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Spare Parts Pricing

Setting the right prices for sustainable profit at Atlet

Master of Science Thesis in Supply Chain Management

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Abstract

This master thesis deals with pricing of spare parts. Spare part pricing is the combination of the research field of pricing with the characteristics of spare parts. The volume of the spare parts is vast compare to the primary products. Spare parts usually stand for a minor part of the sales but a large part of the company's profit. Price has a great leverage on profit compared to an increase in sales volume or cost cutting. Therefore, the profit potential of spare parts pricing is substantial. Moreover, a consistent pricing logic can decrease the amount of customer complaints, and increase the customer satisfaction and loyalty. A company that has identified this profit potential is the forklift manufacturer Atlet. Atlet Part Logistic (APL) is the department responsible for spare part activities and is investigating the possibilities to improve the spare part pricing. In order to do this three main research areas have been identified: pricing strategies, pricing methodologies and pricing tools.

The purpose of this master thesis was to propose an applicable pricing strategy for APL and to identify methods and pricing tools supporting this strategy. The three pricing strategies considered when suggesting an applicable pricing strategy were cost-based, market-based and value-based pricing. In addition, this has been done with the respect to the eight focus areas: spare part pricing methods, market adaption, discount policy, captivity, life-cycle pricing, kitting, price elasticity and spare parts competition. The pricing tools considered were spreadsheets with ERP support and dedicated pricing software.

An in-depth case study of how APL works with spare part pricing has been conducted. Information on spare part pricing was gathered through literature reviews, comparable case studies of five industrial companies and interviews with two pricing software vendors. Since the focus of this thesis was on the pricing of Atlet's spare parts the generalisation of the result is limited. Nevertheless, the results can be used as a guideline for companies with similar preconditions and products as Atlet.

The result of this master thesis is recommendation to use a mix of the three suggested pricing strategies depending on the characteristics of the different spare parts. Recommendations to APL on spare parts pricing with regard to the eight focus areas are also provided. Furthermore, spare part pricing software have been identified for future evaluation. In addition, a timeline for possible implementation of the suggested pricing strategy, pricing methodology and pricing software is provided.

Keywords: Spare Parts Pricing, Pricing Strategy, Pricing Methodology, Pricing Software

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We thank our supervisor at Atlet, Håkan Gäfvert, for taking time and being helpful. Furthermore, we thank our supervisor at Chalmers Igor Insanic for his devoutness and suggestions.

We hope that this thesis will bring insight to the reader in the spare part pricing field that contributes to further learning and understanding.

Magnus Cullbrand and Linnéa Levén
Gothenburg, May 2012

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Key Concepts

Definitions and explanations of key concepts used throughout the report are presented below. The purpose with these key concepts are to facilitate the readers understanding of the master thesis.

Pricing Strategy: Strategies companies use to price their products or services that aims at finding the optimum price, including overall market objectives, consumer demand, product attributes, competitors' pricing and economic trends.

Pricing Tool: A tool that supports and facilitates the execution of the pricing strategy, such as software and spreadsheets

Global List Price: The global list price is the reference price list from which the prices then are market adapted or discounts given on. This thesis uses international reference price as a synonym.

Transfer Price: The price charged by one part of the company for a product and service it provides to another part of the same company, in order to calculate each division's profit and loss separately.

Customer Net Price: The final customer price after deducting all discounts and rebates.

Original Equipment Manufacturer (OEM): Producer or manufacturer of an end product (such as a forklift) or a subassembly (such as compressor) used in the end product.

Captive Part: Parts that are only supplied by the Original Equipment Manufacture.

Life-Cycle Pricing: Refers to pricing of spare parts throughout the primary product life cycle.

Kitting: The bundling of parts in order to simplify customer logistics or improve performance or reliability.

Ratio-To-Complete: The ratio between the cost of the parts incorporated in a primary product and the cost of the primary product.

Value survey: A survey conducted to attain the customers' perceived value of a certain product or service.

Acronyms

The acronyms used throughout the report are presented below in order to facilitate the readers understanding.

APL – Atlet Part Logistics

CVP – Cost Volume Profit (analysis)

EVE – Economic Value Estimation

EVA – Economic Value Analysis

GPM – Global Price Management

KPI – Key Performance Indicator

OEM – Original Equipment Manufacturer

SaaS – Software as a Service

SKU – Stock Keeping Unit

1. Introduction

This chapter introduces a background on pricing, spare parts and Atlet AB. The background is followed by the purpose of this master thesis and the introduction ends with the project scoop, delimitations, and general outline.

1.1 Background

In order to increase the competiveness of a company there are three commonly used methods of interest; decrease of costs, increase the market share and/ or adjust the prices. Adjustments of prices are also known as pricing strategy, aim's to establish an optimum price in relation to profit maximisation of the product or service sold. (Dolgui and Proth, 2010)

The correlation of pricing strategy and profit is strong (Hinterhuber, 2003; Dolgui and Proth, 2010; Simon et. al, 2003). Still, pricing is a largely overlooked mean within industrial marketing (Hinterhuber, 2003). In order to increase the profit the focus has instead been on cost savings, something that gradually has become more difficult (Simon et. al, 2003). In addition it has been proven that an improvement in the pricing process has a clear advantage compared to cost cutting (Hinterhuber, 2003; Simon et. al, 2003).

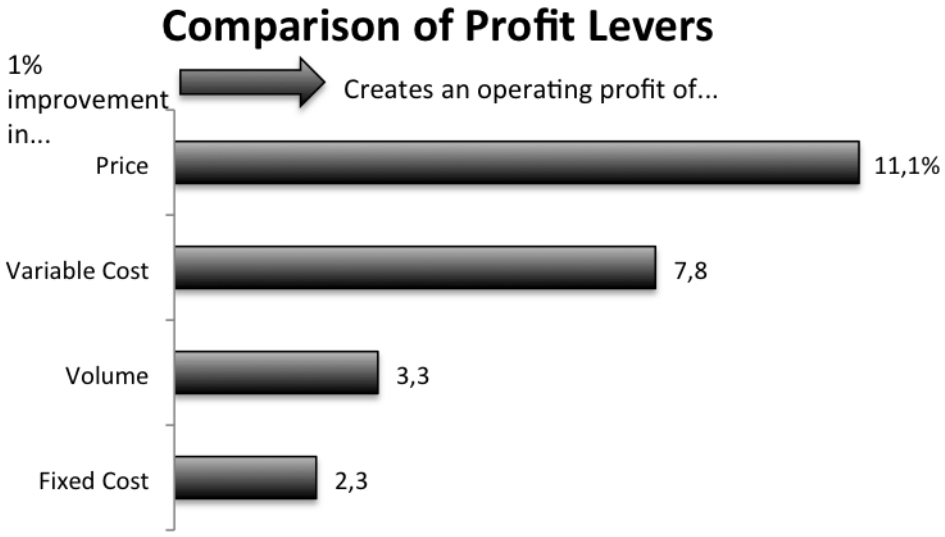

Figure 1 - Price as a profit lever compare to cost and volume (Marn and Rosiello, 1992)

As seen in Figure 1, Marn and Rosiello (1992) state that an increase of only 1% in price without losing volume is far stronger leverage than lowering cost or increasing volume with the same percentage. Furthermore, Marn and Rosiello (1992) mention two examples of when a small increase in price has a huge impact on profit. The first, a consumer durable products company increased profit by nearly 30% on a 2.5% increase in average prices and an industrial equipment manufacturer boosted operating profits by 35% by increasing the price levels by 3%. Price can directly effect volume, but Marn and Rosiello (1992) shows an example where removing a promotional discount of $1 affected the volume. However, removing another $1 order-size discount did not effect

volume negatively, showing that a price increase does not necessary have an effect on volume. Hinterhuber (2003) has a similar point of view and claim that a 5% increase in price leads to a 22% improvement in operating profit, and a substantial profit improvement compared to other operational management tools such as cost cutting.

