Does Customer Perceived Risk Mediate the Relationship Between Service Guarantees and Customer Satisfaction?

An empirical study on the provisioning of fleet management telematic services in the European heavy goods vehicle (HGV) road freight transport industry.

Thesis

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Getting this report in front of you was the last effort I had to make to complete the Master of Science in Management course at the Dutch Open University. The reason for choosing this subject is that I wanted to do research in the area I am currently employed and combine this with a topic (service guarantees) that was mandatory, but had interesting content during the ASM phase of my Masters. Although writing this thesis started as a struggle, after getting in place the first proposal and defining the literature part, I eventually got joy out of it and managed to proudly get this fine piece of work in front of you all.

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Without you all I would never have succeeded, thank you!

Jacco Hovens

September 24th 2013
Abstract
The competition in the European fleet management industry has intensified and pushed pricing to a point where there is virtually no room for profitability. Even though the HGV road freight transport industry acknowledges the potential benefits of fleet management solutions, they often continue inefficient businesses. Low cost, low service solutions are used rather than maximizing utility in making investments and thereby creating value perceived by their customers.

Therefore, it is important for fleet management providers to position their marketing activities seeing the world through their customers’ eyes, in order to determine customer perceived risk lacking these investments. Besides, in order for fleet management providers to attract and retain customers, and gain a competitive edge in the marketplace, both practitioners and academics consider service guarantees an effective means to do so.

In addition to this, the main objective of this study was to investigate the mediating role of customer perceived risk on the relationship between the perceived service guarantees and customer satisfaction. This study aims to provide fleet management providers a better understanding of determining to what extent perceived risk reduces the expected relationship between service guarantees and customer satisfaction. This could assist them in mapping out their strategy in order to reduce customer perceived risk and to achieve and maintain a superior competitive position in the fleet management industry.

This research can be classified as explanatory in which a deductive research approach involves the quantitative testing of hypotheses. Convenience sampling was used to send a self-administrated questionnaire to a population of 9500 European HGV road freight transport companies residing in Austria, Belgium, France, Germany, the Netherlands, Poland, Portugal, Spain and the United Kingdom. The questionnaire consists of items that were adapted from previous studies.

The questionnaires were first tested by a panel of ten experts to assess whether there were misunderstandings or ambiguities of expressions to check for content validity. Reliability of the measures was conducted via a pilot study among HGV road
freight transport customers to deal with matters as instructional clarity, item clarity, and relevance. Data were gathered through an online survey, using Survey Monkey.

A total of 60 valid responses were included in the data analysis using structural equation modeling involving partial least squares (PLS). To ensure the appropriateness of the measurement model, the unidimensionality, reliability and validity of the scale are assessed. Both Cronbach’s Alpha and factor loadings are used to test the unidimensionality of the model. Significance is verified via bootstrapping by which parameter estimates are obtained by generating subsamples with replacement from the original data.

Findings indicate that the presence of a service guarantee positively influences customer satisfaction and reduces the perception of risk. But, in contrast to prior studies, this research found no support for perceived risk to influence customer satisfaction. These findings imply that perceived risk does not mediate the relationship between service guarantees and customer satisfaction.

Compared to previous studies, the findings of this study reveal that performance as well as perceived financial risk in the European HGV road freight transport industry is not to be seen as significant predictors of customer satisfaction.

Limitations exist due to the study design. First, the number of respondents and the response rate are limited. Furthermore, even though this study tried to control its effects, it must be noted that common method bias also could have its influence on this study and therefore runs the risk of reporting incorrect research results. Also, as shown in prior literature, there exists many other service guarantee design elements influencing customer satisfaction and perceived risk. Furthermore, different outcomes of service guarantees (loyalty, price perception, quality) could be incorporated for future research. The same applies for the different aspects of perceived risk, for this research only addresses the financial and performance aspects, whilst time, physical, psychological, and social risk can also be included. In addition to, and in line with many prior studies, this research focuses on the pre-purchase perceptions of risk, whilst future research could examine how the elements of risk influence the post-purchase experience of satisfaction.
Table of contents

Acknowledgements ........................................................................................................... I
Abstract ............................................................................................................................. II
Table of contents .............................................................................................................. IV
List of figures .................................................................................................................... V
List of tables ..................................................................................................................... V
List of appendices ............................................................................................................ V

1. Introduction .................................................................................................................. 6
1.1. Thesis outline ............................................................................................................. 8

2. Literature review ......................................................................................................... 9
2.1. Customer satisfaction ............................................................................................... 9
2.3. Service guarantees .................................................................................................. 10
2.4. Service guarantees and customer satisfaction ....................................................... 11
2.5. Perceived risk .......................................................................................................... 12
2.6. Service guarantees and perceived risk ................................................................. 13
2.7. Perceived risk and customer satisfaction ............................................................. 14
2.8. The mediation role of perceived risk ..................................................................... 15

3. Methodology ................................................................................................................ 16
3.1. Purpose of research ............................................................................................... 16
3.2. Research approach ............................................................................................... 16
3.3. Research strategy ................................................................................................. 17
3.4. Sample selection ................................................................................................. 18
3.5. Measurement items .............................................................................................. 18
3.6. Data collection .................................................................................................... 19
3.7. Analysis of data .................................................................................................... 20
3.8. Measurement model ............................................................................................ 20

4. Findings ....................................................................................................................... 22
4.1. Profile of respondents .......................................................................................... 22
4.3. Structural model ................................................................................................... 23
4.3.2 Mediation analysis ............................................................................................. 25

5. Discussion, implications and recommendations ......................................................... 27
5.1. Discussion ............................................................................................................. 27
5.2. Academic contribution ......................................................................................... 28
5.3. Managerial implications ....................................................................................... 29
5.4. Limitations and future research ........................................................................... 30

Bibliography ................................................................................................................... 32
Appendices ....................................................................................................................... 38
List of figures
Figure 1 Research model .................................................................15
Figure 2 Country of respondents .......................................................22
Figure 3 Results structural model ......................................................24
Figure 4 Mediation analysis ..............................................................25

List of tables
Table 1 SmartPLS quality criteria ......................................................20
Table 2 Principal component analysis ...............................................21
Table 3 Sobel test result .................................................................26

List of appendices
Appendix 1: FMS cost cutting areas ..................................................38
Appendix 2: Survey cover letter .......................................................39
Appendix 3: Questionnaire labels and survey .....................................40
Appendix 4: Measurement model ......................................................49
Appendix 5: Profile of respondents ....................................................50
Appendix 6: Sobel test parameters ....................................................51
1. Introduction

The European fleet management industry has entered a growth period that will last for several years to come, mainly because competition has intensified due to span of the industry in which the opportunities of the pervasive nature of telematics are being used. According to Fagerberg (2012) there are simply too many players providing fleet management services and the very intense competition has sometimes pushed pricing to a point where there is no room for profitability. Besides, in most countries where vehicle fleets have a central role in day-to-day operations, customers are becoming more demanding in terms of services, particularly in the area of fleet management services.

