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**SCHOOL OF BUSINESS, ECONOMICS AND LAW**

# **Anchoring Bias in Strategic Business Decisions**

Bachelor Thesis in Economics  
15 ECTS  
Department of Economics  
Behavioral Economics  
Autumn semester 2013

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# Abstract

Cognitive biases are tendencies that cause distortions in perception, interpretation and judgment, thereby leading to a systematic deviation from rational decision-making. There are various types of cognitive biases, where the anchoring bias is the main focus of this report. Anchoring refers to how different suggestions, such as words or numbers, can affect the decision maker to make a certain decision. Biases related to anchoring is however also discussed in the theoretical framework, such as priming, framing, availability bias, confirmation bias and groupthink, since these are important in order to understand what kind of information can induce cognitive biases. By understanding the theory behind anchoring and related cognitive biases, efforts can be made in order to mitigate its effect on decision-making and thereby make more accurate decisions.

This report investigates and analyzes how different information or treatment induces anchoring bias in a purchasing decision. More specifically, the aim of the report is to test whether the status or authority granted by the CEO title is a source of bias, causing erroneous conclusions and suboptimal decision-making. A case study was conducted on 42 students, where the case results was analyzed in the statistical software Stata and compared with the theoretical framework presented in order to identify if anchoring was observed. Also, the report aims to discuss how the anchoring bias and related tendencies can be overcome.

To further specify, the study presents the results of regressions containing variables retrieved from participants choice between recommending one of two suppliers for a given company, as well as a motivation regarding this choice, decision time to complete the case and several answers to questions contained in a post case form. Significance is not found for the main regression concerning the effect of treatment on participants' choice of supplier recommendation, possibly partly due to sample size. However, the coefficient for the treatment holds the expected sign, and while assuming the presence of its associated bias, regressions indicate that time may have had a mitigating effect. Also, several remarkable tendencies are found by further investigating the relationships between variables.

Furthermore, reasons as to why significance is not found in the relatively small sample are discussed. Aside from the sample size itself, the fact that a large fraction of respondents selected the same supplier, regardless of whether they received treatment or not is addressed as a conceivable explanation. In examining reasons for this, a tendency of risk aversion and what is referred to as the tendency of sticking to well-known brands is discussed.

Accompanying regressions regarding time related variables also indicate that confirmation bias might have been a culprit in the case.

The thesis also discusses implications of observed tendencies and suggests strategic measures to be implemented.

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# 1 Introduction

Decisions are made every day, both of different importance and magnitude. Making the wrong decision can be devastating for both companies as well as individuals. Wrong decisions can be a result of inadequate information, but Kahneman (2011) also means that the mind of the decision-maker can be influenced by obtaining various information. Even if the information is accurate, it can nonetheless result in bad decisions due to certain tendencies that are already present in the decision maker's mind. Such tendencies are referred to as cognitive bias, and consistently violate the decision maker's ability to make a rational choice.

According to Kahneman (2011), cognitive bias in decisions is “intuitive preferences that consistently violates the rules of rational choice”. A cognitive bias therefore occur when a psychological pattern change a person's subjective view of an issue to differ from reality. To understand how this occurs, Kahneman (2011) explains how mental life can be described as two agents - System 1 and System 2. Automatic operations take place in System 1, which is working quickly with little effort and is not willing to take control over thoughts. System 2 is however able to construct thoughts and take control, such as doing complex reasoning and computations. More effortful mental activities hence occur in System 2, where the activities often are connected to the subjective experience of agency, choice, and concentration. (Kahneman, 2011)

In order to avoid cognitive biases when making decisions, System 2 needs to be activated in order to carefully examine the issue. System 2 is however not always aware of the error constructed by the intuitive thoughts of System 1, which makes it difficult to prevent cognitive biases. Furthermore, constant vigilance is not possible, since it is very tedious and takes too much time and effort. System 2 can thereby not be a substitute for System 1, since System 2 is too inefficient and slow. Therefore, one needs to learn in which situations System 2 should be activated in order to avoid costly errors. (Kahneman, 2011)

Furthermore, Kahneman (2011) means that the impression of cognitive ease or strain affects if System 2 is activated or not. Cognitive ease will make it more likely that a person accept a statement as true. Beliefs will thus be more likely to be biased when facing a statement with the impression of cognitive ease, compared to cognitive strain. Familiarity is a key word in this matter, since it is easier to believe a statement that sound familiar and jump to conclusions, even if you do not remember the source of the statement. (Kahneman, 2011)

Anchoring is one type of cognitive bias, which will be the main focus of this report. Anchoring refers to how a case of suggestion, such as words, numbers or pictures, can affect the decision maker to make a certain decision (Kahneman, 2011). This means that an earlier presented suggestion affects people when they are to estimate an unknown quantity, which then will be close to the suggestion that was considered before the estimation (Esch et al., 2009). By understanding the theory behind anchoring, efforts can be made in order to prevent it to affect decision-making. In this way, there will be a better chance to make accurate decisions.

This report will focus on business decisions and how these can be affected by the cognitive bias anchoring. Anchoring will be investigated by performing a purchasing case on students, where some of the respondents will obtain a case with a statement about the decision to be taken, i.e. an anchor. If this anchor affects the respondent's decision, an anchoring effect will then be observed. The case results will be analyzed with statistical software and compared with anchoring theory in order to understand how the anchor affect the decision maker and how this cognitive bias can be overcome.

There are however many different types of cognitive biases, which are closely related to each other. This report is investigating how an anchor can affect a purchasing decision, but it is also important to understand how other cognitive biases relate to anchoring and how these also can affect the decision made by the participants in the study. Therefore, this report also discusses priming, framing, availability bias, confirmation bias as well as groupthink.

## **1.1 Purpose**

The purpose of this report is to test how different information or treatment induces anchoring bias in a purchasing decision. More specifically, the report aims to test whether the status or authority granted by the CEO title is a source of bias, causing erroneous conclusions and suboptimal decision-making. Furthermore, the report aims to discuss how the anchoring bias can be overcome.

Earlier studies have been performed on the effect on authority on decision-making, but there has been limited research on this subject in more specific business settings. This study is hence an attempt to extend this research field to identify how cognitive biases can affect a business decision. This study has a focus on purchasing decisions, since the group of students that were to respond to the case would feel comfortable with the topic. The CEO was chosen

as the authority in this case, since the CEO is considered to be very reliable, which is necessary in order to make it plausible to induce anchoring bias in the decision.

In order to understand why anchoring bias can be induced and how it should be overcome, it is essential to also discuss related cognitive biases, since cognitive biases are overlapping and it is therefore difficult to prove that an effect only depends on a specific bias. Furthermore, research on specific anchoring bias in business contexts is as mentioned limited, why it is important to also present related cognitive biases. Thus, this report also aims to discuss the cognitive biases priming, framing, availability bias, confirmation bias and groupthink.

## **1.2 Scope**

This report investigates and analyses whether anchoring bias is induced in a purchasing decision for a company, by providing different treatment by an authority in a case study conducted on students from the program Industrial Engineering and Management. Anchoring bias is the main focus, but this report also discusses the related cognitive biases priming, framing, availability bias, confirmation bias and groupthink. The case results have been analyzed in the statistical software Stata and compared with the theoretical framework presented in order to identify if anchoring was observed. The report also contains how the anchoring bias and related cognitive biases can be overcome.

### **1.2.1 Concept Clarification: Anchoring Effect caused by Authority**

Research is available regarding the effect of authority in a more direct sense, such as in the well-known Milgram's experiment for obedience. The experiment, in which participants take the role of the teacher and provide electric shocks of increasing intensity to presumed students as the latter give the wrong answer to questions, have proved that use of authority yields substantial effect on decisions. This might however be more of a social pressure effect than a cognitive bias. Although both might be relevant in a wider setting, the main focus of this study is on the latter, since the individual of authority is not personally present for participants.

Stated differently, the case study in this thesis is concerned with the tendency to ascribe an authority's claim an inappropriate degree of reliability, thereby causing a biased decision. This tendency, being an indirect effect of authority, assumed expertise or status is sometimes referred to by the terms "appeal to authority", "argument from authority" but also

“argumentum ad verecundiam”. Its definition, while having similarities with the treatment in the case, is however somewhat narrow. It is often described as a logical fallacy where a statement is simply concluded to be true because an authority or expert claims so, whereas the business case in this study is of a more complex nature, as several factors are weighted in arriving at a decision.

Also, the effect of the treatment in the case is not expected to yield an immediate conclusion, but rather to distort views and adjust weights on aspects impacting the decision. Hence, given this more complex structure, the anchoring bias, in the sense that the claim by an authority may anchor the attention of participants to specific factors, was observed to be the best fitting concept for the study. Furthermore, although the term “appeal to authority” itself is acknowledged, quite limited research is available regarding its presence and implications in different settings. One reason might be that its associated tendencies, as in the thesis at hand, are instead explained in terms of different acknowledged cognitive biases. It is however important to notice that the given tendency might be referred to differently by different parties, and that terms such as “appeal to authority” and “champion bias” might refer to a corresponding or closely related concept.

### **1.3 Method**

Both qualitative and quantitative approaches have been used in order to fulfil the purpose of this report. Literature research in areas of cognitive bias, with focus on anchoring, has been obtained in order to determine the theoretical framework, while quantitative approaches as well as knowledge from lectures in areas of Basic Econometrics have been used in order to perform a case on students and thereby test for the anchoring bias. The case has been solved by a total of 42 students, whose responses were analyzed using statistical software. The result from this analysis has thereafter been analyzed further by comparison with the theoretical framework, from which a conclusion has been drawn.