Despite the possible profit potential, stipulated through improvements in pricing, managers have largely neglected the subject of pricing. The result from an empirical research showed a lack of pricing research within companies, less than 15% of the companies reviewed conduct any kind of systematic research on pricing. (Hinterhuber, 2003) The empirical research from Vigoroso (2005) on spare parts pricing showed even higher number, where 23% of the companies did not have any systematic approach to spare part pricing. In addition the academic field have had a low interest in the topic of pricing compared to other marketing branches, such as product, promotion and distribution. (Hinterhuber, 2003)

Aftermarket sales constitutes of spare parts and after-sales services. These areas often stand for a minor proportion of the total sales but a high proportion of the profit. (Cohen et al., 2006) From Accenture's experience spare parts represent only 10% of the global sales but can contribute up to 50% of net income for an average industrial company (Noeuvéglise and Chevenement, 2011). Furthermore, Cohen et al. (2006) argue that on average 10% of annual sales revenue comes from spare parts. Vigoroso's (2005) research suggests that spare parts contribute to 20-30% of the revenues and 40-50% of the profit for some companies. For example, GM earned more profit from its $9 billion in after-sales revenues in 2001 than it did from its $150 billion of income of car sales. Furthermore, there is a direct correlation between after-sales services and customer repurchase. (Cohen et al., 2006)

1.2 Atlet AB

Atlet AB, hereafter referred to as Atlet, is one of Europe's leading manufacturers of premium forklifts. The company has a market share of 1.9 % globally and is present at 45 markets. Today Atlet has roughly 1000 employees and a turnover of approximately € 190 million. Atlet headquarter and production facility is located in Mölnlycke, Sweden. (Atlet, 2011; Atlet, 2012)

1.2.1 Atlet Parts Logistics

Atlet Parts Logistics, APL, is the division responsible for spare part sourcing and distribution. Today the spare parts pricing is based on cost, the tool used is a cost-plus matrix that segments the parts on how difficult it is to acquire the spare part on the open market as well as the cost level. There are three different spare part categories in the price matrix; *easy accessible parts, medium accessible parts and hard to access/Atlet unique parts*. The Parts Supply Chain Manager of APL is well aware that there is a number of pricing strategies and tools on the market and therefore questions the suitability of their current strategy. [1]

[1] Patrick Magnusson, Supply Chain Manager Parts at Atlet, 2011-01-16

1.3 Purpose

The purpose of this master thesis is to propose an applicable pricing strategy for APL and to identify methods and pricing tools supporting this strategy.

In addition, the purpose is not only to propose a new pricing strategy for APL but also to align the pricing strategy with pricing of spare parts. This is of vital interest since spare parts have different characteristics than other products. Moreover, the thesis will provide an analysis of Atlets current spare part pricing.

The focus is also to investigate which pricing tool that is required to execute these spare part pricing strategies and methods. Furthermore, new pricing strategies need to be sustainable. Sustainability refers to long term profitability without compromising the customer satisfaction or loyalty. Moreover, the pricing in it self should be sustainable for Atlet, meaning that the pricing should be manageable over a long time period.

1.4 Project scoop

Pricing theories in this thesis cover both business-to-consumer (B2C) and business-to-business markets (B2B). Since spare parts, and forklift spare parts in particular, are mostly B2B products, this thesis will focus on strategies, methods, and tools for the B2B market. Moreover, the focus of the thesis is on theories connected to pricing and spare parts that can be beneficial to Atlet and applicable to forklift spare parts.

1.5 Delimitation

Only spare parts supplied for Atlet own forklifts will be included in this thesis. The pricing of spare parts for external brands such as Nissan, Mitsubishi and Caterpillar where Atlet act as a reseller will hence be excluded. This delimitation is motivated by the fact that the pricing process for the external brand differs from Atlet's own pricing process.

Furthermore, this thesis will not propose a recommended spare part pricing tool for Atlet. Instead a few pricing tools that support the execution of the recommended pricing strategy, are presented. Partly because this should be done in consent with the personal working with spare part pricing or the project group that should implement the pricing strategy and the pricing tool. There are also cost of the implementation that depends on several factors not covered by this thesis such as the purchasing price of a new pricing tool, Atlet executive decision, requirements, and prioritisations.

1.6 General Outline

The general outline is presented to provide the reader with perspicuous and clear view of the master thesis.

Chapter 1 – Introduction: The background of pricing, spare parts and Atlet AB is outlined. Furthermore, the purpose of this master thesis, the project scoop, delimitations and general outline are presented.

Chapter 2 – Theoretical Framework: The theoretical framework includes essential concepts related to pricing and pricing strategies. Characteristics of spare part pricing are introduced. Furthermore, different pricing tools and features of these are outlined and research questions related to the purpose are presented.

Chapter 3 – Methodology: This chapter outlines the methodology used, including research strategy, methods for data collection and quality of research.

Chapter 4 – Focus Company: The focus company Atlet AB is presented in this chapter. A company background and information on the forklifts provided by Atlet are given. Furthermore, Atlet's spare part handling and current pricing strategy for spare parts are outlined. To conclude the pricing execution and Atlet's competitors are presented.

Chapter 5 – Pricing Strategies of Pricing Software Vendors: The pricing strategies, methodology and software provided by two software vendors are presented. Two pricing software of interest for Atlet are Navetti's PricePoint and Syncron's Global Pricing Management. Since some of the investigated companies currently are using these pricing software, the pricing software are presented prior to the external empirical findings of this thesis.

Chapter 6 – Pricing of Spare Parts at Investigated Companies: Five comparable case studies of external companies pricing strategy, methodology and tools are presented in this chapter. The investigated companies are Company A, Company B, Company C, Company D and Company E.

Chapter 7 – Analysis: In this chapter the analysis of the data, theory and other empirical information attained are provided in order to answer the research questions. Three different pricing strategies are analysed. Furthermore, analysis on the eight focus areas: spare part pricing methods, market-adapted pricing, discount policy, captivity, life-cycle pricing, kitting, price elasticity and spare parts competition is conducted. Finally, pricing execution and pricing software are analysed.

Chapter 8 – Conclusion and Recommendations: This chapter provide the conclusion of this master thesis and recommendations to APL. The three research questions, related to the pricing strategy, pricing execution and pricing software, are answered. Finally, a timeframe for the execution of the suggested pricing strategy and guidance for future studies are provided.

2. Theoretical Framework

This chapter presents a theoretical framework including essential concepts for pricing and pricing strategies. Characteristics of spare parts and spare part pricing are introduced. Furthermore, different pricing tools and feature of these are presented and research questions related to the purpose conclude the chapter.

2.1 Concepts related to pricing

In this section the concepts related to pricing are described. These concepts are fundamental in order to understand pricing.