These customers, in this case, the European heavy goods vehicle (HGV) road freight transport industry, meet their customer demands for higher service levels at lower costs (FTA/PwC, 2012). As transportation operating margins are normally less than 5 per cent, fleet operators face both internal and external challenges to improve their services and to remain competitive. Fleet management solutions, defined by Fagerberg (2012) as “a vehicle-based system that incorporates data logging, satellite positioning and data communication to a back office application”, could be the answer, as its focus areas for cost cutting and cost optimization influence up to about 62 per cent of fleet operations cost (Frost & Sullivan, 2012). The extraction of this percentage is shown in Appendix 1.

Even though calculations on the return on investment of these services can be made prior to purchase and the HGV road freight transport industry acknowledges the potential benefits of fleet management solutions, the upfront investment costs often result in companies to continue inefficient businesses rather than to maximize utility via making investments. Therefore, it is important for fleet management providers to position their marketing activities seeing the world through their customers’ eyes, in order to determine customer perceived risk lacking these investments (Mitchell, 1999). Lee & Kahn (2012) state that many researchers have contended that reducing consumers’ perceived risk is central to motivating consumers’ purchasing of products and services. It is also suggested that knowledge of customer’s perceived risk is a powerful tool in explaining consumers’ behaviour and can be helpful in targeting and segmenting the market (Mitchell, 1999). For mobile service providers, reducing
customer perceived risk could be important in today’s industry were the level of competition is influencing the demand and competition for acquiring new customers, and retaining existing ones becomes more intense to maintain or improve their market share and profitability (Fagerberg, 2012).

Furthermore, in order for fleet management providers to attract and retain customers and gain a competitive edge in the marketplace, both practitioners and academics consider service guarantees as an effective means to do so (Wirtz & Kum, 2004). Because the characteristics of services yield greater perceived risk associated with the purchase decision than products do (San Martín & Camarero, 2005), service providers implement service guarantees to reduce consumers’ perceptions of risk (Hogreve & Gremler, 2009). Wu et al. (2012) point out that a service guarantee is an extension of a product warranty and that guarantees can help customers to reduce their perceived risk. In other words, service guarantees represent how service providers redeem their service promises. When a service provider is unable to provide the quality that meets customer expectations, the service provider may use a service guarantee payout as a method for reducing customers’ perceived risk.

Besides, these service guarantees serve as extrinsic cues to enhance customer satisfaction (Hogreve & Gremler, 2009). They do so by decreasing anger of the customer after a service failure has occurred (Sarel & Marmorstein, 2001) and merely its presence by itself can positively influence customer satisfaction (Hocutt & Bowers, 2005; McCollough & Gremler, 2004).

Because of the intangible nature of services, the quality of a service is difficult to assess prior to purchase (San Martín & Camarero 2005) and it may not be surprising that the service guarantee’s impact on the evaluation of services is the most frequently researched topic.

Hogreve & Gremler (2009) refer to prior studies to state that the perception of risk, even as customer satisfaction, is a service outcome that can be influenced by these guarantees. According to Hogreve & Gremler (2009) the literature indicates that service guarantees reduce the perception of risk and have a positive impact on customer satisfaction. While this suggests that customer perceived risk has a
moderation effect, the main topic of this study is on mediation. This research tries to indicate the mediation effect of perceived customer risk on the relationship between service guarantees and customer satisfaction. Based on a comprehensive literature review, no references were found referring to the European heavy goods vehicle (HGV) road freight transport industry for fleet management telematics.

Therefore, this study aims to fill this gap by investigating the mediating role of customer perceived risk in the relationship between service guarantees and customer satisfaction. It is hoped that this study will provide fleet management providers a better understanding of determining to what extent perceived risk reduces the expected relationship between service guarantees and customer satisfaction. This could assist them in mapping out their strategy in order to reduce customer perceived risk with the aim of achieving and maintaining a superior competitive position in the fleet management industry.

1.1. Thesis outline

Chapter 2 of this dissertation presents the literature review. The literature review addresses relevant aspects with regards to service guarantees, perceived risk and customer satisfaction. In addition to this, it will indicate the relationships between the variables as retrieved from prior research and propose hypotheses. In Chapter 3, the methodology is explained and addresses the research purpose, approach and strategy. Furthermore, it will comprehend the data collection and analysis method and measurement model. The findings are presented in Chapter 4 and Chapter 5 addresses the analysis discussion, implications and recommendations for further research.
2. Literature review

The literature review presents the theoretical background of the research and how the hypotheses are derived. First of all, some background on service guarantees, customer satisfaction and their relationship will be provided. Hereafter, customer perceived risk will be discussed and its suggested mediating role on the relationship between service guarantees and satisfaction.

2.1. Customer satisfaction

Szymanski & Henard (2001) argue that customer satisfaction has become an important element for customer-oriented businesses. Customer satisfaction in the B2B context is often defined as a positive affective state resulting from the appraisal of all aspects of a firm's working relationship with another firm (Lam, 2004).

Zhao et al. (2012) argue that customer satisfaction is a critical factor for mobile service providers to maintain or improve their market share and profitability. Prior studies have found that customer satisfaction contributes to a firm's profitability and customer retention (Fornell, 1992; Fornell & Johnson, 1996).

Customer satisfaction has developed around two different perspectives: the transaction specific perspective and the cumulative perspective. Although the two types of satisfaction are highly correlated, they are different conceptualizations of satisfaction and serve a different purpose (Zhao et al., 2012). While transaction-specific satisfaction is a customer's evaluation about a particular product or service encounter, cumulative satisfaction involves the overall experience of the product or service over a period of time (Yang & Peterson, 2004). Cumulative or overall satisfaction is an essential indicator of the performance of the firm in the past, present and in the future (Anderson et al., 1993; Daugherty et al., 1998).

Against the background of this research, customer satisfaction is to be considered as a relationship-specific rather than a transaction-specific construct. Therefore, we focus on cumulative satisfaction in our investigation and, for simplicity, refer to cumulative satisfaction as customer satisfaction in this study.
Customer satisfaction can be described as having three elements (Grigouridis & Siskos, 2004):

- The perceived quality or performance, which is the evaluation of the experienced product or service concerning customization and reliability;
- The perceived value or the perceived value of service quality in relation to the paid price;
- The customer expectations based on the information the firm offered to the market, and an estimation of the firm’s ability to deliver quality in the future.

If the perceived experience of these three elements deviates from expectations, it is noticed and remembered. Successful organizations manage to create more memories of delight than disdain. Clearly, all of us expect deliverers of services to try their best to meet our needs and make things right when foul-ups occur. The latter is called ‘service recovery’, and all consumers have service recovery expectations they want organizations to meet (Bell & Zempke, 1987).