The primary information in the study is thereby gathered by the case performed on students and the secondary information has been gathered through literature research. Verification of secondary information has been made by using several references and comparing these with each other. This has been helpful in source criticism and thus increased the reliability of the report. *Thinking, Fast and Slow* by Kahneman (2011) has been used frequently when explaining how the human mind works and why some cognitive biases occur. Kahneman



received the Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel in 2002 for his work in prospect theory and is well known for his research within psychology of judgement and decision-making. This reference is thus considered to be a credible source and is also verified and complemented with scientific articles and books in the theoretical framework.

Also, while research is available regarding the effect of direct use of authority on participants decisions, it is important to notice that the case at hand studies the indirect effect of authority, status and credibility ascribed to a specific title, and its associated effect on decisions in a paper form case. Therefore, research regarding direct use of authority was consciously omitted, as the individual having presumed authority was not personally present in the experiment, but only referred to figuratively by quotation in the case. Next section will explain more about the methodology of the case.

### **1.3.1 Case Method**

A random sample of 42 students from the Industrial Engineering and Management program were selected to carry out the case. Approximately half of the respondents were from the Royal Institute of Technology and the other half were from Chalmers University of Technology. One of the aims of having this selection was to attain a sample group where differing background, knowledge and ability would not be a significant factor in the outcome. Furthermore, the business case is a well-known format to the respondents concerned. In the Industrial Engineering and Management program, students study both business strategy and mathematical analysis and are presumably prepared for a future career in decision-making positions. This makes the group highly relevant to analyze with respect to cognitive bias in strategic decisions.

The participants were submitted the case in paper form, having fifteen minutes to individually read it through, analyze included data, weight perspectives and then select and motivate one of two recommendations.

*The case contains:*

- A description of the company, an engine manufacturer in the automotive industry
- The company's vision, including priorities in both quality, reasonable price and low environmental impact. The purpose being to hold several aspects open for interpretation and provide the possibility to weight them differently.

- A current situation of financial distress, requiring measures to be taken.
- A suggestion to evaluate supplier alternatives regarding delivery of a specific item as a way to improve conditions, leading to a choice between remaining with the current German supplier or switching to a specific Chinese supplier, thereby signing a contract running for three years.
- Data on fixed and variable costs for both alternatives, which by correct calculations imply a break even at 30 000 units, above which the cost structure favours the Chinese supplier.
- Sales levels for the concerned item from six previous years, as to be weighted against the sales forecast later claimed by the CEO.
- Purchasing expenditures related to the item for two previous years, to indicate that an increase in costs would exceed the budget.
- Budget related to the item for the upcoming year, which is exceeded by choosing the German supplier at the higher volumes later claimed by the CEO.
- A comment from the CEO regarding the current situation, but also an outlook including the previously mentioned sales forecast regarding sales for upcoming years.

However, half of the respondents were provided cases containing a few extra rows of text, which constitute the *treatment*, which according to the hypothesis was meant to bias their decision inappropriately. While the CEO of the company maintains a sales forecast in all cases, the addition of the treatment was that one of the supplier alternatives was being explicitly recommended, namely, the German supplier, despite being at odds with the claimed sales forecast and its accompanying costs. Also, the CEO somewhat arbitrarily states that quality is important for the company, and that the relationship with the German suppliers “took many years to build”. However, the case earlier stated that there might be other suppliers able to deliver the corresponding quality, a statement which is not falsified by the arbitrary claim that quality is important, despite being mentioned together with a specific recommendation. Furthermore, the statement that a relationship to a supplier takes many years to build can also be questioned regarding decision-making value, partly because it is old news, but also because it can be turned around in favour of the Chinese supplier, preparing for the more favourable market implied by the sales forecast. Hence, the purpose of the treatment is to anchor attention to specific (but already known) aspects, giving them an undue amount of importance for less legit reasons. Or, stated differently, overweighting them based on

authority and opinion, rather than facts. See Appendix A for the case without treatment and Appendix B for the case with treatment (i.e. the CEO suggests the German supplier).

However, a word of caution is in order. The recommendation of the CEO could be viewed as revealing facts about the relative importance of different aspects for the company. More importantly though, granted that the respondent ascribes high credibility to the claimed sales forecast of the CEO, the German supplier exceeds the budget for 2014. Break even between the German and Chinese supplier is at 30 000 units, which means that the Chinese supplier is the only option in order to stay on budget when producing 32 000 units the upcoming year. Once again, it is important to notice that the recommendation by the CEO contains a contrary message. If the CEO would make a specific recommendation for an arbitrary but consistent reason, and respondents would agree, this could indicate anchoring bias. But it would be more of a challenge to draw any strong conclusions, since respondents might assume that the CEO has important insider information and, since listening more to authority sometimes may be legit. However, since the message given by the CEO in the case with treatment is contradictory, if respondents given treatment are significantly more likely to choose the German supplier, this is sufficient to draw conclusions about anchoring bias at the given significance level.

It is however also important to know more about the respondents' recommendations, why they were also asked to write down a motivation for the recommendation answered as well as fill out a post case form, see Appendix C. The post case form was the same regardless of whether the respondent had been given the treatment, and included a question regarding what specific data had been emphasized when solving the case as well as an opportunity for the respondent to write down any other thoughts related to the case and how they solved it. Furthermore, there was a five-point scale in which the respondent filled out if they felt that they had and took time to reflect over the decision (i.e. which supplier to recommend) and also how much emphasis they had put on the words of the CEO.

### **1.3.2 Statistical Method**

The dependent variable in the case was the choice of supplier, denoted *Recommends German supplier* below. As there are two available options, supplier is a binary variable (1=German supplier, 0=Chinese supplier). The same binary characteristics apply to *treatment*.

The results from the survey were analyzed in the statistical software Stata. The effects of different variables on the dependent variable supplier were modelled with an equation of the form:

$$\text{Recommends German supplier} = \beta_0 + \beta_1 * \text{treatment}$$

Where control variables such as gender were also included.

Attention was brought mainly to the magnitude of the coefficient  $\beta_1$ , which, according to the hypothesis would indicate the effects of *treatment* on the choice of supplier.

Other regressions were also performed to investigate relationships between variables acquired from respondents' motivation regarding supplier choice, and from data contained in their post case form sheet. For example, the effect of treatment on the contents of respondents written motivations was investigated. In cases where the dependent variable was binary, such as for the most central regression presented above, probit regression was used, and mfx (marginal effects) was thereafter used to evaluate marginal effects at the independent variable's mean value. However, if the independent variable (e.g. treatment or gender) was binary as well, the marginal effect of discrete change from 0 to 1 was observed (which is also default for such applications using mfx). Where the dependent variable was non-binary, ordinary least square regression was used to estimate coefficients. A declaration of included variables as well as all relevant regressions is found in the results section. Thus, the study investigated both the effect of treatment on the choice of supplier recommendation, but also explored its effect on other relevant variables. Variables were also investigated pertaining their effect on each other, both with and without treatment. For example, time related variables were reviewed regarding their effect on contents of the motivation, for specific reasons.

## **2 Theoretical Framework**

The theoretical framework presents the theory behind anchoring and how this can affect decision-making. Furthermore, related biases to anchoring will also be presented, since this is essential in order to understand when anchoring is induced and how it can be overcome. The theoretical framework also presents discussion on how bias arises in specific business settings and how it should be countered, including strategic decision-making and meetings, but also in investment selection and risk evaluation.

### **2.1 Anchoring**

According to Esch et al. (2009), “anchoring refers to a biased judgment of a stimulus based on an initial assessment of another stimulus and an insufficient adjustment away from that initial assessment”. This means that an earlier presented value affects people when they are to estimate an unknown quantity, which then will be close to the value that was considered before the estimation. An example of the anchoring effect is how you get influenced by the asking price when buying a house (Kahneman, 2011). A higher asking price will influence you to value the house higher than you would have done if the asking price was lower. According to Kahneman (2011), “any number that you are asked to consider as a possible solution to an estimation problem will induce an anchoring effect”.

Numeric judgments under uncertainty is the most observed anchoring effect, since a lot of studies have been done in this field (Esch et al., 2009). However, the anchoring effect of a judgment does not have to be a numeric one (Cohen & Reed, 2006), but is a general phenomenon (Soman & Chattopadhyay, 2007). Hence, “every time individuals form an image about a stimulus while another stimulus is present, this image may be subject to anchoring effects” (Esch et al., 2009).

Anchoring is produced by two different mechanisms, where one occurs in System 1 and one in System 2. In System 1, anchoring is an automatic manifestation, which occurs by a priming effect. In System 2, anchoring instead occurs in a conscious activity of adjustment. However, there is in most cases no corresponding subjective experience in anchoring. This effect is therefore often perceived by people as unbelievable. (Kahneman, 2011)

According to Kahneman (2011), anchoring is a case of suggestion, since words, numbers or pictures can get someone to see, hear or feel something. An example of this can be when asking people a question if someone can feel that it itches a little on their left arm, which will

result that some people report that it actually does itch a little. Another example is a study where people were asked about the average price of German cars (Kahneman, 2011). The anchor in this case was to make suggestions of car brands after the question was asked. They used a high anchor that named luxury car brands (such as Mercedes and Audi) and a low anchor that instead named mass-market cars (such as Volkswagen). By priming these brands, the study showed that the participants who were exposed to the high anchor tended to guess on a higher average price of German cars than the participants who were exposed to the low anchor. Thus, anchoring is explained by “the selective activation of compatible memories” (Kahneman, 2011).

In order to reduce or eliminate the anchoring effect, it is important to activate System 2 by searching the memory for arguments against the anchor (Galinsky & Mussweiler, 2001). Hence, “thinking the opposite” is a strategy to guard oneself against these effects (Kahneman, 2011). System 2 is however working on data retrieved from memory, where an anchor makes it easier to retrieve certain data (Kahneman, 2011). It is thereby difficult to reduce or eliminate the anchoring effect, even when activating System 2.

