears until the transaction has actually been completed (Lumineau et al., 2020). It became clear that the environmental surroundings influenced the presence of opportunistic behaviour within inter-firm transactions. There is a dearth of studies on the concept of opportunism whereby, with the thought of my research field in mind, I do follow the findings of Mellewigt et al., 2018. Within their findings they indicated the following drivers based on the transaction costs of analysis theory, within their study; technological uncertainty, ambiguous expectations and asset specificity.

Each driver is relevant in the chemical bulk industry and may be viewed as reducing the effectiveness of a particular safeguard;

Environmental uncertainty

Uncertainty refers to the unpredictability of a certain or expected outcome of the inter-firm relationship beforehand, because of unexpected or frequent changes in technology and market conditions, such as product availability, made adaptability more important (Noordewier et al., 1990).

The study of Mellewigt (2018) was hold in the automotive industry were technology is a main driver for quality and the same could be hold true for the chemical bulk industry. For instance, within the chemical bulk industry every transaction starts with specifications of the chemical product offered or bought and a mismatch could lead to dramatic consequences. If there is no match in the specifications there will be no transaction at all. Another issue within the chemical industry is the physical delivery of the product, security of supply, and as this performance is not known at forehand, even not by the supplier, this also reflects uncertainty.

Uncertainty is a driver for opportunistic behaviour that was reflected by the findings of Mellewigt (2018) and it was found that if a buying company can accurately measure the performance of suppliers and is in the position for changing easily to another supplier, (technological) uncertainty is less likely to lead to opportunistic behaviour. With other words, if a company could control the output, there will be less uncertainty resulting in less opportunistic behaviour.

Proposition 1: If the buyer is operating in an uncertain environment there will be high levels of opportunism

Ambiguous expectations

Performance ambiguous expectations is in line with uncertainty and reflects also a state in which it is hard to evaluate the efforts by forehand. A key result of ambiguity is that companies, buyers and sellers, differ in their perceptions of the same environment and in their decisions about what actions should be taken (Carson et al. 2004).

In the study of Carson et al. 2004, it is found that ambiguity also increases the likelihood of opportunistic behaviour between buyer and seller. It became clear that if the expectations between buyer and seller are unclear there is a so-called ´grey area` which could lead to opportunistic behaviour.

This thought has been confirmed by Mellewigt et al., 2018, as their findings within the automotive industry showed that by a lack of the use of contracts, contractual complexity, in combination with performance ambiguity, high levels of opportunism were found in the relationship between buyers and sellers.

Proposition 2: Ambiguous expectations in inter-firm relations have a positive effect on the levels of opportunism

Asset specificity

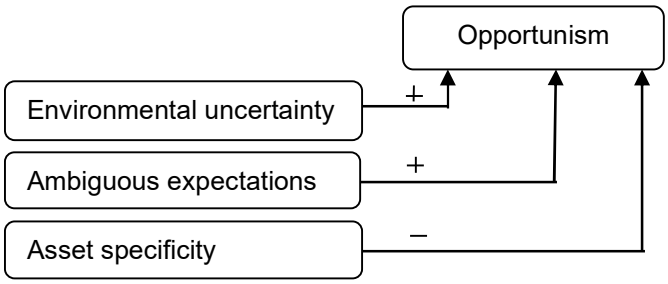
Assets are transaction specific to the extent they create more value within a given relationship than their next-best reservation in use (Carson et al. 2004). A good example within the chemical bulk industry is co-owning or sharing of a storage bulk tank whereby the supplier fills the storage bulk tank for the use of the buyer and sometimes for their own benefits. If this agreement has been made between a buyer and seller, the investment in a storage bulk tank is often shared. If the investment is shared for this particular task, it is considered as a transaction-specific investment.

Asset specificity may be present or un-present, but if it is present within an inter-firm relationship, then are firms less vulnerable for opportunistic behaviour according to the study of Das and Rahman, 2010. Within this study it was given that if there is a low level of dependency, the partner will be more likely to behave opportunistically and the reason they provided was that a partner could easily shift to another supplier. There were also signs that hierarchy could lead to a higher risk on opportunistic behaviour as a partner believes its commitment may be greater than the other partner, it might perceive a higher potential for opportunism. This was especially the case if partners were not equal in company size and this also reflects the hierarchical element combined with asset specify in relation to opportunistic behaviour.

Steinle (2019) considers situations in which rewards are only available within an inter-firm relationship based on dependency and showed that companies feel attempted to explore the situation which is a sign of opportunism. The same remark has been made in the report of Carson at al. (2004), were they state that specific assets could lead to market failure as it creates a bi-lateral monopoly situation, dependency, were a buyer and seller may be vulnerable for opportunistic behaviour by a lack of replacement.

Proposition 3: If there is an asset specificity situation in inter-firm relationships there will be low levels of opportunism

Opportunism will be measured according below items and is presented in figure 1.3;



2.3 Inter-firm governance mechanisms

The object of the transaction costs approach is for ensuring a match between the used governance mechanism in order to smoothening the transactional process by achieving the highest possible economical outcome (Williamson, 1979). Formal policies that specify

responsibilities and obligations should make opportunistic behaviour less desirable Wang & Yang, 2013. According to the transaction costs approach, it was suggested that if dependency increases and the total contractual value increases, contracts will incorporate additional safeguards in combination with a legal backup (Argyres et al., 2007).

Within the study of Lumineau et al., 2019, the role of automatization, computers, was discussed as being a safeguard to opportunism. As the exchanges process was ongoing, low levels of trust were found and the threat of opportunism was likely to concentrate in stages. The design stage showed the highest level of opportunism and automatization should be used compensatory, as a facilitator, and not as the only safeguard instrument.

Firms can deploy a wide variety of governance mechanisms as a safeguard in an attempt to mitigate the risks posed by transaction hazards and it seems to be easier to avoid arrangements that lead inevitably to high opportunism than to low opportunism, however with effective governance mechanisms in place, partners will be more confident in the inter-firm relationship with each other (Mellewigt et al., 2018).

The focus in the literature is on three prominent governance mechanisms,

1. Contracts of varying complexity,
2. Relational governance mechanisms,
3. Formal governance mechanisms.

Contracts of varying complexity

A written contract is mainly used as a response to transaction hazards in an inter-firm relationship were mutual expectations have been written down, in short, the more rules there have been written down the more complex the contract will be (Mellewigt et al., 2018).

Sophisticated contracts are an important element in many industries, especially in sectors were high technology is involved and extensive task description and contingency planning have a reciprocal positive effect on each other. As firms' contract with each other, it was seen that the contracts became more complex over time, detailed task descriptions, and this is contradictory with views of inter-firm relationships, were trust substituted for complex contracts (Argyres et al., 2007).

It would be a plausible thought that (complex) contracts will be used if companies are unknown with each other and the transaction is surrounded with ambiguity. The study of Mellewigt (2018) showed evidence for this thought by reporting that contractual complexity appeared as the sole governance mechanism if high levels of performance ambiguity are present.