### 2.3 Service guarantees

Ghijsen & Semeijn (2007) refer to service recovery as the actions taken by an organization in response to a service failure. In a service failure perspective, service recovery can be considered as a second service encounter where the customers recognize a problem in relation to the service or service provider. Hence, if their expectations are not met, then another set of expectations – service recovery expectations – becomes active (Lewis & Spyrokopoulos, 2001). Ghijsen & Semeijn (2007) spoke about a ‘service guarantee’ as a particular type of recovery tool. This can be seen as an assurance that a product or service offered by a firm will perform as promised, and if not then some form of compensation will be undertaken by the firm.

Service guarantees have become an important means in service industries to attract and retain customers and gain a competitive edge in the marketplace (Wirtz & Kum, 2004). More and more companies find they can guarantee their services and that there are tremendous benefits doing so.

In particular, effective service guarantees can enhance customer satisfaction (Hogreve & Gremler, 2009), achieve a differential advantage over competitors and gain market share (Hart, 1988).
Hogreve & Gremler (2009) defined a service guarantee as ‘an explicit promise made by the service provider to (a) deliver a certain level of service to satisfy the customer and (b) remunerate the customer if the service is not sufficiently delivered.

This definition identifies the major components of a service guarantee. Most previously defined definitions consider a service guarantee a promise or policy that the customer will be insured against failures caused by the service provider (Baker & Collier, 2005; Hays & Hill, 2001; Kashyap, 2001; Owen, 2004; Sum et al., 2002).

In addition, service guarantees apply to service components that come with purchased goods (Rust & Chung, 2006). These service components might include delivery services, after-sales services, or a promise about the lowest price level in the category in the form of a price matching guarantee.

Hogreve & Gremler (2009) regard the expression of a promise about the quality of service attributes or the service as a whole as the core component of a service guarantee definition. To increase the credibility of the promise, the service guarantees also contain compensation as a significant feature (Björlin-Lidén & Skalén, 2003; Kashyap, 2001). Without an offer of compensation, which can be monetary or nonmonetary, a service guarantee is an unsubstantiated promise. Including a penalty in the form of compensation for the customer creates a more powerful instrument by punishing the provider for any misconduct (Williamson, 1985).

2.4 Service guarantees and customer satisfaction
Guarantees state what the customer can expect (the promise or coverage) and what the company will do if it fails to deliver (the payout) (McDougall, 1998). Previous research suggests that service promises can foster and strengthen customer-firm relationships due to their attention to specific attributes such as price or delivery time or because of assurances aimed at increasing customer satisfaction (Kashyap, 2001). Its presence only already can have impact on customers’ postpurchase evaluation of a service and positively influence customer satisfaction (Hocutt & Bowers 2005). Furthermore service guarantees can increase customer satisfaction by decreasing anger of the customer after a service failure occurred (McCollough & Gremler 2004). The above leads to the following hypothesis.
Hypothesis 1.
Service guaranties positively influence customer satisfaction.

2.5 Perceived risk
The origins of the word “risk” itself are debated. A search of the risk management literature reveals many discussions about risk but few clear and concise definitions are provided (Holton, 2004). This is due to researcher’s interchangeable use of the risk and uncertainty concepts. On one hand, decision theorists argue that risk is not merely to be seen as a ‘negative’ downside possibility but also the possibility that performance may be higher than expected. On the other hand, a majority of business researchers appear to use the term risk to refer to some form of negative change with respect to performance. The reason for this is not surprising; it is the downside worry that seems to occupy managers rather than the upside (Khan & Burnes, 2007).

Mitchell (1999) states that risk could be defined as a subjectively determined expectation of loss. Subjective, because essentially the level of the risk experienced is based on the evaluation of the user rather than to the actual risk (Asnar & Zannone, 2008). There is no statistical evaluation involved and, therefore, it is the felt belief of the user that formulates the level of risk perceived (McCarthy & Henson, 2005).

Perceived risk, as defined by Bauer in Mitchel (1999) relates to the perception of the probability of failure and the associated negative consequences of buying/using a product or service. The extensive research on perceived risk (McDougall et al., 2004) has shown that consumers’ perceptions of risk are central to their evaluations and purchasing behaviours.

Laroche et al. (2004) argue different types of risk exist, namely, financial, performance, time, physical, psychological, and social, and the importance of each varies across product categories. The point is that the dimensions of risk are very product specific and can be independent of each other. This study will use a two-dimensional perceived risk scale, concerning financial and performance risk:
Financial risk

Financial risk can be identified as the possibility of monetary loss that results from inappropriate purchasing decisions or the possibility of not getting value for the money spent (Kim, 2005; Laroche et al., 2004).

Performance risk

Performance risk involves the consumer’s belief that a purchased product/service will not perform as expected or will not offer preferred benefits to a consumer. This risk is perceived more prominently when the consumer cannot try the product or service before purchasing (Kim, 2005; Laroche et al., 2004).

Since the very intense competition in the fleet management industry has pushed pricing to a point where there is no room for profitability, and industry consolidation will likely continue among the fleet management providers in the coming years, the financial risk aspect relates to the maturity of the market for which customers are more price conscious than ever before (Simcock, 2010). The performance aspect of risk is, even compared to financial risk, high for computer related purchases (Laroche et al., 2004).

Considering it is argued (Laroche et al., 2004) that the dimensions of risk are very product specific and can be independent of each other, this study will assess the individual aspects of perceived financial and performance risk.

2.6 Service guarantees and perceived risk

Service guarantees represent how service providers redeem their service promise. As a safeguard and in case a service provider is unable to provide the quality that meets customer expectations, the service provider may use a service guarantee as a method for reducing customers’ perceived risk (Wu et al., 2012; Lee, 2012; Chaing, 2013).

Services are characterized as intangible (Ostrom, 1998) and the quality of information available is diminished relative to goods. For these reasons, many researchers argue that service guarantees help companies to, especially in the service sector (Wu et al., 2012), make services tangible. Guarantees are a means for
decreasing consumers’ perceived risk (Hogreve & Gremler, 2009; Liden & Skalen, 2003).

Ostrom (1998) suggests that the usefulness of a service guarantee for a firm depends on the purchase risk experienced by the consumer, which may be influenced by the following: the price of the service, the ego involvement of the consumer, the customer’s knowledge of the service, the impact of failure on the customers’ customers, the time required and the tangibility of the service. All of these affect either a consumer’s perceived uncertainty concerning what will happen during a service encounter or the subsequent consequences that the consumer would face given a negative outcome. Thus the following hypothesis is derived:

**Hypothesis 2.**
**A:** Service guarantees have a positive effect on reducing perceived financial risk. 
**B:** Service guarantees have a positive effect on reducing perceived performance risk.

### 2.7 Perceived risk and customer satisfaction

Johnson (2008) argues that customer perceptions of risk arising from their experiences with an organization may influence their satisfaction ratings by means of common antecedents.