2.1.1 Value

The term value can be defined as the total savings, monetary gain, or satisfaction that the customer receives from using the product/service offered. Even if most people can pay quite a lot for a cold drink a warm summer day at the beach, no one would pay what they consider its total value. The reason for this is that they know what a cold drink cost at for example a supermarket and uses that price as a reference. The difference in real value and reference price are by economist referred to as consumer surplus. The total economic value, Figure 2, constitute of the reference value, plus the positive differentiation value minus the negative differentiation value, the cost of doing business. The differentiation value is the economic value that differentiates between the different offerings, e.g. the value buying cold drink at snack shop at the beach compare to the supermarket. A small amount of consumers insists on only buying the cold drink at the lowest price. Instead it is likely that many would pay more if the cold drink were served at a snack shop close to the beach or even more from a mobile vendor strolling by. (Nagle and Hogan, 2006)

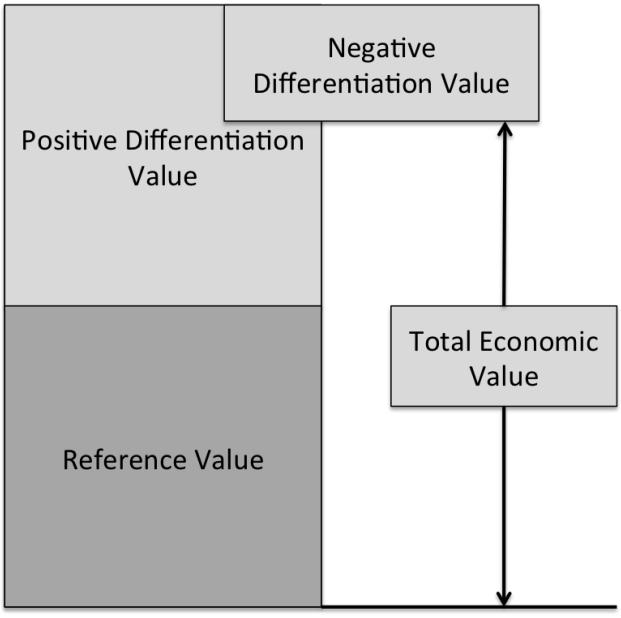

Figure 2 – Economic Value (Nagle and Hogan, 2006)

2.1.2 Psychological pricing

Purchasing is often not economically rational, instead psychological aspects also influence. This section will describe concepts related to the psychology of pricing. These concept are the size of expenditure, switching costs, perceived risk, importance of end-benefit, price quality perception, proportional price evaluation, reference prices, perceived fairness and gain-loss farming.

The *size of expenditure* affects the purchasing behaviour. In business market, this means that the small purchases do not justify a professional purchasers' time, making the buyer less price sensitive when the expenditure is small. There can be s*witching costs* that make the buyer less inclined to change supplier. This can be additional spending after the purchase, such as, the cost of training or education to use the product. Only if the customer expects that the price difference between brands exceeds the cost of switching the customer may consider a change. *Perceived Risk* means that if it is difficult to estimate the expenditure before the purchase there is a risk that the value will be much less than promised. If this risk is large compared to the expenditure the buyer will ignore a supplier's promise of better value in favour of less valuable promise from a highly reputable supplier. (ibid)

Importance of end-benefit, means that customer tends to be less price sensitive if the purchase price accounts for a smaller share of the total amount. Consumers often ignore the price of, for example, accessories, simply because the cost seems small in comparison to the larger expenditure. This can moreover be used when there is a risk of failure are very high, car manufacturer have been successful with this when promoting there original versus non-original spare parts. *Price-quality perception*, implies that if it is hard to objectively estimate the value of a product, customers tend to use price as a proxy for quality. With a higher price, the customer perceives a higher quality. This can be combined with a strong brand, which delivers value to the customer by reducing search cost, risk and improving prestige. (Hinterhuber, 2008a; Nagle and Hogan, 2006)

Proportional price evaluation refers to that it has been showed that a savings of high proportion is considered more valuable than a savings of low proportion with the same amount. For instance a $5 discount on a $15 purchase (33% discount) is perceived as more valuable than a $5 dollar discount on a $125 (4% discount) purchase. This is called the Weber-Fechner effect and there are some practical applications. Consumers are less motivated by a fixed-dollar rebate on a car purchase than a free financing, despite that it may cost the same for the seller. The consumers see this as a 100% discount on the financing as much more valuable than a 5% discount on a $20.000 car. Another impact of the Weber-Fechner effect is that buyers react more negatively to a large price rise than many small. (Nagle and Hogan, 2006)

If a person sees prices in a descending order, from highest to lowest, they consider the product much more valuable than seeing it in a ascending order, from lowest to highest. This is because persons use the first price as a *reference price* and compares this with the following prices. This tactic can be used for a direct-mail catalogues that display products from the most to the least expensive.

This conflicts with the idea of using discounts to introduce products to the market and empirical studies have showed that even if pricing low as a introduction price stimulates the sales in the beginning, the total sales some time after the market introduction are larger on the ones without a introduction discount. This shows that it is important to first establish a reference price before using discounts. (ibid)

Perceived Fairness means that it is more acceptable for the purchaser to pay a high price if it justified with a "good" motive, like improving service level and treating personnel well, than with a "bad" motive, like exploiting market shortage to increase the profit of stockholders. This has practical implications, such as companies setting prices at the highest possible level. This enables them to discount slow moving product, a "good" motive, rather than increase prices when the demand is strong, a "bad" motive. A price increase can be accepted if it is motivated. For instance a high priced new product can be motivated when the company needs to recover development costs. (ibid)

Gain-Loss Farming refers to that psychologically a person wants to avoid losses rather than capturing equal gains. In other words, taking $10 away from a person causes more dissatisfaction than giving the same person $10 causes satisfaction. Research has showed that loss is perceived about two-and-a-half times harder to accept than equal gains. That means that for every loss of $1, the product has to provide roughly $2.5 in benefits to leave the buyer emotional neutral. Thus, prices can be set as a gain forgone instead of an out-of pocket cost. Practically this can be executed by setting list prices high and those that do not receive full discount accept this since it is a gain forgone. (Smith 2012; Kotler and Armstrong, 2008; Nagle and Hogan, 2006)

2.1.3 Discount Policy

Discounting is a common way to work with pricing in several industries. The aim is to stimulate the customers buying behaviour. When bearing a generous discount policy the risk is that customers often perceive the discounted price as the ordinary price, with a consequence of a lower average price than necessary. (Lundén, 2008)

In order to keep a discount policy that is easy to understand for both salespeople and customers it is essential to first have a price list specifying the price for each product. The discount percentages should then be applied in a consistent and structured way based on the revenue size of each customer. This is essential, since if a firm offers the same net price to customers that buy a single item and customers that buy 2000 items the customers will not have any incentive to buy large volumes. It is also important to bear in mind that if the net price is not considered current or in line with competitors' pricing strategies in the market, the discount percentage used is meaningless. (Calogrids, 2010) Furthermore, according to Calogrids (2010) there are two basic ways to work with discounting, variable and fixed. Variable discounts refer to fluctuations based on the customers' revenue size during a defined period. Fixed discounts refer to the customer signing a contract that specifies a fixed discount percentage that

should be given when predetermine minimum revenue threshold is reached. (ibid)

A great challenge for many companies is to decide on a discount policy, in terms of how discount decisions should be managed and whom that should make these decisions. According to Smith (2012) one of the largest challenges with discount policies are the difference in incentives and knowledge between field and centralized executives. (Smith, 2012)

