Aalto University
School of Business

The effect of cognitive biases on organizational purchasing decision making: Case study of IT infrastructure purchasing in Finnish SMEs

Information Systems Science

Master's thesis

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AALTO UNIVERSITY SCHOOL OF BUSINESS **ABSTRACT**

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PURPOSE OF THE STUDY

This thesis concentrates on identifying if and how the use of decision making heuristics can lead to biased decision making in organizational purchasing context and in which ways a salesperson can identify such situation to present the best solution to the buyer's problem. The main object of the study is to find which cognitive biases affect the different stages of the purchasing process of the case companies and to what extent.

METHODOLOGY

A literature review of customer centric selling, organizational purchasing and behavioral decision making theory in purchasing context was used to create a theoretical framework for the empirical study. The empirical data of the comparative multi-case study was collected with semi-structural interviews. The interviews were carried for two separate groups of people: salespeople at Finnish IT resellers and purchasing decision makers at Finnish small and medium-sized enterprises.

RESULTS

The findings of the study implicate that cognitive biases affect the purchasing decision making of the interviewed companies during their purchasing process. The most affected purchasing process steps were need specification, supplier search and supplier evaluation and selection phases while the most common cognitive biases present in the purchasing decision making were availability, commitment, confirmatory and status quo biases.

KEYWORDS

Purchasing process, behavioral decision theory, cognitive bias, IT infrastructure

AALTO YLIOPISTON KAUPPAKORKEAKOULU **TIIVISTELMÄ**

Tieto- ja palvelutalouden laitos

Pro Gradu -tutkielma

Veikko Kotimäki

TUTKIMUKSEN TAVOITTEET

Tämän tutkielman tavoitteena on tutkia miten heuristiikkojen käyttäminen päätöksenteossa voi johtaa vääristyneeseen ostopäätöksentekoon organisaatioissa ja kuinka myyntihenkilö pystyy havainnoimaan kyseisen tilanteen ja tarjota parhaan ratkaisun ostajan ongelmaan. Päätavoitteena tässä tutkielmassa on löytää mitkä kognitiiviset vääristymät vaikuttavat mihinkin ostoprosessin vaiheeseen milläkin voimakkuudella.

METODOLOGIA

Kirjallisuuskatsausta asiakaskeskeiseen myyntiin, hankintatoimeen ja behavioristiseen päätöksentekoteoriaan ostokontekstissa käytettiin teoreettisen mallin perustana. Tutkimuksen kuvailevan usean tapauksen tapaustutkimuksen empiirinen aineisto koostui puolistrukturoiduista laadullisista haastatteluista. Haastatteluja tehtiin kahdelle eri ihmisjoukolle: suomalaisten IT-jälleenmyyjien myyntihenkilöstölle sekä suomalaisten pk-yritysten ostopäätöksentekijöille.

TULOKSET

Tutkimustulokset osoittavat että kognitiiviset vääristymät vaikuttavat haastatelluiden yritysten ostopäätöksiin. Vääristymillä oli eniten vaikutusta ostoprosessin vaatimusten määrittely-, toimittajien etsintä- sekä toimittajien vertailu- ja valintavaiheessa. Vääristymistä eniten ilmenivät saatavuus-, sitoutumis-, vahvistavuus- ja vallitseva tila -vääristymät.

AVAINSANAT

ostoprosessi, behavioristinen päätösteoria, kognitiivinen vääristymä, IT infrastruktuuri

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1. Introduction

The purpose of this chapter is to present the background and motivation of this master's thesis. After this, the research questions, scope and objectives are defined and the structure of the study summarized.

1.1. Background

Customer buying processes and decision criteria are an ever interesting subject for customer oriented companies wanting to create and capture more value from their customer relationships (Bosworth and Holland, 2004). This is especially true in mature business to business markets where new growth is hard to achieve (Kotler et al., 2009). Professional selling has evolved significantly since the beginning of the industrial era, still the academic viewpoint to selling and especially customer centric selling has been lagging behind. Traditionally, salespeople have been perceived manipulative and even sleazy, while the modern salesperson can be seen more consultative and problem solving individual (Eades, 2004).

This dyadic situation turns problematic if the selling and purchasing sides do not speak the same language or have a correct understanding of each others' objectives and how they are achieved. As a real-life example, a beverage company's objective might be to increase their production efficiency and to do that they decide to ask the suppliers for a more efficient bottling machine. However, a new bottling machine is most probably only one of many alternatives to increase efficiency as the company might as well streamline their processes or e.g. change their bottle material from glass to plastic to decrease their weight and thus logistic costs. A smart supplier might see the underlying logic of efficiency improvement behind the tender for a new machine but might not be able to propose alternative solutions if the customer's judgment is clouded. The beverage company might be fixed to the idea of a new bottling machine or be so stuck in their old habits that they do not want to hear about other alternatives than what they thought in the first place. This means that the company's decision making is biased which in turn can result in suboptimal achievement of their intended objectives.

This thesis concentrates on identifying how the use of decision making heuristics can lead to biased decision making in organizational purchasing context and how can a salesperson identify such situation to present the best solution to the buyer's problem. Often, the reasons behind a bad decision can be found tracing back to the way of how the decisions were made: the decision criteria were not clearly defined, relevant information was not collected or the relationship between costs and benefits was not accurately weighted (Bazerman, 2006). However, in some cases the fault lies in the mind of the decision maker instead of the decision making process itself. Even with the most sophisticated decision making tools at hand, human brain and the way it works can sabotage our decisions (Hammond et. al, 1998). In order to make better purchasing decisions and to conduct truly customer centric sales work, both sides should learn to identify and avoid such decision making traps to reach a mutually optimal solution.

In order to get a comprehensive view of the selling-purchasing process, this study contains the viewpoints of both sides of selling, so to say, how the sales processes should be done in customer centric way and how the purchasing process of the buyer should be organized while acknowledging the effect of decision making biases. This is essential knowledge for customer centric selling as the sales process always includes both the selling and purchasing sides and the aim is that these parties create more value together than separately (Eades, 2004).

1.2. Motivation

The studied subject is interesting and has managerial implications as seldom the salespeople and sales units know of their customers' purchasing processes and how their decision making might be biased without having a deep and long relationship with them (Kotler et al., 2009). The account managers do not possibly have an extensive knowledge of all of their customers' business and purchasing processes and correspondingly the purchaser might not know what and how she should be asking for to solve her company's problem or need.

The empirical part of the study concentrates in the purchasing setting of small and medium-sized enterprises (SMEs) which prove to be highly interesting subject group for research as smaller organizations presumably do not have as elaborate purchasing organizations and processes as their larger counterparts (Dean et. al, 1998). In addition, using IT infrastructure

purchasing and selling as a case example in the empirical part is ideal, as traditionally the IT salespeople tend to sell products and features instead of solutions to client problems (Sharma et. al, 2008). After understanding clients' purchasing processes and decision making criteria, IT salespeople have better knowledge how to address their clients' problems with the right solutions. Also, procuring IT infrastructure provides to be such a complex situation for many SMEs where not all of the buyers have essential know-how to compare between different solutions. Multiple studies have shown that decision making for IT-investments is not as thorough as for other capital investments such as machinery or plants (Hallikainen, 2003; Tam, 1992). As the amount of decision power given to the IT reseller of the company when procuring new IT infrastructure can vary a lot, the purchasing incentive structure should be evaluated not only regarding the end customer but also the selling incentives of the IT reseller.

1.3. Research Questions

The research problem can be answered through following the research questions and sub-questions below:

1. According to literature, how can cognitive biases affect purchasing decisions?
    a. What is the optimal purchasing process and how should a salesperson approach it?
    b. Which decision making biases alter which purchasing process steps?
2. According to the empirical research, how are cognitive biases affecting decision making in practice?
    a. Which biases are most common to affect the buyer in different purchasing process steps?
    b. How well can a seller tackle the biases affecting the buyer's decisions?

1.4. Scope of the study

This study focuses on understanding how behavioral decision making patterns can affect the purchasing decisions of small and medium sized enterprises and what would be an optimal process for making an optimal purchasing decision for universal and standardized solutions. This means that this study does not concentrate in complex project based solutions, enterprise level customers or consumer markets.

The empirical part of the study is conducted on the IT reselling channel in Finland and the purchasing processes and decision making of Finnish SMEs. More specifically, the case study is concentrating on IT infrastructure purchasing decisions through local IT resellers. Even though the fundamental purchasing process and decision making of SMEs most probably do not vary by country, the size of IT resellers, different competitive situations and market sizes are country-specific.

1.5. Structure of the Study

After the introduction, the study is structured as follows. First, the essential literature related to customer centric sales, behavioral decision making and organizational purchasing is reviewed. The literature is then synthesized to a model illustrating the optimal purchasing process and how decision making biases affect its different steps. After the literature part, a brief overview of the case industry, IT infrastructure business in Finland, is given, following a presentation of the case companies and the empirical case analysis. Finally, the conclusion and discussion draw together the key findings of the study by presenting theoretical and managerial implications and recommendations for further study.

2. Literature review

The literature review forms the theoretical framework for this study. First, the customer centric sales concept is introduced. Then, previous research in organizational purchasing is summarized. After this, an introduction to decision making theory and especially behavioral decision making, heuristics and decision making biases are covered to get a good overview of how purchasing decision making "on a gut basis" can lead to suboptimal or even erroneous purchasing decisions. Finally, a comprehensive theoretical model of purchasing process steps with corresponding decision making biases is formed.

2.1. Customer and Solution Centric Sales

This section presents the basic principles of customer and solution centric sales and adaptive selling behavior and how they differ from the traditional product centric approach to selling. The solution sales methodology and customer centricity combined with adaptive selling behavior depict a new age generation of sales which requires a different attitude towards sales and the sales situation.

2.1.1. Solution centric sales

Solution centricity offers a new angle to tackling the modern business environment. A solution centric company defines itself through the solutions and problems it solves for its customers as opposed to the products and services it provides. This mindset should be visible in all parts of the company so that all actions are justifiable only through direct contributions to positive customer outcomes. The company should measure its results not only through the revenue it produces but by the positive outcomes customers gain through the use of products and services provided. (Eades and Kear, 2006)

The basic principle of solution centricity is that the company would be as aligned as possible with the customer and its processes, problems and needs. This way, the company providing the solutions has the best possible means to solve the aforementioned problems and meet the needs. Keith Eades (2004) developed a new solution selling methodology to serve the idea of solution centricity. This methodology has proved to be very popular and has been widely adopted (Moncrief and Marshall, 2005; Sharma, 2007; Sharma et al. 2008). Fundamentally, the new

solution selling methodology by Eades is a new framework for completing sales. A simplified illustration of this framework is presented in Figure 1 below. The difference in this new approach compared to the previous ones is that its backbone is in customers' purchasing processes. As a study by Tanner (1996) suggested, sales processes should closely follow purchasing processes in order to achieve better results. This model connects customer purchasing process steps to solution sales process steps that have verifiable outcomes. The methodology also provides a substantial amount of tools as well as implications to management systems (Eades, 2004).

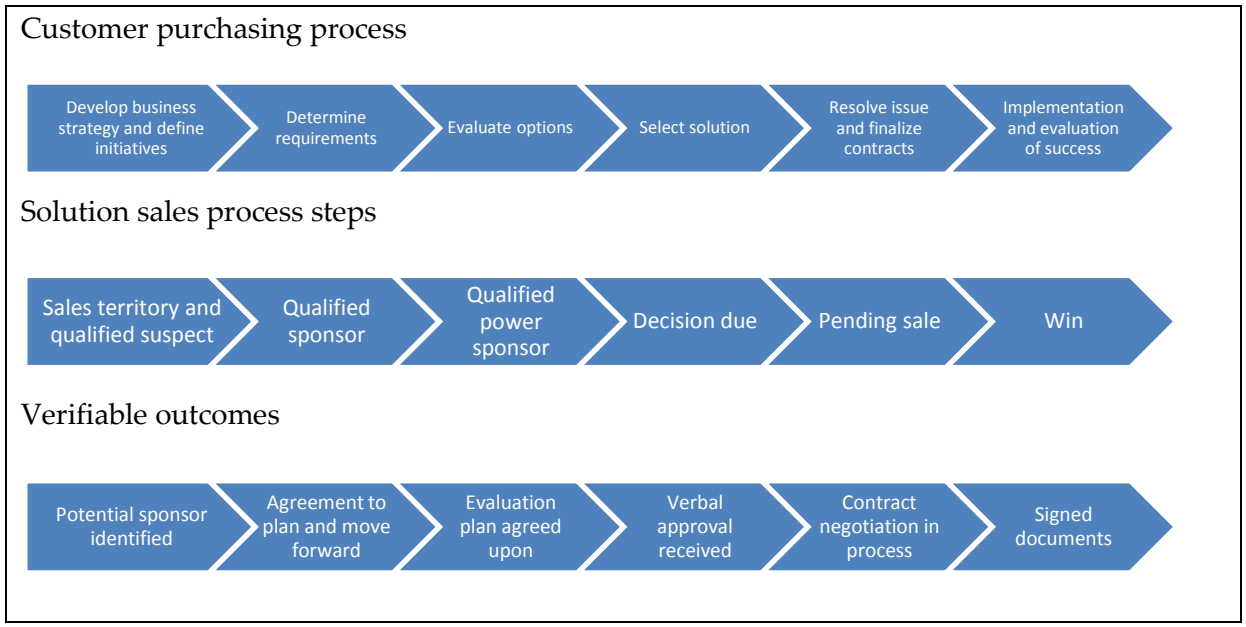


Figure 1. Solution selling process model (adapted from Eades 2004)

The model implicates that the salespeople should not decide themselves how to sell as the purchasing people conduct purchasing in their own personalized way which in turn requires the sellers' to adapt to the process, not vice versa. As an example, when the customer is determining requirements for the solution at hand, the salespeople should have a qualified sponsor targeted in the purchasing organization which leads to a mutual agreement to plan and move forward with the project. The seller can try to hasten the customer's purchasing process but she has to learn to understand the purchasing people and where they are in their process. If

the customer is still working out the option evaluation phase, there is no sense for the seller to try to push the selling process to decision phase.

2.1.2. Customer centricity

Customer centricity and customer orientation as concepts have been around for longer than solution centric sales, many authors having studied the issue (Saxe and Weitz, 1982; Dickinson et al., 1986). Though, this does not mean it is in active use in today's sales work more than the solution selling even though it might be written in almost every company's value statement. Bosworth and Holland (2004) have explained the customer centric approach by comparing it to the traditional salesperson approach. Table 1 below demonstrates this comparison. As one can see, the traditional selling behavior concentrates on pushing the seller's message by making presentations, relying on product and selling by persuasion and overcoming resistance whereas the customer centric approach relies on asking relevant questions from the purchaser, focuses on the solution and makes an effort to empower the purchaser to solve their problems and achieve their goals.

Table 1. Comparison between traditional and customer centric selling behavior (Bosworth and Holland 2004)

Traditional	**Customer centric**
Making presentations	Converse situationally
Offer opinions	Ask relevant questions
Focus on relationship	Focus on solution
Gravitate towards user	Target business people
Rely on product	Rely on product usage
Need to be managed	Manage their managers
Attempt to sell by	Empower buyers to
convincing and persuading	achieve goals
handling objections	solve problems
overcoming resistance	satisfy needs

Dhar et al. (2004) have made an equivalent comparison between traditional product-centric and solution-centric marketing. As can be seen in the Table 2, this is a very similar comparison to Bosworth and Holland's (2004), having the focus on customer value, understanding customer's business thoroughly and co-creating the offerings respectively. Both of these models clearly

prove that customer centric solution selling requires re-engineering the traditional ways of selling.