## **2.2 Biases Related to Anchoring**

As there is limited research on specific cognitive biases, it is important to also introduce closely related biases to anchoring in the report. This in order to understand how anchoring can be induced, but also how anchoring can be overcome. Moreover, it is not clear beforehand that the case study performed on students induces precisely anchoring bias. Therefore, it is essential to present knowledge about related biases in order to understand anchoring and be able to analyze the case results. This section therefore presents priming, framing, availability bias, confirmation bias as well as groupthink.

### **2.2.1 Priming**

Priming is defined in the *Encyclopedia of Neuroscience* as “the effect where a prior exposure to a stimulus exerts influences on a subsequently given stimulus” (Binder et al., 2009). Kahneman (2011) gives numerous examples of this effect in the book *Thinking Fast and Slow*, such as how you complete words differently depending on other words you have recently seen or heard. For example the word fragment SO\_P will probably be more likely to be completed as SOUP if you have heard or seen the word EAT or any other words that relate to this. If you on the other hand would have seen or heard the word WASH, you would instead

temporarily complete SO\_P to SOAP. In this example, the idea of EAT primes the idea of SOUP while WASH primes SOAP (Kahneman, 2011). According to Binder et al. (2009), “priming produces a faster and/or a more accurate response to a stimulus associated with a previously presented stimulus called prime”.

However, priming is not only restricted to concepts and words, but your emotions may even be primed by events without you being aware of it. You have no conscious access to the priming phenomena, since it arises in System 1 (Kahneman, 2011). Hence, stimuli that you do not pay attention to or are completely unaware of can influence your behaviour and thoughts and the environment of the moment may thereby have a major impact on the decisions.

The priming results threaten people’s subjective sense of agency and autonomy, since it does not correspond to subjective experience. This is why many people find the priming results unbelievable and even upsetting (Kahneman, 2011). People want to feel independent and free and do not want their thoughts to be guided or constrained. Furthermore, Kahneman (2011) explains that it is hard to imagine the effect yourself, since it is impossible to know how you would have reacted if the environment were different. Therefore, you should always assume that priming is present in all your decisions and if necessary mobilize yourself by activating your System 2 to combat the effect (Kahneman, 2011).

### **2.2.2 Framing**

An example of when framing effects occur is when the same information is presented in different ways, and thereby evokes different emotions (Kahneman, 2011). Compare the following two statements: “The odds of survival one month after surgery are 90 %”, and secondly, “mortality within one month of surgery is 10%”. Both imply the same probability, but with different frames. The first is likely to evoke a more positive response. Another example is when a product is presented as being “90 % fat free”, or “10 % fat”, respectively.

Framing can induce different conclusions in decisions. In the article *Breaking the frame: An analysis of strategic cognition and decision making* (Hodgkinson et al., 1999), the authors perform a study involving undergraduates, proving that framing a business situation differently can cause both risk aversion and risk seeking tendencies. However, a technique referred to as cognitive mapping, in which participants draw a diagram of causal relationships between relevant variables, which are represented as nodes, was proven to decrease framing bias in the given study if applied before the decision. (Hodgkinson et al., 1999)

Kahneman and Tversky (1983) distinguish between when a frame, which induces values in favour of a particular decision, is unlikely to affect the experience resulting from a decision, and when it might. For example, framing therapies for lung cancer in terms of survival rate or mortality is likely to affect a decision on whether to apply, but not substantially affect the experience of the therapy itself. On the contrary, framing expenditures related to insurance either as the price of being ensured, or as an uncompensated loss can affect both the decision whether to hold a specific insurance, but also the experience that follows from such expenditures. (Kahneman & Tversky, 1983)

Kahneman and Tversky (1983) also point out that although an individual might feel a sense of confidence in a choice given a particular frame, this does not ensure that the same individual would make the same decision in another. Hence, actively seeking out different frames to the same problem is an appropriate practice to test robustness of the initially preferred decision. (Kahneman & Tversky, 1983)

### **2.2.3 Availability Bias**

Availability heuristic is the ease that one can bring exemplars of an event to mind and how this affects the process of judging how frequently the event occurs (Kahneman & Tversky, 1982). Both System 1 and System 2 are involved in the availability heuristic, which means that it is both an automatic operation and a deliberate problem-solving strategy. The availability heuristic is a heuristic of judgment that substitutes one question for another, which result in systematic errors, or biases, in judgment. (Kahneman, 2011)

For example, a car crash that is well covered in media will temporarily affect how you feel about the safety of driving a car. Therefore, an event that reaches your mind will temporarily increase the availability of its category (Kahneman, 2011). By reconsidering your feelings and decisions, the potential availability biases can be resisted (Kahneman, 2011). In the the previous example, we should question if the fear of driving a car is reasonable or if it is just an illusion caused by an event. By maintaining the vigilance against biases, by activating System 2, we are more likely to avoid making mistakes in decisions (Kahneman, 2011).

The availability heuristic can however also be used to achieve behaviour changes in a positive way. Ukpong et al. (2011) have found that children's ability to identify more energy efficient behaviours increases by the use of educational interactive systems. By letting children play a game that is designed to present more energy efficient behaviours, children get positively



influenced, which affects the child's behaviour regarding energy efficiency (Ukpong et al., 2011).

In terms of product risk, consumers can estimate product failures by determining how easy it is to bring such events to mind (Folkes, 1988). Significant changes occurs in consumers' behaviours when they perceive a risk of purchasing a product; such as becoming more information seeking, become brand-loyal, stick to well-known brands as well as taking other measures in order to minimize product failure (Roselius, 1971). Thus, it is important to understand when consumers perceive risks in purchasing (Folkes, 1988).

#### **2.2.4 Confirmation Bias**

Confirmation bias is, according to Hernandez and Preston (2013), "where people selectively seek evidence that is consistent with their prior beliefs and expectations". This result in a biased search for information and thereby an increased risk to overestimate the probabilities of unlikely events in decisions, since evidence is not being considered fully. Kahneman (2011) discusses how confirmation bias may arise by associative memory when asking someone if a person they know is friendly or if that person is unfriendly. Depending on how the question is addressed, different instances of the person's behaviour will come to mind to the participant. Therefore, the answer will probably be different even though the question is the same, which result in a biased result. According to Kahneman (2011), the associative memory arises in System 1 and is triggered by specific descriptions.

Hernandez and Preston (2013) suggest in their study that confirmation bias can be reduced by changing the style of an argument presentation and thereby bring forth more opposing views. In their study, arguments that promoted more careful, analytic processing made participants with prior attitudes become less extreme in their views. More careful, analytical processing were achieved by presenting the arguments in a disfluent format, since this results in an increased effort during reading and thereby the participants processed the material more comprehensively. Hence, disfluency can reduce the confirmation bias. The confirmation bias is however not reduced by disfluency when people are under cognitive load, since cognitive resources are necessary in order to overcome confirmation biases. (Hernandez & Preston, 2013)

### **2.2.5 Groupthink**

Groupthink refers to the tendency for groups to arrive at bad decisions as the striving for unanimity exceeds the motivation to be realistic and evaluate alternatives. Another definition refers groupthink to a deterioration of mental efficiency, reality testing and moral judgement resulting from group pressure. (Jones & Roelofsma, 2000)

Groups that are under influence of this bias are more concerned with consensus than the process of which it is formed. Another related description is that members are more concerned with not rocking the boat, than the quality of the very decisions. (Jones & Roelofsma, 2000)

Symptoms include overconfidence and stereotyping people outside the group, a strong pressure to conform. Common implications are insufficient information search and survey of alternatives. (Jones & Roelofsma, 2000)

## **2.3 Biases in Specific Business Contexts**

This section presents discussion on how bias arises and how it should be countered in specific business settings, including strategic decision-making and meetings, but also in investment selection and risk evaluation.

### **2.3.1 Strategic Decision-Making and Meetings**

In the article *Distortions and deceptions in strategic decisions* (Lovallo & Sibony, 2006), the authors discuss implications of different biases on strategic decision-making. Despite the enormous resources invested in such activities as strategic planning, important decisions often boil down to judgement, which in turn is vulnerable to biases and misaligned incentives. Among cognitive distortions, the authors claim that over optimism and risk aversion are the most significant sources of error in strategic decisions, as all strategy decisions involve an element of risk. (Lovallo & Sibony, 2006).

Meetings are an important setting in strategic decision-making for businesses. However, meetings are also prone to several biases (Lovallo & Sibony, 2010). According to Kahneman and Klein (2010), one of the biggest issues in the meeting setting is an inclination to marginalize people who express disagreement in meetings. Rather than exploit the opportunity to nuance perspectives and be curious about dissenting views, leaders often expect people to agree or start questioning their critique. (Kahneman & Klein, 2010)

The hierarchic nature of companies often inhibits free debate in meetings. People thereby become prone to agree, in particular with their seniors, holding back their own views and waiting for the most senior executive to take a stance. In such an environment, groupthink is likely to occur (Roxburgh, 2009). This is also related to the connection between anchoring and overweighting authority in decisions, which is examined in the case study and will be discussed more comprehensively later.

As addressed earlier, groupthink refers to the tendency for groups to be more inclined to strive for consensus than to be realistic and evaluate alternatives. Under a strong pressure to conform, a group can create an illusion of invulnerability (Jones & Roelofsma, 2000). Furthermore, one among central aspects of groupthink is collective over optimism (Kroon et al., 1991). Over optimism, while not being challenged, may lead to unrealistic forecasts, but also underestimation of related challenges (Lovallo & Sibony, 2006). Executing a merger without considering the clash between corporate cultures is an example of this phenomenon (Lovallo & Sibony, 2006).