Less complete contracts will allow companies for dealing in a more flexible manner to transaction hazards, but the side effect is that less complete contracts leave some room for misinterpretations and thus for the potential of opportunism. By reducing the incompleteness and behave towards more complete contracts, limits the potential for opportunistic behaviour (Argyres et al., 2007).

Contracts of varying complexity are signs of a formal governance structure and the indicators for both are combined within this research. The focus within this research is on two governance mechanisms and the mix of those two by taking them together as one variable;

1. Relational governance mechanisms
2. Formal governance mechanisms

Relational governance mechanisms

Relational governance mechanisms enhance the building of trust, social identification, is called a social-based mean of control and tend to be selected in more embedded relationships (Carson et al., 2004).

It was found in the study of Mellewigt (2018) that relational governance mechanisms in the absence of a contract may lead to a state in which a buyer and a seller feel themselves quite in a comfortable situation. This typical situation leaded to a state in which the seller was able to renegotiate the contract terms as the buyer had a `blind eye` to violations and thus to opportunistic behaviour.

Relational contracts were ineffective in containing opportunism unless supported by the monitoring of formal governance mechanisms (Mellewigt et al., 2018). On the other hand, Noordewier (1990) descripted that the adaption capabilities of more formal governance structures are enhanced by increasing relational aspects to the structure.

Which implicated that relational governance mechanisms on their own are not effective in order to prevent opportunism and if a company decides to implement relational contracting, it should be supported by more formal governance mechanisms.

Proposition 4: If relational governance mechanisms are used in a transactional relationship then high levels of opportunism are present in inter-firm relationships.

Formal governance mechanisms

In contrast to relational contracting is formal contracting based on the depersonalized means of controlling, controlling partner behaviour and output, in an intercompany relationship.

Within the study of Mellewigt (2018) it was found that if formal governance was applied as the only governance mechanism in an inter-firm relationship, it did not indicate any signs of high opportunism. Formal governance mechanisms were insufficient to achieve low levels of opportunism, but their exclusive use is not consistently associated with high opportunism either.

This contributes to the thought that the absence of formal governance makes it more likely that a company will experience high opportunism.

Proposition 5: If formal governance mechanisms are used in an inter-firm relationship then low levels of opportunism are present.

2.4 Conclusion

The theory led to the causal model as shown in figure 1.4, with governance mechanisms as independent variable and opportunism as dependent variable. In order to measure the concepts identified in this chapter, the concepts need to be operationalized and data needs to be collected in order to be able to verify my claims. This process will be further presented in chapter 3.

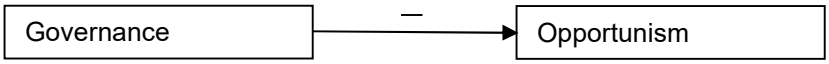


Figure 1.4

3 Data

3.1 Reliability and validity

3.1.1 Validity

Valid measurement can be achieved when the obtained scores can be considered to capture the ideas contained in the corresponding concept (Dul and Hak, 2008). To achieve this, an accurate measurement protocol for each indicator of the concepts of interest was designed.

The two variables, governance mechanism and opportunism, were measured by the following five indicators, relational or formal governance, ambiguous expectations, asset specificity and environmental uncertainty. For each of these indicators a measurement protocol was designed according to the discussed procedure, presented in appendix 1: measurement of Dul and Hak, 2008, for the development of a valid and reliable procedure for measurement of the value of a concept, the following eight attention points were given;

1. Formulate a precise definition of the concept.
2. Determine the object of measurement.
3. Identify the location of the object of measurement.
4. Specify how evidence of the value of the variable will be extracted from the object of measurement.
5. Specify how sources of evidence will be identified, selected and accessed.
6. Specify how evidence will be recorded.
7. Specify how data will be categorized.
8. Write a measurement protocol.

By performing above steps with the best insights as possible, I aimed at designing a proper measurement protocol, were the measurement methods actually measure what they were designed to measure, with a high measurement validity.

3.1.2 Reliability

Reliability is an estimate of the precision of the score obtained by a measurement and the first step is in achieving a measurement validity. The study is quantitative and the evidence is subtracted by surveys hold among European chemical bulk firms.

The survey was structured in order to enhance the reliability (Dul and Hak, 2008). To get a reliable outcome, the aim was in designing a survey in a clear and logical structure. By operationalizing the concepts, it was possible for designing a measurement protocol and for each concepts several questions were formulated. By following this procedure, it made it possible to measure what aimed was to measure in order to capture or secure reliability.

Governance was indicated within the literature as contracts of varying complexity, formal governance and relational governance mechanisms (Mellewigt et al., 2018, Argyres et al., 2007, Argyres et al., 2007, Carson et al., 2004, Noordewier, 1990). Based on pre-tests with industry members, it turned out that *contracts of varying complexity* were not clearly defined enough and made it 'vague' and therefore unusable within this research. There is always a form of a contract present underlying a transaction between Chemical bulk firms and therefore the focus within this research was on the safe guards formal governance mechanisms, relational governance mechanisms and the mix of both mechanisms in relation to opportunism. Confidentiality is highly present within the chemical bulk industry, insights in contracts will never been given and especially not by taking my own professional presence within Europe in mind. The indicators which were given in the scientific literature made it possible for measuring the degree of formal or relational governance and excluded the route by having insights in the actual contracts which could lead to troubles, not willing to cooperate and delays in further research.

The theoretical research provided the input for the measurement protocols which resulted in a structured survey and made it possible in achieving a reliable outcome.

3.2 Research method

The research I adopted, was the theory-testing research and the research depends on the proposition Mellewigt et al., 2018. The proposition implies a probabilistic relation. If there is more governance it probably will lead to lower levels of opportunism but it is not a guarantee. According to Dul and Hak, 2008, the best research strategy would be by holding an experiment. An experiment is not possible within my domain and the best next research strategy suggested was a survey. By conducting a survey active in the European chemical bulk industry, presence as trader (distributor) or producer manufacturer, with different values of governance, formal or relational, the influence of the applied governance mechanism on the dependent concept opportunism was measured.

3.3 Operationalizing the concept

After the scientific literature study, it became clear that the concepts needed to be operationalized for making them suitable for measurement. In order to measure the concepts in practice, and to

be able to develop a valid and reliable survey, the concepts needed to be further developed in measurement protocols.

3.3.1 Opportunism

The presence of opportunism within an interfirm relationship was measured according to the measurement protocol of Steinle, C., et al., 2019. Opportunism was divided in perceived opportunism from the supplier by the buyer and the measurement of buyer opportunism in inter-firm relationships within the European chemical bulk industry.

Steinle et al., have adapted the measures of perceived supplier opportunism from Jap and Anderson (2003) see appendix 8.1.. Steinle et al., have adapted and adjusted the measures of buyer opportunism from Blonska et al. (2013), after pretesting of the survey, the scale has been changed from 1= Hardly ever, 7=very often to 1=never, 5=always, see appendix 8.2 .

Opportunism was to be measured by using three drivers: uncertainty, ambiguous expectations and asset specificity. These three drivers are further defined into measurable concepts.