Whereas traditionally the study of perceived risk focuses on the pre-purchase and purchase stage of the decision making process, Simcock (2010) and Johnson (2008) examined how the elements of risk influence the post-purchase experience of satisfaction. It is found that there is a significant negative relationship between satisfaction and perceived risk.

Based on the above discussion, the following hypothesis related to perceived risk and customer satisfaction can be proposed.

**Hypothesis 3.**
**A:** Perceived financial risk has a negative effect on customer satisfaction. 
**B:** Perceived performance risk has a negative effect on customer satisfaction.
2.8 The mediation role of perceived risk

Baron & Kenny (1986) define a mediator as a third variable, which represents the generative mechanism through which the focal independent variable is able to influence the dependent variable of interest.

The effect of a mediating variable is characterized statistically as an interaction (Cohen et al., 2003). It’s a qualitative or quantitative variable that affects the relation between dependent and independent variables.

The relationship of service guarantees on customer satisfaction has frequently been investigated and Hogreve & Gremler (2009) indicate that service guarantees reduce the perception of risk and have a positive impact on customer satisfaction. However, nothing is mentioned about the mediating role of perceived risk on this relationship.

Therefore, this research tries to indicate the mediation effect of perceived customer risk on the relationship between service guarantees and customer satisfaction.

Based on the above literature review, this study proposed a model that integrates service guarantees, perceived risk and customer satisfaction. The proposed model is presented in Figure 1; showing the effect of service guarantees on perceived risk which in turn influences customer satisfaction.

![Figure 1 Research model]
3. Methodology
In the following chapter, the methodology used for the research is outlined and discussed. The research methodology of the thesis is selected in order to answer the research questions. The purpose will be stated along with the approach, strategy, sample selection, measurement items and data analysis. Furthermore, to ensure the appropriateness of this research, the measurement model will be discussed.

3.1. Purpose of research
According to Saunders et al. (2009), the classification of research purpose most often used in the research method’s literature is the threefold of exploratory, descriptive and explanatory. However, the research project may have more than one purpose and may change over time.

Explanatory study
The emphasis in explanatory research is on studying a situation or a problem in order to explain the relationship between variables. The study may establish causal relationships between those variables (Saunders et al., 2009). According to Yin (2003), explanatory research answers questions of ‘how’ and ‘why’.

This research can be classified as explanatory as the research aims to collect data in order to explain and to address a problem, instead of to report and define it. Explanatory research attempts to go above and beyond exploratory and descriptive studies in order to identify the actual reasons of the problem. According to Saunders et al. (2009), the emphasis in explanatory research is on studying a situation or a problem in order to explain the relationship between variables.

3.2. Research approach
The design of the research may contain a deductive or inductive approach. According to Saunders et al. (2009), a deductive research approach involves the testing of a theoretical proposition by the employment of a research strategy specifically designed for the purpose of its testing. The research takes information and draws a conclusion directly from that. The hypotheses will be tested and results will either support these or not.
In this thesis, the deductive approach is adopted because the study will move from the general ideas to particular situations. Hence, the particular is deduced from the general idea or the broad theory (Collin & Hussey, 2003). Furthermore, in order to properly fulfil the purpose of the study, two methodological approaches exist; qualitative and quantitative. The main purpose of a qualitative research approach is to gain in depth understanding of the subject instead of merely measuring it.

In contrast, the quantitative approach is predominantly used for the generation or usage of numerical data. This approach deals with questions such as ‘how many’ and ‘how large’ and ‘What is the influence of factor X on factor Y’. According to Lancaster (2005), using the quantitative research approach tends to be more efficient with regard to testing hypotheses, but may result in fewer contextual details about a particular situation.

For this study, a quantitative research approach is most suitable in order to have the possible relationships between the different variables tested and validated via hypotheses.

### 3.3. Research strategy

There are several research strategies which can be used for explanatory research (Yin, 2003). The choice of research strategy will be guided by the research questions and objectives, the extent of existing knowledge, the amount of time and other resources available (Saunders et al., 2009).

Surveys allow the collection of a large amount of data from a sizable population in a highly economical way and is most frequently used to answer who, what, where, how much and how many questions. In addition, data collected using a survey strategy can be used to suggest possible reasons for particular relationships between variables. It is also possible to generate findings that are representative for the whole population.

Surveys are often obtained by using a questionnaire administered to a sample and tend to work best with standardised questions that one can be confident will be interpreted the same way by all respondents.
The design of a questionnaire differs according to how it is administered and, in particular, the amount of contact you have with the respondents. According to Saunders et al. (2009), questionnaires can be formalised as 'self-administered and 'interviewer-administered'. For this research, self-administered questionnaires will be used, which will be sent and administered electronically using the Internet.

3.4. Sample selection

The process of selecting who are respondents and how many respondents should participate in the research is an important part of the study. Sampling techniques can be divided into probability and non-probability sampling (Saunders et al., 2009).

Because it is not feasible to interview the total population, convenience sampling will be used. Convenience sampling is a type of non-probability sampling which involves the sample being drawn from that part of the population which is close to hand. The population of European HGV road freight transport companies to be approached for this research consists of 9500 organizations for which contact details are derived from an existing database.

3.5. Measurement items

The self-administrated questionnaire consists of items that were adapted from previous studies. Three categories of statements were used to test the hypotheses: customer satisfaction, service guarantees and perceived risk.

The questionnaire was designed to test the effect of service guarantees on perceived risk to influence customer satisfaction. The questionnaire was first checked by a panel of ten experts, employed in the fleet management industry, to assess whether there were misunderstandings or ambiguities of expressions and to check for content validity. In an attempt to establish the reliability of the measures effectively, a pilot study with five HGV road freight transport customers was then conducted to deal with such matters as instructional clarity, item clarity and relevance.

The service guarantee scale consists of three main questions, two of them related to the type of guarantee and the third item representing the preference for this guarantee adapted from McDougall et al. (1998). A total of 11 items were used to
measure two dimensions of perceived risk. The measures for financial and performance dimensions of perceived risk were adapted from Laroch (2004), Kim (2005) and Zhao (2008). The customer satisfaction scale consists of six items, of which four adapted from Lam (2004), and two items adapted from Zhao (2012). All measures employed seven-point Likert scales ranging from 1 (strongly disagree) to 7 (strongly agree).

A detailed overview of the survey, measurement items and their descriptives are presented in Appendix 3.

3.6 Data collection

The collection of data is important in order to answer the research questions properly. Collecting suitable data can be done in two ways, either using secondary data or primary data. Primary data is explained as specifically collected for the research project undertaken. On the other hand, secondary data is used for a research project that was originally collected for some other purpose (Saunders et al., 2009).

Having considered the data collection requirements to test the hypotheses, it would be appropriate to collect primary data. A questionnaire was sent out to 9500 European HGV road freight transport companies. Data were gathered through an online survey, using Survey Monkey. An empirical survey-based research was adopted, comprising 27 items.