Employees in the decentralised organisation such as salespeople or executives working in the field are often encouraged to work for a continued increasing market share. The incentives, such as bonuses and promotions, are often closely tied to their ability to increase sales volume and achieve sales targets. These sales targets are often set unrealistically high, which leads to the usage of discounts for the sake of reaching sales targets. Smith (2012) argue that the needs of the firm and the needs of individual salespersons might be misaligned due to differences in risk leverage. Referring to that a salesperson bears a greater risk when losing a valuable sale than the risk borne by a firm. This is because a firm can diversify the sales risk by perusing multiple sales opportunities at the same time whereas a salesperson has one or a few sales opportunities each time. Thus, in order to improve the probability of a sale, it is not uncommon for salespersons to feel an increased pressure than the firm to provide the customer with price benefits. So solely leaving discount policy decisions to salespersons can result in disastrous situations. On the other hand, even in firms were the discount policy is aligned with the organizational goals, there is still a need to actively manage discount decisions in order to avoid a downward pricing spiral. (ibid)

Centralised executives do on the other hand often focus on getting as high price as possible and just expecting the volume to be delivered. The incentives for these executives, such as compensations, promotions and peer respect, are often closely connected with the delivery of products with a strong demand and a high price. This is related to the fact that senior executives are likely to encourage strategies of higher prices and large market projection. Discounting often contradicts this strategy to retain a high price from the market in every transaction. Price discounts might however allow for finer market segmentation, thus facilitating segmentation based on individual customers willingness to pay. The tactical knowledge required to make these differentiated discount decisions in a good manner is, however, often lacking among centralised executives. (ibid)

So both the incentives and the knowledge possessed by salespersons and centralised executives often cause a conflict concerning discounts. If discounts only are decided by salespersons the expected result will be a great difference between list prices and real selling price. Whereas, if all discount decisions are made on a central level there is a risk that the firm will lose out on profitable price segmentation opportunities. In order to solve this conflict, a unified discount policy needs to be used throughout the whole organisation. This enables different levels within the organisation to bring different insight to discount decisions. The centralised executives bring value by their knowledge on

how to aggregate multiple sources of data to gain a broad understanding in the discount decision-making, whilst, decentralised field employees bring value by unveiling valuable information on specific discount decision. These two valuable insights should be included when a firm creates a discount policy. (ibid)

Smith (2012) has identified two key approaches to improve decision-making regarding discounts. First, decision-making rights need to be limited within the organization. For example, salespeople may be authorised to give discounts up to 2.5%, field executives up to 5% and discounts above 9% need to be authorised by sales managers. Another way to limit the decision-making right might be to limit the discount based on the amount of dollar. Meaning that the authority required are based on the amount of dollars the discount leads to. Secondly, the incentives of the discount decision makers and the goal of the organization need to be aligned. One way to align the incentives between salespeople and the goals of the organisation is to reward salespeople's performance based on revenue instead of volume or number of sales closed. Another way is to tie performance to profit, meaning that the performance incentives increase when the net prices are above a predetermined target level and vice versa. (ibid)

2.1.4 Transaction pricing

The idea of transaction price management is to achieve the best net realised price for each order or transaction. In order to achieve this, two methods can be used, the pocket price waterfall and the pocket band. The pocket price waterfall, which can be seen in Figure 3, aims to strip down all extra discounts or extra costs to know what amount the seller actually receives, an amount known as the pocket price. This becomes a far better metric than the list price or the invoice price. The pocket price band is using the information from the waterfall and ranking the pocket price from the highest to the lowest on the x-axis and percentage of volume on the y-axis. (Marn and Rosiello, 1992)

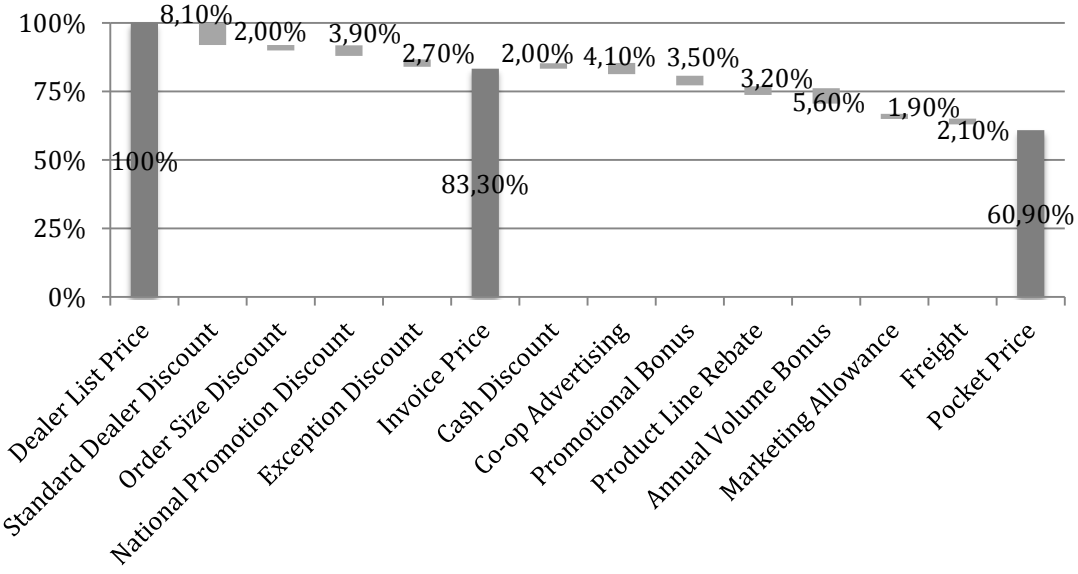

Figure 3 - An example of a pocket price waterfall for the company Tech-Craft (ibid)

When an investigated company viewed their broad pocket price band they considered it natural since they had a volume discount. However, when further

looked upon, it was discovered that there was no correlation between volume and high discounts. Furthermore, those considered as good customers often contributed to a low pocket price and the bad customers contributed to a high pocket price. The reason for this is that the customers that had received the highest discounts were the ones with best connections in the company and not necessary the largest or most profitable customers. (ibid)

One of the examined companies, a manufacturer of home appliances, did realise that different discounts affected the market differently. For example, a $1 change in order size discount influenced volumes much less than a $1 change in promotional discount, which lead to the same pocket price. By changing discounts to raise profit without losing volume, Tech-Craft, increases unit volume by 11% and increased pocket price by 3,5%, with the result of a 60% operating profit improvement within a year. (ibid)

2.1.5 Conjoint Analysis

Conjoint analysis is an experimental technique used to measure price sensitivity as well as sensitivity to product attributes. The idea behind conjoint analysis is to let the customer answer the questions where they do not directly state their purchase intention but the preference that are behind those decisions. The customer choses either between different products or different product attributes and these vary in price. This can be how much more a customer is prepared to pay for an attribute or another product. The data collected can be used to asses the value. The conjoint analysis is considered as the most useful method to estimate price sensitivity. Still, this technique is an experimental situation that does not simulate actual purchasing environment, as the respondents focus much on comparison of product, price and attributes than the customer would actually do. (Nagle, Hogan, and Zale, 2010)

2.1.6 Price Elasticity

The conjoint analysis can be used to estimate the price elasticity. Which refers to the rate of percentage change in demanded volume in relationship to a change in price, or in other words, the effect that price has on demand volume. If a product is considered price elastic it means that the percentage increase in price gives a higher percentage decrease in volume, for example 5% increase in price gives a loss of 5% in market share. The opposite applies for price inelasticity and it is then possible to raise the price without losing market share. In Figure 4 it is illustrated how a price increase from P1 to P2 affects the demanded volume, which decrease from Q1 to Q2. All products have a price zone where changes in price have little effect on volume and in most cases price elasticity is not, as in Figure 4, linear. In addition, lowering prices on products to gain market share are often a bad idea. Research on this subject have showed that a price decrease of 5% needs an increase in volume by 17,5% for the company to have the same margin as before the decrease. Price decreases may also leads to a price war with competitors and that the customer get used to the low price and refuses future price increases. (Hutt and Speh, 2010; Lundén, 2008).