Availability bias is another common barrier to effective strategic decision-making. Presenting prepared facts for a specific decision during a meeting will often reduce the inclination to seek out more information. As Kahneman (2011) points out, there is an inclination to think that “what you see is all there is”, or to conclude that the given information is what is appropriate to make a particular decision.

### **2.3.1.1 Suggested Counter Strategies**

Perhaps the most central remedy to bias in meetings is to encourage constructive debate and questioning. Although groups may be prone to bias, using debate correctly to break down weak arguments and assumptions is a powerful tool, which is not available to the individual in the same sense. (Lovallo & Sibony, 2006)

Another important tool is to create a learning environment with feedback systems to compare outcomes to forecasts and expectations. Forecasts that proved to have a sound sense of judgement should be rewarded, whereas over optimism should be observed and corrected. Important decisions could also be tracked to identify other biases in need of correction. The CEO could also meet up with managers to actively reflect over past decisions, in order to integrate a process of improving decision-making in the organization. (Lovallo & Sibony, 2006)

Framing, whereas often referred to as a bias in the negative sense, can also be used constructively. Under some circumstances, a strong frame can increase functionality. An example is to use framing in order to clearly distinguish the purpose of a meeting, thereby separating such as reaching the best decision from aligning the team and increasing commitment. This might also make for more deliberate considerations as to whom the appropriate meeting participants ought to be for the given purpose. (Lovallo & Sibony, 2006)

However, people sometimes tend to stick with defending their original opinion based on prestige (Lovallo & Sibony, 2006). Another strategy therefore, is to have people write down what they perceive to be the pros and cons of different solutions to the question, without considering what the best answer would be (Mulcahy, 2010). Thereafter, the group can discuss the portfolio of pros and cons given a more nuanced picture than if someone had set a strong frame advocating a particular solution.

Yet another way to mitigate the effect of self-interest on views as discussed above, is to hold a senior-management seminar where discussants have to advocate another individuals preferred strategy. Despite the fact that it might be viewed as an artificial exercise, this can help individuals widen their perspectives as they need to acknowledge the merits of another view. Also, the group might be more open to adopt a plan using a mix of positive aspects from the different strategies, rather than just selecting a winner. (Lovallo & Sibony, 2006)

Among techniques related to the commonly discussed devil's advocacy approach, is the premortem exercise, wherein the meeting participants are asked to imagine for example the proposed project to have been a total failure, and thereafter write down reasons as to whether it failed. This is claimed to be a way of incorporating contrarian, devil's advocate thinking, yet avoiding resistance. (Kahneman & Klein, 2010)

### **2.3.2 Investment Selection and Risk Evaluation**

Although selecting what to invest in is a strategic decision, this particular category is prone to biases, which ought to be addressed in their specific setting.

In *A bias against investment?* by Koller et al. (2011), and contrary to the overconfidence often discussed in relation to investments, companies were systematically under investing at the given time, despite favourable investment opportunities. Although one factor might have been fear of a double dip in the economy, the authors go on to ascribe the low investment rate to biases related to investment decisions. A global survey done by McKinsey showed that the

executives themselves thought they were under investing in areas such as sales, marketing, and start-ups for new products and new markets. The authors advocate that the given tendency imply not only a loss for the companies concerned, but also damages economies including job creation efforts. Also, while this tendency is being left unrectified, it gets further conserved in the company. Under investing can often be taken as a sign of loss aversion, where potential losses receive more weight than equivalent upsides. (Koller et al., 2011)

The most common bias in the survey proved to be confirmation bias, which however can lead to overinvesting as well (Koller et al., 2011). Another common bias was the tendency to rely too much analogies for investment which are not appropriate or applicable for the specific investment decision. Yet another observed tendency was the champion bias, where people tend to put too much emphasis on the individual supporting or making a specific investment proposal, rather than putting emphasis on the merits of the proposal itself (Koller et al., 2011). This bias can be thought of as part of anchoring in its wider sense, and a central part of the treatment in the case.

An important notice is that the idea of accounting for personality might be legit in itself. However, the champion bias implies that individuals often tend to look for aspects of a persons reputation in situations when it has very low predictive value (Lovallo & Sibony, 2006). Koller et al. (2011) also claim that many among the common biases can be traced down to past experience of those who make or support proposals. Furthermore, the presence of bias proved to have significant effect on whether investments performed above or below expectations. Major investments of respondents reporting fewer biases had overall performed better than expected, and vice versa (Koller et al., 2011).

Executives in the survey were also given a hypothetical scenario with an investment yielding possible gains of \$400 millions and a possible loss of \$100 millions. Remarkably, most were only willing to accept a risk of loss in the interval of 1-20 %, suffice it to say that the net present value of the investment would be positive up to 75 %. This systematic risk aversion explains why several companies fail in exploiting beneficial investment opportunities. The size of the investment might sometimes justify caution. But the loss aversion remained even though the investment size was scaled down, removing doubts about bias. The smaller size of investment and the fact that smaller opportunities occur more often, thereby decreasing variance, did not seem to mitigate the tendency. (Koller et al., 2011)

In yet another article, the same authors discuss the fact that incentive structures within organizations might amplify risk aversion and unwillingness to tolerate uncertainty even though the project at hand implies a positive expected value. A simple example illustrates this agency problem. A manager of a company may often prefer less risky investment selection if these still meet his earning goals; even though the expected value for the organization is substantially higher choosing the riskier investment, this might not provide incentive enough for the manager at hand. (Koller et al., 2012)

Relating to this is the fact that managers often have different time horizons than companies. In several companies in the consumer goods industry, managers who rotate quickly between jobs proved to be more inclined to favour alternatives with short-term payback (Sibony et al., 2006). While this might not come as a surprise, it is nevertheless a fact that such tendencies entail decisions, which are biased in relation to a more long term corporate strategy.

CEOs considering large investments are generally more prone to risk aversion than overconfidence, the authors claim. Also, although the two might coexist, it does not necessarily mean they counteract each other (Lovallo & Sibony, 2006). In large investments relative to the size of the company, more caution may be justifiable to avoid financial distress (Koller et al., 2012). Mid Level executives frequently doing smaller investments ought to be risk neutral, giving risks and rewards the same weight given the corresponding likelihood, but proved to have an inclination to overweight risks, despite the fact that the likelihood of several projects failing at the same time is small, unless the projects concerned are exposed to the same risks (Koller et al., 2012).

Another important tendency observed in the matter of frequent investments is narrow framing, where individuals frame the investment as a single, separate phenomenon, failing to see the larger portfolio context of the company's investments. The authors in particular discuss the importance of pooling risks together across multiple projects in the organization, as this leads to a substantial reduction in risk aversion. Aforementioned also claim that by systematically considering investment outcomes in isolation, the inclination towards narrow framing and risk aversion is actually institutionalized in the company. (Koller et al., 2012)

An important part of the cause of risk aversion is often found in the corporate culture, as a lot of companies hold individuals responsible for projects failing, even though the outcome was beyond control (Koller et al., 2012). This scapegoat culture, including the failure to

distinguish between success factors that are controllable or uncontrollable amplifies loss aversion, which is claimed to be the primary driver of risk aversion by the authors. Thereby, corporations fail to leverage well-calibrated risk taking, which ought to be a central source of competitive advantage. (Koller et al., 2012)

### **2.3.2.1 Suggested Counter Strategies**

Project plans ought to include a broader range of scenarios, including both failure and great success, not to forget the potential upside and give evaluators a better picture of potentials and risks, and avoiding all too simplified scenarios such as only two outcomes, or a baseline scenario together with arbitrary percentage upside and downside scenarios. For example, in product development, managers should consciously include the probability of a home run scenario, not to neglect such potential while comparing investment in projects, and also outline those projects in a manner that captures the upside of a very beneficial scenario. (Koller et al., 2012)

For important investment decision, a legit alternative might be to take use of a second opinion outside the company, such as an investment firm (Lovallo & Sibony, 2006). Another measure is to explicitly ban arguments concerning investments, which refer to an individual's reputation more than facts, and also purely anecdotal arguments to ensure that such occurrences do not get unwarranted credit (Lovallo & Sibony, 2006).

Regarding the difference in time horizons between managers and companies, the biases at hand can be mitigated if companies put effort into examining activities that may be part of the cause, such as the identification- and evaluation processes for projects; but also the structural incentives and managerial rewards (Koller et al., 2012). Relating to managerial incentives; another key principle is to reward skill, not luck. This includes the ability to distinguish between what is controllable and not, and the incentive structure should be designed to account for this matter. Specifically, managers performing well in projects but failing due to factors beyond control should still be rewarded, whereas managers performing poorly but succeeding due to luck should not. (Koller et al., 2012)

The company may consciously increase its inclination to offer managers riskier projects, and offer a more detailed review of such investments in cases where high potential is observed. Managers should also evaluate their discount rates for projects, which are often too high, particularly for frequent or small investments, and implement the portfolio perspective.

Moreover, managers performance should as far as possible be evaluated for their portfolio of investments, not blamed for single outcomes or punished for legit risk taking. (Koller et al., 2012)

A suggestion related to this is to establish internal venture funds, or a separate organization, providing for riskier projects where potential is observed. This has been applied by for example IBM, to pursue emerging business opportunities, providing the advantage of increased flexibility (Lovallo & Sibony, 2006). Koller et al. (2012) also advocate the importance of having a corporate center responsible for implementing the aforementioned remedies. Thereby, this unit can support the risk calibration of the company, pooling project risks and outcomes, and designing policies (Koller et al., 2012).