Table 2. Comparison between traditional product- and new solution-centric marketing (Dhar et al., 2004)

Traditional product-centric	**Solution-centric**
Customer preferences are known and predictable	Customer preferences are learned
Creation and demand generation precede fulfillment	Creation = demand fulfillment
Focus on *core* offering: Customers pay for the core product; services are cost centers	Focus on *customer value*: Products and services are "price of admission"; solutions are differentiated value proposition
Producer determines offering	*Cocreated* offerings
Investment in manufacturing	Investment in expertise around the *customer*

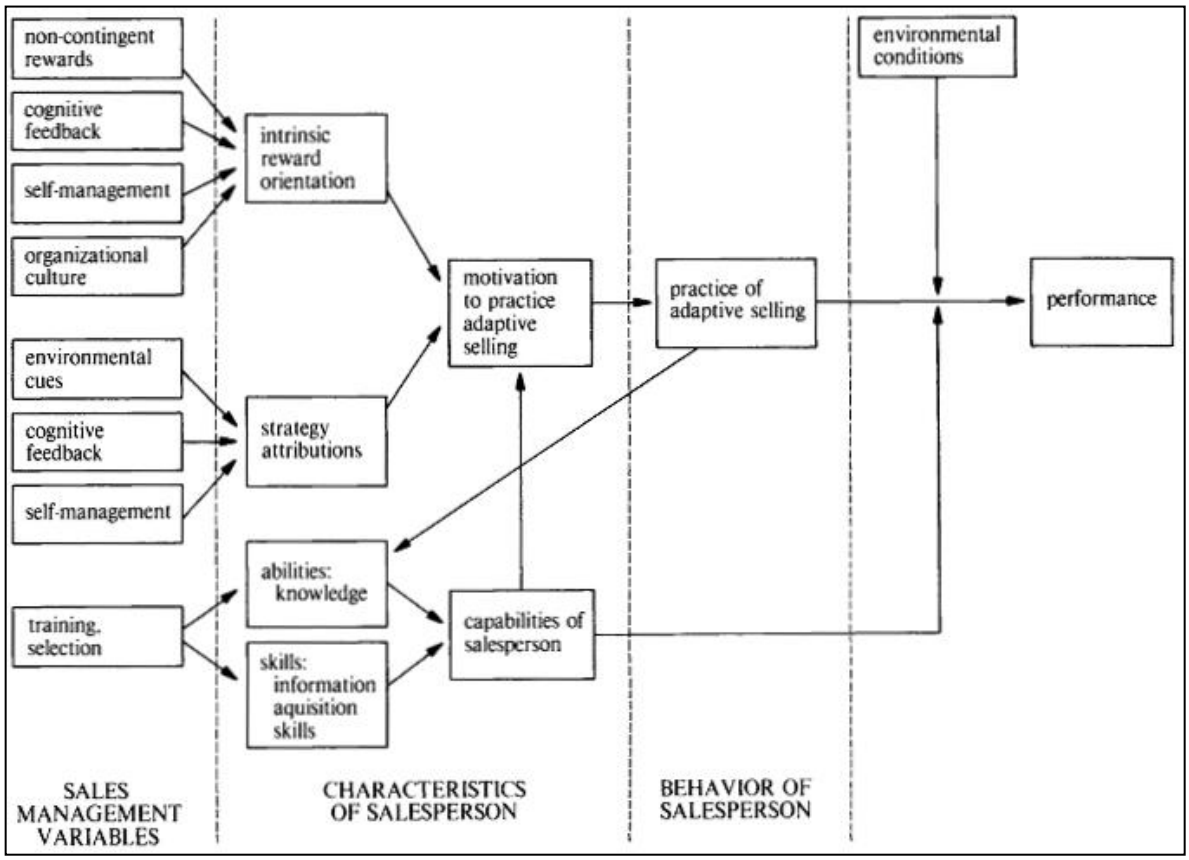
As Bosworth and Holland (2004) and Dhar et al. (2004) demonstrate with their sales and marketing process comparisons, the main point of the shift towards customer centric and solution selling is that it requires the seller to have deep knowledge and understanding of the customer and its business. The salesperson has to pay significant attention to the purchasing behavior of the customer and constantly listen and understand where the customer is at the moment and where they are willing to be in the future. Linking to this, the salesperson should align her sales process to the purchasing process of the customer, demanding better knowledge of the customer's purchasing and decision making processes.

2.1.3. Adaptive selling behavior

As defined by Weitz et al. (1986, p. 175): "The practice of adaptive selling is defined as the altering of sales behaviors during a customer interaction or across customer interactions based on perceived information about the nature of the selling situation". So to say, transforming the salespeople towards using customer analysis and altering selling process accordingly as seen in the previous mentioned solution and customer centric methodologies can as well be called adaptive selling behavior (ASB). An extreme example of non-adaptive selling behavior would thus be to deliver the same "canned" sales presentation (Jolson, 1975) to every customer, regardless of their unique business needs or purchasing behavior.

In essence, practicing adaptive selling is not the sole requisite for top sales performance according to the ASB framework which can be seen in Figure 2 below. Top sales performance is also affected by the capabilities of the salesperson and the nature of the selling environment. Adaptive selling is effective only when these variables result in the benefits outweighing the costs such as time and money of practicing it (Weitz et al. 1986). However, studies have proven that adopting this kind of approach increases selling performance on self-rated, manager-rated and objective rated measures (Franke and Park, 2006) and depending on the approach, when selling to task-oriented, interaction-oriented and self-oriented buyers (McFarland et al. 2006). According to Franke and Park (2006), ASB also increases customer orientation and combined they increase job satisfaction which leads on its own part to increased performance. ASB can hence be seen a very viable approach to selling.

Figure 2. An Adaptive Selling Framework (Weitz. et al 1986)



2.2. Organizational Purchasing

Organizational purchasing differs significantly from consumer purchasing on many levels, deriving from the fact that the organizational purchasing process tends to be much more complex process than consumer purchasing. This is due to many factors such as the higher number of people impacting the decision making and the basic fact that the buyers are acting as agents for the company as opposed to purchasing for own individual consumption (Morris et al. 1999). Purchasing has become more professional as it is considered today as strategic and a source of competitive advantage thanks to centralization, supply chain optimization and formalized processes (Karjalainen, 2009).

The previous section stressed out how the seller has to understand their customer's business, decision making and purchasing behavior in order to adapt correspondingly to the purchasing situation at hand. This section concentrates on organizational purchasing from the viewpoint of the purchasing people by examining the purchasing process and purchasing criteria used by them.

2.2.1. Purchasing Process

As stated before, the organizational purchasing process can be very complex with multiple factors affecting the decision making process. The process model of purchasing has been researched extensively by many authors stressing different parts of the purchasing process and defining differing levels of detail. Figure 3 illustrates a compilation of multiple process models of purchasing with their authors respectively.

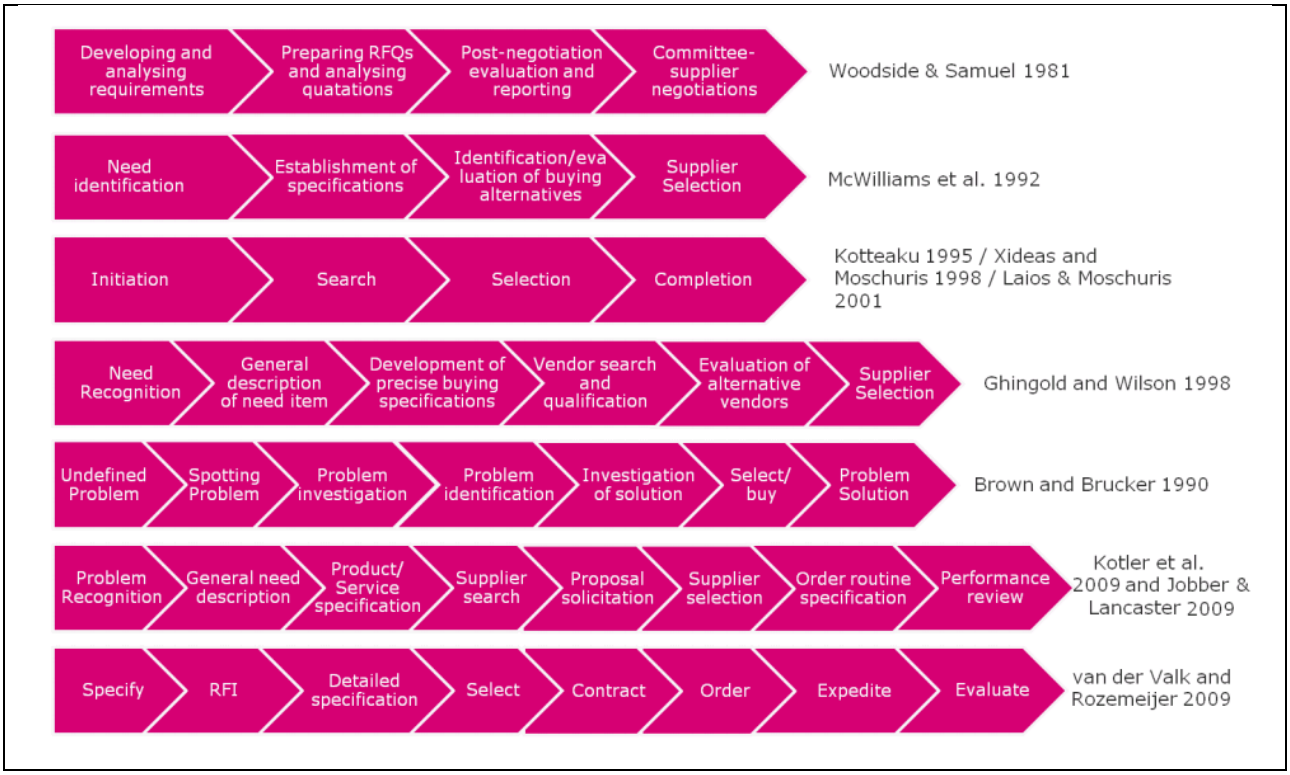


Figure 3. Different organizational purchasing process models (adapted from Knight, 2010)

For example Kotteaku et al. (1995) and others take a very simplistic view of the process whereas Kotler et al. (2009) take a more detailed approach in several steps. Brown and Brucker (1990) concentrate very much on the recognitions of the problem (4 out of 7 steps) and all the selection and purchasing tasks in one single step. Contrary to this, yet again Kotler et al. (2009) move into the actual perceived purchasing steps almost straightaway. Van der Walk and Rozemeijer (2009) especially define their purchasing process for the purchasing of services. With reference to Van Weele (2005) they stress the importance of adding steps 2 and 3 to service purchasing.

When comparing different purchasing process models, one must have in mind that they are mere generalizations of how the purchasing is done on a regular basis. Companies seldom use one exact model on each of their purchases for one reason or another. According to many authors, the type of purchase or "buyclass" – commonly divided into straight rebuy, modified rebuy and new task – has most significant effect on how the purchasing and decision making is conducted (Lewin and Donthu, 2005; Lau et al., 1999). Straight rebuys of continuously used assets such as common components or small upgrades and extras do not demand such elaborate

product- or supplier-evaluation processes and thus allow for skipping of some steps of the purchasing process allowing quicker decisions. More complex or discontinuous purchases for their part fall into the category of new tasks, demanding more thorough and time-consuming work in selection and evaluation processes and therefore it is more probably that the buyer benefits more from using all of the steps of the formal purchasing process (Jobber and Lancaster, 2009). Five different stages could be identified to be found in majority of the purchasing process models reviewed: Problem recognition, Need specification, Supplier search, Evaluation of alternatives and selection and Post evaluation. These stages are used to form a generalized framework for "ideal" purchasing process which is presented in Figure 4 below after which the steps of purchasing are discussed more in detail.

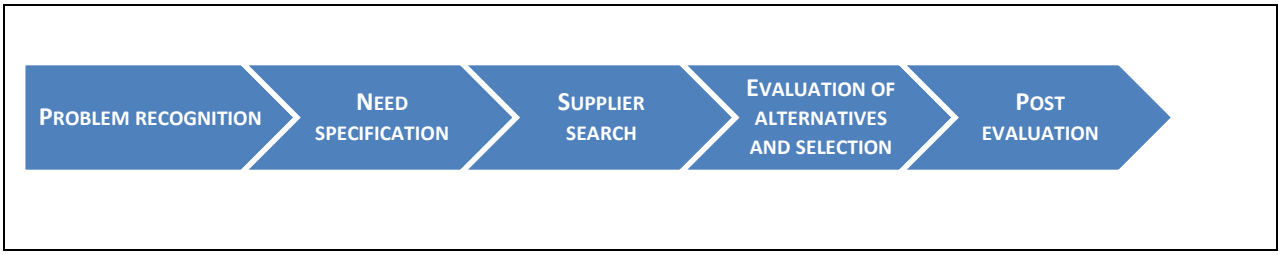


Figure 4. Generalized purchasing process model

Problem recognition

Purchasing process in most cases starts with the recognition of a problem or a need which can happen via internal or external motivation (Jobber and Lancaster, 2009). In both cases the problem or solution has to be attractive enough in order to initiate the purchasing process i.e. the problem is active (Kotler et al., 2009). Problems that are recognized but not acted upon, for example due to more pressing concerns, are called passive and can provide very lucrative opportunities for a salesperson if identified and highlighted correctly. Internal motivation includes i.e. investment in new equipment due to the lack of capacity, new product development or dissatisfaction with the product, service, quality or pricing of the current supplier. External motivation is such as selling or marketing actions directed to the company and observations from the competition or other external environment.

Need specification

In the specification stage the buyer makes important decisions regarding the quantity and qualities of the product or service being bought. If a salesperson is able to participate and influence the client in this step, it can give her definite advantage over the competition. Advising the customer to specify features that are unique in the seller's product or service can lock out competition very effectively (Jobber and Lancaster, 2009).

Supplier search

Potential suppliers are searched from existing suppliers, contracts with other companies, trade directories, advertisements, trade shows and the Internet (Kotler et al. 2009). Purchasing online via electronic marketplaces, private exchanges and such provides advantages in lower transaction costs and reduced time between order and delivery but at the same time might erode supplier-buyer relationship and provide security issues (Jobber and Lancaster, 2009). Buyers may also form purchasing alliances with other departments or external parties to gain volume discounts.

Evaluation of alternatives and selection

After identifying all the possible suppliers, they are shortlisted to include only the most qualified ones after an initial evaluation. According to Kotler et al. (2009), getting on this short list should be a major objective of sales efforts in addition to win cases as this list often is rather static since a thorough investigation of the whole supplier base is not carried out concurrently. These shortlisted companies receive the requests for proposal (RFP) or requests for information (RFI) depending on the stage of the buyer's decision making process. After receiving the proposals, the client evaluates and processes them using a spreadsheet or other evaluation form and makes selection of supplier or suppliers accordingly (Kotler et al. 2009).

However, the RFP process is not necessarily the most crucial for salespeople. Argued by Eades (2004), a seller who has not been part of the purchasing vision creation process and fails to recognize it has a chance of next to nothing to win the sale. Companies who get to the client first have the opportunity to participate in the vision creation and often become the "column A" in

the evaluation matrix to which the rest of the suppliers are benchmarked at. The column A supplier has probably positioned their own strengths to the purchasing vision and thus benefits from the process of "creeping commitment" so that the purchasing organization becomes increasingly committed to the first supplier through its involvement and provided technical assistance (Jobber and Lancaster 2009). As an example, the software group at IBM tracked its sales results worldwide, comparing the situations where they were "column A" versus coming later into the negotiations. IBM's study revealed that 93 percent of the time IBM lost the business to competition when they were not the party to define the customer's problems and set the requirements (Eades, 2004).

Post selection and evaluation

After the supplier selection, more detailed negotiations related to terms and conditions, delivery, pricing and additional services are made in order to conclude the purchase (Kotler et al. 2009). Often a frame agreement is also agreed upon which can be used especially in related following purchases such as straight rebuys.

As important as the pre-purchasing steps is what happens after the purchase has been concluded (Jobber and Lancaster, 2009). This so called use and evaluation or post evaluation stage is important addition to the process as the purchased items and services are used continuously by the customer, be the product as simple as pen and paper or a highly sophisticated enterprise resource planning system. However, the same iterative method of earlier stages is not present in this stage as after a contract is signed it is near to impossible to return to the previous phases without reopening negotiations. The use and evaluation stage is also highly important when considering following purchases as good experiences with the current solution result in repurchases while bad experiences serve as an incentive to find alternative solutions most probably from the competitors. This is extremely important to understand when dealing with more complex solutions as they cause more easily problems to the customer due to e.g. improper usage or training (Verville and Halingten, 2003).