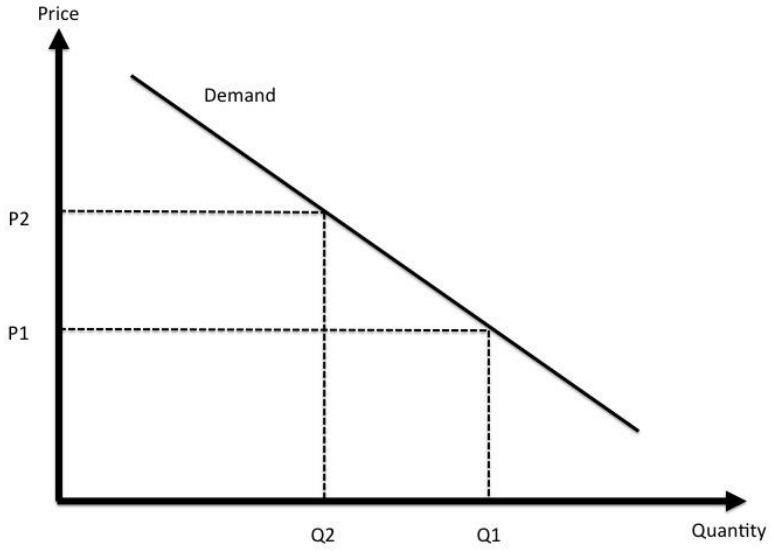

Figure 4 - Price Elasticity

2.2 Pricing strategies

In reviewed literature pricing strategies provided by different researchers have been identified. According to Hinterhuber (2008b) there are three strategies of pricing. Namely, cost-based, competition-based and value-based pricing. Nagle and Hogan (2006) ads an extra: customer-driven pricing and expand the last category to be value-based, proactive and profit-driven pricing. Vigoroso (2005) uses cost-plus, market-adaptive and optimized pricing in his research on pricing methods used in the industry. The first pricing strategy presented in this section is cost-based pricing, followed by market-based pricing which includes competition-based pricing as well as customer driven pricing. This section is concluded with a discussion about value-based pricing.

2.2.1 Cost-based pricing

Cost-based pricing is also called cost-plus or mark-up pricing and constitutes of using the cost as a base and then adding a standard mark-up to retrieve the final price (Kotler and Armstrong, 2008). Cost-based pricing is popular (Kotler and Armstrong, 2008) and according to research on spare part by Vigoroso (2005) nearly half of the respondents in his survey used cost-based pricing. The reason is that it is harder to acquire knowledge about the demand than about the cost (Kotler and Armstrong, 2008). This is likewise the strength of cost-based pricing since cost data usually already is available to use (Hinterhuber, 2008b).

The weaknesses of using cost-based pricing are many. Firstly, costs are not fixed but vary with purchased or produced volume, and price usually affects the volume sold. This can start a death spiral, Figure 5, where either a drop in volume or a rise in cost causes raising prices that in turn affect volume causing further rising cost and further rising prices. (Kotler and Armstrong, 2008; Nagle and Hogan, 2006) Secondly, cost-based pricing contributes to under pricing of strong products and over pricing on weak markets. The over pricing can be fixed by allowing flexibility in the mark-ups by using discounts. However when customers are rewarded with discounts for their price resistance, the resistance

becomes more frequent even when the product is valuable for them. (Nagle and Hogan, 2006) Third, cost-based pricing does not take competition and customer's willingness to pay into account. The problem of cost-based pricing was already recognised by researches as long ago as the 1950's and a more recent researcher concludes that cost-based pricing leads to lower-than-average profitability. (Hinterhuber, 2008b) Noble and Gruca (1999) agrees on that cost-based pricing has a weakness in that it ignores consumer and competitive information but states that if there are little or no information about demand, it is expected that the company is more likely to choose cost-based pricing.

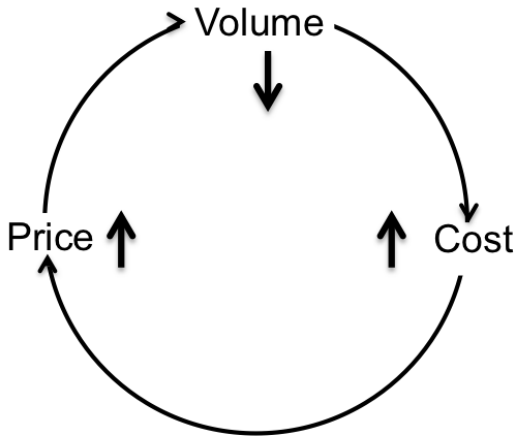

Figure 5 - Death spiral of cost-based where a decrease in volume causes increase in cost that increases price that further decreases sales and volume.

2.2.2 Market-based pricing

Since cost-based pricing fails to take the competition and customer's willingness to pay into consideration, a pricing that reflects the market conditions becomes necessary for companies. Market-based pricing, means that companies price after the customers' willingness to pay or the competitors' prices. (Nagle and Hogan, 2006)

According to Nagle and Hogan (2006) there are two large problems with customer-based pricing. First, buyers are rarely honest when it comes to how much they want to pay. Second, sales and marketing should not only process orders on what the customers are willing to pay, in contrast they should increase the amount paid by the customers to a level that better represents the product's true value. (ibid)

The other tactic to base price on, within market-based pricing, is the competition. Because price easily can be matched, this leads to a short-term market advantage. Consequently, lead to a downward, value destroying price spiral in the long run. (Nagle and Hogan, 2006; Gallagher et al., 2005) It is tempting to lower price to get a higher market share but that would not go unnoticed by competitors implying a poor financial decision. A low-margin industrial company raised their price by 9% and suffered a 20% loss of market share. This may sound worrying but this actual resulted in an increase in profit by 70%. Product differentiation, advertisement, and improving distribution do not increase sales as quickly as price cuts, but offer a more sustainable long-term benefit which is usually more beneficial than a short-term price cut. (Nagle and Hogan, 2006)

2.2.3 Value-based pricing

Since it is in the end the customer that decides if the price is right, good pricing begins with understanding of the value that the product or service brings to the customer. Pricing after the buyers' perception of value is called value-based pricing. As seen in Figure 6, value-based pricing reverses the pricing process in contrast to cost-based pricing. (Kotler and Armstrong, 2008)

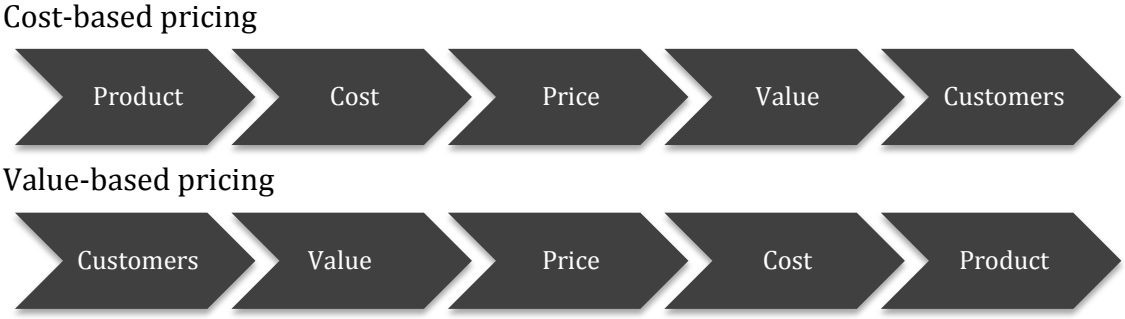

Figure 6 - Cost-based versus value-based pricing (Nagle and Hogan, 2006)