Uncertainty

Uncertainty was used as a driver for measuring the dependent variable opportunism (Mellewigt et al., 2018). As uncertainty refers to the unpredictability of a certain or expected outcome of the inter-firm relationship, it became clear that information is vital, because the needs are changing more rapidly (Noordewier et al., 1990). If the needs change more rapidly, adaptability became more important (Reuer, J, J. and Devarakonda, S, V., 2015). If the governance structure used for the exchange was not very adaptive, the unforeseen contingencies would result in low levels of buying transactional performance. The needs could differ due to price and volume uncertainties and market turbulence vendor related issues, could result in an easily change of the initial positive intention of the business relation. Besides the fact that information transfer between the contractor was important, it was also important for monitoring the outcomes. Auditing plans are used as an instrument for ensuring that increased information provided to suppliers is not misused by opportunistic vendors. There were also cases were even complete production plans were shared which was a sign of a high involvement between the buyer and the seller in order to reduce the uncertainty risk.

The following objects of measurement are of importance;

- Information: Auditing plans, Production plans, Complete share and usage of information. A high extent of information sharing between a buyer and a seller indicates a high extent of uncertainty.
- Adaptability: Market turbulence vendor-related issues, volatility of the market, price and volume uncertainties. A high extent of adaptability indicates a high extent of uncertainty.

See appendix 8.3

Ambiguous expectations

Ambiguous expectations could be surrounded by an inter-firm transaction, if the firm is unable to evaluate the received or ordered quality of the product and as a key result of ambiguity, is that firms, buyers and sellers, differ in their perceptions of the same environment. It implicates that there is a so-called grey area about the product quality and in their decisions about what actions should be taken. E.g. within the Chemical industry there is a commodity with the name MEG (mono-ethylene-glycol) you could think there is one quality with a purity specification, 99,4%, but in practice there are three different grades virgin, technical and regenerated with different price settings. This is not always known; it is hard for noticing it on the certificate of analysis and is a source for possible opportunistic behaviour. This was given in the literature and described as difficulties in measurement and no separability of effort across actors (Mellewigt et al., 2018, Noordewier et al., 1990).

The following objects of measurement are of importance;

- Clearness about responsibilities: mutual responsibilities. A high extent of the lack of descripted responsibilities indicates a high extent of ambiguous expectations.
- Product control: clearness about product quality, unable to, or difficulties to evaluate the product quality. A high extent of product unclearness indicates a high extent of ambiguous expectations.

See appendix 8.4

Asset specificity

Assets are transaction specific to the extent they create more value within a given relationship than their next-best reservation in use (Mellewigt et al., 2018). It implies a dependency between the buyer and the seller in order to achieve the best possible result. Within the chemical industry co-owning or sharing of a storage bulk tank could be present, in order to get the transaction done. This is a sign of sector dependency and the level increase by how the total investments are made, hierarchy, and how it is shared. To determine the level of asset specificity within the firms, there will be looked at the mechanisms, presence of asset specificity or not, and the mutual hierarchy

The following objects of measurement play an important role;

- Asset specificity may be present or un-present within transactions.
- Dependency by mutual investments: hierarchy, company size, percentage of the taken investment, easily shift to other suppliers or buyers, dependency totally depended or not at all depended. A high extent of dependency are indications for the presence of asset specificity.

See appendix 8.5

3.3.2 Inter-firm governance mechanisms

As a safeguard, companies can deploy a wide variety of governance mechanisms in an attempt to mitigate the risks posed by transaction hazards, as being specified in chapter two. Within the

Chemical industry there is always a form of a contract underlying a transaction, otherwise nothing will happen, and the form differs in their complexity. E.g. the minimal form is a short line confirmed in an Email by indicating: the product name, price, currency, unit, incoterm and final destination, with some attention points regarding to the discussed total quantity, mode of transport, road tanker, train or vessel, maximum payload and the period in which the offer is valid. In practice, it could result in;

Formaldehyde 49/1 348,- Euro a ton DDP Leverkusen

- 2400MT
- According to attached specifications
- Road tanker
- Min 24MT per lot
- 30 days nett
- Period Q3, 2020

Above is an indication of a contract with a value of 835.200,- Euro, were a company have bought 100 road tankers for delivering 2400 metric tons of Formaldehyde 49/1 to Leverkusen in Q3, 2020, this is commonly accepted within the industry and a sign of a written contract with less complexity and the more clauses or details there will be written, like for example demurrage costs treatment, the more complex the contract will be.

Trust that it will be clear that there is always a form of a contract present underlying a transaction between chemical bulk firms and therefore the focus within this research was on the safeguard's formal governance mechanisms and relational governance mechanisms.

Relational governance mechanisms

Relational governance mechanisms enhance the building of trust, social identification, is called a social-based mean of control and tend to be selected in more embedded relationships (Carson et al., 2004). This is in line with Noordewier, 1990 where was stated that the contracts which were made up between buyers and sellers have had lesser termination dates and that there was a greater expectation of repeat business with the exchange partner. (Carson et al. 2004, Reuer and Devarakonda, 2015, Argyres et al., 2007). The objects of measurement are defined as follow;

- Communication: regular meetings, formation of steering committees, open communication, information sharing, coordinating.
- Termination dates: the termination dates will be lesser which is a sign that the relational business relationship is more important than opportunistic possibilities.
- Relational history: reputation, continuity, trust, history of exchange, repeat business.

A high extent of the communication, termination dates and relational history items are signs of relational governance mechanisms.

Formal governance mechanisms

A contract typically contains agreements and more complex contracts are able to specify each of these agreements in greater detail as well as address a wider range of potential contingencies (Argyres et al., 2007, Noordewier et al., 1990). The objects of measurement are defined as follow;

- Content: rights and obligations, roles, responsibilities, goals and outcomes, performance expectations, penalties for contract violation, dispute resolution mechanisms.

- Control: audit programs, monitoring procedures, budget plans, cost breakdown methods.

A high extent of above-mentioned content and control items are indications for the presence of Formal governance mechanisms.

Governance mechanisms

In order to indicate the governance mechanism applied within the intercompany relationship it became clear, after a pre-test, that the measurement protocol, based on above objects of measurement, was to extensively constructed, time consuming and not realistic for testing it within this study. The survey questions were compressed to a straightforward and answerable question.

See appendix 8.6

3.4 Sources

Basically, there are two different types of sources for data gathering used within this research. These sources are categorized in primary and secondary data sources. Primary data is original data gathered for the specific purpose of this research and secondary data relates to already existing data which has been gathered for other purposes than this research.

The following primary data and secondary data sources has been used:

Primary data
The primary data has been gathered by conducting surveys with chemical European bulk firms.

Secondary data
The secondary data of this research has been gathered by expert literature and online resources.

3.5 Case selection

The Independent Commodity Intelligence Services (ICIS) provided me with a ranking of the world's leading Chemical producers based on 2018 sales. The list contains the top 100 Chemical Companies around the world. The domain, were the theory had to be employed, is broad and applies for all Chemical bulk firms. I limited the domain to firms which are active within the European chemical bulk market. The object of study in this research was limited to the inter-firm relationship within Europe. The cases were selected according to the presence of the companies within the European market. The cases were selected among companies who were listed or non-listed, active as a producer or trader also distributors named. The cases were held at different firms and are active in different countries within the European community.