In conclusion, academic research has detected and investigated several cognitive biases in a general sense. Also, several systematic tendencies in business are being acknowledged by less strictly academic sources such as McKinsey Quarterly and Harvard Business Review, where what is referred to as “champion bias” might be the one most closely related to this thesis. However, there is a lack of academic research regarding the effect of authority on strategic business decisions. Thus, the case study of this thesis aims to provide more knowledge to this particular field of research. Its results will be presented below.



### 3 Empirical Section

The empirical section presents the results of the study carried out at 42 students, which is analyzed with the statistical software Stata. This section also presents qualitative information such as the motivation for the recommendation given from the respondent as well as information from the post case form.

#### 3.1 Case Result

Several regressions were performed in Stata, among which the one's holding relevant information concerning the case and its outcome will be presented below.

**Table 1:** Summary Statistics

Variable	Baseline	Treatment	<i>p</i> -value
Recommends German supplier	0.67 (21, 0.48)	0.71 (21, 0.46)	0.7416
Gender (1 if male)	0.48 (21, 0.51)	0.38 (21, 0.50)	0.5378
Decision time (minutes)	10.6 (21, 2.84)	10.0 (21, 2.35)	0.4820
Took time to reflect	3.62 (21, 0.74)	3.90 (21, 0.54)	0.2156
Emphasis on CEO opinion	3.29 (21, 0.78)	3.05 (21, 0.86)	0.901
Stresses Quality of German supplier in motivation	0.19 (21, 0.40)	0.29 (21, 0.46)	0.4741
Stresses Relationship to German supplier in motivation	0.095 (21, 0.30)	0.43 (21, 0.51)	0.0152

Note: Number of observations and standard deviations in parentheses (n, sd); *p*-value refers to a Mann-Whitney U-test).

#### Declaration of variables:

- *Recommends German supplier*: Binary variable holding 1 if the respondent recommends the German supplier, and 0 recommending the Chinese supplier.
- *Gender*: Control variable, holding 1 for male and 0 for female respondent.
- *Decision time* (minutes): The respondent had at maximum 15 minutes to complete the case, recommend a supplier and write a few rows to motivate the choice, before filling in the post form. Thus, this variable contains the number of minutes taken to complete the case.
- *Took time to reflect*: This variable contains the value 1-5 corresponding to the value stated by the respondent in the post case form in response to the question “Would you say that you had and took time to reflect over the decision?”, thereby providing a possibility to control for this aspect.

- *Emphasis on CEO opinion*: Similarly, this variable contains the value 1-5 regarding what degree of emphasis had been given to the words of the CEO, according to the respondent at hand.
- *Stresses Quality of German Supplier in motivation*, as well as *Stresses Relationship to German supplier in motivation* are both binary variables, whose value was retrieved from the motivation by each respondent, holding 1 if true and 0 otherwise.

**Table 2: Recommending the German supplier: Probit regression results**

Model:	(1)	(2)	(3)	(4)
Dependent variable:	Recommends German supplier	Recommends German supplier	Recommends German supplier	Recommends German supplier
Treatment	0.135 (0.33)	0.207 (0.50)	0.378 (0.84)	-1.93 (-0.49)
Decision Time		0.119 (1.44)	0.176** (2.09)	0.0893 (0.61)
Gender			1.03** (2.07)	1.41 (1.26)
Took time to reflect				1.27*** (2.70)
Emphasis on CEO opinion				-1.64** (-2.40)
Treatment * Decision Time				0.0583 (0.31)
Treatment * Gender				-0.491 (-0.36)
Treatment * Took time to reflect				-1.28* (-1.68)
Treatment * Emphasis on CEO				1.88** (2.47)
Constant	0.430 (1.50)	-0.813 (-0.91)	-1.87* (-1.91)	0.0636 (0.02)
Pseudo r-squared	0.0021	0.0434	0.1394	0.2989
Number of observations	42	42	42	42

Note: \* denotes  $p < 0.1$ , \*\* denotes  $p < 0.05$ , \*\*\* denotes  $p < 0.01$ ;  $t$ -statistics in parentheses; robust standard errors.

**Table 3: Probit marginal effects evaluated at variable means**

Model:	(1)	(2)	(3)	(4)
Dependent variable:	Recommends German supplier	Recommends German supplier	Recommends German supplier	Recommends German supplier
Treatment	0.0476 (0.33)	0.0721 (0.50)	0.127 (0.86)	-0.532 (-0.56)
Decision Time		0.0417 (1.44)	0.0596** (2.13)	0.0263 (0.62)
Gender			0.325** (2.39)	0.373* (1.70)
Took time to reflect				0.375*** (2.76)
Emphasis on CEO opinion				-0.483** (-2.53)
Treatment * Decision Time				0.0172 (0.31)
Treatment * Gender				-0.160 (-0.34)
Treatment * Took time to reflect				-0.377* (-1.72)
Treatment * Emphasis on CEO				0.552** (2.51)
Constant	0.430 (1.50)	-0.813 (-0.91)	1.03 (-1.91)	0.0636 (0.02)
Pseudo r-squared	0.0021	0.0434	0.1394	0.2989
Number of observations	42	42	42	42

Note: \* denotes  $p < 0.1$ , \*\* denotes  $p < 0.05$ , \*\*\* denotes  $p < 0.01$ ;  $t$ -statistics in parentheses; robust standard errors.

As shown in model 1 in Table 2 and 3 above, the coefficient for treatment has a positive value, as expected by the hypothesis. However, the coefficient is not significant in the given sample of 42 observations. Adding control variables, as in model 2 and 3 did not change this fact. Nonetheless, a larger sample might yield significance for treatment. For the sake of discussion, a regression with 588 (i.e. 14\*42) observations where respondent answer proportions were held constant would be sufficient to yield significance at the 5% level, hence indicating that the lack thereof might be due to sample size, if the smaller sample is representative. However, acquiring such a large sample extends beyond the boundaries of the bachelor thesis at hand. Thus, further research would be required to draw any conclusions regarding the specific matter.

As seen in model (3), while controlling for both gender and the decision time in minutes until finishing the case, where the maximum was set to 15 minutes, the mentioned variables are both significant at the 5% level, indicating that being male, and taking more time to select which supplier to recommend both would increase the likelihood of choosing the German supplier, according to the regression result.

Regarding the coefficients, the marginal effects are of primary interest using probit regression. As earlier described, independent variables are, by using mfx for marginal effects, hence evaluated at their mean value, binary variables being the exception. Thus, table 3, model (3) implies that being male would increase the likelihood of choosing the German supplier with 32.5%, whereas taking one extra minute in addition to the mean value of approximately 10.3 minutes before deciding would therefore increase the same likelihood by 5.96%.

However, more specific information is obtained by separating the control variables depending on whether the respondents received treatment or not. In particular, the time related variables are of interest, as a means of providing information regarding whether more time mitigated the bias at hand. Model (4) hence show the effect of including several interaction terms, holding the respondents without treatment as a base group and thereby displaying effects of different variables for cases with and without treatment separately.

Not surprisingly, the emphasis put on the words of the CEO is highly significant both with and without treatment. For both, the effect of increasing the emphasis by 1 from the mean value implied a decrease and increase of around 50% for each case respectively. That is, respondents without treatment giving high credibility to the words of the CEO were more inclined to trust his sales forecast, hence selecting the Chinese supplier, whereas those given the treatment yet putting much emphasis on the words of the CEO were therefore likely to be agreeing with his additional statement, recommending the German alternative.

Interestingly, model (4) also show that respondents without the treatment were more likely to select the German alternative if taking more time to reflect, whereas the opposite was true given the treatment. The associated coefficient implies an increase or decrease in probability of selecting the German alternative of around 38% if the mean value for the variable (3.76 on a 1-5 linear scale) is increased by 1, for each group, respectively. The latter, while being given the treatment, might imply that time taken to reflect actually mitigates the bias, as respondents appear to have been less prone to listen to the recommendation of the CEO, recommending the German alternative.

**Table 4: Emphasis put on the words from the CEO, ordinary least squares regression**

Dependent variable: CEO	Emphasis put on the words from the CEO
Treatment	-0.310 (-1.15)
Time taken	-0.0659 (-1.26)
Gender	-0.194 (-0.72)
Took time to reflect	0.0552 (0.27)
Constant	3.88*** (4.23)
R-squared	0.0673
Number of observations	42

Note: \* denotes  $p < 0.1$ , \*\* denotes  $p < 0.05$ , \*\*\* denotes  $p < 0.01$ ;  $t$ -statistics in parentheses; robust standard errors.

Table 4 shows the ordinary least squares regression of how much emphasis the respondents stated that they ascribed to the words of the CEO in the case, controlling for several variables. Specifically, the coefficient for treatment is negative and of significant magnitude. While not being significant, this regression might nonetheless carry explanatory value as to why the coefficient for treatment's effect on supplier recommendation in the original regression did not yield significance in the sample.

**Table 5: Respondent stresses quality of german supplier in motivation: Probit regression results**

Dependent variable:	Stresses quality of german supplier
Took time to reflect	0.774* (1.76)
Decision Time (minutes)	0.0838 (0.87)
Gender	0.664 (1.40)
Constant	-4.91 (-2.42)
Pseudo r-squared	0.1422
Number of observations	42

Note: \* denotes  $p < 0.1$ , \*\* denotes  $p < 0.05$ , \*\*\* denotes  $p < 0.01$ ;  $t$ -statistics in parentheses; robust standard errors.

**Table 6: Probit marginal effects evaluated at variable means**

Dependent variable:	Stresses quality of german supplier
Took time to reflect	0.215* (1.86)
Decision Time (minutes)	0.0233 (0.87)
Gender	0.190 (1.39)
Constant	-4.91** (-2.42)
Pseudo r-squared	0.1714
Number of observations	42

Note: \* denotes  $p < 0.1$ , \*\* denotes  $p < 0.05$ , \*\*\* denotes  $p < 0.01$ ;  $t$ -statistics in parentheses; robust standard errors.