2.2.2. Purchasing Criteria

Underlying each purchasing decision are the acknowledged or unconscious criteria on which the decision is based. The more formal and structured the company's purchasing process is the more elaborate and recognized the criteria are. Knowing and understanding the customer's purchasing criteria can benefit a salesperson considerably as it enables her to emphasize on the select features of her offering fitting best to the criteria at hand (Eades, 2004).

There has been vast research on the purchasing criteria since the 1950s. Price has been found to be the prevailing criteria in many studies but not the only one to have significance to the buyer's decision making. As presented in the Table 3 below, Sheth (1973) presents an early but sophisticated model of industrial buyer behavior, depicting as the most common explicit purchasing criteria to be product quality, price, after-sale service, delivery time and quantity of supply. He also states that several implicit criteria such as size, location, personality, reputation, reciprocity, technical expertise, salesmanship and even lifestyle of the salesperson can affect the organizational buyer's decision making.

Table 3. Traditional purchasing criteria (Sheth, 1973)

Explicit	**Implicit**
Product quality	Size
Price	Location
After-sale service	Personality
Delivery time	Reputation
Quantity of supply	Reciprocity
	Technical expertise
	Salesmanship
	Lifestyle

Jobber and Lancaster (2009) provide a more detailed division of the criteria on a different basis, bisecting them into functional (economic) and psychological (emotional) ones as can be seen in Table 4. This division highlights the fact that every significant criterion cannot necessarily be quantified in an easy way. Also, the purchasing behavior is not always rational economically thinking as there are many subjective choice issues regarding the people making the decision which is discussed more in the following sections. While one might think that only quantifiable

economic criteria should be taken into account in order to make rational purchasing decisions, a considerable concern should be present not to look at the situation too narrowly. The decision should be based on the situation as a whole instead of micromanaging single criteria.

Table 4. Economic and emotional purchasing criteria (Jobber and Lancaster, 2009)

Economic	**Emotional**
Price	Prestige
Delivery	Personal risk reduction
Productivity – cost versus revenues	Office politics
Life-cycle costs	Quiet life
Reliability	Pleasure
Durability	Reciprocity
Upgradability	Confidence
Technical assistance	Convenience
Commercial assistance	
Safety	

Bonoma (1982) concentrates on the human factor in purchasing, emphasizing the psychology underlying purchasing decisions. He divides the criteria into four most commonly used benefit-classes as can be seen in the Table 5. The model with its examples is not comprehensive but gives a good overview of different sorts of benefit classes a buyer can use when evaluating different options. Naturally, these dimensions may be interrelated as getting lower cost (financial) or better quality for the price (product) might lead to good performance evaluations and a promotion (social-political).

Table 5. Purchasing criteria divided in benefit classes (Bonoma, 1982)

<table>
<tr><th colspan="4">Benefit class</th></tr>
<tr><th>Financial</th><th>Product or service</th><th>Social or political</th><th>Personal</th></tr>
<tr><td>Absolute cost savings</td><td>Pre- and post-sales service</td><td rowspan="3">Will purchase enhance the buyer's standing with the buying team or top management?</td><td rowspan="2">Will purchase increase others liking or respect for the buyer?</td></tr>
<tr><td>Cheaper than competitive offerings</td><td>Specific features</td></tr>
<tr><td>Will provide operating-cost reductions</td><td>Space occupied by unit</td><td rowspan="2">How does purchase fit with buyer's self-concept?</td></tr>
<tr><td>Economics of leasing versus buying</td><td>Availability</td><td></td></tr>
</table>

Similar to Jobber and Lancaster (2009), Bonoma states that different buyers weight benefits in different ways. Jobber and Lancaster stress more how a user's such as production engineer's criteria might differ from the viewpoint of the CFO. Bonoma then concentrates on buyers being driven by self-interest and thus they focus on their personal benefits such as choosing a solution suiting better their own user group while complicating the lives of other departments or even committing to bribery. For some buyers the social-political benefits, how others in the company perceive the purchase, is more important than the financial ones (Bazerman, 2006). There are additional biases that may arise from this fact, such as if the buyer is measured personally on the amount of discounts achieved during negotiations. In this situation, a vendor which issues high list pricing and heavy discounts might win a vendor offering minimal discounts but which has a notably lower initial cost leading to lower total cost to the buying company (Kotler et al., 2009). Once again this leads to the conclusion that several types of criteria should be used, buyer's incentives understood and the purchasing situation considered in its entirety.

The different purchasing criteria listings can be interpreted to fit roughly in two different categories: objective and subjective purchasing criteria. More tangible and rational objective criteria represent the implicit purchasing criteria of Sheth (1973), economic criteria of Jobber and Lancaster (2009) and financial and product or service benefit classes of Bonoma (1982). The more abstract and personal subjective criteria represent explicit criteria of Sheth (1973), emotional

criteria of Jobber and Lancaster (2009) and social or political and personal benefit classes of Bonoma (1982). In order to make economically just purchasing decisions, companies should rely more on the objective criteria as the subjective ones are more prone to biases (Bazerman, 2006). However, salespeople should acknowledge the fact that even though the subjective criteria would not always lead to the best purchase resolution, they are affecting the purchasers' decision making. Table 6 below shows the purchasing criteria division in a concise manner.

Table 6.Division between objective and subjective purchasing criteria

Objective	**Subjective**
Financial impact	Personal benefits
Product qualities	Office politics
Logistics	Convenience
After-sales service	Reciprocity
	Prestige

The objective side includes more measurable metrics starting from the financial impact of the purchased products such as the transactional purchase price, lifecycle costs, productivity and savings achieved through its usage. Product qualities refer to the overall quality of the product in terms of reliability, durability, safety, upgradability and general features it includes. Logistics include the transportability and space requirements of the product as well as the availability and delivery times of it through suppliers. After-sales service refers to the post purchase activities provided by the supplier such as technical and commercial assistance, and maintenance and warranty related issues.

The subjective side represents more qualitative and personally experienced metrics. Personal benefits refer to how the product benefits the purchaser herself which can relate to her personal preference and how the product fits her self-conception but also how the product helps her particular job, reduces her personal risks businesswise or how it affects others' liking and respect of her (Bonoma, 1982; Jobber and Lancaster, 2009). Office politics is related to how the purchasing decision might affect her standing in the company in regards of her importance for the company and reputation if the purchase can be personified to her (Bonoma, 1982). Convenience refers to the ease of selecting the product, be it minimizing the effort to make the

decision, social acceptance inside the company or familiarity with the product. Reciprocity has two sides in it as it can be related to the joint cooperation with a supplier but can also have a grayer side of returning favors such as purchasing from a supplier because it is an important client of the company or has provided personal benefits to the decision maker (Jobber and Lancaster, 2009). Prestige has to do with pleasure or lifestyle effects of the purchased product. For example, a company might choose a premium car as a company car or lease fancy office space for prestige reasons even though more economic options would suit their needs sufficiently (Jobber and Lancaster, 2009; Sheth, 1973).

As stated before, historically price has been a prevailing choice criterion for purchasing. Yet, a comparison of the evolution of purchasing criteria in studies from 1974 to2009 indicates that the relative importance of selection criteria used by organizational purchasing teams has changed by time. As can be seen in Table 7 below, especially quality but also service considerations seem to have shifted to dominate the previously prevailing delivery and price criteria. There might be multiple reasons behind this but globalization in the marketplace and increased competitive environment are stated to be the driving forces behind this (Wilson, 1994). Though, the way of looking at the purchasing decisions has also changed by time. As an example, the studies of van der Rhee et al. (2009), Cheraghi et al. (2004) and Wilson (1994) differ from the older ones in that they see the purchasing price to be of lower importance while recognizing the importance of the total cost over time which is interrelated with quality and service aspects.

Table 7. Choice criteria importance across several studies between 1974 and 2009

	Rank of importance			
Study	**Price**	**Quality**	**Delivery**	**Service**
Lehmann andO'Saughnessy (1974)	2	3	1	4
Evans (1982)	2	3	1	4
Lehmann andO'Saughnessy (1982)	2	1	4	3
Wilson (1994)	3	1	4	2
Cheraghi et al. (2004)	3	1	2	4
van der Rhee et al. (2009)	4	1	3	2

2.2.3. Procurement practices in small firms

The comprehensive purchasing process models illustrated before are designed to be better suited to larger organizations having their own purchasing center or department, while a small or medium sized enterprise (SME) might not often have enough resources or willingness to implement such a heavy process in their procurement practices. In this sense it is arguable if these models should be adjusted to fit the SME environment.

Notable amount the research considering SMEs assumes that small businesses function alike to large ones. According to Gibb (2000), SME researchers generally consider that the only difference in managing a small or large organization is size. Dean et al. (1998) have researched the differences between small and large organizations and state that SMEs behave notably differently than large organizations. According to their research, smaller firms are more agile in their development and responsiveness than their larger counterparts due to their structural simplicity, streamlined operations and often narrow competition as small companies more often focus on a less competitive niche market. On the other hand, they do not benefit from increased purchasing power and greater resources inherent in their larger counterparts.

Even though the SMEs do not have as "deep pockets" as Dean et al. (1998) picture it, small and medium sized enterprises can be a very lucrative customer segment for multiple reasons. Ellegaard (2009) has studied the purchasing orientation of small owner-managed companies and found five key issues a salesperson should understand when doing business with them: need for flexibility, need for problem solving capabilities, lack of purchasing knowledge, high level of supplier loyalty and demonstrate reliability.

According to Ellegaard (2009), SMEs need flexibility from their suppliers as they often make rush orders due to more volatile business environment and a lack of long term planning. SMEs look especially for problem solving capabilities from their suppliers as they do not have such elaborate internal resources and also as they lack purchasing education, experience and knowledge. The latter issue means also that salespeople should meet the small company owners on their level, having a more down to earth approach and minimizing all kinds of formal

procedures and exchange rules. As the small company owners tend to not have much time to search for new suppliers, they develop very loyal relationships with their chosen suppliers and will not shift to another one without experiencing severe problems with the existing ones. Linking to all of the abovementioned issues, the small company owners also demand that their suppliers demonstrate continuous reliability as their companies move more quickly than their larger counterparts and they do not have the time to tender constantly for new suppliers.

As one can see, all of these issues stem from the fact that small businesses do not have the resources to actively manage their purchasing function or have a clear long-term strategy for their operations as their business environment moves in such a fast pace. These issues can provide to be beneficial for the salesperson understanding their implications. First of all, as the SMEs are more agile than the larger companies, they can make their decisions more quickly leading to faster selling-cycles and demanding less negotiation skills and time of the salespeople who then have time to concentrate on multiple cases instead of the time consuming sales projects with the larger companies. Selling to SMEs gives also more power to the seller regarding the offering and pricing as the SCO lacks the purchasing skills and is more dependent on her supplier in problem solving than the more resourceful CEO of a large enterprise. And if the salesperson does her work well, she'll have a loyal customer which might account for a small profit at first but the lifetime value of the SME customer can be significantly higher than the value captured when winning a single case with a large enterprise.

2.3. Behavioral Decision Theory

In order to better understand the organizational purchasing decision making, this section illustrates how organizational decisions in general should be made as depicted by decision theory and how it happens in practice by adding the behavioral dimension to the decision making theory. The basic concepts of decision making are introduced below, starting from classic rationality and optimality and continuing with the behavioral adjustments of bounded rationality and prospect theory.

2.3.1. Rationality, Optimality and Utility

The term rationality used in here refers to the decision making process that is expected to lead to the optimal result for the decision maker after an accurate assessment of the risk preferences and values of the decision maker (Gilboa, 2011). The model of rationality is based on a set of assumptions recommending how a decision should be made instead of describing how a decision is made (Bazerman, 2006). Although rationality can be defined based on psychological utilitarianism and decision theory, no single and unified definition exists (Blume and Easley, 2008).

Traditional economic theory supposes an "economic man" (Simon, 1955) or homo economicus (Thaler, 2000) when studying how people act and decide in the world. Being "economic" assumes that this man is rational, thus he knows perfectly his environment, has a stable and well-organized system of preferences and a high skill of mental calculation so that in decision situations he can analyze the available information in a systematic and logical way. It is also implied that the economic man makes his decisions in a forward-thinking way, taking fully into account the future consequences of current actions (Kahneman and Smith, 2002). This way, the economic man knows which alternative courses of action help him to reach the best possible outcome in his preference scale.

In behavioral decision theory, researchers typically state that individuals fail to act rationally as they make choices not maximizing their personal monetary gains. Research in behavioral finance has especially pointed this fact out as trading mistakes such as misunderstanding and failed interpretations of the generally available market data are considered as "irrational behavior" (Zeckhauser and Hendricks 1991).

Simply put, an optimal decision is a decision that leads to the best outcome of all of the available options. Utility, for its part, is a measure used in economics referring to the amount of satisfaction an individual receives from consuming a good or a service (Mankiw, 2003). In this sense, these concepts are directly linked to rationality as a rational decision maker maximizes his utility by making the optimal choice.

What comes to optimal choice or utility maximization theory, one should understand the distinction between feasibility and desirability. A choice is feasible if it is possible to make by the decision maker and an outcome is desirable if the decision maker wishes it to happen. Typically feasibility is a dichotomous concept while desirability is continuous. In other words, a choice is either feasible or not whereas an outcome is desirable to a certain degree and different outcomes can be ranked according to their desirability (Gilboa 2011).

Desirability is normally measured by a utility function u so that the higher the utility of a choice the more the decision maker prefers it. People do not necessarily think directly about their utility functions nor use a calculator to optimize their function in their everyday life but there most certainly is one behind every choice made. People might believe they are maximizing their utility function with the choice they pick and it might stand in many situations for the individual decision maker. However, a problem arises when a single person or a small team makes choices on behalf of a larger entity such as an organization or a country. Is the single person or the small team maximizing the utility of only the decision maker(s) or the utility of the larger entity for which the decision is made?

When considering choice under certainty, there is no difference between choices and outcomes as the decision maker knows that a given choice leads to a particular outcome. If uncertainty is present, the distinction between choice and outcome appears as the decision maker may choose his action but does not know the resulting outcome from this action. In this case the literature discusses states of nature or states of the world which affect the outcome (Bazerman, 2006; Gilboa, 2011). Thus, a decision maker has feasible acts, he faces possible states of nature and depending on the situation he will experience more or less desirable outcomes.

2.3.2. Prospect theory

Kahneman and Tversky's (1979) Nobel winning prospect theory is a behavioral economic theory that concentrates on describing decisions with risky alternatives which have known probabilities of outcomes. According to the theory, people base their decisions on the potential value of losses and gains instead of the final outcome and these losses and gains are weighted

using different kinds of heuristics. Prospect theory is descriptive as it aims to model real-life decision situations rather than optimal ones.

Compared to the earlier research in decision making, the fundamental difference of the prospect theory to the prevailing utility theory is the introduction of subjectivity into the world of objectively perfect decision making. The model was a direct critique towards the expected utility theory. The researchers used empirical evidence to prove their thesis against the expected utility theory changing the research in human decision making from axiomatic to descriptive research (Kahneman and Smith, 2002).

Prior to the development of prospect theory, the behavioral decision literature was largely ignored by economists. Traditional economists claim that both bounded rationality and heuristics and biases can be explained away as a rational strategy, adapting for the costs of search. However, for example the framing effects described later on show larger effects on how people make decision based on what even economists would agree is normatively irrelevant information (Bazerman, 2006).

2.3.3. Bounded rationality

Not arriving to the best possible outcome does not necessarily indicate that the decision-maker has made the decision in an irrational way. Introduced by Herbert Simon (1957), bounded rationality is a decision making theory explaining the bounds for rationality in human decision making.