4 Results/ Analysis

General overview

In total there were n=30 surveys hold among Chemical bulk firms scattered around Europe, the aim was to target the buyers and they have been surveyed. The surveyed persons hold the following professional functions, Chief Executive Officer (CEO) 3,3%, Buyer 83,3%, 3,3 % Product Manager (PM) and 10% as a Trader. 80% of the surveyed persons are active within the chemical bulk industry for >10 years, 16,7% between 5 and 10 years and 3,3% below 5 years. The total spend is an indication of the professional weight of the buying function and it was found that 70% of the surveyed persons have a total spend of above 1000K, 26,7% between 500 and 1000K and 3,3% between 100 and 500K.

53,3 % of the surveyed firms serve as a distributor or trader and 46,7% serve as a producer - manufacturer. 7 of the surveyed companies were listed, 23,3% and 23, which reflects 76,7% of the companies, were unlisted companies.

There businesses are squatted over Europe and 16,7% hold their office in France, 3,3% in Belgium, 6,7% in Switzerland, 40% in Germany and 33,3% were based in The Netherlands.

As the location were a person is based doesn't always reflect the responsibility area, the responsibility area has been investigated as well and 10% were responsible for the buying of Chemical bulk items in France, 3,3% in Belgium, 3,3% in Switzerland, 10% in Germany, 13,3% in the Netherlands, 6,7% in Antwerp Rotterdam Amsterdam (ARA area), 30% in Europe and 23,3% were responsible for the Global chemical bulk buying's.

Uncertainty

It was found that, 13,3% of the surveyed persons were always sharing information about production plans and off-takes with their supplier and by taking the cumulative percentage of 86,7% in mind we could conclude that in most of the cases information was shared about production plans and off-takes with their supplier.

The chemical bulk market is considered as volatile with 23,3% answered agree and 43,3% with strongly agree.

Are you sharing information about productionplans and off takes with your supplier

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	5	16,7	16,7	16,7
	Rarely	4	13,3	13,3	30,0
	Sometimes	7	23,3	23,3	53,3
	Often	10	33,3	33,3	86,7
	Always	4	13,3	13,3	100,0
	Total	30	100,0	100,0	

Table 1

The market where I am active on is volatile and surrounded with price and volume uncertainties

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6,7	6,7	6,7
	Disagree	4	13,3	13,3	20,0
	Neutral	4	13,3	13,3	33,3
	Agree	7	23,3	23,3	56,7
	Strongly agree	13	43,3	43,3	100,0
	Total	30	100,0	100,0	

Table 2

Ambiguous expectations

At the start of the business relation 43,3% agreed and 26,7% even strongly agreed that mutual interest and or goals were clear. Only in 16,7% of the cases the mutual interest and or goals were not clear at the start of the business relationship.

At the start of the business relation mutual interest and or gaols were clear

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	16,7	16,7	16,7
	Neutral	4	13,3	13,3	30,0
	Agree	13	43,3	43,3	73,3
	Strongly agree	8	26,7	26,7	100,0
	Total	30	100,0	100,0	

Table 3

The product quality was evaluated at forehand in order to prevent any ambiguity and reflect, with 50% always and 33,3%% often, a high indication. The product quality is evaluated at forehand with 83,33% of the respondents.

Are you able to evaluate the product quality at forehand

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	1	3,3	3,3	3,3
	Rarely	3	10,0	10,0	13,3
	Sometimes	1	3,3	3,3	16,7
	Often	10	33,3	33,3	50,0
	Always	15	50,0	50,0	100,0
	Total	30	100,0	100,0	

Table 4

Specific investment

In 7 of the 30 cases, 23,3%, a specific investment was done in order to facilitate the transaction and the investment was shared between the supplier 13,3% and the buyer 13,3%.

The supplier has done specific investments in order to facilitate the transaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	7	23,3	23,3	23,3
	No	23	76,7	76,7	100,0
	Total	30	100,0	100,0	

Table 5

Who has made the investment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not applicable	22	73,3	73,3	73,3
	Supplier	4	13,3	13,3	86,7
	Both	4	13,3	13,3	100,0
	Total	30	100,0	100,0	

Table 6

4.1 Measurement of perceived supplier opportunism

Frequency overview

Aloof

The surveyed persons, buyers, rarely experienced an aloof reaction toward them from the supplier indicated with 46,7% and sometimes 26,7% or often 3,3%, if never and rare were taken together the outcome is 70% and indicate low values of aloofness from the supplier towards the buyer.

The supplier is aloof towards us

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	7	23,3	23,3	23,3
	Rarely	14	46,7	46,7	70,0
	Sometimes	8	26,7	26,7	96,7
	Often	1	3,3	3,3	100,0
	Total	30	100,0	100,0	

Table 7

Hollow promises

It was found that 46,7% of the surveyed persons experienced rarely hollow promises made by the supplier and never 26,7%, but sometimes and often taken together gives the figure of 26,7% and this reflects the same outcome as never, by adding up rarely the figure exceeds never, so we could conclude that our respondents experienced hollow promises made by the supplier.

The supplier makes hollow promises

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	8	26,7	26,7	26,7
	Rarely	14	46,7	46,7	73,3
	Sometimes	6	20,0	20,0	93,3
	Often	2	6,7	6,7	100,0
	Total	30	100,0	100,0	

Table 8

Window dresses

The surveyed persons, buyers, never experienced any window dressing by the efforts made by the supplier to improve, 10%, resulting in 90% of the cases that a window dressing activity was noticed. Rarely 43,3, sometimes 26,7, often 16,7 and always with 3,3%.

The supplier `window dresses` his efforts to improve

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	3	10,0	10,0	10,0
	Rarely	13	43,3	43,3	53,3
	Sometimes	8	26,7	26,7	80,0
	Often	5	16,7	16,7	96,7
	Always	1	3,3	3,3	100,0
	Total	30	100,0	100,0	

Table 9

Faire share

The buyers, surveyed persons, felt with 36,7% sometimes that they have paid more than their fair share in a certain dispute. The good part is that 6,7% experienced it often compared with 23,3% never. But even in this section, it turned out that the surveyed persons indicated a high percentage of dishonest behaviour.

The supplier expects us to pay for more than our fair share of the costs to correct the problem

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Never	7	23,3	23,3	23,3
	Rarely	10	33,3	33,3	56,7
	Sometimes	11	36,7	36,7	93,3
	Often	2	6,7	6,7	100,0
	Total	30	100,0	100,0	

Table 10

Accepts responsibility

The balance is more on the unwillingness with, 16,7% often, 36,7% sometimes and 36,7% rarely compared with 10% never. It turned out with rarely and sometimes, both indicators of dishonest behaviour that was present during the relationship with the supplier.

The supplier is unwilling to accepts responsibility

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	3	10,0	10,0	10,0
	Rarely	11	36,7	36,7	46,7
	Sometimes	11	36,7	36,7	83,3
	Often	5	16,7	16,7	100,0
	Total	30	100,0	100,0	

Table 11

False accusations

The results showed that the buyers experienced rarely false accusations made by the supplier with 50% and never with 30%. Sometimes with 16,7% and 3,3% experienced a charge or claim that they did something wrong.