Table 5 and 6 show the results of regressing the binary variable “Stressed quality of German supplier” retrieved from the respondents’ motivation of supplier choice, holding the value 1 if the respondent stressed the quality aspect of the German supplier, and 0 otherwise. As shown, the regression yielded significance for the coefficient of time taken to reflect at the 10% level. That is, taking more time to reflect appears to have increased the propensity to select the German supplier. The value was stated on a linear 1-5 scale by respondents in the post case form, holding an average value of 3.76. Hence, the coefficient in table 6 implies that an increase by 1 from the mean to 4.76 would imply a 21.5% increase in probability of stressing the assumed quality of the German supplier. Regarding treatment; excluded regressions showed that treatment was far from having any significant effect on the dependent variable above, why it was omitted in the regression.

**Table 7: Respondent stresses relationship to german supplier in motivation: Probit regression results**

Dependent variable:	Stresses relationship to german supplier
Treatment	1.28*** (2.80)
Gender	0.637 (1.43)
Constant	-1.71*** (-4.29)
Pseudo r-squared	0.1714
Number of observations	42

Note: \* denotes  $p < 0.1$ , \*\* denotes  $p < 0.05$ , \*\*\* denotes  $p < 0.01$ ;  $t$ -statistics in parentheses; robust standard errors.

**Table 8: Probit marginal effects evaluated at variable means**

Dependent variable:	Stresses relationship to german supplier
Treatment	0.363*** (2.91)
Gender	0.191 (1.35)
Constant	-1.71*** (-4.29)
Pseudo r-squared	0.1714
Number of observations	42

Note: \* denotes  $p < 0.1$ , \*\* denotes  $p < 0.05$ , \*\*\* denotes  $p < 0.01$ ;  $t$ -statistics in parentheses; robust standard errors.

Table 7 and 8 show the results of regressing the binary variable retrieved from the respondents' motivation of supplier choice, holding the value 1 if the respondent stressed the relationship to the German supplier, and 0 otherwise. The variable's coefficient yielded significance at the 1% level, supposedly indicating that the relationship to the German supplier became top of mind for respondents given the treatment, as its coefficient in the marginal effects imply a 36.3% higher probability of stressing the relationship to the German supplier in their motivation.

### 3.1.1 Stated Motivation

In addition to providing a recommendation to the company, respondents were also writing a short motivation for its recommendation. This section aims to summarize general tendencies regarding respondents written motivation and their reasoning, including both the group with and without treatment. More specific tendencies depending on whether treatment was given, will be addressed later and in a more quantitative manner, in the analysis.

To start off, the respondents that have chosen to recommend the Chinese supplier have most often based their decision on cost and the budget for 2014. By calculating, one can conclude that the break-even point is 30 000 units and that the Chinese supplier therefore will be less costly when producing 32 000 units year 2014. Furthermore, the budget will be exceeded by choosing the German supplier when producing 32 000 units. Since the company needs to cut costs in order to survive, the budget needs to be maintained. Furthermore, a respondent emphasize that the new contract will only be valid for the next three years and that the Chinese supplier probably will remain the cheaper alternative during this period.

Quality has been the main focus when the respondents have chosen to recommend the German supplier. Respondents emphasize that German suppliers are known for high quality

products compared to Chinese suppliers as well as the security of already having a relationship with the German supplier. Some respondents do not mention that this choice exceeds the budget, while others argue that it is worth it since it is lower risk to buy from the German supplier and that it is a negligible cost. Switching suppliers often involve a lot of hidden costs, such as costs of transaction, why some respondents argue that the German alternative may be less costly even when producing 32 000 units.

Furthermore, some respondents are suspicious against the CEO's forecast to produce 32 000 units next year. They emphasize the risk of wrong forecasting and that the German supplier would be the most beneficial if the company sell below 30 000 units, since the fixed cost is lower for the German supplier. Some respondents also discuss the longer lead times that will result from switching to a Chinese supplier as well as the need to have a larger safety stock. Furthermore, the longer transport distance is considered to be at odds with the company's environmental profile by some respondents.

### **3.1.2 Stated Emphasis on Specific Data**

The respondents were to write down in a post case form which specific data they did put most emphasis on when solving the case. Cost was definitely the data that the most respondents put emphasis on, by calculating the supplier costs at different quantities and figure out the breakeven point. Some respondent used the sales number for 2014 from the CEO and then compared the different supplier costs with each other as well as the budget. Some respondents however looked on previous sales and made an own sales forecast for 2014 by looking at trends and discussing the market situation. Delivery time was also a data that was mentioned by some respondents.

Furthermore, many respondents put a lot of emphasis on quality as a reason to choose the German supplier. Other mentioned environmental aspects since this is a part of the company vision. Many also stressed the difficulty of building new relationships and the transaction costs that may arise.



## **4 Analysis**

The analysis is divided into three parts. The significance of the central regression is discussed, followed by a discussion on why there was an absence of significance. This part also connects the case result to different biases presented in the theoretical framework. Furthermore, a top of mind effect of the current supplier relationship is also discussed.

### **4.1 Central Regression**

The most central regression of the study, shown in different forms in table 2 and 3, holding the choice of supplier recommendation as the dependent variable while testing for the effect of the treatment, did not yield significance for the coefficient of the latter, while nonetheless being positive. As stated, this might be largely due to sample size. However, several both relevant and significant tendencies were observed.

For the sake of discussion below, the bias of relying too much on the explicit recommendation of the CEO, and anchoring attention to associated aspects is assumed to be present.

#### **4.1.1 Additional Observations**

Interestingly, taking more time to reflect was observed in model (4), table 2 and 3 to have a mitigating effect on this presumed tendency, in that more reflection lowered the probability of choosing in line with the CEO's explicit recommendation, thereby exceeding the budget, choosing an alternative lacking facts supporting higher quality, but also imposing a cost structure less favourable for higher future volumes claimed by the same. Instead, respondents given treatment and taking more time to reflect was more prone to select the Chinese supplier, and thus appear to have been more cautious towards the explicit recommendation. While not completely unexpected, this is still an interesting relationship. As decisions in business are often made under some degree of time pressure, it is hardly unthinkable that seniors would be more prone to leverage their authority to come to a particular decision, while others might be more inclined towards agreement, both for the sake of coming to a decision, but also as a consequence of being given less time to reflect. An illustrative example would be when seniors would call to a meeting without informing participants about the decision and accompanying basis, already having a particular outcome in mind, thereby trying to minimize questioning.

On the other hand, respondents who were not provided the treatment were interestingly enough more prone to select the German alternative. This matter will be further addressed below.

Respondents who put more emphasis on the CEO were more likely to choose the associated supplier for each case. That is, the group without treatment was more prone to choose the Chinese alternative based on the CEO's sales forecast, while for the treated group, putting more emphasis on the CEO was associated with following his added and explicit recommendation of the German alternative. The associated coefficients were not surprisingly significant. However, it is important to notice that respondents receiving treatment and ascribing high credibility to the words of the CEO, hence choosing the German alternative, likely committed a logical error, unless they specifically stated that they thought the sales forecast itself was too optimistic, that they had focused instead on historical volumes or other related claims. This is because the sales forecast claimed by the CEO in the paragraph just before the explicit recommendation, while also being given great importance by treated respondents, would imply breaking the budget and imposing a less favourable cost structure for the given sales volume.

## **4.2 Explaining the Absence of Significance For Treatment in a Small Sample**

Going on, the lack of significance for treatment in the relatively small sample can be ascribed to several factors. One important aspect is that a large fraction of respondents choose the German supplier, both with and without treatment in the case. This is an aspect that provides a challenge in attaining significance given the sample size, and will thereby be further discussed.

### **4.2.1 With Treatment**

To start with, regarding the group who received treatment, it is important to notice that the positive magnitude of the coefficient for treatment has to account for the fact that several respondents might have become increasingly wary due to the very explicit recommendation in the treatment. This is hardly unthinkable, and the regression results in table 4, while not being significant ( $P > t = 0.258$ ), still indicate a conceivable tendency to become more sceptical of the words of the CEO as an effect of the treatment. In further research, this is a factor that might be relevant to include in the post-form for such a case, to provide a possibility to account for it.

## **4.2.2 Without Treatment**

Going on, the group without treatment was also, contrary to expectations, inclined to choose the German alternative.

### **4.2.2.1 Risk Aversion**

The first possible explanation is that an unexpected degree of risk aversion was present, such that the respondents wrongly observed it to be “safer” to stay with the German supplier. While investigating respondents written motivations, a general tendency was observed to be that the German supplier was associated with less risk, despite that it would break the budget and impose a less favourable cost structure for a presumed increase in demand. Also, several respondents stressed the downside of the Chinese alternative, where lower sales levels would be costly. This could be viewed as risk aversion, with the tendency to acknowledge downsides more than upsides. The situation of financial distress might increase the tendency to play it safe, even though taking risks might be the only way to solve the problem of lacking competitiveness itself. Relating to the hypothetical investment scenario discussed earlier, where decision makers showed a systematic risk aversion rather than observing net present value, it is hardly unthinkable that the corresponding tendency would often hold in a situation of financial distress. For example, providing a scenario where one alternative would hold an overhanging risk of slow failure might incorrectly appear as being “less risky” than a more radical alternative which would either solve the problem or fail in a more drastic manner, despite the latter carrying a more favourable net present value than the earlier alternative. Also, supporting this perspective, such a tendency is stated as being frequently occurring by Kahneman (2011) in *Thinking Fast and Slow*.