In essence, the theory of bounded rationality proclaims that decision-makers have the intention to be rational in being adaptive and goal-oriented but the rationality of the human decision-makers is limited by the information they have at hand, the limited capability of their mind for computing future consequences and the finite amount of time they have for decision making (Jones, 1999).Since the decision-makers have such a hard time arriving to the theoretically optimal solution due to the resource and capability constraints, rationality is not applied in the decision-making until the options available have been greatly simplified. When looking at decision making in this way, bounded rationality considers the decision-maker to be a simplifier

or a satisfier, one that seeks a good enough or satisfactory solution instead of the theoretically optimal one.

In addition to Simon (1957), Kahneman and Tversky (1979) proposed bounded rationality as a complementing theory to improve the limitations present in traditional rational-agent models of economic theory. Simon introduced different dimensions which improve the traditional models of rationality to be more realistic such as limiting the available utility functions, including the possibility of having multi-valued utility functions and recognizing costs associated with information gathering and processing. Simon also introduced the idea of people using heuristics to ease their decision making which is the topic of the next section alongside with the decision making biases resulting from the use of them.

2.4. Heuristics and Decision Making Biases

This section provides an introduction to how people make decisions in the real world and how one's decisions can deviate from the theoretically rational and optimal ones due to heuristics people use and decision making biases deriving from them. First, the idea behind the heuristics is depicted and then the most prevalent bias types according to the literature introduced and linked to the purchasing process steps (Bazerman, 2006; Carter et al., 2007; Gilboa, 2011).

2.4.1. Heuristics

Heuristics refer to experience-based techniques for problem-solving, sometimes referred to as a "rule of thumb" or even "common sense" (Bazerman, 2006). They are used to simplify decision making and to speed up finding a satisfactory result when an in-depth search is impractical. As stated, heuristics are not useless and harmful. To the contrary, they are useful and reasonable way of providing answers to difficult problems but sometimes they might lead us astray. According to this view, it is a good idea to be aware of our biases and of the heuristics our minds use, and it is also a good idea to ask why they are, on the whole, useful. At the same time, it is wise to consider when these generally successful reasoning techniques might lead to suboptimal or even wrong answers (Gilboa, 2011).

The logic behind the use of heuristics is that using them should lead to adequate decisions more often than inadequate ones. So to say, on average the resulting loss in decision quality would be compensated by saved time or resources (Bazerman, 2006).Stereotyping is one sort of heuristic where people associate certain characteristics on specific social groups due to their own experiences or public belief. For example, one might develop a tendency to disregard and avoid people of a certain ethnic origin if they read in newspapers that representatives of this origin have been committing substantial amounts of crime (Gilboa, 2011). Another question is then if this heuristic leads to good or bad outcomes on a general level if this ethnic group becomes discriminated due to this. Another example would be number estimation, such as counting the number of people in a room, where instead of counting every single person; one might use a quicker path such as estimating the size of the room or use some other rule of thumb to arrive to a close enough answer more quickly.

However, a blind acceptance of heuristics is unwise as there are situations where one needs to realize the risks associated in deteriorating the decision quality in order to save time such as when large amounts of money or even human lives are at stake (Gilboa, 2011). One can see why it would not be wise to arrange air traffic control or base investment decisions on a gut feeling even though at first time would be probably saved without introducing a sophisticated system to control them. Also, the abovementioned logic advocates that a decision maker has knowingly recognized and accepted the accompanying quality tradeoffs in using heuristics even though this is not the case in reality (Hammond et al., 1998). Most of the people are unaware of the existence of heuristics and their continuing influence on their decisions. Consequently, people are unsuccessful in separating the instances where they are of help and when potentially detrimental (Bazerman, 2006). Based on behavioral decision making literature, most common biases affecting purchasing related decision making are described in the following subsections.

2.4.2. Availability bias

The availability bias is a cognitive bias that causes a decision maker to overestimate the probability of events which they recall more easily from memory. Vivid, familiar or memorable occurrences with which the decision maker has prior experience with are more easily remembered and are thus considered to happen more likely than ones that the decision maker is

unfamiliar with (Slovic et al., 1977; Tversky and Kahneman, 1973). The availability bias can hasten the decision making process but in some instances it might result in preferring easily remembered information to other useful information, leading to suboptimal decisions (Combs and Slovic, 1979; Hogarth, 1987). As memorable events are further magnified by coverage in the media, the availability bias does not affect people on a singular basis but is compounded on the society level (Gilboa, 2011).

Good example of availability bias leading to bad decisions is a purchasing agent that chose a supplier from a set of firms because it had the most familiar name. Later on he realized he knew the name because the company had recently gained adverse publicity regarding its unethical and illegal business practices (Bazerman, 2006). Country of origin effect is another example of availability bias, which can lead purchasing managers to prefer suppliers from their home region or country as they invalidly consider that such supplier might provide better service than a supplier with different origins. Therefore, a supplier from a region or a culture unfamiliar to the supply managers might be faultily given worse evaluation or even might not be considered at all because of this bias (Pauleen and Murphy, 2005). An earlier example from Bruner and Postman (1949) illustrated that relevant information is regularly omitted from decision making due to the decision maker's background such as affiliation, education or profession. For example, a technical specialist might prefer tight quality inspection and exact specifications for the sake of his job whereas a supply manager might consider looser conditions an advantage to avoid problems in purchasing such as higher prices or monopolistic scenarios due to the scarcity of qualified suppliers.

2.4.3. Base rate bias

Base rate bias depicts a tendency to ignore more relevant statistically significant data and focus on more individuating particular data instead (Bar-Hillel, 1990; Bar-Hillel and Fischhoff, 1981; Kahneman and Tversky, 1973; Lyon and Slovic, 1976;). Bayes Theorem gives the basis for the normative approach to combine specific information to base rate data to improve the data quality. However, the base rate bias claims that in general people are not naturally "Bayesian" (Fischhoff and Beyth-Marom, 1983). According to Arrington et al. (1985), this bias occurs since

more specific and concrete information seems more accessible than more abstract statistical information.

This bias is present in situations where base rate data such as statistics is perceived rather abstract and thus irrelevant when compared to more tangible but less generalizable data such as the decision maker's current situation. An example of the effect of base rate bias in purchasing context would be to decide to decrease the safety stock buffer due to the lack of its use in a short period of time such as few months, even though there have not been any major changes in lead-times and demand levels both for the company and across the industry. In this case, the purchasing manager might have erroneously perceived risks to be lower solely because by coincidence there had not been any need for safety stock during this short period of time. Another example would be a purchaser who ignores historical statistics or industry data regarding the quality and service of a supplier and rather prefers her personal experience or opinion of another purchaser or even a friend in evaluating a supplier. In both of these situations, the purchaser decides to count on a small number or possible even a single piece of vivid data instead of using more trustworthy but perhaps less appealing base rate data.

2.4.4. Commitment bias

A commitment bias is present when a decision maker has a tendency to follow or escalate a previous course of action regarding an investment in time, effort or money even though the past performance has been poor and would not support continuing the commitment. According to the traditional microeconomic theory, future costs and profits should be the base for rational investment decisions (Mankiw, 2003). So to say, the past and the present are relevant in decision making solely for the purpose of providing relevant information that helps to assess future outcomes.

Multiple studies have demonstrated that when a decision maker commits to a course of action, she most probably follows her commitment regardless of opposing facts arising later, claiming that the original commitment was a poor choice (Arkes and Ayton, 1999; Beeler and Hunton, 1997; Schwenk, 1984; Staw, 1976, 1981; Williams, 1986). In these cases, commitment in the original decision can only be considered rational if the costs of non-commitment or

abandonment offset the benefits (Kahneman et al., 1991; Schwenk, 1986). Such a scenario could occur if the decision maker's reputation would suffer and the escalation costs are not significant. Also, linked to the hindsight bias explained later, the tendency to escalate commitment is accentuated in situations where it is possible to explain the failure out with an external reason unconnected to the decision maker's initial decision such as unstable economic situation instead of poor fit to market. However, there is also empirical evidence that a manager gets more likely rewarded for commitment escalation instead of changing the course of investments. Most probable reason behind this is that changing course might implicate poor past decisions even though future prospects would tell otherwise if one would look at the big picture (Ross and Staw, 1986; Staw and Ross, 1978).

In essence, the rational choice according to microeconomic theory includes abandoning the association of non-recoverable or sunk costs with the decision at hand. Sunk cost fallacy is one of the most popular types of commitment bias (Gilboa, 2011; Sharp and Salter, 1997). Sunk costs refer to already incurred costs which can be considered to be unrecoverable to any notable degree, e.g. investments in special machinery or other resources committed to the client or supplier development. Sunk costs affect the decision maker in a way that she fails to evaluate available options entirely based on their future returns and costs but includes the incurred costs in her calculations (Arkes and Ayton, 1999). Due to this, investment decisions should include multiple decision makers as individual decision makers are more likely to escalate commitment than groups of people. Groups tend to make better and more rational decisions as they see better the irrationality behind the unsuccessful choices in the past. However, if a group fails in recognizing the adverse decision path of the past, the group dynamic strengthens the original choice and thus intensifies the commitment escalation in even greater lengths than individual decision makers would do (Bazerman et al., 1984).

2.4.5. Confirmatory bias

Confirmatory bias portrays the tendency to search for evidence supporting one's current position or desired outcome and to dismiss disconfirming evidence proving otherwise. In other words, people have an inclination to seek and interpret information in a way that supports their presumptions due to the desire to be right in their stand. As Carter et al. (2007) state,

confirmatory bias works in opposition to one of the essential doctrines of the scientific method: information contradicting an argument should be regarded as more valuable than information supporting an argument. Failing to consider contradicting information might then result in unwarranted confidence in one's decisions (Einhorn and Hogarth, 1986; Russo et al., 1996).

There have been multiple studies proving that managerial decision makers tend to make their assessments based on their personal beliefs while disregarding real probabilities much like in the previously presented availability and base rate fallacies. Managers who succumb to the confirmation bias systematically disregard contradictory information and seek for one confirming their initial values and views (Giles, 2003; Hogarth, 1987; Lynn and Williams, 1990; Schwenk, 1988). Additionally, these managers have a tendency to consider the sources of confirming information to be more trustworthy than the ones providing contradictory information (Babad, 1995; Hogarth, 1987; Thaler, 2000).

As a purchasing context example, a manager might start preferring Supplier A in the selection process because of a positive superficial impression of the supplier's production facility or engineering team during a plant visit or basically because the manager knows the supplier better. Afterwards, when the objective supplier evaluation matrix designates Supplier B to be the optimal choice, the purchasing manager might begin to gather extra evidence to support his initial preference for Supplier A while disregarding contradicting evidence that favors Supplier B. On a more general societal level, confirmation bias can also result in entrenched ideological, religious or ethical beliefs not being challenged, leading to more confident believers and supporters.

2.4.6. Control illusion bias

Humans are in general not good at perceiving randomness (Ayton et al., 1989, 1991; Lopes and Oden, 1987). When control illusion bias is at place, successive random events or a small non-representative sample can be erroneously thought to form a pattern and lead as such to overconfidence in one's judgment. In other words, succumbing to this bias leads the decision maker failing to take account the principle of statistical independence in her assumptions. If two

events are independent from each other, information about one's outcome should not have an effect on another (Hogarth, 1987; Tversky and Kahneman, 1973, 1974).

As an example, if three consequent flips of a fair coin result in heads, an individual might erroneously believe that the next coin flip would have a high probability to be tails even though the probability in reality is 50 percent for every coin toss including the fourth flip of the coin. Due to this relation the bias is also called gambler's fallacy or Monte Carlo fallacy. To put into a purchasing context, a purchasing manager might have experienced demands for price increases from suppliers in the last three negotiations when he had Engineer A in his team. Although the presence of Engineer A most likely had no effect on the suppliers' demands, the purchasing manager might choose to prefer another engineer over the current one in the future negotiation teams. Furthermore, false sense of control might lead people to be overly optimistic in assessing the future success of multifaceted linked events such as long-term projects with multiple stages. This is probably one of the key causes for many purchaser-supplier joint development projects to fail in terms of surpassed deadlines and exceeded budgets (Teigen et al., 1996).

The control illusion can lead to several additional decision making biases. Observation of a data presentation that seems logical or complete in a quick glance can make the individual careless and stop searching for errors in it. A too simplified standardized supplier evaluation system with few different criteria makes a good example. A purchasing manager might pick the supplier with highest total points according to the few select criteria while failing to include additional relevant dimensions to the supplier selection. For instance, there might be external factors present such as high risk for consolidation in the supplier's industry which leads to a possibility that the supplier is purchased by a competitor or the key development people might leave the supplier. This kind of overconfidence in standardized evaluation system can gravely harm the quality of decisions (Fischhoff et al., 1977).

Environmental aspects such as information overload or time pressure can increase a task's perceived complexity. Problem rises if this leads to groundless simplification of a problem at hand by ignoring the level of uncertainty inherent in the decision problem (Hogarth, 1987;

Nordstrom et al., 1998). Compounding disjunctive events (events where components of the compound do not have to be combined to create the final result) might as well be incorrectly evaluated. As an example, for a chain to snap or a computer to crash, only a single component or link needs to fail for the whole system to collapse. Such disjunctive events need to be judged by using probability theory's addition rule with expected utilities for different alternatives and then pick the option with the highest expected utility. (Bar-Hillel, 1973; Cohen et al., 1972)

2.4.7. Hindsight bias

Also referred to as output evaluation bias or self-serving bias, the hindsight bias occurs when the predictability of a current situation is overestimated in retrospect or when success is credited by the internal factors or personal abilities of the decision maker but failure is associated with external or situational factors such as poor luck. The hindsight bias appears when a decision maker does not recall the path leading to a certain outcome in detail as the event that actually happened in the end is more prominent in her mind. This leads onwards to an imprecise reconstruction of the causal relations between the different events in the decision path (Buchman, 1985; Fischhoff and Beyth-Marom). A widespread example is the differing assessment between the reasons behind a failure and the reasons for a success. Successful outcomes from a decision are usually attributed to the decision maker's intelligence and capabilities for making good decisions (Hogarth, 1987; Miller, 1976). On the contrary, failure is accredited to external reasons such as bad luck, poor timing or ineffective execution by other involved parties (Miller and Ross, 1975).

The hindsight bias and the control bias can be seen as related even though they are different in nature. When control bias occurs, a decision maker perceives erroneously logic in events where it is not present. In the case of hindsight bias, a decision maker reconstructs the logic in retrospect after the final decision outcome is known. In other words, control bias is present in circumstances where poorly designed decision problems lead to sought-after outcomes. The hindsight bias then diminishes the decision maker's chances to learn from the past and take advantage from the potential mistakes made in the course of the decision making process. This can incorrectly increase the decision maker's confidence in her judgment and inherent decision making skills for the future (Connolly and Bukszar, 1990; Mazursky and Ofir, 1997).

2.4.8. Presentation bias

The presentation bias is at place when the display, order, scale or selection in a presentation has an impact on the perceived value of information, which then can lead to systematic errors in reasoning and decision making. The type of presentation or the sequence of items in a presentation should not affect judgment from a normative point of view. However, many researchers have proved this not being the case in reality (Hogarth, 1987; McKenney and Keen, 1974). For example managers have a tendency to favor verbal reports to written ones and also to favor face-to-face meetings to telephone discussions (Bazerman, 2006). Additionally, for attentive reasons managers have a tendency to emphasize the first and last items in a presentation while disregarding the ones in the middle (Chapman et al., 1996) and judge events in a different way depending on if they are framed as gains or losses (Kahneman and Tversky, 1979, 1984; Tversky and Kahneman, 1981, 1986). Furthermore, the range of the data might affect its perceived variability (Ricketts, 1990) and repetitive occurrences might be understood erroneously to be more probable which can lead to overestimations of the occurrence's probability or the significance of information or an event (Arkes et al., 1989; Hogarth, 1987).