The supplier makes false accusations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	9	30,0	30,0	30,0
	Rarely	15	50,0	50,0	80,0
	Sometimes	5	16,7	16,7	96,7
	Often	1	3,3	3,3	100,0
	Total	30	100,0	100,0	

Table 12

False information

The buyers, surveyed persons, rarely received false information from the supplier indicated with 53,3% and even 26,7% answered that they never received any false information from the supplier. Sometimes 16,7% and often 3,3%.

The supplier provides false information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	8	26,7	26,7	26,7
	Rarely	16	53,3	53,3	80,0
	Sometimes	5	16,7	16,7	96,7
	Often	1	3,3	3,3	100,0
	Total	30	100,0	100,0	

Table 13

Proper notification

The difference in information and notification is the urgency, urgency of a truck or vessel which arrives too late for example. The balance is shifted to sometimes with 40%, 23,3% often and rarely 33,3%. The low percentage of 3,3% for never reflects the urgency and difference in outcome compared to false information.

The supplier fails to provide proper notification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	1	3,3	3,3	3,3
	Rarely	10	33,3	33,3	36,7
	Sometimes	12	40,0	40,0	76,7
	Often	7	23,3	23,3	100,0
	Total	30	100,0	100,0	

Table 14

SPSS outcome multiple linear regression test, supplier opportunism

Adjusted R square means that the number of explanatory variables in the model has been taken into account when calculating the explained variance.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,555[a]	,308	,128	,45834

a. Predictors: (Constant), Governance Formeel, Governance Relationeel, Asset specificity supplier, Uncertainty, Ambiguous expectations, Governance Mixed

Table 15

The Model Summary shows that the adjusted R square = 0.128. With other words; about 13% of the variation in Supplier Opportunism can be explained by the predictors: Governance Formal, Governance relational, Governance mixed, Asset specificity supplier, Uncertainty and Ambiguous expectations.

The Model Summary shows an adjusted R square of 0,128 which implies a negligible correlation (0.2> R> -0.2), between Supplier Opportunism and the predictors: Governance Formal, Governance relational, Governance mixed, Asset specificity supplier, Uncertainty and Ambiguous expectations.

The F-test in the ANOVA table tests the null hypothesis within this research.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2,152	6	,359	1,707	,164[b]
	Residual	4,832	23	,210		
	Total	6,984	29			

a. Dependent Variable: Supplier Opportunism

b. Predictors: (Constant), Governance Formeel, Governance Relationeel, Asset specificity supplier, Uncertainty, Ambiguous expectations, Governance Mixed

Table 16

The analysis shows that there is no significant linear relationship between the dependent variable (P= <0,05, Sig. 0,164): Supplier Opportunism and insufficient significance with one of the independent X variables.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	**(Constant)**	1,764	2,481		,711	**,484**
	Uncertainty	-,179	,101	**-,341**	-1,780	**,088**
	Ambiguous expectations	-,168	,115	-,290	-1,456	,159
	Asset specificity supplier	,024	,200	,023	,121	,905
	Governance Relationeel	,166	,544	**,103**	,306	**,762**
	Governance Mixed	,412	,479	,341	,861	,398
	Governance Formeel	,523	,591	,270	,885	,385

a. Dependent Variable: Supplier Opportunism

Table 17

Within the Coefficients Model the t-test shows that the relationship between Uncertainty (Sig. 0,088), Ambiguous Expectations (Sig. 0,159), Governance mixed (Sig. 0,398) and Governance Formal (Sig. 0,385) is significant (Constant p <0.484).
The relation between Asset specificity supplier (Sig. 0,905) is not significant (Constant p <0.484) and also the Governance Relational (Sig. 0,762) are not significant to Supplier Opportunism.

A standardizes Coefficients Beta compares the strength of the effect of each individual independent variable to the dependent variable which means that the relative importance of each coefficient, in a regression model, can be compared. With other words, the higher the absolute value of the beta coefficient, the stronger the effect will be.

Figure 1.3 shows that opportunism was measured by the independent variables; environmental uncertainty, ambiguous expectations and asset specificity. Uncertainty has a standardized beta coefficient with a value of -,341 and has the largest impact on supplier opportunism, which implicates that the model shows that with every increase of one standard deviation increases with -0,341, followed by ambiguous expectations with -0,290. It turned out that asset specificity supplier has the least impact on supplier opportunism with a standardized beta coefficient of 0,023.

As discussed and shown in the conceptual model figure 1.1, the emphasis is on the safeguards against opportunism. The safeguards have been classified as formal governance, relational governance and the mixture of them, the independent variables. The model shows that with every increase of one standard deviation governance mixed increases with 0,341 and has the largest effect on supplier opportunism, followed by formal governance 0,270 and the least impact safeguard is relational governance with a standardized beta coefficient with a value of 0,103.

Above implies that the best safeguard against supplier opportunism is the one with the least impact and therefor relational governance should be applied.

See appendix 8.7

4.2 Measurement of perceived buyer opportunism

Frequency overview

Count on us

With an outcome of 66,7 % the surveyed persons, buyers, indicated that the supplier could always count on the promises made by the respondents, buyers, 30,0% answered often and 3,3% with sometimes. The interesting part about the outcome is that the buyers are considering themselves, as a person who does always keep their promises, as they neglected the option never, it has not been given by one of the 30 respondents.

The supplier can always count on us following through on our promises

	N	%
Sometimes	1	3,3%
Often	9	30,0%
Always	20	66,7%

Table 18

Decisions and reciprocal interest

The surveyed persons, buyers are considering with 60,0% the supplier's interest as well as their own in making a decision, 23,3% sometimes and 3,3% never. 13,3% replied for always considering both interests.

When making decisions, we consider the supplier´s interest as well as our own

	N	%
Never	1	3,3%
Sometimes	7	23,3%
Often	18	60,0%
Always	4	13,3%

Table 19

Trust and interest

The results showed that 53,3% of the surveyed persons, buyers, keep the best interest of the supplier in mind and 36,7% often. Sometimes 6,7% and rarely 3,3% and again the option never was neglected.

The supplier can trust that we keep his best interest in mind

	N	%
Rarely	1	3,3%
Sometimes	2	6,7%
Often	11	36,7%
Always	16	53,3%

Table 20

Honesty

The surveyed persons, buyers, are considering themselves as being honest with the supplier by answering 70% with always and 30% with often. The options sometimes, rarely and never were completely neglected.

We are honest with this supplier

	N	%
Often	9	30,0%
Always	21	70,0%

Table 21

SPSS outcome multiple linear regression test, buyer opportunism

Adjusted R square means that the number of explanatory variables in the model has been taken into account when calculating the explained variance.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,718[a]	,515	,389	,27984

a. Predictors: (Constant), Governance Formeel, Governance Relationeel, Asset specificity supplier, Uncertainty, Ambiguous expectations, Governance Mixed

Table 22

The Model Summary shows that the adjusted R square = 0.389. With other words; about 40% of the variation in Buyer Opportunism can be explained by the predictors: Governance Formal, Governance relational, Governance mixed, Asset specificity supplier, Uncertainty and Ambiguous expectations.