Hinterhuber (2008b) claims that customer value-based pricing is increasingly recognized in the literature as superior to all other pricing strategies, such as cost-based and market-based pricing, if profit maximisation is the objective. Several companies have successfully implemented value-based pricing, even if it still is only adopted by a minority of firms (Hinterhuber, 2008b). In a survey exploring the link between pricing and new product success, value-based pricing had a positive correlation to new product success. No such correlation did exist with the adoption of cost- based and market-based pricing. (Hinterhuber, 2008a)

There are different methods to estimate a products economic value which is the first thing a marketer should do when determining the benefit the product or service can offer to a business customer. Economic Value Estimation, EVE, is a method recommended by Nagle and Hogan (2006). First, EVE requires setting a reference value that is set equal to the cost of the next best alternative, for the customer, and then a differentiation value is added to get the final price. The second part is the difficult one and that is to set the differential value. This can be done taking into account which economical benefits the product or service has over the next best alternative. This can be by lowering the customers' labour cost or providing higher product quality. After the differentiation value has been defined the third part, the economic value profile, can be established to determine which market segments to serve in order to maximize profitability at a specific price. (Nagle and Hogan, 2006)

Nagle and Hogan (2006) present a three-step process for usage of EVE, which can be seen in Figure 7. The first step is to establish the main types of value drivers and have hypothesis of how important these are for the customer. The second step is to determine the monetary worth of the hypothesised values. The third and last step is to use information of customer economics, competition, value driver algorithm, and other differential performance data. (ibid)

Figure 7 - The three process steps for EVE (Nagle and Hogan, 2006)

Figure 8 displays what Hinterhuber (2003) calls key elements of pricing decision and can be used for value-based pricing. It constitutes of three parts, the first is to understand the value to different clusters of customer through economic value analysis. The second is the understanding of the effects that change in price and volume has on the company's profitability through cost volume profit (CVP) analysis. Finally, the third part is to understand the trends in competitive pricing, product offerings, and strategies through a competitive analysis.

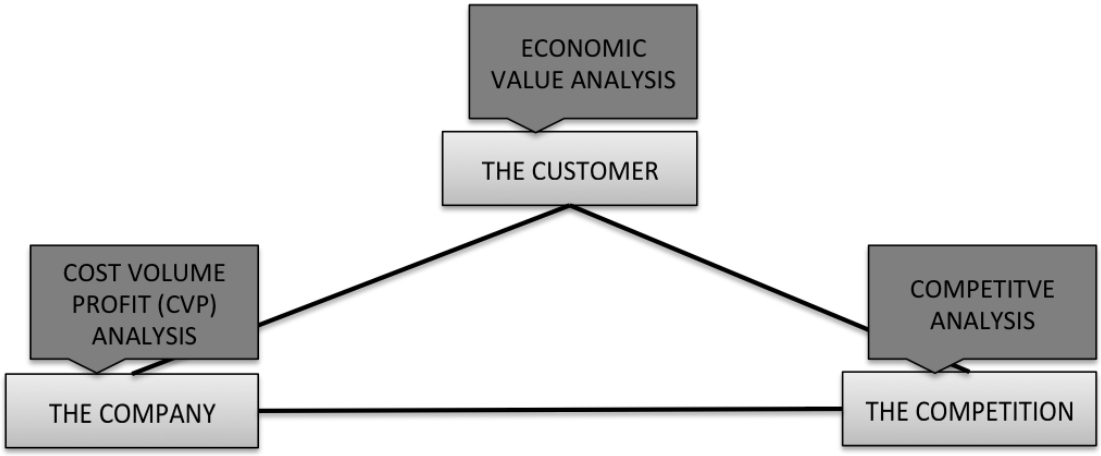

Figure 8 - Key elements to analyse with a value-based pricing (Hinterhuber, 2003)

Economic value analysis (EVA), is based on economic value estimation from Nagle and Hogan (2006). However, Hinterhuber (2003) adds his own ideas into a six step model:

- The first step is to identify the cost of the competitive product or process that consumers view as best alternative. The alternative does not need to be a physical similar product or even a product. It can be a working process that makes the use of the product uninteresting.
- The second step is to segment the market in order to understand how different customer segments use and value the product.
- The third step is to identify all factors that differentiate the product from the competitive product or process and this can be: reliability, performance, ease of use, longevity, life-cycle costs, user and environmental safety, service (in terms of delivery reliability, delivery speed, and flexibility of deliveries), superior aesthetics, prestige, and so on.
- The fourth step is to determine the value to the customer of these differentiating factors and it can be to quantify reduced failure rates, start-up costs, and life-cycle costs in monetary terms in order to demonstrate the value of a product to current and potential customers. Hinterhuber (2003) recommends conjoint analysis since it is a simple tool that aims to capture trade-offs in product features in a systematic way

and assigns monetary values to specific attributes. An example of conjoint can be to present alternative (a) as low price and no technical support and alternative (b) as high price with support and guarantees. There are a number of different value assessment tools such as: internal engineering, field value in use, indirect surveys, focus groups, direct survey, benchmarks, compositional approach, and importance ratings. Empirical research shows that focus group value assessment and importance ratings are the most widely used, however conjoint analysis is the one with the highest practical success rate.

- Step five is to summarise the reference value and the differentiation value to determine the total economic value.
- Step six is to use this to estimate future sales at specific price points. Step five sets the maximum theoretical price and then the real price can be set in step six giving sales estimates for the price point.

After having analysed the customer perspective it is interesting to turn the attention to the company and cost structure of the product. *Cost volume profit (CVP) analysis* refers to that the cost is suitable for analysing how price increase and decreases affect the demanded volume to maximise profitability. With 20% contribution margin a price reduction of 10% requires a 100% increase in sales to be profitable. In addition, if a product with 70% margin were set to have a price increase with 10% the increase would be profitable if the decline in sales would be less than 13%. The formula for CVP, which was originally provided by Nagle and Hogan (2006), is:

$$Break\ even\ (\%) = \frac{-(\%Price\ change)}{\%Contr.Margin\ +\ (\%Price\ change)} = \frac{-\Delta P}{CM\ +\ \Delta P}$$

Competitive analysis refers to analyse of the competitive situation. Hinterhuber (2003) includes six steps in this analysis:

- The first step is to *analyse the threat of new entrants* and this is because pricing solely on economic value may lead to a price levels high enough to attract new competition. The threat of new entrants can depend on factors such as access to distribution channels, access to raw materials, technical barriers to entry, customer's propensity to switch, and quality differentials between incumbents and new entrants.
- The second part is to *evaluate price trends* in existing markets. This is done because it is usual on industrial markets to disclose information about prices offered by competitors to gain larger discounts and more favourable terms. Without reliable information about the competitor's offer it is tempting to discount to win the order, which in turn may destroy price levels and start a price war.

The third in the analysis is called *competitive strategies* and that can be strategies of competitors, estimated profitability across principal product lines and market segments, and anticipated future behaviour.