Framing effect is one of the most common ways of presentation bias to occur. In everyday life, framing effect takes place often when comparing relative and absolute relationships over values. As an example, a relative discount of 30 percent of a 2$ item might be regarded as superior to the absolute discount of "60 cents off". Prospect theory has been considered the most popular explanation for the framing effect (Kahneman and Tversky, 1979, 1984; Tversky and Kahneman, 1981, 1986) which has demonstrated via multiple studies systematic dissimilarities in people's preferences in the face of differently framed but rationally identical options. According to the prospect theory, people are risk averse and evaluate gains and losses of equal value differently.. In other words, people are risk seeking in the face of losses but risk averse in the face of gains: the marginal perceived value drops significantly for each additional unit of gain as is illustrated in Figure 5. As an example, a considerable share of purchasing managers would favor certain savings of $5.000 to a 25 percent chance of achieving $20.000 savings while they would rather choose a 25 percent chance for $20.000 increase in pricing than a certain $5.000 price increase. Albeit the expected values of the options in both decision scenarios are the same, the decision

makers' risk preferences vary depending on the loss/gain framing (Tversky and Fox, 1995; Tversky and Kahneman, 1992).

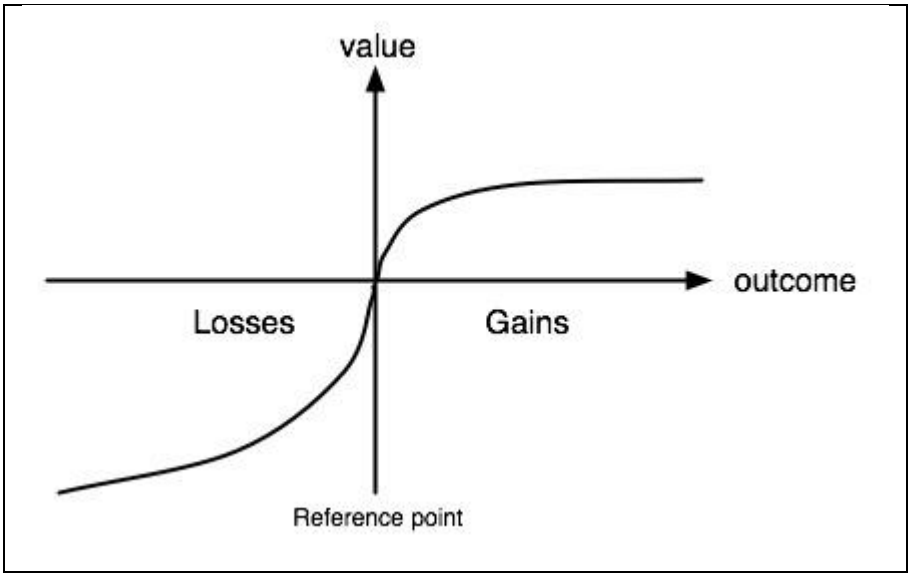


Figure 5. Value perception of losses and gains according to prospect theory (Kahneman and Tversky, 1979)

Another good example in purchasing context is bonus-rebate framing where using the word "bonus" for money gained after the original purchase creates the image of surplus money while "rebate" is perceived as money that returns the purchaser to the proper status quo (Epley et al., 2005). For the same negative-positive framing reasons, IBM does not want to advertise in the media next to bad news as they believe the news will have negative effect on their marketing communications and thus negate its effects (Markkinointi ja Mainonta, 2003).

2.4.9. Reference point bias

In the case of the reference point bias, decision maker does not evaluate or adjust her position from the initial reference point sufficiently. This so called anchoring leads a decision maker to evaluate uncertain quantities or values in the biased direction of an initially presented reference point or comparison value. According to Tversky and Kahneman (1974), choosing a reference point and starting to fine-tune one's estimations based on it is one of the most common simplifications human mind does in decision making situations. This can be a suitable approach in iterative environments where feedback is continuously available. However, studies have

shown that in most situations the adjustments from the initial reference point fail constantly to be sufficient enough (Slovic et al., 1977).

For a practical example of the reference point bias, many studies have shown that in negotiations the value of the final agreement shows significant relation towards the value of the initial offer independent of its difference from a fair market value (Galinsky and Mussweiler, 2001). Such results illustrate how a reference point has an impact on the decision maker's conclusions after it has been proposed. Even if the reference point is an arbitrary value assigned at random and the decision makers are conscious of the fact, they still tend to be prone for anchoring to the initial value (Epley and Gilovich, 2005).

In purchasing context, the purchaser might not demand sufficiently large price reductions from the supplier as the initially set level of pricing anchors her perception of reasonable pricing. However, in reality the opening price might exceed the appropriate price level. Likewise, purchasing departments' target setting for price savings for different groups of products has frequently its base on previous accomplishments which can be considered as rational if historical data in this context can be seen relevant and comparable. Yet, past performance is seldom the best indicator for achievements in the future, especially in the case of different types of products or time windows (Hogarth, 1987).

2.4.10. Status quo bias

Status quo or persistence bias is present when an option is chosen only due to the fact that it has been chosen before to preserve the current situation or status quo. In this case, the decision maker ignores relevant new information but limits the search for information which might lead to confirmatory bias as well (Fernandez and Rodrik, 1991; Samuelson and Zeckhauser, 1988). The sayings "Don't fix it if it's not broken" or "This is what we have always done" are very good examples of the bias in layman's language.

The status quo bias is a representation of an extreme situation of bounded rationality and even though persistence can be of use at times, such as in protecting people from making too hasty decisions or in the case of smaller less important decisions, it can prove to be defective in more

important and long-term decisions (Hogarth, 1987; Slovic, 1975). People tend to hold on to the status quo especially in uncertain decision environments as altering the current status involves an act when simply keeping it needs an omission, a decision not to act. Individuals tend also to prefer harmful omissions to correspondingly harmful actions. Even when making a decision results in both benefits and losses, omissions are preferred (Hammond et al., 1998; Ritov and Baron, 1990; Spranca et al., 1991).

The omission bias can be seen as incorporated in western legal systems as well. Pharmaceutical firms are conventionally held responsible for the generally well-researched and well-produced but sometimes unintentionally harmful medications and vaccines while not being liable for the decision not to produce new medication in fear of the possibility of costly lawsuits (Baron and Ritov, 1993). Same logic applies to the fact that those who participate in crimes that lead to death are strongly punished while there are not as severe bystander laws that would punish those who could rescue someone's life but choose not to or fail to do so (Bazerman, 2006).

In purchasing context, a company might have information systems which perform less than average but the deciding manager does not dare to take a risk to invest in a new information system if there is even a tiny possibility that the new one would not perform substantially better than the current one. For the same reason, a purchasing manager might become satisfied with the discount percentage of their current supplier and does not take time to tender the purchasing contract even though significant additional savings could be achieved.

2.5. Synthesis of literature

The previous sections have introduced first how sales should be done in a customer centric way and how organizational purchasing should be organized in a company. After selling and purchasing theories, behavioral decision theory and the decision making inefficiencies or biases it can cause in purchasing are presented. This section combines these different viewpoints and presents the linkages between different steps of purchasing process and behavioral decision making biases while addressing how salespeople should acknowledge them when conducting customer centric sales. First, the different biases and their effects on purchasing decisions' are

depicted and then they are combined to the adjusted purchasing process model including the customer centric sales aspect.

2.5.1. Decision making biases in organizational purchasing

Even though the different decision making biases mislead the human mind in multiple different ways, the judgmental effects of the decision making biases fall in three different categories: incorrect assessment of event outcomes or probabilities, ignoring relevant alternatives and overly optimistic or pessimistic assessment. Table 8 has a comprehensive listing of the previously introduced decision making bias types and in which ways they can affect our judgment. In addition, concrete examples in purchasing context are depicted after respective bias types.

Table 8.Summary of decision making biases in purchasing context

Decision bias	Effect on judgment	Example in purchasing
Availability	Ignoring relevant alternatives Overly optimistic or pessimistic assessment	An erroneous recall of the seller's good performance can result in overly optimistic evaluation and wrong choice of supplier.
Base rate	Incorrect assessment of event probabilities or outcomes Overly optimistic or pessimistic assessment	Ignoring the relative importance of relevant new information about the developments in the market can result in overly optimistic or pessimistic assessment of the situation.
Commitment	Ignoring relevant alternatives Overly optimistic or pessimistic assessment	Buyer might pursue unprofitable investment paths by concentrating too much on sunk costs deriving from her past commitments.
Confirmatory	Incorrect assessment of event probabilities or outcomes Ignoring relevant alternatives Overly optimistic or pessimistic assessment	Buyer searches for evidence supporting her current position or desired outcome while dismisses disconfirming evidence proving otherwise.
Control illusion	Incorrect assessment of event probabilities or outcomes Ignoring relevant alternatives Overly optimistic or pessimistic assessment	A sequence of random events such as few singular successes of a select supplier is mistaken for an overall superiority.
Hindsight	Incorrect assessment of event probabilities or outcomes Overly optimistic or pessimistic assessment	Poor purchasing decisions are attributed to bad luck or other external reasons while successful ones are accredited to the proficiency of the decision makers.
Presentation	Incorrect assessment of event probabilities or outcomes Ignoring relevant alternatives Overly optimistic or pessimistic assessment	Presentation of solutions or suppliers is erroneously perceived to include all the relevant information which can lead to inadequate search for other alternatives.
Reference point	Incorrect assessment of event probabilities or outcomes Overly optimistic or pessimistic assessment	Adjusting from the initially set pricing position does not lead to the lowest possible price the seller could offer.
Status quo	Ignoring relevant alternatives Overly optimistic or pessimistic assessment	Buyer might stay using current supplier or solution instead of searching for new and better ones in order to preserve the status quo.

2.5.2. Research framework: Behaviorally adjusted purchasing process

The theoretical study has appointed that each of the decision making biases presented can have an effect on the decision making in different stages of organizational purchasing process. This relationship is illustrated in the behaviorally adjusted purchasing process model below which is used as the research framework for this study (Figure 6).

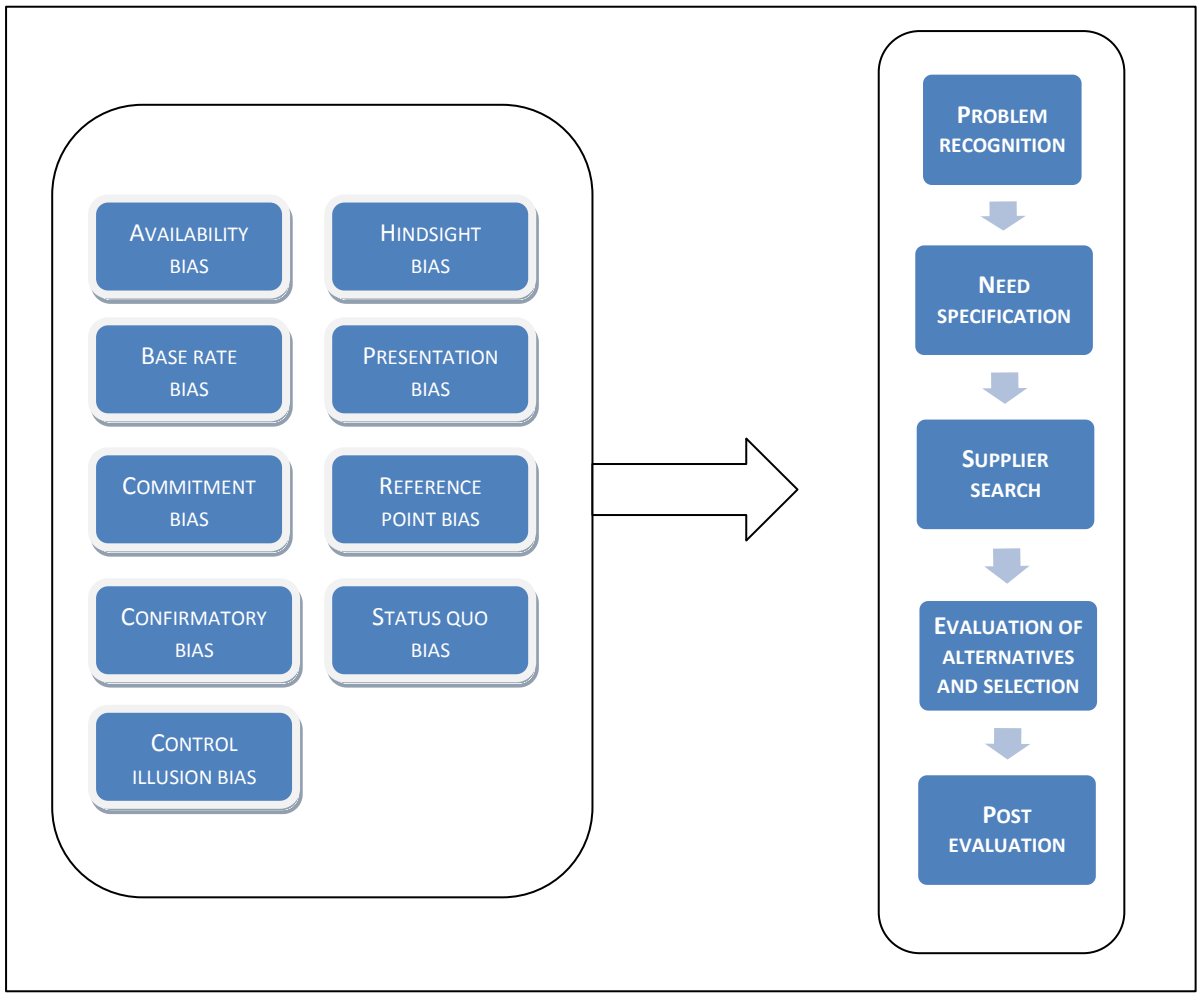


Figure 6. Model of purchasing process steps with the decision biases affecting it

As stated by the solution centric sales model in section 2.1.1. (Eades, 2004) and the adaptive selling framework in section 2.1.3. (Weitz et al., 1986), salespeople should align their sales process in the purchasing process of the end customer company and adapt their sales efforts depending on the customer's actions and situation. The research framework of this study found above suggests for the salespeople to take also into account the influence of decision making

biases on the purchasing process of the customers and adapt their sales efforts accordingly. The relationship between specific biases and purchasing process steps are studied further in the following empirical part of this study.

3. Empirical study

The following subsections describe how the empirical research was conducted and depict the studied case companies and their business environment. This chapter also lists the findings in each area of the framework and as a conclusion discusses some of the general finding in the study related to the case companies.

3.1. Methodology in Case Studies

This section describes the methodology chosen and executed for this study. Data collection, analysis and evaluation of validity and reliability are included.

3.1.1. Case Study as a Research Method

Case studies are a popular form of research and they are often used to gain in-depth understanding of the dynamics in single settings. The aim in case studies is to provide description, test an existing theory or generate a new theory (Eisenhardt, 1989). Case study is a suitable research method when the research questions are in the form "what" or "how", the phenomenon researched is from current real life and the researcher has control over what happens during data collection (Yin, 2003). Research questions in this study fall strongly into the "how" and "what" categories. It is also difficult to define a more real life business world phenomenon than the principle stage of doing business: the purchasing – selling dyad. Finally in this study the researcher was in full control of data collection. Thus case study can be chosen as the best opportunity to study this phenomenon.

There are several types of case studies: exploratory, descriptive and explanatory (Yin, 2003). This study aims predominantly to describe the current situation in the selected case companies, but it also backs up the theoretical framework presented in the literature synthesis. Thus the whole study generates new theory in the form of a theoretical framework even though some parts of the framework are not discussed in the required detail of this study. These areas are however covered in numerous other studies. Thus the descriptive case study was selected as the dominant mode of research. However there are some elements of an exploratory case study as well.

As for the design of the case study, there are two possible options available: single-case study and multi-case study (Yin, 2003). Single-case studies dig deep into a single setting and give very good insight into a single surrounding. Multi-case studies on the other hand, even though they may require significantly more effort, give much more perspective as there are several settings under analysis. This makes it possible to test the same procedures with several sources which may all have very differing circumstances. This gives the opportunity for the conclusions to be more easily generalized and have a wider applicability (Eisenhardt, 1989; Yin, 2003).