The Model Summary shows an adjusted R square of 0,389 which implies a moderate correlation (0.4> R> 0.2), between buyer opportunism and the predictors: Governance Formal, Governance relational, Governance mixed, Asset specificity supplier, Uncertainty and Ambiguous expectations.

The F-test in the ANOVA table tests the null hypothesis within this research.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,916	6	,319	4,077	,006[b]
	Residual	1,801	23	,078		
	Total	3,717	29			

a. Dependent Variable: Buyer Opportunism

b. Predictors: (Constant), Governance Formeel, Governance Relationeel, Asset specificity supplier, Uncertainty, Ambiguous expectations, Governance Mixed

Table 23

The analysis shows that there is a significant linear relationship between the dependent variable (P= <0,05, Sig. 0,006): Buyer Opportunism and at least one of the independent X variables.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1,741	1,514		1,150	**,262**
	Uncertainty	,215	,062	**,560**	3,493	**,002**
	Ambiguous expectations	,071	,070	,167	1,004	,326
	Asset specificity supplier	,141	,122	,183	1,155	,260
	Governance Relationeel	,488	,332	,416	1,469	,155
	Governance Mixed	,216	,292	,246	,739	,467
	Governance Formeel	,088	,361	**,063**	,245	**,809**

a. Dependent Variable: Buyer Opportunism
Table 24

Within the Coefficients Model the t-test shows that the relationship between Uncertainty (Sig. 0,002), asset specificity supplier (Sig. 0,260) and Governance relational (Sig. 0,155) is significant (Constant p <0.262).
The relation between Ambiguous expectations (Sig. 0,326) is not significant (Constant p <0.262) and also the Governance mixed (Sig. 0,467) and Governance Formal (Sig. 0,809) are not significant to Buyer Opportunism.

A standardizes Coefficients Beta compares the strength of the effect of each individual independent variable to the dependent variable which means that the relative importance of each coefficient, in a regression model, can be compared. With other words, the higher the absolute value of the beta coefficient the stronger the effect.

As discussed and shown in Figure 1.3, opportunism is measured by the variables; environmental uncertainty, ambiguous expectations and asset specificity. Uncertainty has a standardized beta coefficient with a value of 0,560 the largest impact on Buyer opportunism, which implicates that the model shows that with every increase of one standard deviation increases with 0,560, followed by asset specificity 0,183 and ambiguous expectations with a standardized beta coefficient value of 0,167.

The conceptual model figure 1.1 showed that the emphasis was on the safeguards against opportunism. The safeguards have been classified as formal governance, relational governance and the mixture of them. The model shows that with every increase of one standard deviation governance relational increases with 0,416 and has the largest effect on buyer opportunism, followed by governance mixed 0,246 and the least impact safeguard is formal governance with a standardized beta coefficient with a value of 0,063.

Which implies that the best safeguard is the one with the least impact and therefor formal governance should be applied against buyer opportunism.

See appendix 8.8

4.3 Conclusion

The model dependent Supplier Opportunism showed a negligible correlation, adjusted R square of 0,128, and the dependent Buyer Opportunism showed a weak correlation, adjusted R square of 0,389. The Anova model was significant, whereby p=<0,05, for buyer opportunism, 0,006, and not significant for Supplier Opportunism 0,164.

The Coefficients model, compared to both measures, was uncertainty the predicable for supplier opportunism were the Coefficients model showed a constant significance indicator of 0,484 and a uncertainty significance indicator of 0,088 with a standardized coefficients beta of -0,341 which has the largest impact on supplier opportunism. The predicable for buyer opportunism was also uncertainty with a constant significance indicator of 0,262 and a sig. uncertainty of 0,002 with a standardized coefficients beta of 0,560 and has had the largest impact on buyer opportunism.

The coefficients model showed that formal governance was the best safeguard against buyer opportunism with a standardized beta coefficient of 0,63 in combination with a significance indicator of 0,809 which reflected no significance with buyer opportunism (Sig.0,262). The coefficients model showed that relational governance was the best safeguard against supplier opportunism with a standardized beta coefficient of 0,103 in combination with a significance indicator of 0,762 which reflected no significance with buyer opportunism (Sig. 0,484).

These findings will be compared with the theory, as been given in chapter two, with the theory in chapter five resulting by answering the research question.

5 Conclusions and recommendations

5.1 Theory vs Data

The literature commonly discussed opportunism as activities including breach of contract, cheating, stealing, dishonesty and the miss presentation or withholding of information and is considered to many inter-firm relationships (Steinle, C., et al., 2019 and Williamson, 1979).

Opportunism is a sticky concept as a buyer or a seller could not know if opportunistic behaviour appears until the intercompany relation or transaction has actually been completed (Lumineau et al., 2020).

Uncertainty referred to the unpredictability of a certain or expected outcome of the inter-firm relationship beforehand, because of unexpected or frequent changes in market conditions (Noordewier et al., 1990)

Unexpected or frequent changes in market conditions is considered as volatility within the chemical sector and the surveyed persons, n=30, experienced their market as volatile with 23,3% and strong volatile with 43,3%.

The conclusion could be made that the respondents, chemical firms, are active in a volatile environment surrounded with uncertainties. The literature has led me to **proposition 1**, *If the buyer is operating in an uncertain environment there will be high levels of opportunism,* and it could be hold true according to both cases Buyer and Supplier opportunism. This implicates that if the uncertainty increases the potential for opportunistic supplier and buyer behaviour increases and this is corresponding to the literature.

Ambiguous expectations appears if a company is unable to evaluate the received or ordered quality at the beginning of the intercompany transaction and it especially appears when the buyer and the seller differ in their perceptions of the same environment by a lack of measurement attributes or no separability of efforts across them (Mellewigt et al., 2018).

In the study of Carson et al., 2004, it was found that ambiguity increased the likelihood of opportunistic behaviour in intercompany relationships and led me to **proposition 2**, *Ambiguous expectations in intercompany relations has a positive effect on the levels of opportunism.* The proposition could be hold for true for Supplier Opportunism, with other words if the inter-firm transaction is surrounded with ambiguity the potential for supplier opportunism increases accordingly. The findings are contrary to Buyer Opportunism in which the ambiguity increases it is not correlated to opportunism and was also reflected by a low standardized coefficients beta indicator.

Carson et al., 2004 argued that specific assets could lead to market failures as it creates a bilateral monopoly situation, dependency, were a buyer and seller may be vulnerable for opportunistic behaviour by a lack of replacement. Assets are transaction specific to the extent they create more value within a given relationship than their next-best reservation in use (Mellewigt et al., 2018). Above the side effects of asset specificity were meant but the study of Das and Rahman, 2010 explained that if there is a low level of dependency the partners will be more likely to explore the situation and in an asset specificity situation the firm will be less vulnerable to opportunism. This thought or theory has led to **proposition 3**, If *there is an asset specificity situation in intercompany relationships there will be low levels of opportunism.*

The findings show no correlation and a low standardized coefficients beta, to asset specificity and supplier opportunism, so in cases were the supplier has invested accordingly it will not lead to opportunistic behaviour. In cases were asset specificity occurs other behaviour could be expected from the buyer side as it turned out that buyer opportunism is correlated with asset specificity.