Two respondents however explicitly claimed that playing it safe would not be sufficient under the given circumstances, which was thought of as needing more radical measures:

- “If Motor AB wants to gain market shares and sell more than 30 000 engines annually, the lower variable cost wins out. Not to mention that the budget for 2014 does not allow for the German manufacturer. If the company sells less, it will lose anyway, so better to aim high.”
- “The Chinese supplier may deliver lower quality - but it is survive or die.”

Also, relating to earlier discussions of the importance of setting the right incentives in the organization, few respondents aside from the quotes above highlighted that the cost structure

of the Chinese supplier would provide overarching incentives for the organization to push for an increase in volumes.

#### **4.2.2.2 Well-known Brands & Confirmation Bias**

Another reason as to why such a large fraction of respondents choose the German supplier might be the acknowledged tendency people have to stick to well-known brands, as discussed in the theoretical framework. In particular, the case result shows a general tendency to choose the German supplier based on quality (regardless of the lack of support for this statement in the case), both with and without the treatment. In particular, model (3) in table 2 and 3 showed that decision time in minutes before selecting recommendation yielded a significant effect on the choice of recommendation, where respondents taking more time tended to favour the German supplier.

To further investigate this conclusion, the binary variable *germanquality* was regressed over both decision time in minutes, and how much time the respondent stated had been taken to actually reflect. As shown in tables 5 and 6, the effect of time taken to reflect yielded significance at the 10% level on whether the respondent stressed that the German supplier would deliver higher quality (regardless the lack of support of this statement, given that “other vendors are considered to supply equivalent products at a better price” in the case). Notably, the coefficient was of substantially greater magnitude for the time taken to reflect variable than for the decision time in minutes to finish the case. One explanation might be that the act of taking time thinking, and more specifically, switching to an outside view where information and preconceptions from outside the papers of the case was acquired, might have been associated with the act of reflecting, as respondents filled out their post case forms.

It is interesting to note that the statement of the German supplier as delivering quality by respondents was independent of treatment (why it was omitted, as earlier mentioned). The arbitrary statement by the CEO regarding that quality was important for the company but not directly stating that the German supplier was delivering higher quality might also have been looked through or omitted. Therefore, it appears as if respondents did not over-rely on authority for the quality aspect, but instead weighted their preconceived views more heavily.

Furthermore, as this tendency increased with time, this might indicate a case of confirmation bias, respondents more or less scanning the rest of the case for facts stating that the German supplier was delivering quality products. If, on the other hand, respondents would be seeking

to falsify this view, a legit statement would be that they would be more likely to find out that there was no factual support, but on the other hand a statement that other supplier alternatives was viewed as capable of delivering the corresponding quality. If that would have been the approach by respondents, the inclination to choose the German supplier based on quality should instead decrease with time, and therefore its coefficient would have held negative sign.

#### **4.2.2.3 Availability and Staying Close to the Base Rate**

In conclusion, this might reveal an inclination to fall back on preconceptions, given more time to reflect. This is an interesting aspect, as on the one hand it may be viewed as irrational to draw conclusions based on preconceptions perhaps not relevant to the case at hand. However, a word of caution is in order. As Kahneman (2011) discusses in *Thinking, Fast and Slow*, in situations where the availability of relevant information is limited, staying close to the base rate is an appropriate strategy in order to decrease bias due to overweighting the small amount of information being given. Therefore, one perspective would be that if German suppliers actually had better quality in general, those respondents, consciously or not, applied a strategy for decreasing availability bias. The case consciously held several areas unknown. The implications on brand and image from switching were left untouched. A more specific evaluation of the quality and reliability of the Chinese supplier would have been highly relevant. A possible increase in environmental impact from switching was not addressed or quantified. The implications on transport and flexibility were only partly brought up. The corporate culture of the Chinese supplier and its possible implications on cooperation was not evaluated. Given that several vital aspects were being left out, staying close to the base rate might be justified.

Another perspective that might have been held by several respondents, is that the data and information included in the case is per definition implicitly what ought to be accounted for in the solution, as part of the “rules” for solving a case.

Several respondents also choose to put low emphasis on the words from the CEO, including the recommendation, and mostly looking at historical sales levels for what they viewed as being a more realistic forecast. This, given that the sales forecast from the CEO was considered an opinion, is in a sense in line with data driven analysis, often advocated in business case solution methodology. While a data driven approach may be successful in mitigating several biases, and also perhaps being the appropriate strategy in case competitions, it is important to remember that it might still be a vulnerable strategy with

respect to other biases, such as availability (, e.g. making a habit and “sport” out of drawing conclusions only based on the given data).

### **4.3 Significant Top of Mind Effect of Current Supplier Relationship**

As shown in table 7 and 8, treatment however yielded a significant effect on whether the respondents stressed the current relationship to the German supplier. This is an interesting contrast to the case with quality, where the admittedly more arbitrary statement from the CEO regarding quality had no significant effect on itself appearing in the motivation whatsoever. The statement about that the current supplier relationship seems to have been seen as revealing importance of keeping it, despite that the suggestion that building supplier relationships take time is a well known fact, which might just as well be an argument in favour of the Chinese supplier, improving communication and processes in time for a rising demand as discussed earlier. Another, less refined reason would be that the relationship to the supplier was simply more accessible in the memory once the respondent filled out the motivation, presumably being an argument easily remembered.

To finish this paragraph, it can be stated that while it is impossible to predict the exact implications of such tendencies, considering the consequences of leaders inducing mental anchors of questionable decision-making value in the minds of co-workers is on the contrary less of a challenge.

## 5 Conclusion

The coefficient for treatment did not yield significance. Several reasons concerning sample size and conceivable tendencies among respondents has been discussed, the latter providing an indication that other biases than the one expected may have been more dominant in the given sample.

In retrospect, a legit measure would be to revise the case, providing data more heavily weighted in favour of the Chinese alternative. This would enable the achieving of a more accurate result in a small sample. Also, including questions providing an opportunity to control for the other biases discussed would be a highly relevant addition in a revised form of the case. A more apparent measure would also be to attain a considerably larger sample. While the case, unlike online forms, requires the presence of both participants, examiner and a suitable facility at each specific opportunity, such a comprehensive study including several hundred participants reaches beyond the boundaries of the bachelor thesis at hand.

However, while classical studies such as Milgram's experiment for obedience has proved a significant effect of authority on decision-making, research of tendencies related to authority, status and reputation in the more specific business setting are yet quite limited. What McKinsey Quarterly refers to as the champion bias is claimed to be an acknowledged tendency in their global survey of executives is highly relevant. However, more exhaustive excerpts from the study at hand seems unavailable to the public. That being said, further research in the given field would provide both increased accessibility and impact of knowledge concerning the tendencies at hand.

To briefly summarize the findings of this thesis, the treatment did not yield a statistically significant effect on the respondents' choice of supplier in the relatively small sample. While several reasons for this have been addressed, it is also relevant to note that its coefficient was nonetheless positive. Going on, more time appears to have had both a significant and mitigating effect on the presumed anchoring bias. Also, risk averse tendencies was likely often present, together with an inclination to stick to well-known brands, hence assuming that a German supplier would produce higher quality. Furthermore, related to the latter statement, confirmation bias might have exacerbated this tendency, since more time taken to reflect appears to have had an amplifying effect either by increasing the weight on preconceptions, or spending time seeking validation rather than falsification in the text. Also, a highly significant

top of mind effect of an aspect of questionable decision-making value was observed as an effect of the treatment.

Therefore, while the treatment did not yield a statistically significant effect on the respondents' recommendation of supplier itself, the study of this thesis has nonetheless contributed to the field both by providing several relevant indications of conceivable tendencies, but also by highlighting opportunities for further investigation.



## 6 Final Discussion

The incidence of cognitive bias in both individuals as well as organizations is gaining increasing attention both as a subject for research, but also in contexts more available to the public. An important claim made by Kahneman (2011) in *Thinking Fast and Slow*, is that a vocabulary for describing different biases has been lacking. Hence, it is not inconceivable that a significant amount of such systematic deviations from rationality goes by unrecorded, which would also apply to corporations. As quoted in the aforementioned book concerning the notion of rationality, “the agent of economic theory is rational, selfish and his tastes do not change”. This view of individuals being rational agents is encountering stronger scepticism, as research increasingly claim otherwise. The spread of a vocabulary might in and of itself increase general awareness in the matter, as having a word for a given phenomenon facilitates both observation, discussion and corrective measures.

In businesses, measurements ought to include both the level of corporate culture, as well as individual awareness of different tendencies. One approach to handling bias in organizations would be to identify the most fatal sources of bias and take measures to correct them. Another more proactive and far-reaching approach would be to frame the presence of bias in organizations as an opportunity to acquire sustainable competitive advantage by addressing bias, both as a matter of personal development, but also organizational maturity.

Therefore, addressing the individual level, companies could provide education for employees, tailored for specific purposes. Aside from establishing general awareness of bias, individuals responsible for forecasting ought to be specifically aware of related tendencies such as planning fallacies, whereas individuals responsible for investment decisions might receive additional education regarding risk calibration, and so on. A raised individual awareness of bias might also lead to less distorted communication flows in the organisation. Consider the classic childhood game where the first person whispers to the next (referred to as “telephone” or “Chinese whispers”), and this chain goes on until the last person says what he or she heard out loud, often holding no relevance to the first statement whatsoever. In the same sense, biases such as the propensity to agree, groupthink, over optimism, and anchoring effects in forecasts may be increasingly distorted in chains of communication throughout the organization, something that which be addressed with more awareness.