In this study, the aim is to gain general insight into all customers' purchasing behavior and that is why more specifically this is a comparative multi-case study, where multiple settings are compared to one another to find out similarities and irregularities according to the research framework. A comparative multi-case study gives the opportunity to gain information from several organizations and thus enlighten salespeople about a larger scope of purchasing operations. Furthermore (multi-)case studies have been successfully used in previous similar studies. For example Verville and Halingten (2003) made a thorough investigation into the purchasing processes of ERP software and produced a model and set of criteria for this setting. Thus a descriptive comparative multi-case study was selected as the research method for this study.

3.1.2. Data collection

Case studies utilize several methods of data collection. In this study the dominant form for acquiring core data was through in-depth interviews. Naturally before the interviews extensive background information was acquired through secondary data sources such as websites, annual reports and other company material. Also during and after the interviews the interviewees provided several insightful internal documents. Thus the primary sources of data were the interviews and internal company documents and secondary data sources were publicly available company materials and websites.

Case companies for the reseller part were selected from local IT resellers concentrating on IT infrastructure cases for small and medium sized Finnish companies. The interviewed end customers were selected from these resellers' customer base. As stated before, the idea behind

using SMEs as study subjects is that it can be assumed that they do not have as organized purchasing operations as larger enterprises and are thus better targets for researching decision biases in purchasing context.

Interviews

The objective was to obtain at least ten case companies. In the end, 14 companies were chosen as targets of the case studies of which seven were IT resellers and seven end customer companies. Altogether 14 in-depth interviews in person and by phone were carried out in the case companies. Additionally, some interviews were held with faculty members and other subject experts. Altogether 14 case company interviews and 5 expert interviews provided the primary data including internal documents received simultaneously.

The interviewees were from different levels and roles of the purchasing process. This included high level management as well as executors of purchasing and selling. It must be noted that the majority of the interviewees were the appointed purchasing people inside the organizations and the study might have benefited from gaining broader insight from users and different business units.

Interviews were held at the case-company premises or via telephone and lasted approximately an hour. The interviews were semi-structured and conversational. Most questions were open ended to allow the interviewee to elaborate and open up. The interviews were arranged in three waves. In the first wave, industry experts were interviewed to gain general insight of the case industry. The second wave was the main part of the data gathering and consisted of the reselling companies. The third and last wave consisted of the client companies purchasing the IT infrastructure. For further information about the interviews, please see the interview reference list in the references chapter and the interview questionnaires in Appendices 1 and 2.

3.2. Description of the case industry

This section presents the case industry of this study: IT infrastructure business in Finland. First, the concept of the IT infrastructure is defined and then an introduction to the IT infrastructure sales channel, logistics and business model is given.

3.2.1. IT infrastructure

IT infrastructure sets the foundation for all the other information systems inside a company. Due to their basic and comprehensive nature, the infrastructure investments are often shared among several business units and are usually centrally managed inside the company (Weil and Broadbent 1998).IT infrastructure consists of computing platforms, storage systems, networks, middleware, operating systems and shared non-business-process related applications such as email applications and application integration systems (E1). IT infrastructure expenditures can be considered investments as they are asset generating long-term benefits (Weil and Broadbent 1998). A company can invest in the IT infrastructure either as an in-house asset or as a hosted service through a service provider. However, even if the infrastructure is located in-house, it is seldom paid as a whole but through a financing intermediary which moves the nature of the investment more towards a continuous service due to the payment model of monthly or quarterly fees (E3).

A company's datacenter can consist of simply a server or two in a closet or it can be a large clustered solution with all the networking hardware, storage systems, switches and related software solutions (E5). This depends on both the company's size and its industry's IT-intensity. For example a software company of ten people might have ten times more the server capacity to test their products than a professional services company of one hundred employees who needs only a collaborative e-mail and calendar solution.

The datacenter products of big IT corporations that are targeted to the small and midsized-clients are considered entry-level or midrange products, in contrast to the enterprise solutions targeted to large customers (E3). Another categorization between these product groups is volume and value products. Albeit being considered volume, these solutions can cost the client between few thousand and few hundred thousand Euros.

The components of IT infrastructure are visualized in Figure 7. Hardware forms the basic layer which is then topped with system software performing functions such as system management, security and login management, virtualization layers and operating system (E1). On top of the

system software are the basic applications such as e-mail and collaboration tools.. On top of these IT infrastructure layers or foundation come business applications such as ERP and CRM systems or Business Intelligence software but they are not considered a part of the IT infrastructure and thus are out of this study's scope.

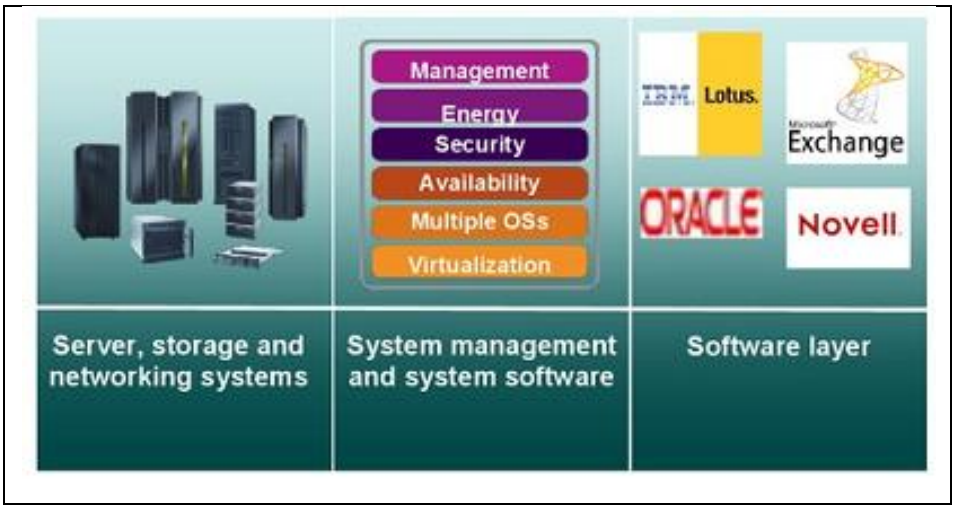


Figure 7. The components of IT infrastructure

3.2.2. IT infrastructure business model in Finland

In Finland, the IT infrastructure business works through a channel of distributors and resellers which is in most cases four tiered as can be seen in Figure 8. Some larger client companies might conduct business directly with the hardware manufacturers but in the SME segment almost 100% of the companies purchase their IT infrastructure through resellers who in turn work together with distributors and the manufacturers (E3). There are six major IT infrastructure manufacturers present in Finland: Cisco, Dell, Fujitsu, HP, IBM and Oracle. Their non-direct business goes mainly through the five biggest IT distributors in Finland: ALSO, ArrowECS, Computerlinks, F9 and TechData. Depending on the calculations, there are about 400 resellers in the IT infrastructure business in Finland.

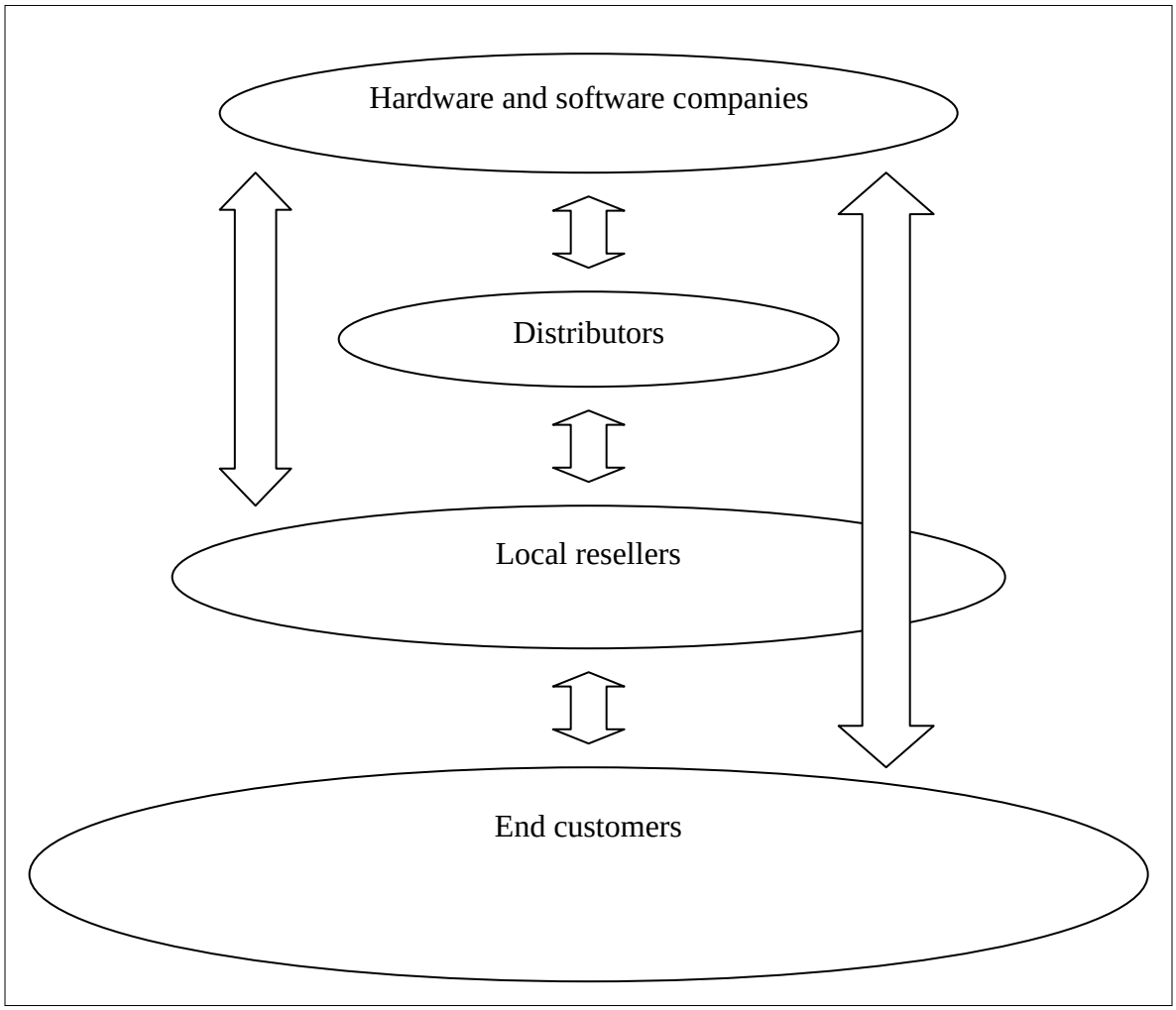


Figure 8. IT infrastructure sales channel in Finland

The route of a product or a solution from the manufacturer to the small and midsized end customers happens as follows:

1. A nationwide reseller or a local smaller reseller and the hardware manufacturer's client representative find a customer need either in cooperation or individually and form a configuration and a proposal together.
2. Depending on the product type, the reseller gets the detailed pricing from a distributor or for complex products directly from the hardware manufacturer.
3. When the customer agrees to purchase the offer, the reseller places an order either to the distributor or directly to the IT manufacturer.
4. Distributors have pre-ordered in stock the most demanded and basic products such as regular servers, small storage systems, network switches, hard-drives and related options. These products are instantly available from their domestic or Nordic warehouse from where they are shipped directly to the customer or via reseller in a day or two. For more configured, customized or otherwise out-of-stock products the distributor places an order to the hardware manufacturer's factory which means longer lead times.
5. The manufacturer builds the hardware in one of its factories around the world and ships it to the customer directly or via distributor or reseller if they want to do preconfigurations to it in their own premises.
6. The reseller delivers and installs the IT infrastructure elements to the end customers' premises or datacenter. In some cases the infrastructure is installed into the resellers' own datacenter to offer a hosted service or the reseller offers only server and storage capacity as a virtual or dedicated resource from their own datacenter infrastructure.

The same process applies for off-the-shelf software licenses included in the IT infrastructure such as operating systems, virtualization software etc. but the process is faster as the factory in this case is a person or system creating the license keys for distribution. Otherwise the reseller and distributor channel stays the same.

Sales cycles of the IT infrastructure follow the hardware manufacturers' and software developers' version upgrades and licensing very closely. Generally speaking, the maintenance and support of the systems is reasonably priced during the first three to four years after which the upgrade should take place due to exponentially rising support costs (E3). This is evident especially with the entry-level hardware which begins to lose its reliability after the first three years because mass-produced disks, processors and other components wear over time in the almost 24/7/365 use (E1). The old and unreliable hardware causes downtime that can quickly become much more costly to the user than purchasing new hardware. The software upgrade pricing raises relate more to added features and interoperability between different software packages on the same infrastructure but also to the constantly increasing price of maintaining expertise of older systems at the vendor's and customer's IT support personnel (E4).

3.3. Interviews with the case companies

The research framework of behaviorally adjusted purchasing process model was used to generate relevant questions to both sellers and buyers of IT infrastructure. First, a set of people conducting sales from various Finnish resellers targeting SMEs were interviewed with questions related to the problems they face with their clients in their sales work. Another part of interviews was targeted to a set of CEOs, IT managers and other related IT infrastructure purchasing decision-makers of SMEs to find out their viewpoint on their capabilities of making successful IT infrastructure investments.

3.3.1. The interviewed resellers

Seven people working in the sales of seven different IT resellers were interviewed for this part of the study. List of the interviewed people and companies can be seen in Table 9. Due to nondisclosure reasons, the names of the people and companies are not revealed.

Table 9. Interviewed people at IT resellers

Company	Turnover (2011)	Personnel	Title
rA	0,4 M€	3	CEO
rB	1,0 M€	3	CEO
rC	1,2 M€	12	CEO
rD	3,8 M€	29	Account Manager
rE	0,6 M€	4	CEO
rF	0,9 M€	5	CEO
rG	3,6 M€	18	Sales Director

Several clear pain points at resellers in the IT infrastructure sales were identified through the interviews, both in the sellers and buyers side leading to suboptimal IT solutions for the end customers. However, not all of the resellers seemed to conduct their sales in a truly solution and customer oriented way as exemplified by Eades (2004).

"What is the different between a car salesperson and an IT seller? – the car salesperson knows when he is lying."
- IT reseller

The general tendency at the resellers was that the salesperson often chooses to sell directly what the customer asks in fear of losing the sale if he or she starts questioning the customer's opinion. In this way, it is not appealing enough for the IT salespeople to go the extra mile for the customer if the outcome is too risky compared to the reward gained through the increased effort to change the customer's mind.

Customers seldom want to change their IT supplier without experiencing a major disappointment in their services (E3). There are multiple reasons for this: first one is the previously mentioned complexity of IT environments where even slight changes in its components or administration can cause major problems. Changing the supplier can also present migration problems if changing one platform to another, this is why most SMEs choose more universal IT solutions as they do not want to stick with only one option (E1).

The choice between a multi-vendor and single vendor purchasing strategy affects the purchasing situation from both the manufacturers' and resellers' viewpoints (Arnold, 1999). There are multiple pros and cons for both of these strategies but in general the SME customers' needs are not complex enough and purchasing power large enough to benefit from the multi-vendor strategy (Ellegaard, 2009). So to say, they work often with a single reseller which might then integrate different manufacturers' products to solutions, were it from two or many more sources.

3.3.2. The interviewed end customer companies

In order to understand the opposite view on the IT infrastructure purchasing, seven decision-makers from different companies were interviewed related to the purchasing processes they lead and their IT knowledge and purchasing skills in general. List of the interviewed people and companies can be seen in Table 10 below. Due to nondisclosure reasons, the names of the people and companies are not revealed.

Table 10. Interviewed end customers

Company	Turnover	Personnel	Industry	Title
cA	1,8 M€	15	Software	CEO
cB	37,8 M€	200	Construction	CEO
cC	32,1 M€	44	Energy	IT Manager
cD	20,7 M€	43	Wholesale	CIO
cE	38,1 M€	150	Manufacturing	IT Manager
cF	20,9 M€	103	Wholesale	IT Manager
cG	4,9 M€	60	Marketing	CEO

3.3.3. Factors mentioned in the interviews

The decision making biases found to affect purchasing decisions based on the conducted interviews are presented below in the order of different purchasing process steps.