Inter-firm transactions are burdened with high potential opportunism when they are characterized by factors that either limit the firm's ability to neutralize attempted opportunism on the part of their partner or increase the likelihood of unpredicted (or unpredictable) contingencies, which creates the occasion for opportunistic behaviour (Mellewigt, et al., 2018).

The object of the transaction costs approach is for ensuring a match between the used governance mechanism in order to smoothening the transactional process by achieving the highest possible economical outcome (Williamson, 1979). The approach of Williams may be hold for a classical one but it is still true and the core within a business or inter-firm transaction context. A central assumption in transaction cost economics (TCE) is that the threat of opportunism is inherent in economic inter-firm transactions (Lumineau, et al., 2019).

According to the studies of Mellewigt et al., 2018 and Carson et al., 2004, it was found that relational governance leaded to a grey area and this so-called grey area could lead to a high potential of opportunistic behaviour. These thoughts have led me to **proposition 4**, *If relational governance mechanisms are used in a transactional relationship then high levels of opportunism are present in inter-firm relationships.* It turned out that if relational governance was used the buyer could show opportunistic behaviour as the correlation was positive and the standardized coefficients beta showed the highest number. On the other hand, there was no correlation between relational governance and supplier opportunism and was reflected by the lowest standardized beta coefficient beta.

Wang & Yang, 2013 have found in their study that formal policies that specify responsibilities and obligations should make opportunistic behaviour less desirable. Which stimulated the thought that formal governance should lead to low levels of opportunism. This thought has been supported by the study of Mellewigt et all., 2018 were it was found that formal governance as an only safe guard did not lead to high signs of opportunism. Both studies supported the idea for **proposition 5**, *If formal governance mechanisms are used in an intercompany relationship then low levels of opportunism are present.*

The outcome of the supplier regression analysis was not in line with the theory as there was a correlation found that if the formal governance increases the threat for opportunism increased accordingly, with a second high standardized coefficients beta indicator, which is contradictory to the theory. From a buyer opportunism perspective, there was no correlation between formal governance and opportunistic behaviour and the standardized coefficients beta reflected the lowest indication, the findings do respect the theory.

Within this research is was interesting for investigating the mixed variant of governance which implied the mix of relational and formal governance, as a safeguard to opportunism. Mellewigt et al., 2018 wrote that relational contracts were ineffective unless supported by the monitoring of formal governance and Noordewier, 1990 wrote that formal governance should be supported by relational governance for their adapting capabilities.

It was not an official proposition within my research, but it was worth for investigating it if these findings hold also true within the European chemical industry. It turned out that if the governance mixed variant was used it will not lead to more opportunistic behaviour from the buyer perspective, supported with the second lowest standardized beta coefficients indicator, so the theory stands from the buyer's perspective. From the supplier perspective there was a correlation found between governance type mixed and opportunistic behaviour and the standardized beta coefficients indicators showed the highest and second highest indication which implies that from a supplier perspective the formal and relational mixed governance is not a suitable safeguard to opportunism.

To finalize, I would like to bring up the study of Steinle et al., 2019 were they wrote that buyers regarded their own opportunistic behaviour against sellers as less vulnerable for a sound relationship, but if it turned the other way around, suppliers acted opportunistically, it was considered by the buyers as vulnerable for the inter-firm transaction. Within my findings it could also hold for true and supports the theory that buyers are more outside focussed and put more emphasis on managing their suppliers, than addressing the impact of their own

5.2 Conclusion

With regards to the research question as formulated in paragraph 1.4;

What is the impact of the applied governance mechanism on opportunism experienced by buyer from the supplier and opportunistic behaviour of the buyer its selves regrading to the supplier within the European Chemical bulk sector?

This research has led to the conclusion that the relationship between governance and opportunism within the chemical bulk industry as formulated in the main research question is not present.

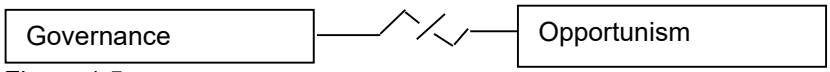
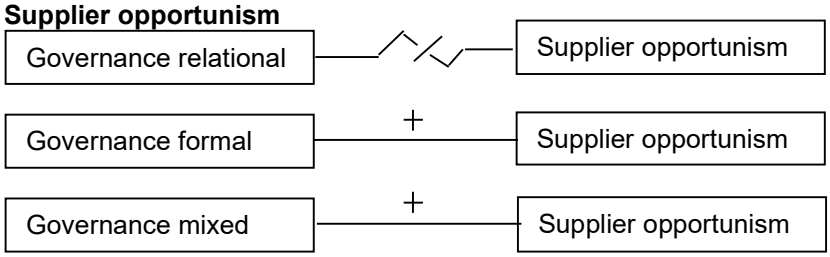


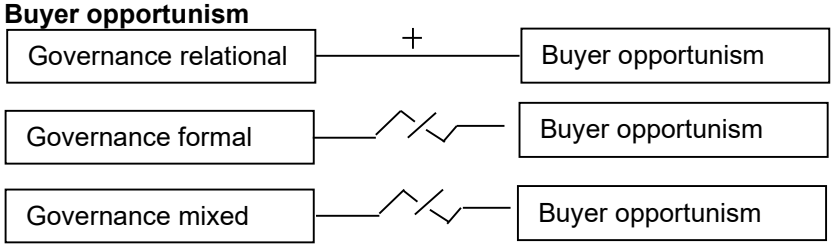
Figure 1.5

Within this research a separation has been made between supplier and buyer opportunism, dependent variables, and the governance mechanisms, independent variables or predictors, were separated in governance types Relational, Formal and the Mixture of both, Relational and Formal, of the governance mechanisms applied within the Chemical European bulk sector.

Supplier opportunism



Buyer opportunism



What is the correct safe-guard against opportunism? In order to prevent supplier opportunism, from the buyer point of view, the best governance mechanism to apply would be relational governance, standard coefficient beta lowest 0,103 with no significance to the dependent variable, and from the supplier point of view, in order to prevent opportunistic behaviour from the buyer, formal governance mechanisms should be applied with no significance to opportunism and the lowest indicator of the standardized beta coefficient, in inter-firm transactions.

In inter-firm transactions there will always be a buyer and a seller and if both parties would like to construct a contract with each other in an open and fair manner, the advice is to go for the mixed

form. But the finding showed that the buyer needs to be prepared for some opportunistic behaviour from the supplier, by applied this type of safeguard.

5.3 Limitations and recommendations

This study has had several limitations and provided some insights which could be used for future research. First of all, this research was done during the COVID19 crisis and it would be interesting for examining the outcomes of my research in a more normalised economic environment.