- The fourth part of the analysis involves *collection of data* about distribution channels, including: market share with key distributors, amount of products stored in distribution channels, pricing and payment policies of distributors, incentive schemes of principal competitors, sales forecast from selected distributors, competitive activities with distributors (promotions, new product launch initiatives), and more.
- The fifth step, *reference value for customer groups*, implies constant monitoring of the next best competitive alternative.
- The sixth and last step is called *likely reactions* to price changes and refers to a possibility to test a suggested change in price before implementing significant price changes.

2.3 Spare Part Pricing

The section first explains the characteristics of spare parts. Furthermore, existing pricing theory on the spare parts are presented, including pricing strategy, pricing spare part methods, spare part competition and kitting of spare parts.

2.3.1 Spare Parts Characteristics

Many companies have thousands of spare parts, which vary widely in price, cost and frequency of orders (Gallagher et al., 2005). Each product generation contains many different parts for which different suppliers are used. The spare parts connected to each product need to be kept available for several product generations. (Cohen et al., 2006) Customers might only purchase new equipment every few year, nevertheless the spare part will be purchased throughout the whole primary product life cycle (Gallagher et al., 2005). The large number of product generation and different suppliers result in spare parts approximately constitutes of 15 to 20 times the number of stock keeping units (SKUs) compared to manufacturing functions. Another difference compared to manufacturing units is that the required respond time for spare parts supply is much shorter, for example one day delivery. (Cohen et al., 2006)

In spite of the high profit margins that derive from spare part sales, companies seldom get the best profit out of these assets. A problem related to spare part sales is low inventory turnover rate, commonly only one to two times annually. Research provided by Cohen et al. (2006) show that the low inventory turnover rates leads to an obsolete share of 23% of the spare part inventories yearly, as the obsolete parts can no longer be sold. These spare parts do however still generate cost, as long as they are stocked, in terms of tied-up capital and warehouse costs. (Van Jaarsveld and Dekker, 2011)

The high demand on availability of spare parts is closely related to increased efficiency, since it facilitates for a minimization of machine downtime. Furthermore, the demand for spare parts is hard to forecast, since breakdowns are difficult to predict. (Braglia et. al, 2004: Vigoroso, 2005) Spare parts are used during scheduled or preventive maintenance and unplanned repair. For preventive or scheduled maintenance the demand for spare parts is predictable and it can be possible to order spare parts just in time for repair and not keep these spare parts in stock. Since the cost of not having a part during an

unplanned repair can be high it can be of interest for the customer to keep a safety stock. (Kennedy et al., 2002)

Kennedy et al. (2002) describes certain characteristics of spare parts maintenance:

- If a machine breaks down, one way to restore functionality is either to repair the broken part or replace the part. If there is little redundancy among parts, then there is a greater need for immediately available spare parts.
- Reliability information of the product is often not available making it hard to forecast failure and the demand of spare parts.
- Part failures are often dependent, if the dependencies are not known this can have various effects.
- Sometimes demand for parts can be met by cannibalism of other parts or units.
- For unplanned repair the consequence of not having a repair often includes production loss with significant costs.
- Spare parts in the warehouse stock may become obsolete.
- Components are more likely to be stocked than the primary products, if the primary product is expensive.
- The customer may prefer repair rather than replacement if it is possible.

Due to the large number of articles, methods to differentiate the spare parts can be helpful (Gallagher et al., 2005). One such method is to differentiate spare parts through dividing them into categories, which are subject to competition. A single to several additional sources might supply spare parts that are subject to competition. While the parts known as captive parts, are only supplied by the Original Equipment Manufacture (OEM). (Vigorso, 2005; UK Competition Commission, 1982)

Competitive spare parts face a number of comparable or imitation options. Imitation parts supplied by manufacturers all over the globe have lately increased, intensifying the competitive aftermarket and putting pressure on OEMs. (Vigorso, 2005) The reason why spare parts are captive might differ. The design might be protected, hence preventing the marketing of alternatives. It may also be a slow moving part, which does not provide a sufficiently large market to attract competitors. (UK Competition Commission, 1982)

2.3.2 Pricing of Spare parts

This section explains pricing strategies for spare parts, spare part pricing methods, spare part competition affect on price, and how to price spare part kits.

Pricing Strategy

Traditionally OEMs have priced their spare parts in line with the upper limit of the marketplace. Spare parts often are many, counting in thousands, and vary widely in price, cost and frequency of orders. Therefore it is tempting to use cost-based pricing and set a general expectation for gross margin for all parts. (Gallagher et al., 2005) It is therefore not a surprise that nearly half of the OEMs

responding in Vigoroso's (2005) survey priced their spare parts with cost-based pricing. As the cost-based pricing does not take current market conditions for each spare part into consideration, it leads to a lack of understanding of the potential value of the parts. This can cause diminishing revenues and margins, customer dissatisfaction, increased competition, and lost market shares (Gallagher et. al, 2005; Vigorso, 2005). Cost-based pricing can sometimes cause unexpected problems. An industrial company found out that they sold parts with 5% loss because of an estimation based on out-of-date batch manufacturing and inventory cost. Raising prices only on parts with negative margins increased profitability on the aftermarket by almost 10%. (Gallangher et al. 2005)

Spare Part Pricing Methods

Since spare parts can consist of thousands of components some rather simple approaches of differentiated pricing can be applied. One way to segment price for spare part is to differentiate depending on the amount of competition the part is subject to. When implementing this type of differentiation is essential to possess correct and updated information on how the component is used and where competitors are entering the market. In general, companies have access to this knowledge through the field engineering or customer support, however processes to gather these data may be lacking. (ibid)

One North American vehicle manufacturer had divided their spare parts into three categories: those facing none, some, or heavy competition. The company then tried to understand the reason behind customer purchase of certain parts. They recognized that some spare parts were bought as emergency repairs and some were purchased frequently. In case of emergency repairs, the customer had no time to shop around. On the other hand frequent purchasing leads to better knowledge of the price. With this knowledge the company raised prices on some parts and lowered the price on others. The impact of this strategy was an improved gross margin on spare parts by no less than 30%. (ibid)

Docters et al. (2004) claim that in order to price spare parts the first thing to do is to categorise parts and part families according to their *part velocity* and *proprietary position*. *Part velocity* is how fast the parts move off the shelves. It is suggested to use a spare parts matrix from A.T. Kearney, which is displayed in Figure 9**.** *Proprietary position* describes the uniqueness of the part, the parts that are inelastic is the one part provided exclusively by the OEM, similar to captive parts, and those that are elastic are the easily imitated part. The difference between *proprietary positio*n and *part velocity* drivers can be seen in Table 1. The largest price increases is on the parts that are inelastic and have a low velocity, they are position in the dark grey in the matrix and their characteristics on the right side Table 2. The lowest price increases are on parts that are elastic and have high velocity, seen as light grey in the matrix and their characteristics on the left side in Table 2. These competitive spare parts constitute of at most 10% of all parts. Furthermore, Docters et al. (2004) suggest that spare parts can be categorised by value, part family, business line, and attributes. (ibid)

Table 1 - Difference between drivers for proprietary position and part velocity (ibid)

Proprietary position	**Part Velocity**

Competitor overlaps	Lifecycle of the part
Reference parts	Repairs available
Bundled versus unbundled	Market share prospects
Premium Value	Likely competitor entry
Remanufacture candidate	Demand forecast
Customer importance	
Unique safety or style part	

Table 2 - Highest and lowest price increase and difference in driver characteristics (ibid)