Problem recognition

In the first step of the purchasing process, problem recognition, *availability*, *commitment*, *confirmatory* and *status quo biases* were present either in separate or interrelated ways.

"A Mercedes guy does not buy a Volvo no matter how hard you try"
- IT reseller

Each of the interviewed resellers and three of the end customers (cA, cD and cG) had strong opinions on the brand of the IT infrastructure they or their clients were considering to purchase. Resellers often used the abovementioned analogy to car sales that their customers' IT managers are often loyal to a certain brand, were it Cisco in the networks, HP in servers and IBM in the storage systems. The purchasers had rational opinions on the subject such as the better quality or a cheaper price of a certain brand and some mostly rational such as having done the training for a certain brand and thus being accustomed to use a certain kind of IT equipment. However, the "being accustomed" argument lead also to the notion of "don't fix it if it's not broken", so to say not wanting to change the supplier and brand they already had even though there had possibly been some problems with the current supplier. This notion leads to the possible presence of *status quo bias*.

"I do not care about the fancy features or cutting edge technology. Our IT support company tells us when we would need something new and if we have the budget, they do the tendering for technology on our behalf and we always pick the cheapest choice."
- CEO of an end customer

The abovementioned CEO stated that they don't care what brand they are using as they have outsourced their IT purchasing for their IT support company. The company had not much knowledge of IT and trusted that the IT support company makes good purchasing choices and tenders them on their behalf. However, when asked more of the purchasing propositions their IT support company had made in the history, it appeared that the company consistently proposed one brand to be superior to others. So to say, the end customer trusted their IT support company to have analyzed for them the most cost-efficient way of building and administrating their IT infrastructure and the proposed solution was constantly almost the same which raises the question if any analysis or tendering had really been made, thus pointing to the direction of *status quo*, *confirmatory*, *control illusion* and *availability biases* affecting the decisions.

"Small companies seldom have a long-term plan for their IT infrastructure; the IT department is often over-employed to consider more strategic approach in addition to the operational IT infrastructure administration. Often the IT purchase does not come to mind until it is almost too late such as when a piece of equipment fails or current capacity is overreached. This leads to hasty repurchases without looking at the big picture."
- IT reseller

"Most of my time goes to administration and ad-hoc tasks. I do not have much time to project future development efforts as the current infrastructure already gives me more than enough work."
- IT manager of an end customer

"Small companies which have less than 30 people purchase only the bare minimum needed or what they consider to be cool to have. When the company starts to be the size of 50 people or more the laws of business and economics start to apply to their operations and behavior."
- IT reseller

The point of the SME clients acting irrational about their purchases and not having comprehensive long- or even mid-term plan for their IT infrastructure was made by one more senior CEO of an IT reseller as being a threshold for introducing smarter systems to their clients. When the end customers were asked about their IT plans in the long term, only the CIO in cD seemed to have a consistent bigger picture in mind. The IT managers (cC, cE, cF) had somewhat enough knowledge of the IT but seemed to not have enough time to concentrate on the bigger plan and the CEOs (cA, cB, cG) purchased only what they considered to be absolutely necessary when something broke suddenly. These companies seemed also not to have any interest in developing their IT to meet better their business requirements as they saw it mostly as a cost factor they had to live with.

The fact that the companies did not see much need for developing their IT capabilities to better meet business requirements is a clear sign of *status quo bias* as they preferred to keep their IT the

way it was and make amendments only if absolutely necessary. As mentioned, the end customers also did not plan ahead their IT lifecycles but made purchases mostly in face of a major crisis which turned them vulnerable to hasty decisions including biased decision making.

Need specification

The *status quo bias* continued to have a strong presence in the need specification phase with *confirmatory* and *commitment biases* but also *reference point, presentation, availability* and *base rate biases* were affecting the clients' decisions.

"When considering public purchasing RFQs, the company should be involved already in the early stage because when the official RFQ is published, often there are only one or two products that meet the selected purchasing criteria on features etc."
- IT reseller

"If a client is searching for a new disk system or total infrastructure you instantly know which manufacturers' seller has been there first when you are told the most important technical features it should have."
- IT reseller

"Technology X sounds so prominent piece of technology that we have to have our future IT infrastructure supporting it."
- IT manager of an end customer

The resellers pointed out in many ways the importance of getting into the purchasing process early enough in order to steer the customer into their way, similar to the findings of IBM Software Group's study mentioned in the purchasing theory part (Eades, 2004). Most problematic were RFQs of public entities as the high regulation forces the customers to refuse any offer not adhering 100% to the initially published requirements. The resellers and manufacturers have to be present in the very beginning of such purchasing processes in order to not be left out of the competition due to incompatibility reasons which the competition fiercely

tries to implement in the RFQs. As an example, with the aid of the manufacturer or reseller, the end customer might require their new disk system to be totally compatible with four different pieces of virtualization software and be scalable up to 200 terabytes even though their future requirements would need only half of that in the future. However, this is a way to close out competitive offers not meeting the exact requirements with good enough pricing.

The interrelating nature of the decision biases is well exhibited in the aforementioned RFQ process. The steering conducted by resellers results in the end customers to be subject to *reference point, presentation, availability* and *confirmatory biases.* First of all, when the first reseller(s) set the scene for the customer needs, the anchored customer has a hard time adjusting their need specification to a more realistic direction as they have the first proposition on top of their minds which is one of the results of *presentation bias* as well. Of course the proposed solution also has to be somewhat sensible and not too over the top. After the first proposed solution, the end customers continue to compare the following alternatives to the first one which leads us to *availability* and *confirmatory biases. Availability bias* affects the customers in the sense that they consider the first solution more than the following ones while *confirmatory bias* leads them to neglect following solutions not fitting the description of the initial proposition, e.g. if the technology works in slightly different way or does not have one specific but trivial feature.

"Ideal situation would be that the technical expert could just come and tell the customer that this exact solution solves their problem and answers their need. This is challenging in the sense that the technical expert should not be perceived too much of a seller as salespeople are sometimes seen sleazy. The fact that not all of the customers know thoroughly what they are actually purchasing is not helping the situation."
- IT reseller

"Customer bought several tower servers due to slightly cheaper one-time purchasing price even though rack or blade servers would have been more easily administrated thus decreasing the work-burden of the customer's IT staff. With a TCO or other cost calculation for two or three years the customer would have saved more money with a different solution but convincing the

client otherwise would have burdened our sales team too much as we were winning the project anyway."

- IT reseller

However, the resellers' opinion was also that the customers did not trust enough their technical pre-sales people's opinion on the suitability of different technologies to the end customers' needs. As slightly contradicting the purchasing criteria literature (Cheraghi et al., 2004; van der Rhee et al., 2009; Wilson, 1994), the end customers had a tendency to over-emphasize the purchase price as they considered it to be the most tangible and understandable measure of price. This is a perfect example of the difficulty of selling IT solutions to the SMEs as the client itself does not have the resources and knowledge to assess themselves the feasibility of different solutions but they are dependent on the suppliers' presentations which makes them subject to short-sightedness.

As was stated already before with the problems in the public RFQ process, this lack of sophisticated evaluation tools leads the SMEs also to depend more heavily on heuristics which can lead e.g. to *presentation* and *reference point bias*. Especially the latter was present in cases where the first reseller had set the scene for them that they would need technology A in order to succeed and they would not survive with a solution below the price range they were offering which might not be true at all or vice versa the client would not need more expensive solution than the entry-level solution which in reality might not be suitable at all and thus demanding expensive reinvestments in the near future. However, the resellers faced once in a while end customers who, based on blog or some other redundant piece of information found on Internet, were sure that one certain technology is superior to another even though the more experienced supplier would disagree. Most of these situations involved *base rate bias* as the end customer based her opinions on a single data point without any statistics that the supplier could provide either through their vast client base using their technology of choice or even more generalized data.

The end customers had a high tendency of preserving the status quo as they on average clearly lacked the ability to specify needs on a detailed level without the help of an external consultant. However, this external consultant was often a technical or salesperson from a manufacturer or reseller they had used previously that was evidently biasing the customer to favor the solutions they represent. The *status quo bias* led also to *confirmatory bias* as the end customers where most of the time reluctant to change their technology provider or even include them in their tenders to see if features and prices would prove to be better than what they currently had.

"The IT manager of one of our clients had already decided to abandon their current supplier HP due to bad experiences with their reseller and decided to now change their infrastructure supplier to IBM. If IBM would prove to be as bad choice as HP, the IT manager would look bad in the eyes of the CEO and CFO as then he would have made two bad technology choices consecutively."
- IT reseller

This quote coming from one of the resellers pinpointed the power of omission when being an IT manager, especially if the business people of the company are not acquainted with IT (Ritov and Baron, 1992). The IT manager takes a risk when changing a supplier to another and possible poor performance with the current technology is not visible without a comparison with a competitive technology. It also leads to the *commitment bias* as the IT manager can be seen responsible for the technology choices and the business side might see it as a sign of incompetency if he admits a wrong choice in the past even though for the good of the company only future results of choices in the current state should be considered (Bazerman, 2006). Several end customers (cB, cE, cF, cG) had been loyal to their current technology provider for 5-10 years including thus two or more IT infrastructure lifecycles. Being loyal to a certain technology is not inherently an irrational choice but the fact that these end customers had not really considered other providers during this time was a clear sign of the *status quo*, *commitment* and *confirmatory biases*.

Supplier search

The end customers tended to say not being locked in to a set IT reseller but still many of them used consistently only one or two familiar suppliers without looking for other ones. Resellers also had the same opinion of having mostly loyal customers with few exceptions, mostly larger companies, who tendered and searched extensively for alternative suppliers. Similar to the need specification stage, *status quo, commitment* and *confirmatory biases* were prevailing here with *availability, base rate* and *reference point biases* present as well.

"I could try to be proactive and convince the client company's CIO to renew their old server system into a consolidated virtualized server system to ease manageability and reduce operative costs. However, the client pays our company for the hours spent in the administration so it's easier for me to just sell a box after box and invoice the client of my services, after all that's where my profit margin comes from and why should I make the extra effort if I will not get any real benefits out of it."

- IT reseller

"For over twenty years, Coca Cola has been the soft drink of my choice and IBM my company's technology choice. If I am satisfied with the products I am using, why bother searching for something else."

- CEO of an end customer

These two quotes are some examples of how the reseller and end customer can perceive a long-term customer relationship (the reseller and end customer are not related). First quote is fine example of what kind of service a supplier might give to a loyal customer who does not take the time to tender their offers. Also the interviewed end customer seemed to have been paying slightly above-average margins to their reseller but their system was apparently well developed and fit their needs.

All of the end customers had had a long relationship with either their resellers or technology providers, the longest having lasted almost 30 years. Only two of them (cC, cD) were planning to change their reseller or brand they were using at least for some of their IT needs. One of the

biggest reasons according to both of them was the lack of activity from their current resellers in offering anything new and innovative to them but also price savings and more suitable technology were mentioned.

"I have used the local reseller for years and I trust them to have good expertise. I could see us using at least some of the resellers from the neighboring cities/communes but not from other regions."
- IT manager of end customer

"Local companies want to conduct business with us as we have been present here over 10 years. Even with slightly higher margins we are able to win business from larger national resellers due to the locality and longer business and personal relationships."
- IT reseller

"All of our customers come from the Helsinki Metropolitan region as there is enough business for us. Having customers in other big enough cities such as Turku, Tampere or Lahti would be feasible distance-wise but the companies there want to use local resellers so there is no point in going there."
- IT reseller

These quotes exemplify the importance of the locality of the reseller even though they would be representing the same technology brands and the general level of service, size of the company or experience provided would not be the same. In these cases the *availability bias* and especially country of origin effect is evidently present. The resellers pointed out that one has hard time getting SMEs as clients outside their own city or region as the SMEs tend to trust the local resellers more even if the reseller from another region would have significantly more assuring customer references. Once again the difference comes with the larger companies who have more professional purchasing and IT staff and often launch public RFQs similar to the public entities (E3).

"Our company used IBM for the whole nineties, and then in 2001 we switched to HP as we lost one client due to some quality issues with IBM. Nowadays the HP's quality has seemed to be worsening in relation to the price so we have switched back to IBM."
- IT reseller

The *base rate bias* can work also to the opposite direction as exemplified by the previous quote as the reseller (rB) lost his trust in one brand due to a single setback and revised his previous decision. However, this was the only example of such behavior as preserving the status quo and not making any sudden supplier changes due to singular events was prevailing in most of the other situations.

Evaluation of alternatives and selection

As in the supplier search, many of the end customer companies clearly lacked an elaborate way of comparing between different suppliers and offered solutions. Also, tendering was not present in many cases so that the companies did not have much to evaluate in the first place. *Confirmatory bias* was prevailing here with the *base rate* and *availability biases*.

"SME procurement in Finland is still on B2C level; customer seldom has a strategic view but makes the choice irrationally on a gut-feeling. The difference can be easily seen when doing business with Swedish companies that pursue tight purchasing negotiations even in the case of a small purchase or company."
- IT reseller

"Our technical guys identified a need in our datacenter and ordered it directly from a reseller's web shop, without negotiating the price or tendering the offer. They wanted a simple and fast solution to the problem and they did not bother to annoy themselves with those tasks. In the future, they hopefully know to run these purchases through me."
- CEO of an end customer

These quotes illustrate the lack of supplier evaluation methods of the SMEs quite well. As mentioned earlier, the end customers did not usually tender their purchases or if they did, they had a maximum of two alternative resellers they had already initially decided to use and the rest were there for either cosmetic reasons or for trying to keep the pricing of their favored reseller in reasonable level. Also the amount of possible suppliers is in most cases artificially limited due to the constraints made by one of the suppliers in the need specification stage as explained before.

Not one of the end customers interviewed had any supplier evaluation matrix and instead based their purchasing decisions on solely transaction price and gut-feeling got from meeting the suppliers. So to say, return on investment, total cost of ownership or any risk evaluation methods were not generally in use for the IT purchases in the interviewed companies. Instead of evaluation matrix, such vague qualities as "well-known local supplier", "size of the reseller", "experiences of other people I know" and "impressive references" were mentioned but when asked how these factors were evaluated, the end customers seemed to not have a used any concise way of actually comparing anything else than price and familiarity of the supplier so *availability, base rate and presentation biases* were well represented.

"According to one of our end customer's external IT consultants, both we and the competitor had an equally good solution for the client but the end customer chose the competitive offer as they claimed it to be better priced. However, we found out later on that the competitive offer was slightly more expensive than ours but the end customer apparently just did not want to purchase from us."
- IT reseller

All of the resellers claimed to have been in a situation where the end customer did not choose their offer even though they had been priced better or had technologically more advanced or suitable solution for the customer. One could argue that maybe the resellers who got turned down were not as competitive as they thought on every aspect but as the SMEs clearly seemed to appreciate mostly the price this was probably not the case. The end customer mentioned in the quote was interviewed and claimed that they used the reseller they thought that could

provide better levels of service. Even though the chosen reseller was a larger company, it was profiled more as a reseller than the other company which was clearly profiled more as a comprehensive IT service provider. In this case, the end customer clearly had already made the choice and was subject to the *confirmatory bias*, trying to ignore the other reseller's points and reinforce their perception of the chosen one. However, the resellers did not seem to push aggressively enough their selling points, thus indicating lack of customer and solution centricity (Eades, 2004).

Post evaluation

None of the interviewed end customer companies had an elaborate post purchasing evaluation step in their purchasing process. They had raised issues only if they had had any major problems with their IT infrastructure or the agreed service level was not met. Although, as none of the end customer had not made any return on investment calculations or prepared specific measurable objectives for their IT infrastructure projects, better than "lower costs" or "systems that work well", one could not probably make any elaborate evaluation after the purchase has been made. Also the resellers did not mention to have stumbled upon such situations often with their end customers. However, the end customers claimed to have had most of the time successful IT infrastructure choices which, in light of the vague post-evaluation metrics, indicates clearly the presence of the *hindsight bias*.