The question appeared, what is a normal chemical bulk sector environment? The COVID19 crises was faced with a tremendous back lock in the supply of raw materials, feedstocks, and the lack of demand which totally stood still in the months, end of March, April and May. As we haven´t experienced a crisis like the COVID19 before, it caused a lot of uncertainty all around the world, resulted in quantity and price fluctuations, a tremendous drop in raw material, feedstock and prices in general. The month which followed, June, showed a strong upturn in demand, the bullwhip-effect appeared and also the month July was reflected with a lot of uncertainty. As those months in the year 2020 were considered as more than extreme conditions, it would be interesting for holding this research again in a more quiet or normalised economic environment in order to find out if the outcomes of this research still hold true.

Based on the ICIS top 100 chemical companies, the main idea was for surveying firms scattered around Europe with different legal personalities. It turned out that the most firms, which were listed companies, were quite septic about questions around governance and email suggestions were completely neglected. It was hard for receiving data input and even telephonic appointments turned out by emailing the survey which was followed by a long, long, very long period, which even hold on at this moment of time, of an eerie stillness.

As the data was needed for finalizing this research, in order to result in sound conclusions, I have called all the firms and took the surveys personally. I have tried to appear as neutral as possible, however my presence in the European market is known, it could be that the companies have provided desirable answers, which could has led to a possible bias for some interviewed persons.

Insights in contracts, individual governance policies were not given and completely shielded, therefor the outcomes are based on the good insights of the surveyed persons. The governance measurement protocol I have built, see paragraph 3.3.2, was too extensively constructed within my research and therefor some straight forwarded questions were asked for determining the applied governance structure. Even there could be a bias of insights and provided wishful answers from the interviewed persons.
Within the study of Argyres et al., 2007, it was given that as two partners contract with each other overtime they tend to included more, not less, contingency planning in their contracts. The extensiveness of task description and contingency planning have a reciprocal positive effect on each other and it would be interesting for finding out if this holds also true within the Chemical European bulk industry. Within the same study of Argryres et al., 2007 it was told that by reducing the incompleteness and behave towards more complete contracts, the potential for opportunistic behaviour will be limited. So, if firms work with each other for a longer period of time the relational aspect become more important or present and then it will result in more detailed contracts with

positive reciprocal effects and limited opportunism? This would be interesting for investigating it within the European chemical bulk industry if this proposal could be hold for true within the sector.

Above is contradictory with views of interorganizational relationships that emphasise that trust tends to substitute for detailed contracts as such relationships develop over time. This idea is based on the study of Stevens et al., 2015 and it is based on the trust repair literature and inter-organizational relationships.

The definition is not completely correct as the main focus within my research is inter-firm transactions between buyer and sellers. On the other hand, if firms at a certain point end up in a holding structure, you quickly speak of a collection of legal entities or a collection of individual firms overshadowed by a holding entity. With this being told, the theory of Stevens et al., 2007 could be used for this discussion.

Within my perspective it was told in this article that a firm should find the optimal trust level in order to prevent misbehaviour in inter-firm transactions which basically is opportunistic behaviour according to my definition. But is it really the lack or the abundance of trust that will lead to opportunism? With other words is trust the correct predictor for opportunistic behaviour? It is worthwhile for investigating the predictor in future research within the European Chemical bulk sector.

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8 Appendixes

8.1 Measures of perceived supplier opportunism

When a problem occurs, how often will the supplier do the following? (1=never, 5=always)

Adapted from Jap and Anderson (2003) P.1697, AVE=0.702, CR=0.949 α=0.90

The supplier makes hollow promises.
The supplier is aloof toward us.
The supplier window dresses his efforts to improve.
The supplier expects us to pay for more than our fair share of the costs to correct the problem.
The supplier is unwilling to accepts responsibility.
The supplier makes false accusations.
The supplier provides false information.
The supplier fails to provide proper notification.

8.2 Measures of buyer opportunism

The supplier can always count on us following through on our promises.

Adapted and adjusted from Blonska et al. (2013) AVE=0.584, CR=0.848

When making decisions, we consider the supplier´s interest as well as our own.
The supplier can trust that we keep his best interest in mind.
We are honest with this supplier.

8.3 Measures uncertainty

Are you sharing information about production plans and off takes with your supplier? (1=never, 5=always)
The market where I am on is volatile and surrounded with price and volume uncertainties. (1=strongly disagree, 5=strongly agree)

8.4 Measures ambiguous expectations

At the start of the business relation mutual interest and or goals were clear. (1=strongly disagree, 5=strongly agree)
Are you able to evaluate the product quality at forehand? (1=never, 5=always)

8.5 Measures asset specificity

The supplier has done specific investments in order to facilitate the transaction
(1=yes, 2=no)
Who has made the investment?
(1=supplier, 2=buyer, 3=both)

8.6 Measures governance mechanism

Which governance mechanism is applied?
(1=formal, 2=relational, 3=mixture of formal + relational, 4=none, 5=other)

8.7 SPSS supplier opportunism

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Governance Formeel, Governance Relationeel, Asset specificity supplier, Uncertainty, Ambiguous expectations, Governance Mixed[b]	.	Enter

a. Dependent Variable: Supplier Opportunism
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,555[a]	,308	,128	,45834

a. Predictors: (Constant), Governance Formeel, Governance Relationeel, Asset specificity supplier, Uncertainty, Ambiguous expectations, Governance Mixed

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2,152	6	,359	1,707	,164[b]
	Residual	4,832	23	,210		
	Total	6,984	29			

a. Dependent Variable: Supplier Opportunism

b. Predictors: (Constant), Governance Formeel, Governance Relationeel, Asset specificity supplier, Uncertainty, Ambiguous expectations, Governance Mixed

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1,764	2,481		,711	,484
	Uncertainty	-,179	,101	-,341	-1,780	,088
	Ambiguous expectations	-,168	,115	-,290	-1,456	,159
	Asset specificity supplier	,024	,200	,023	,121	,905
	Governance Relationeel	,166	,544	,103	,306	,762
	Governance Mixed	,412	,479	,341	,861	,398
	Governance Formeel	,523	,591	,270	,885	,385

a. Dependent Variable: Supplier Opportunism

8.8 SPSS buyer opportunism

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Governance Formeel, Governance Relationeel, Asset specificity supplier, Uncertainty, Ambiguous expectations, Governance Mixed[b]	.	Enter

a. Dependent Variable: Buyer Opportunism

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,718[a]	,515	,389	,27984

a. Predictors: (Constant), Governance Formeel, Governance Relationeel, Asset specificity supplier, Uncertainty, Ambiguous expectations, Governance Mixed

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,916	6	,319	4,077	,006[b]
	Residual	1,801	23	,078		
	Total	3,717	29			

a. Dependent Variable: Buyer Opportunism

b. Predictors: (Constant), Governance Formeel, Governance Relationeel, Asset specificity supplier, Uncertainty, Ambiguous expectations, Governance Mixed

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1,741	1,514		1,150	,262
	Uncertainty	,215	,062	,560	3,493	,002
	Ambiguous expectations	,071	,070	,167	1,004	,326
	Asset specificity supplier	,141	,122	,183	1,155	,260
	Governance Relationeel	,488	,332	,416	1,469	,155
	Governance Mixed	,216	,292	,246	,739	,467
	Governance Formeel	,088	,361	,063	,245	,809

a. Dependent Variable: Buyer Opportunism