This survey was sent out by Email to all contacts available in the database. To make sure the appropriate people to fill out the questionnaire were addressed, the content of this Email explicitly requested to have the survey forwarded to the person responsible for the purchase of the fleet management system. Appendix 2 provides the cover letter that went out with the survey.

In total 171 responses (response percentage: 1.8%) were received. Of these, 60 questionnaires were fully completed. Respondents were resided in Austria, Belgium, France, Germany, the Netherlands, Poland, Portugal, Spain and the United Kingdom. A total of 60 valid responses were included in the data analysis.
3.7 **Analysis of data**

The data were analysed using structured equation modelling, involving partial least squares (PLS) estimations and making use of SmartPLS (Ringle *et al.*, 2005). PLS is an analysis technique that enables the simultaneous estimation of both the measurement and the structural models (Haenlein & Kaplan, 2004; Tenenhaus *et al.*, 2005).

3.8 **Measurement model**

To ensure the appropriateness of the measurement model, the unidimensionality, reliability and validity of the scale are assessed. Both Cronbach’s Alpha and factor loadings are used to test the unidimensionality of the model. For Cronbach’s Alpha, typically a threshold of 0.6-0.7 is required (Nunnally, 1978), which is met by all factors (Table 1).

<table>
<thead>
<tr>
<th></th>
<th>AVE</th>
<th>Composite Reliability</th>
<th>R Square</th>
<th>Cronbachs Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Risk</td>
<td>0.767</td>
<td>0.943</td>
<td>0.054</td>
<td>0.925</td>
</tr>
<tr>
<td>Guarantee</td>
<td>0.762</td>
<td>0.941</td>
<td></td>
<td>0.921</td>
</tr>
<tr>
<td>Performance Risk</td>
<td>0.809</td>
<td>0.962</td>
<td>0.049</td>
<td>0.953</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>0.827</td>
<td>0.966</td>
<td>0.586</td>
<td>0.958</td>
</tr>
</tbody>
</table>

*Table 1 SmartPLS quality criteria*

All factor loadings, as shown in Appendix 4, resulting from confirmatory factor analysis exceed the threshold value of 0.50 proposed by Dunn *et al.* (1994), further supporting the unidimensionality of the scales. Moreover, the scales are reliable: all composite reliability values in Table 1 exceed the threshold value of 0.70 (Nunnally, 1978).

As it is argued that dimensions of risk can be independent of each other, an exploratory factor analysis (EFA) is used to identify the underlying relationships between the measured variables. The results of the principal component analysis (PCA), as shown in Table 2, can be separated into two components (as described: financial and performance risk).
Exploratory factor analysis

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
<th>Rotation Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
<td>Cumulative %</td>
</tr>
<tr>
<td>1</td>
<td>7,471</td>
<td>67,921</td>
<td>67,921</td>
</tr>
<tr>
<td>2</td>
<td>1,373</td>
<td>12,479</td>
<td>80,401</td>
</tr>
<tr>
<td>3</td>
<td>0,588</td>
<td>5,343</td>
<td>85,743</td>
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<tr>
<td>4</td>
<td>0,360</td>
<td>3,275</td>
<td>89,019</td>
</tr>
<tr>
<td>5</td>
<td>0,291</td>
<td>2,642</td>
<td>91,661</td>
</tr>
<tr>
<td>6</td>
<td>0,259</td>
<td>2,350</td>
<td>94,011</td>
</tr>
<tr>
<td>7</td>
<td>0,211</td>
<td>1,914</td>
<td>95,925</td>
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<td>8</td>
<td>0,142</td>
<td>1,287</td>
<td>97,212</td>
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<tr>
<td>9</td>
<td>0,137</td>
<td>1,241</td>
<td>98,453</td>
</tr>
<tr>
<td>10</td>
<td>0,110</td>
<td>1,000</td>
<td>99,453</td>
</tr>
<tr>
<td>11</td>
<td>0,080</td>
<td>0,547</td>
<td>100,000</td>
</tr>
</tbody>
</table>

Table 2 Principal component analysis.

Construct correlations, which are displayed in Table 1, provide evidence for construct validity: the average variance extracted (AVE) exceeds 0.50 (Bagozzi & Youjae, 1988) and the square root of the average variance of an individual construct exceeds the correlation of that construct with the remaining constructs (Fornell & Larcker, 1981). Figures are shown in Appendix 4.

Significance is verified by re-sampling techniques (Bagozzi, Youjae & Phillips, 1991). Via bootstrapping, parameter estimates are obtained by generating subsamples with replacement from the original data. The results show that except for the relation between perceived risk and customer satisfaction, all loadings are significant.
4. Findings

In this chapter the results of this research will be presented. In the structural model, answers will be provided on the relationships between the constructs as presented in the hypotheses and research model. However, first a profile of the respondents participating to this research will be provided.

4.1. Profile of respondents

The sample used consists of sixty respondents located in Germany (22), Poland (11), Belgium (8), the Netherlands (7) and other European countries (12) (Fig.2). 57 per cent of these companies utilize a fleet that has more than 50 trucks.

Furthermore, based on the information of the respondents, it can be concluded that some transport companies make use of more than one fleet management provider. A total of 72 Fleet management solutions were being used across the 60 respondents that participated in this research. 21 of these differ from the ones indicated in the survey, such as Transics (13) and Mercedes (10), which were the main known ones used as listed in the survey.

It is also worth mentioning that 70% of the respondents were offered a specific guarantee by their fleet management provider, and that an unconditional guarantee is seen as preferred by only 53% of the respondents. Figures are shown in Appendix 5.
4.3 **Structural model**

The structural model represents the relationships between constructs that were hypothesized in the research model. Structural equation modeling derived from SmartPLS was used to test the hypothesized model. With SmartPLS the correlation is researched, describing the strength and direction of the relations. The results, as presented in Figure 3, show that:

**Hypothesis 1.**

*Service guarantees positively influence customer satisfaction.*

This hypothesis presumes a positive relation between service guarantees and customer satisfaction. The regression coefficient is 0.741 and the relation between the variables is significant at the 0.01 level (2-tailed). This means that the relation is significant and the chance for coincidence is very low. Besides, $R^2$ indicates that 58.6% of the variability is explained by the model. These results support hypothesis 1, which stated that service guarantees have a positive effect on customer satisfaction.

**Hypothesis 2.**

*A: Service guarantees have a positive effect on reducing perceived financial risk.*

This hypothesis presumes a negative relation between service guarantees and perceived financial risk. The regression coefficient is -0.233 and the relation between the variables is partially supported as it is not significant at the 0.05, but at the 0.1 level (2-tailed). This is also reflected by $R^2$ which indicates only 5.4% of the variance is explained by the model.

*B: Service guarantees have a positive effect on reducing perceived performance risk.*

This hypothesis also presumes a negative relation between service guarantees and perceived performance risk. The regression coefficient is -0.221 and the relation between the variables is partially supported as it is not significant at the 0.05, but at the 0.1 level (2-tailed). This is also reflected by $R^2$ which indicates only 4.9% of the variance of the perceived performance risk is explained by the variance of the service guarantee.
Hypothesis 3.