As stated before, trusting the same technology provider year after year should not be perceived as a proof of poor purchasing expertise or lack of IT management skills. Possibly the companies had calculated that with their current resources they manage to reach sufficiently efficient results in their IT purchasing even though it means that they most likely stay with one supplier or technology and skip thorough tendering processes. More human resources or different kind of time investments of course have their price but the companies should conduct cost benefit analysis of some kind as well for the investments done previously which is the idea behind the post-evaluation stage.

The end customer companies seemed to miss one point in their planning. Their IT management seemed to put most of their time in operational duties while both IT experts of technology providers and the resellers claimed that making right IT infrastructure choices able automation of various processes and thus gives more time to the IT people to concentrate more on strategic mid- to long-term planning (E2, E4, E5). In addition to the infrastructure purchasing costs, the companies have to pay for their administration, support and minor development that all require more personnel. By investing slightly more in their IT infrastructure, the company can reach significant savings due to lower personnel expenses (E3). However IT enabled business process development is not the topic of this study so this will not be covered more thoroughly.

3.3.4. Summary of findings

The interviews proved to give good insight into which decision making biases were affecting which part of the purchasing process and how often. As the purchasing process is composed of consecutive interrelated process steps, factors influencing it do not work in isolation but often touch multiple parts of the process in similar ways. The same fact is true for the decision making biases that derive from heuristics. Even though the biases have variable backgrounds regarding their way of working, their influence has often similar type of a result as they complement each other on the way. Often the presence of one bias lead to another forming links between them. Such links were also present when comparing the effect on different purchasing steps as the different steps are linked to one another. For example, a bias affecting the need specification step followed often to both of the following two steps as well.

Table 11 illustrates the relations between the biases and purchasing process steps. Weak influence was appointed if the bias was present in 1/3 or less of the interviews, medium influence if the presence was 1/3 to 2/3 and strong influence was appointed if the bias was present in more than 2/3 of the interviews.

The three most prevailing decision making biases affecting the SMEs purchasing decisions according to this study were status quo, confirmatory and availability biases in the order of their importance. Especially status quo and confirmatory biases worked simultaneously as the customers often backed their desire to sustain the status quo by overemphasizing the information supporting it and neglecting disconfirming evidence. Biases with intermediate

significance in several purchasing process steps were commitment, presentation, reference point and base rate bias. These biases were also often complementing others, especially base rate with availability bias and presentation with reference point bias. They influenced most the need specification, supplier search and evaluation of alternatives and selection steps which seemed to be the steps most influenced by decision biases overall. Hindsight was found to have strong presence in post-evaluation but it was not showing in other steps. Control illusion had only weak presence in the first three steps.

Table 11.Level of decision bias presence in different purchasing process steps

	Problem recognition	**Need specification**	**Supplier search**	**Evaluation and selection**	**Post evaluation**
Availability	Medium	Medium	Strong	Medium	
Base rate		Weak	Weak	Medium	
Commitment	Weak	Medium	Medium	Medium	
Confirmatory		Strong	Strong	Strong	
Control illusion	Weak	Weak	Weak		
Hindsight					Strong
Presentation	Weak	Medium	Medium	Medium	
Reference point		Medium	Weak	Medium	
Status quo	Strong	Strong	Strong	Strong	

In addition to the end customers, also the resellers seemed to not acknowledge really well the effect of the decision making biases on their customers' purchasing process. They seemed to accept quite easily their defeat to irrational purchasing behavior and not try to be truly customer centric in their sales efforts even though they followed quite conscientiously the customer's purchasing process (Bosworth and Holland, 2004). Also the resellers seemed to rely too much on the RFQs of the end customers and did not question the underlying problem to be solved by proposing out of the box solutions as recommended by Eades (2004).

4. Conclusion and discussion

The following sections will describe the results of the study with its limitations and depict both managerial and theoretical implications and future research possibilities in the area of decision making biases and purchasing process.

4.1. Synthesis and discussion of results

As hypothesized, decision making biases were present in the interviewed case companies in different parts of the purchasing process with varying power. Decision making biases and their effect on SMEs purchasing decision making had one common denominator: lack of time or resources. The purchasing decisions were suboptimal as the people responsible for IT purchases had not developed a long-term plan in the first place and during the purchasing process did not have the time to properly analyze the available options in order to reach the best or even a satisfactory result. Lack of time was also mentioned as a key factor contributing to the use of heuristics in the literature which in turn leads to decision making biases when the imperfection of their usage is not taken into account (Bazerman, 2006; Gilboa, 2011; Kahneman and Smith, 2002)

The literature acknowledged the decision making biases to have an equal standing as there had not been previously any studies on their relative importance in purchasing context (Bazerman, 2006; Carter et. al 2007; Gilboa, 2011). However, according to the empirical research, status quo and confirmatory bias were the most prevailing biases with a strong influence on the interviewed companies' purchasing process. These biases were the ones that steered the decision maker to not alter the current situation and use only as familiar solutions as possible. This is understandable as unknown alternatives pose always risks to the decision maker and they also make the decisions much easier. However, these biases seemed to lead the decision makers to be overly cautious and while reducing potential risks quite effectively they also diminished the potential to grow and improve the current situation. After all, stagnancy has its risks as well in a quickly evolving world.

Other group of significantly influencing decision making biases derived from the decision makers' lack of experience or information from the chosen area. Availability, presentation,

reference point and base rate biases direct the decision maker towards decisions that seem smart with a quick glance or when only short-term benefits are considered. As the end customers lacked the expertise and long-term perspective, these biases led the end customers astray in terms of finding the correctly sized and functional solution to their company's business environment. Currently, most of the interviewed companies had either too high or too low expectations of what kind of an IT infrastructure would be needed for their operations now and in the future.

Hindsight bias was seemingly present only in the post evaluation stage. However, as it works as a way of interpreting successful end results as an outcome of good decision processes and unsuccessful end results as an outcome of external factors its place is naturally in the post evaluation stage as was suggested in the literature as well (Fernandez and Rodrik, 1991; Ritov and Baron, 1992; Samuelson and Zeckhauser, 1988) . Control illusion bias had a seemingly weak effect on the purchasing decision making. However, as control illusion and base rate bias work in an interrelated fashion in the sense of trusting in few data points to be more significant than they are or erroneously believe unrelated events to form patterns, it was hard to distinct which one of them was in place. Also, it would have required a higher number of data points and a statistical survey to prove if the IT projects had been successful or unsuccessful by chance and if different projects' outcomes were interrelated or not (Hogarth, 1987; Tversky and Kahneman, 1973, 1974).

In addition to the purchasing side, the biases seemed to have a negative impact on the selling side as well. According to the interviews, the salespeople did not seem to put much effort on or even have the possibility to adjust their sales process and challenge their customers when biased decision making was present in the purchasing process. However, this was a result of closely following the purchasing process of the customers as suggested by customer centric selling (Bosworth and Holland, 2004) and adapting to it as suggested by the adaptive selling behavior (Weitz et al., 1986). However, in order to be truly customer centric and concentrate on solution selling the salespeople should have challenged more the purchasers' initial requests and dug deeper to better understand the underlying problems the customers sought to solve. This way

the salespeople could have also tackled the biases affecting the purchasing side as they would have had more means to justify their propositions contradicting the customers' initial standing thus leading to better sales results (Bazerman, 2006; Eades, 2004).

4.2. Limitations of the study

This study with its comparative multi case approach conducted via qualitative interviews has evidently its limitations. It is important to remember that although qualitative approach is well-suited to conduct exploratory research in social sciences (Babbie, 1995) the method poses analytical restrictions that must be addressed in the analysis of the research results.

The general validity of the study can be said to be good. There was a reasonable amount of interviews done and the interviewed customer base gave in general exhaustive explanation of the current status of their IT purchasing. The last interviews seemed to not contribute new material to the study but only strengthened the results of the first ones. However, the amount of case studies does not yet justify making broader generalizations of the results, at least outside the studied subject group of IT infrastructure purchasing in Finnish SMEs.

As this study was conducted on small and medium sized Finnish companies, difference in result might be seen when compared to e.g. larger companies or companies operating on other national or international markets due to the difference in business size, environment and culture. A similar type of study in SMEs on another country or on differently sized companies would add to the validity of this study. Also, a wider set of studied data points could have given more insight if the biases have different effects depending on the geographical situation, industry or type of purchasing team inside the company.

4.3. Managerial recommendations

The results of the study implicate that the companies should refocus their purchasing efforts to achieve better results. First of all, they should formulate a formal purchasing process to be followed in significant purchasing or investing ventures, it can be leaner version for smaller companies but there should be a structure that the companies would follow in order to not forget any crucial part of purchasing. The companies should pay special attention to the first

and last steps which were neglected in the case companies. Problem recognition includes first preparing in advance for any future investments so that any decisions are not made too hastily. Post evaluation step requires the company to set clear measurable objectives for the purchases and investments they are making so that tracking the successfulness of past and future purchases and investments become more transparent. Tendering was also forgotten in most of the companies. As stated widely in the literature, conducting it in sufficiently enough manners ensures that the company faces the best possible price level and does not ignore some of the relevant options available in the market (Ghingold and Wilson, 1998; Jobber and Lancaster, 2009; Karjalainen, 2009; Kotler et al., 2009).

For smaller tweaks in the process, the companies should conduct cost-benefit analysis to better optimize the time and other resources used in their purchasing decision making. As partly mentioned regarding the problem recognition step, they should also develop mid- or long-term plans for the company and include in them how they affect different parts of the company such as the IT and also cascade the information to these departments. In addition to the formal purchasing process, also some sort of formal evaluation matrices should be used for assessment of alternatives in combination with the previous mentioned target-setting and post-evaluation studies of the purchases.

The study also showed that there was a clear difference between CEO and IT Manager or CIO driven IT purchasing processes regarding the objectives, purchasing criteria and biases affecting it. The CEOs clearly considered IT as more as a necessary supporting function adding to the costs of the company and they focused more on the price and nothing more while the CIO and IT manager side considered IT more as an enabler and put more emphasis on the quality and feature side though possibly then neglecting the cost factors. To lower the possibility of biased decision making, significant decisions should be done in groups instead of individual people. In an ideal situation the deciding group would be a team of cross-functional people so that different viewpoints would be taken into account (Bazerman et al., 1984).

In addition to the purchasing side, salespeople should not undermine the effect of decision making biases and push even harder to illustrate the irrationality in their clients' decisions if they spot hints of rushed or incongruent decisions (Bazerman, 2006). They should also not take granted that the clients understand their value proposition and illustrate better total cost of ownership and other metrics in their presentations so that the clients perceive more than just the transactional purchasing price (Eades, 2004). The selling side should enforce solution centric sales methodology in order to cultivate more lucrative client relationships. This would require the selling side also to gather as much information as possible to ensure that the true customer problem is understood and can be answered with the best possible solution (Bosworth and Holland, 2004).

4.4. Theoretical implications and future research

This study was made with a business emphasis and had an aim of contributing to the real life sales and purchasing problems. However, apart from the aforementioned managerial recommendations, this study contributes to the behavioral decision making and organizational purchasing literature in following ways.

As stated in the limitations of the study, a quantitative approach with a more elaborate data set could provide more generalizability to the current results. However, the study as is deepens the understanding of decision making biases' effect on organizational purchasing process as it has clearly shown a link between these two groups of research. It also introduces a new framework for organizational purchasing with a decision bias effect (presented in section 2.5.2.) which was supported with the findings of the empirical study.

The study also fills the gap in the literature regarding the importance of different biases in the purchasing decision making, especially in the purchasing process of small and medium sized companies. In this way, the study illustrates which biases or purchasing process steps should be more deeply analyzed in the future and which can be given lower importance in the future behavioral decision making and organizational purchasing research. This is also an addition to the customer and solution centric sales literature to inform the salespeople of the reasons behind irrational purchasing behavior and how it can be used to achieve better sales results for both the

selling and purchasing parties. In addition this study has aimed to give a more comprehensive look of how different decision making biases work in interrelated fashion in a real setting throughout the purchasing process instead of focusing only in the effect of one specific bias as has been the case in previous literature.

Future research possibilities in the area of decision making biases in purchasing process are vast. A larger quantitative study of the decision making biases effect on companies' financials would give better insight into the monetary relevance of different biases. From the sales and customer relationship viewpoint, a more accurate way to identify the presence of decision making biases in the customers' purchasing process as early as possible would prove to be valuable. As stated in the limitations of the study, also similar kind of study setting could be replicated on another business environment, on differently sized companies or with different type of products or investments as the scope of the purchasing process.

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Interviews

Case companies

End customers companies were interviewed during November 2011 - February 2012. Please see section 3.3.1.for more information.

Experts

Experts were interviewed during August - September 2011.

E1: Personal discussion with Mr. S.K., server specialist.

E2: Personal discussion with Mr. T.M., private cloud architect.

E3: Personal discussion with Mr. T.A., IT infrastructure sales director to Finnish telecom and IT service provider companies.

E4: Presentation by Mr. S.S., senior systems engineer, virtualization.

E5: Presentation by Mr. I.T., IT architect

Resellers

Resellers were interviewed during September - November 2011. Please see section 3.3.2.for more information.

APPENDIX 1. Questionnaire to the resellers

Customer centricity in sales / purchasing process

1. What is your role in the sales process of your company?
2. How much experience do you have in the field of IT infrastructure sales?
3. What size are your clients on average?
4. Do you face fierce competition or do you have more stable customer relationships?
5. In your opinion, what are the main pain points about IT infrastructure sales?
    a. For you and your organization?
    b. For the customer?

Decision biases in the purchasing process

6. Do your clients ask only for a selected solution or brand?
    a. Is it the one they have already?
    b. Do you provide alternatives to the end customer?
7. Is it possible for you to question your clients' RFPs?
8. Which one of you has more to say about the IT infrastructure?
    a. Do you create the offers and needs or does the customer do them?
    b. What is your perception of the customer's knowhow on the subject?
9. How do you differ yourself in the eyes of the client from other resellers?
10. How do you continue the cooperation with the end customer after the purchasing transaction and implementation has been done?

APPENDIX 2. Questionnaire to the end customers

Purchasing process

1. Can you describe the purchasing process of your company?
2. What is your role in the purchasing department?
3. Who are the people involved in an IT infrastructure purchase?

General background

4. What is organizational structure of the company?
5. What is the IT's primary role in your company?
6. Does IT and business have integrated strategy planning?
7. What were the important business objectives at the time of the decision?
8. What is the competitive situation in your industry?

Problem recognition

9. Which departments generate the idea to invest in IT?
10. What level does it usually originate?
11. How ad-hoc are the IT investments pursued in your company? What kind of a mid to long-term plan do you have for your IT?

Need specification

12. Are the skills and knowledge of the IT personnel enough to support the proposal for the decision?
13. Are there usually external suppliers or consultants actively involved in the IT investment process?
14. What period of time elapsed between the idea generation and the decision to invest?
15. Were any financial techniques used to assess the investment?
16. What were the alternatives to this investment?

Supplier search

17. If you tendered for the IT investment, how did you do it?
18. Where do you look for potential suppliers? Do you change / tender them often?
19. Did you ask for other alternatives in addition to the proposed ones?

Evaluation of alternatives and selection

20. How have you assessed the suppliers? Have you changed the evaluation criteria through time?
21. What sort of investment criteria do you use prior to any investment evaluation decisions?
22. How do you consider past system investments in your current investment decisions?
23. Why the chosen one was the best alternative?
    a. according to you
    b. according to the seller
24. Did past experiences of current systems have an effect?
25. Did past experiences from media, other companies' systems or other acquaintances have an effect?

Post evaluation

26. How do you determine if your current or past investments have been successful?
27. What do you believe were the reasons behind successful / not so successful investment decisions?
28. What benefits were identified with your current IT investments?
29. What costs were associated to the investment?
30. Which risks were identified?
31. Was it implemented as planned?
32. Was a post-implementation study conducted after the project completion?
33. How well has your current investment done compared to minimum acceptance criteria for an investment?