Or, as stated in *The McKinsey Way* by former McKinsey associate Ethan Rasiel:

*"Anything that gets in the way of efficient communication is anathema to a strong organization. Fuzzy thinking, obfuscatory jargon, impenetrable hierarchy, and playing the "yesman" get in the way of adding value for customers or clients. Structured thinking, clear language, a meritocracy with the obligation to dissent, and professional objectivity allow an organization and its people to reach their maximum potential."* (Rasiel, 1999)

As previously discussed, incentive structure and rewards is an area that requires specific attention. For larger corporations, institutional changes might be a legit measure to coordinate risk taking, such that individual risk aversion does not prevent sound risk taking in investments. Also, establishing processes for feedback regarding outcomes of forecasts and decisions might not only enhance decision-making, but also identify new areas in need of attention. This might include creating tailored frameworks or checklists for specific situations in order to enhance bias control.

A crucial aspect relating to the anchoring effect of authority receiving more weight than relevant facts in important decisions is, as addressed, connected to the culture of the corporations at hand. A problem might be that more authoritarian organizations may be more prone to such tendencies, also including confirmation bias and a lack of questioning, while at the same time being little inclined to transform into a platform of prestigeless debates, suddenly encouraging subordinates to question their seniors. Nevertheless, such organizations might also be where substantial opportunities for improvement exist. Either such organizations may address the problem by own means, by acknowledging it and creating processes for improvement. Else, seeking external consultancy might be a legit measure to attain a fresh view and enable the dissolving of hierarchy where such is due. Also, the scope of appropriate measures would depend on whether transforming the culture to a less authoritarian one would be favourable for the specific company, given the context of its particular industry.

In conclusion, the field of cognitive bias in decision-making, while having received greater attention lately, is nevertheless an area holding substantial opportunities for improvements by providing more knowledge. Hence, its development will be followed by inquisitiveness by the authors of the thesis at hand.

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# Appendix

Appendix contains the purchasing case, where one is without treatment and the other one is with treatment. Appendix also contains the post case form that was filled out by the respondents after the case.

## Appendix A - Case Without Treatment

Welcome to participate in the experiment that will be the centre of our bachelor thesis at the University of Gothenburg, the School of Business, Economics and Law. You will now be given a simple purchasing case, where you are supposed to give the company Motor AB a recommendation which supplier to choose. The answer consists of two options, where you should choose one of them. No aids or discussion with other students are allowed in order to solve the case. The case will only take a couple of minutes to solve, but you are welcome to sit for maximum 15 minutes. Please write down your response time (i.e. how long it took from the time you started reading until you filled in your recommendation to Motor AB). After you have finished the case, please hand it in and you will receive a short evaluation form to fill out.

We are very grateful for your help!

Best regards,

Sandra Johansson and Simon Andersson

### Case

A Swedish company, Motor AB, is operating in the automotive industry as an engine manufacturer and is a supplier to quality car brands in Europe. The company's vision is to create customer value by delivering quality products at a reasonable price and at the lowest environmental impact possible.

Motor AB has experienced some bad years financially and now needs to cut costs in order to survive as a company. One measure that is prioritized is to evaluate all suppliers to find the most viable solutions. The turbo charger is one of the items that are evaluated. Right now, the turbo charger is purchased from a supplier in Germany who is known for delivering quality products. However, the investigation shows that there are other vendors who are considered to supply equivalent products at a better price, such as a supplier located in China. Motor AB is

now choosing whether to continue purchasing from the German supplier, or to switch to the Chinese supplier. The new purchasing contract will run for the next three years.

Switching to a Chinese supplier will result in a lower variable cost compared to buying from the German supplier, even if the shipping cost increases. Shipping cargo from China takes approximately two weeks from order to delivery, compared to one week from Germany. However in need of fast deliveries, cargo can also be transported by air from China. This results in the same delivery time as the German supplier, but to an increased transportation cost. However, the fixed cost is lower when purchasing turbo chargers from the German supplier.

**Data:**

One turbo charger is needed for each engine produced. Hence the demand for engines is the same as the amount turbo chargers that Motor AB purchases from the supplier.

**Table 1. Total purchasing costs for turbo chargers, German supplier vs. Chinese supplier (including shipping costs)**

	<b>Chinese supplier</b>	<b>German supplier</b>
<i>Fixed cost (\$/year)</i>	\$5 000 000	\$2 000 000
<i>Variable cost (\$/unit)</i>	\$100	\$200

**Table 2. Engine sales for Motor AB between 2007-2013**

	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<i>Engine sales [units]</i>	33 000	24 500	22 785	25 064	23 810	25 715	28 287

**Table 3. Total purchasing expenditures for turbo chargers 2011 & 2012 as well as the budget for 2014**

<b>Expenditures for 2012</b>	<b>Expenditures for 2013</b>	<b>Budget for 2014</b>
\$7 400 000	\$7 836 800	\$8 267 082

**Some words from the CEO:**

*“The turbulence experienced recently is partly due to the financial crises of 2008, but also due to intensified competition, as reflected in the current income statement. Current setbacks should be taken seriously, yet still, we should not underestimate the credibility of our brand and the opportunities to regain market shares in the coming years. Several strategic initiatives will be initiated for 2014, in particular concerning our suppliers, to improve efficiency. Thereby, we expect to return to previous sales levels for the upcoming years, at around 32 000 engines annually.”*

Please help Motor AB to reach a decision by giving your recommendation (put a mark in one of the boxes below). Please also give a short motivation (2-3 sentences) for why the company should choose the recommended supplier.

Motor AB should purchase turbo chargers from the **German** supplier

Motor AB should purchase turbo chargers from the **Chinese** supplier

Short motivation:

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Your Name: \_\_\_\_\_

(Will be treated anonymously and only for administrative purposes)

Response time: \_\_\_\_\_ minutes

Thank you very much for your help!



## **Appendix B - Case With Treatment**

Welcome to participate in the experiment that will be the centre of our bachelor thesis at the University of Gothenburg, the School of Business, Economics and Law. You will now be given a simple purchasing case, where you are supposed to give the company Motor AB a recommendation which supplier to choose. The answer consists of two options, where you should choose one of them. No aids or discussion with other students are allowed in order to solve the case. The case will only take a couple of minutes to solve, but you are welcome to sit for maximum 15 minutes. Please write down your response time (i.e. how long it took from the time you started reading until you filled in your recommendation to Motor AB). After you have finished the case, please hand it in and you will receive a short evaluation form to fill out.

We are very grateful for your help!

Best regards,

Sandra Johansson and Simon Andersson

### **Case**

A Swedish company, Motor AB, is operating in the automotive industry as an engine manufacturer and is a supplier to quality car brands in Europe. The company's vision is to create customer value by delivering quality products at a reasonable price and at the lowest environmental impact possible.

Motor AB has experienced some bad years financially and now needs to cut costs in order to survive as a company. One measure that is prioritized is to evaluate all suppliers to find the most viable solutions. The turbo charger is one of the items that are evaluated. Right now, the turbo charger is purchased from a supplier in Germany who is known for delivering quality products. However, the investigation shows that there are other vendors who are considered to supply equivalent products at a better price, such as a supplier located in China. Motor AB is now choosing whether to continue purchasing from the German supplier, or to switch to the Chinese supplier. The new purchasing contract will run for the next three years.

Switching to a Chinese supplier will result in a lower variable cost compared to buying from the German supplier, even if the shipping cost increases. Shipping cargo from China takes approximately two weeks from order to delivery, compared to one week from Germany. However in need of fast deliveries, cargo can also be transported by air from China. This

results in the same delivery time as the German supplier, but to an increased transportation cost. However, the fixed cost is lower when purchasing turbo chargers from the German supplier.

**Data:**

One turbo charger is needed for each engine produced. Hence the demand for engines is the same as the amount turbo chargers that Motor AB purchases from the supplier.

**Table 2. Total purchasing costs for turbo chargers, German supplier vs. Chinese supplier (including shipping costs)**

	<b>Chinese supplier</b>	<b>German supplier</b>
<i>Fixed cost (\$/year)</i>	\$5 000 000	\$2 000 000
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<b>Expenditures for 2012</b>	<b>Expenditures for 2013</b>	<b>Budget for 2014</b>
\$7 400 000	\$7 836 800	\$8 267 082

**Some words from the CEO:**

*“The turbulence experienced recently is partly due to the financial crises of 2008, but also due to intensified competition, as reflected in the current income statement. Current setbacks should be taken seriously, yet still, we should not underestimate the credibility of our brand and the opportunities to regain market shares in the coming years. Several strategic initiatives will be initiated for 2014, in particular concerning our suppliers, to improve efficiency. Thereby, we expect to return to previous sales levels for the upcoming years, at around 32 000 engines annually.*”

*Due to this increase in sales, I believe that we should continue purchasing turbo chargers from the German supplier. Motor AB is a company concerned with quality and already has an established relationship with the German supplier that took many years to build.”*

Please help Motor AB to reach a decision by giving your recommendation (put a mark in one of the boxes below). Please also give a short motivation (2-3 sentences) for why the company should choose the recommended supplier.

Motor AB should purchase turbo chargers from the **German** supplier

Motor AB should purchase turbo chargers from the **Chinese** supplier

Short motivation:

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Your Name: \_\_\_\_\_

(Will be treated anonymously and only for administrative purposes)

Response time: \_\_\_\_\_ minutes

Thank you very much for your help!

## Appendix C - Post Case Form

Would you say that you *had and took time to reflect* over the decision? (Circle the number that seems to correspond)

No, not at all

Yes, I took a lot of time to reflect

1

2

3

4

5

Did you put emphasis on specific *data*? Please describe.

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How much emphasis did you put on the *words from the CEO*? (Circle the number that seems to correspond)

None

All emphasis

1

2

3

4

5

Any other thoughts related to the case, your conclusion or how you solved it? (Optional)

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Your Name: \_\_\_\_\_

(Will be treated anonymously and only for administrative purposes)

Thank you for your participation!