**A: Perceived financial risk has a negative effect on customer satisfaction.**

This hypothesis presumes a negative relation between perceived financial risk and customer satisfaction. The regression coefficient is 0.061 and the significance between the variables is more than 0.1. This means that the relation is positive and very weak between the variables, and the chance for coincidence is relatively high. Based upon these outcomes, the hypothesis is not supported.

**B: Perceived performance risk has a negative effect on customer satisfaction.**

Again, this hypothesis presumes a negative relation between perceived performance risk and customer satisfaction. The regression coefficient is 0.029 and the significance between the variables is more than 0.1. This means that the relation is positive and very weak between the variables, and the chance for coincidence is relatively high. Based upon these outcomes, the hypothesis is not supported.
4.3.2 Mediation analysis

Mediation is a hypothesized causal chain in which one variable affects a second variable that, in turn, affects a third variable. The intervening variable, M, is the mediator. It “mediates” the relationship between a predictor, X, and an outcome. Graphically (Fig.4), mediation can be depicted in the following way:

Paths A and B are called direct effects. The mediational effect, in which X leads to Y through M, is called the indirect effect. The indirect effect represents the portion of the relationship between X and Y that is mediated by M.

When performing structural equation modeling and employing bootstrapping, we tried to establish the existence of zero-order relationships among the variables. In case one of these relationships is nonsignificant, it can be concluded that the hypothesis of mediation is not supported.

Baron & Kenny (1986) described a more statistically and rigorous method by which mediation hypotheses may be assessed. This procedure, developed by Sobel (1982; hereafter referred to as the Sobel test) provides a more direct test of an indirect effect.

A Sobel test can tell whether a mediator variable significantly carries the influence of an independent variable to a dependent variable; i.e., whether the indirect effect of the independent variable on the dependent variable through the mediator variable is significant.

The parameters necessary to perform this test are shown in Appendix 6 and include:

- The regression coefficient for the relationship between the independent variable and the mediator;
• The regression coefficient for the relationship between the mediator and the dependent variable;
• The standard error of the relationship between the independent variable and the mediator;
• The standard error of the relationship between the mediator variable and the dependent variable.

<table>
<thead>
<tr>
<th></th>
<th>Financial Risk</th>
<th>Performance Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sobel test statistic</td>
<td>0.644</td>
<td>0.320</td>
</tr>
<tr>
<td>One-tailed probability</td>
<td>0.260</td>
<td>0.374</td>
</tr>
<tr>
<td>Two-tailed probability</td>
<td>0.520</td>
<td>0.749</td>
</tr>
</tbody>
</table>

Table 3 Sobel test result

Seeing the result of this test (Table 3), the two-tailed probability by far exceeds the threshold of 0.05. Therefore, it can be said that perceived financial, as well as perceived performance risk, does not mediate the relation between service guarantees and customer satisfaction.
5. Discussion, implications and recommendations

In this section, the results of this research and the model will first be discussed. This will be followed by the academic contribution and managerial implications, limitations of this research and implications for future research.

5.1. Discussion

The main objective of this study was to investigate the mediating role of customer perceived risk on the relationship between service guarantees and customer satisfaction. This would provide fleet management providers a better understanding of this role, and assist them in mapping out their service recovery strategy in order to reduce customers' perceived risk, thereby allowing them to achieve and maintain a superior competitive position in the fleet management industry.

Taking a multi-dimensional approach, with reference concepts from studies on service marketing and consumer behavior, a research model was proposed and empirically tested against data collected from 60 fleet management provider users in the European HGV road freight transport industry. The results generally support the model and three out of five hypotheses.

Our findings indicate that the presence of a service guarantee positively influences customer satisfaction and reduces the perception of risk. These findings are in accordance with many prior studies reported in the service marketing and consumer behavior literature, stating service guarantees serve as extrinsic cues to enhance customer satisfaction (Hogreve & Gremler, 2009; McCollough & Gremler, 1999) and are a means for decreasing consumers' perceived risk (Hogreve & Gremler, 2009; Liden & Skalen, 2003).

Especially in an environment that is consolidating, customer satisfaction is a critical factor for mobile service providers to maintain or improve their market share and profitability. Prior studies have found that customer satisfaction contributes to a firm's profitability and customer retention (Zhao et al., 2012).

Both practitioners and academics consider service guarantees an effective means for service firms to attract and retain customers and gain a competitive edge in the
marketplace (Wirtz & Kum, 2004). Ostrom & Iacobucci (1998) and Kennett et al. (1999) recognize that a service guarantee can reduce the perceived risk by setting the service standards that customers can expect. What type of guarantee is considered to set this standard will further be outlined in the managerial implications paragraph.

Johnson (2008) and Simcock (2010) stated that customer perceptions of risk arising from their experiences with an organization may influence their satisfaction ratings, resulting in a substantial negative relationship between satisfaction and perceived risk. This research found no support for the perceived financial or performance risk to influence customer satisfaction. This finding suggests that perceived risk does not mediate the relation between service guarantees and customer satisfaction.

A remark that has to be made is that this study of perceived risk focuses on the pre-purchase and purchase stage of the decision making process. Simcock (2010) and Johnson (2008) examined how the elements of risk influence the post-purchase experience of satisfaction.

**5.2. Academic contribution**

The results of this study have demonstrated that service guarantees are found to be significantly related to perceived risk but do not indirectly influence customer satisfaction via perceived risk.

Service guarantees play an important role in reducing the risk perception of customers. It is believed that customers judge their perception of risk through these service guarantees in terms of financial and also performance aspects. Therefore, it seems apparent that as customers are to be offered a service guarantee prior to their purchase decision, this offering will influence their risk perception of the buying of the product or service.

Furthermore, this study, as expected, supports that service guarantees have a direct effect on customer satisfaction. It goes without saying that the more positive perception customers showed on service guarantees, the more positive attitude customers showed on satisfaction.
The above findings in understanding customers’ risk perception may serve as the foundation for fleet management providers to improve their marketing strategies to gain competitive advantages.

In this time of economic downturn and intense competition, the heavy goods vehicle freight industry are forced to put increased focus on efficiency, however, the industry tends to be undercapitalized with players lacking resources to make profitable investments (Fagerberg, 2012). Investments in fleet management technology increase confidence when offering a service guarantee, since offering this can be a means to reduce the perceived risk. This also increases customer satisfaction by setting the service standards that customers can expect resulting in increased profitability for the company.

On the other hand, this study does not empirically support the findings that perceived risks plays an important role in influencing customer satisfaction.

It is important to highlight that this study has adopted the multi-dimensional approach using several dimensions of perceived risk. The findings have enabled this study to differentiate from existing knowledge. In comparison with previous studies (Simcock, 2010; Johnson, 2008), the findings of this study reveal that performance, as well as perceived financial risk, in the European HGV road freight transport industry, do not appear to lead to customer satisfaction.

Finally, the model built for the present study is empirically tested in the European HGV road freight transport industry. This study could be extended to other sectors of the transport and logistics industry in which telematics are being used.

5.3. Managerial implications

Competition in the European fleet management industry has intensified and the effort for acquiring new customers and retaining existing ones has become more imperative to maintain or improve market share and profitability. It is therefore, important for fleet management providers to position their marketing activities seeing the world through the customers’ eyes (Mitchell, 1999), in order to reduce consumers’ perceived risk and to stimulate their purchasing behavior.
It is indicated that service guarantees reduce consumers perceptions of risk prior to purchase, enhance customer satisfaction and are an effective means to attract and retain customers and gain a competitive edge in the marketplace. However, no results regarding the types of service guarantees to use are provided in this research. According to Ostrom & Iacobucci (1998), no clear pattern emerges regarding whether unconditional or specific service guarantees are better for reducing consumers’ perceived risk. Hocutt & Bowers (2005) point out that unconditional guarantees are superior to specific guarantees in achieving customer satisfaction.

Whereas conceptual research on service guarantees recommends the exclusive use of unconditional guarantees (Hart, 2000), empirical research has not confirmed this recommendation (Wirtz & Kum, 2001). Wirtz & Kum (2001) have produced findings that show combined guarantees are superior to pure designs because they combine full satisfaction guarantees with the low uncertainty of attribute-specific guarantees. However, an ill-designed service guarantee may have minimal benefits or even disastrous effects on the firm's value.

5.4. Limitations and future research

Based on the literature, this work examines how service guarantees, perceived risk and customer satisfaction are related. Although effort has been made to make this a comprehensive study, limitations exist due to the study design.

The sample size of this research was limited to a database of 9500 available contacts. In addition to the limited sample size, the response rate of the study is relatively low, considering that of the 9500 survey requests sent out, only 60 usable responses were received. Therefore, there might be a non-response bias in the study and it might require a high degree of caution in interpreting the results of the study.

Furthermore, it must be noted that common method bias could also have an effect on this study as it influences item validity, item reliability and the covariation between latent constructs. As a possible outcome, incorrect research results could be reported even though this study tried to control these effects through careful design of the study’s procedures. Also, the effects of method biases after the data had been
gathered were tested statistically. There are potentially many other factors that may cause common method bias which have not been taken into account in this research.

Whilst this study focuses on the mediating role of customer perceived risk on the relationship between service guarantees and customer satisfaction, Wu et al. (2012) argue that the increase in perceived risk would lead to an increase in the importance of salient cues such as guarantees that might be available to a consumer. This would again, as referred to in the introduction, indicate a moderation effect of perceived risk, as it suggests that the higher the perception of risk, the more perceived service guarantees have a positive effect on customer perceived risk. Hence, future research could elaborate on this by determining the moderating effect of perceived risk on this relationship.

Furthermore, as shown in prior literature, there exist many other factors influencing customer satisfaction and perceived risk. To emphasize the difference in guarantee types, this study only briefly mentions the unconditional versus specific guarantee aspect and does not address any other service guarantee design elements such as scope, compensation or process of invoking. In addition to this, different outcomes of service guarantees (loyalty, price perception, quality) could be incorporated for future research.

The same applies for the dimensions of perceived risk for which this research only addresses the financial and performance aspect, whilst time, physical, psychological and social risk can also be included.

Our model explains 58.6% of the variance in service guarantees and customer satisfaction and although the explanatory power is quite satisfactory for the satisfaction variable, examination of other factors might improve the model. Furthermore, and in line with many prior studies, this research focuses on the pre-purchase perceptions of risk, whilst future research could examine how the elements of risk influence the post-purchase experience of satisfaction.
Bibliography


Appendices

Appendix 1: FMS cost cutting areas

Appendix Figure 1  Source: Frost & Sullivan 2012
Appendix 2: Survey cover letter

**Subject:** Important: Dutch MSc student would appreciate your help by answering this Fleet Management survey

Dear Sir/Madam,

My name is Jacco Hovens, MSc Student at the Dutch Open / Fontys University. Please could you be so kind and assist me to obtain my Master’s degree for which I have chosen following topic:

**The relationship between Fleet management providers service guarantees and customer satisfaction and the impact of customer perceived risk on this relationship.**

This research will be conducted within the European Heavy Goods Vehicle road transport Industry and for the ones interested an executive summary which will benchmark you on others in the industry will be send out upon completion of this research. Just provide your contact details when answering the final question of this survey.

**In order to successfully complete this research I would highly appreciate if you could forward this email to the person who is responsible for the purchase of the Fleet management system to participate in this survey.**

Here please find the link to the survey: [http://www.surveymonkey.com/s/PB9J352](http://www.surveymonkey.com/s/PB9J352)

I sincerely hope you or your colleagues can do me a favor by making the effort and spend some time answering these questions!

Thanks in advance!

Best regards,

Jacco Hovens
MSc Student

Appendix Figure 2 Cover letter
Appendix 3: Questionnaire labels and survey

Satisfaction

4. Please could you provide us with how you feel about your current Fleet management provider (X), answering following questions;

1. This (X) is one of the best Fleet management providers I could have chosen. (SAT1)
2. X's Fleet management services always fully meet my expectations (SAT2)
3. In general, my company is very satisfied with the services offered by (X). (SAT3)
4. Overall, my company is very satisfied with its relationship with (X). (SAT4)
5. Overall, (X) is a good company to do business with. (SAT5)
6. Overall, (X) treats my company very fairly. (SAT6)

Perceived risk

Financial risk

5. Could you please indicate the degree your company perceived financial risk before entering into an agreement with your Fleet management provider?

1. I would be concerned that the financial investment I would make would not be wise (FIN1)
2. Purchasing this service could involve important financial losses. (FIN2)
3. If I enter into an agreement with a Fleet management provider, I would be concerned that I would not get the suggested return on investment. (FIN3)
4. Entering into an agreement would be an inappropriate way to spend money. (FIN4)
5. Entering into an agreement would not provide value for the cost involved (FIN5)
Performance risk

6. Could you please indicate the degree your company perceived performance risk before entering into an agreement with your Fleet management provider?

1. I would become concerned that the Fleet management solution will not work as well as expected. (PER1)
2. I would become concerned that the Fleet management solution will have technical problems (PER2)
3. I would become concerned that the fleet management provider will not provide the level of benefits expected (PER3)
4. I worry about whether the fleet management solution will really "perform" as well as it is supposed to. (PER4)
5. The thought entering into an agreement causes me to be concerned for how really reliable that service will be. (PER5)
6. I am not confident about the ability of a Fleet management provider to perform as expected. (PER6)

Service Guarantees

8. Could you please indicate to what extent you like the type of guarantee that your Fleet management provider provided?

1. Fleet management Provider (X)’s guarantee is believable. (GUAR1)
2. Fleet management Provider (X)’s guarantee is easy to use if I have a problem (GUAR2)
3. I have confidence in the guarantee provided by my Fleet management provider (X) (GUAR3)
4. I trust the guarantee provided by my Fleet management provider (X) (GUAR4)
5. The guarantee provided is probably offered by the “best” Fleet management provider in the business (GUAR5)

Appendix Figure 3 Measurement item descriptives
Dear Sir/Madam,

Thank you for your time to take part in this survey. As indicated previously, this survey is part of a final research to be conducted for obtaining a Masters Degree in Marketing & SCM at the Dutch Open University. The questionnaire given assesses the relationship between Fleet management providers service guarantees and customer satisfaction and the impact of customer perceived risk on this relationship.

The survey will take about 5–10 minutes to complete. Allow yourself enough time so that you don't have to rush. All answers you provide will be treated as confidential and will be anonymised. Please bear in mind there aren’t any right or wrong answers, it’s just your opinion we’re after.

If you have any questions about the content of this questionnaire or technical difficulties with the Web-based instrument, please contact: jbm.hovens@studie.ou.nl
**Generic questions**

1. Please indicate the country your office is located
   - Austria
   - Belgium
   - France
   - Germany
   - The Netherlands
   - Poland
   - Portugal
   - Spain
   - United Kingdom
   - Other

2. Please specify the number of trucks your company currently utilizes?
   - 1 - 10 Trucks
   - 11 - 50 Trucks
   - More than 50 Trucks

3. Please indicate if your company currently uses one or more of below mentioned Fleet management providers
   - Garmin
   - GreenCat
   - Iveco
   - Masternaut
   - Mercedes
   - Navman
   - Trimble
   - Veloz
   - Volvo
   - Other
**Fleet Management survey**

**Satisfaction**

4. Please could you provide us with how you feel about your current Fleet management provider (X), answering following questions:

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree or disagree</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly agree</th>
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<tbody>
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</tbody>
</table>

- This (X) is one of the best Fleet management providers I could have chosen.
- X's Fleet management services always fully meet my expectations.
- In general, my company is very satisfied with the services offered by (X).
- Overall, my company is very satisfied with its relationship with (X).
- Overall, (X) is a good company to do business with.
- Overall, (X) treats my company very fairly.
### Fleet Management survey

#### Financial risk

**5. Could you please indicate the degree your company perceived financial risk before entering into an agreement with your Fleet management provider?**

<table>
<thead>
<tr>
<th>I would be concerned that the financial investment I would make would not be wise.</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree or disagree</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchasing this service could involve important financial losses.</td>
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<tr>
<td>If I enter into an agreement with a Fleet management provider, I would be concerned that I would not get the suggested return on investment.</td>
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<tr>
<td>Entering into an agreement would be an inappropriate way to spend money.</td>
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<tr>
<td>Entering into an agreement would not provide value for the cost involved</td>
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</tbody>
</table>
6. Could you please indicate the degree your company perceived performance risk before entering into an agreement with your Fleet management provider?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree or disagree</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would become concerned that the Fleet management solution will not work as well as expected.</td>
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<tr>
<td>I would become concerned that the Fleet management solution will have technical problems.</td>
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<tr>
<td>I would become concerned that the Fleet management provider will not provide the level of benefits expected.</td>
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<td>I worry about whether the Fleet management solution will really &quot;perform&quot; as well as it is supposed to.</td>
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<td>The thought of entering into an agreement causes me to be concerned for how really reliable that service will be.</td>
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<tr>
<td>I am not confident about the ability of the Fleet management provider to perform as expected.</td>
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</table>
For this research, we distinguish two types of service guarantees. The first is called the unconditional guarantee and the second is called the specific guarantee.

An unconditional guarantee promises full customer satisfaction on all aspects of service or else you will get your money back.

The specific guarantee covers part of the service. For example, the service provider warrants that
- Service Availability shall be at least x% per month for all hours excluding Planned Downtime.
- For an indicated period, the product shall be free from defects in materials or workmanship and capable of providing the Service in accordance with its specifications

*7. Thinking about these two types of guarantees, could you please indicate the type of service guarantee provided by your Fleet management provider?
- Unconditional guarantee
- Specific guarantee

*8. Could you please indicate to what extent you like the type of guarantee that your Fleet management provider provided?

<table>
<thead>
<tr>
<th>Fleet management Provider (X)’s guarantee is believable.</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree or disagree</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly agree</th>
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<tr>
<td>Fleet management Provider (X)’s guarantee is easy to use if I have a problem</td>
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</tr>
<tr>
<td>I have confidence in the guarantee provided by my Fleet management provider (X)</td>
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</tr>
<tr>
<td>I trust the guarantee provided by my Fleet management provider (X)</td>
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<tr>
<td>The guarantee provided is probably offered by the “best” Fleet management provider in the business</td>
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</tr>
</tbody>
</table>

*9. What type of guarantee would you prefer your Fleet management provider should offer?
- Unconditional guarantee
- Specific guarantee
Fleet Management survey

Executive Summary

I would like to thank you for participating in this important project.

10. Please provide your contact details if you would like to receive an executive summary showing the results of this research

Name: 
Company: 
Email address: 

Appendix Figure 4 Survey
Appendix 4: Measurement model

**Factor loadings**

<table>
<thead>
<tr>
<th></th>
<th>Guarantee</th>
<th>Perceived Risk</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN1</td>
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<td>FIN2</td>
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<tr>
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*Appendix Table 1* Factor analysis

**Square root of the average variance**

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<th>Satisfaction</th>
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*Appendix Table 2* Square root
Appendix 5: Profile of respondents

**Number of trucks utilized**

- 57%: 1 - 10 Trucks
- 23%: 11 - 20 Trucks
- 20%: 21 or more Trucks

*Appendix Figure 5 Number of trucks utilized*

**FMS System**

- 29%: Other
- 21%: Transics
- 14%: Mercedes
- 10%: Other brands
- 8%: Other brands
- 7%: Other brands
- 6%: Other brands
- 5%: Other brands
- 3%: Other brands

*Appendix Figure 6 Type of FMS used*

**Guarantee offered**

- 70%: Unconditional guarantee
- 30%: Specific guarantee

*Appendix Figure 7 Type of guarantee offered*

**Guarantee preferred**

- 53%: Unconditional guarantee
- 47%: Specific guarantee

*Appendix Figure 8 Type of guarantee preferred*
Appendix 6: Sobel test parameters

Parameters to perform Sobel test

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<tr>
<th>Path Coefficients</th>
<th>Original Sample (O)</th>
<th>Sample Mean (M)</th>
<th>Standard Deviation (STDEV)</th>
<th>Standard Error (STERR)</th>
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Appendix Table 3 Path coefficients