Lowest price increases	**Largest price increases**
Volumes ramping up	Declining sales volume
Part included in catalogue	Not a reference part
New competitors	Bundled with other parts
Low market share	Stable market share
Repairs authorized	Premiums available

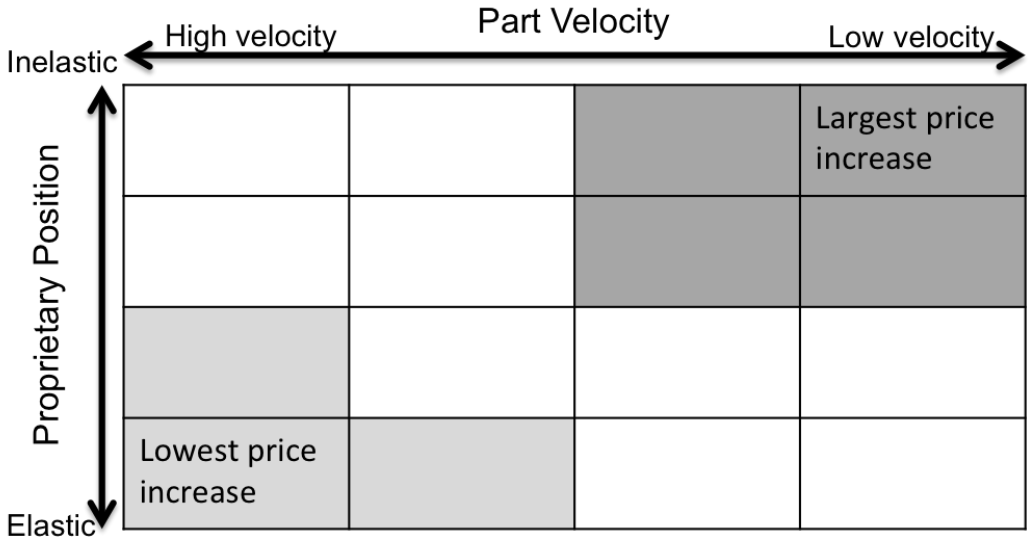

Figure 9 - Docters et al. (2004) suggested price matrix for spare parts from A.T Kearney

Zinoecker (2006) suggest primarily three methods in spare part pricing. The first method is to *categorise parts based on complexity and competition*, which is displayed in Figure 10. The second method is defined as *consistency-oriented pricing*, which refers to price the parts included in product families in relation to each other. This method does not exclude categorisation and can be used as a complement. The basis of this method is to group similar spare parts into spare part families (e.g. ball bearings in different sizes). The second step is to choose an appropriate value driver for each family such as weight, volume, diameter, power, torque and complexity. The third step is to build a pricing logic, where the price increases with increasing value driver. The motivation behind this pricing logic is to maintain a high level of consistency and reduce customer complaints. Spare part families reduce the number of parts handling and make it easier to detect profit improvements when the spare part families are plotted.

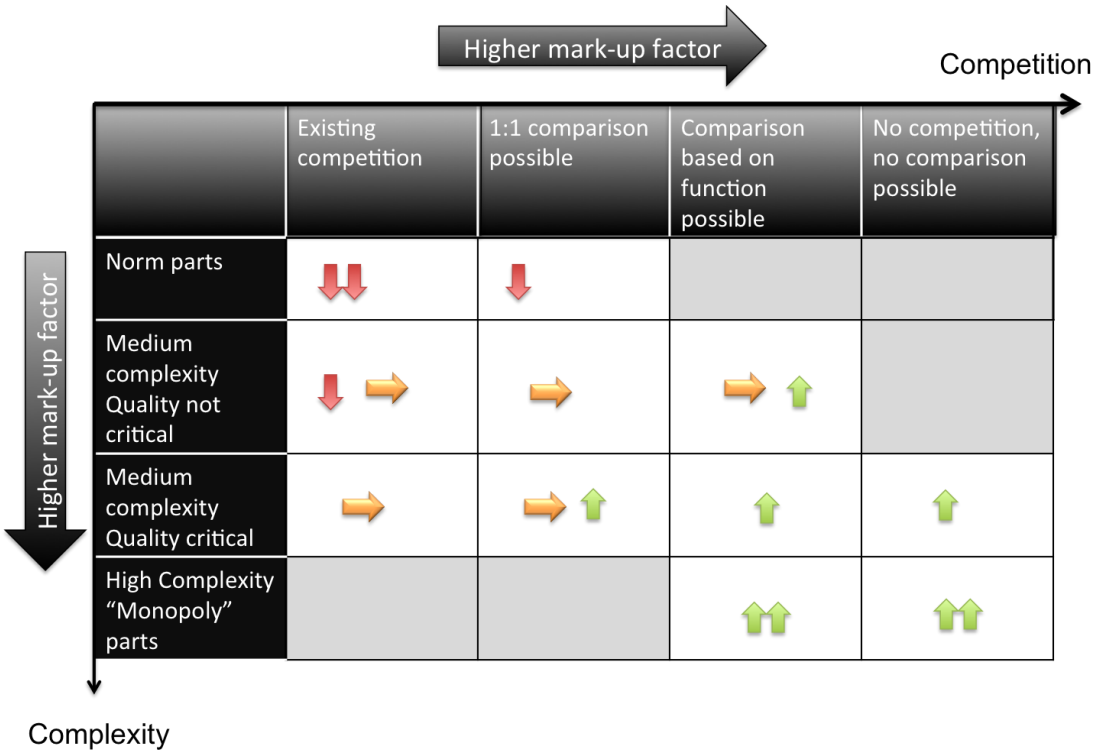

Figure 10 - Zinoecker (2006) categorisation graph with complexity and competition

The third method is to price the *spare part in comparison with a new product.* The maximum tolerance for price of repair of machinery (includes invested working hours and spare parts) is typically somewhere between 50-70% of the new products' price. (Zinoecker, 2006)

Spare part competition

As stated above, imitators have lately entered the market and are threatening the profitability of OEMs by providing spare parts at prices that OEMs cannot match. Gallagher et al. (2005) argue that if the OEM purely focuses on price competition, a value destroying price spiral will be the result. (Gallagher et al., 2005) Therefore is it necessary to have a wider view and take other measures. According to Vigorso (2005) OEM can significantly impact its financial and competitive position by improving its spare part pricing through the following techniques:

- *Build case for service operations focus.* It is essential to increase the understanding of the impact of strategic spare part management on the overall performance of a company.
- *Chart technology evolution strategy.* Spreadsheets and ERP system rarely posses the capabilities needed for spare part pricing. Instead evaluation of pricing technology should be conducted. This provides a more dynamic view of the price elasticity and enables profit optimization of spare parts.
- *Understand your demand patterns and lifecycle stages.* When pricing spare parts it is vital to understand the customers purchasing behaviour and how they use the parts.
- *Understand and track the competition.* Visibility of competitive and comparable spare parts is fundamental when setting prices. OEMs should

always have an up-to-date view of the competitive market, which is a vital input for pricing spare parts.

It is vital to know that price is far from the only consideration when customers purchase spare parts. In a survey with managers responsible for purchasing industrial commodities, 64% of the respondent identified factors other than price as the key influence on their purchase. The supplier's reputation, the consistency of a product's quality, the speed of delivery, and the technical support was more important than price to more than 40% of the respondents. This information can be used to segment customers and deliver different packages of spare parts and services at various prices. (Gallangher et al. 2005)

Kitting of spare parts
Kitting is defined as the bundling of parts in order to simplify logistics, and to improve performance or reliability. The seller and customer can then split the extra value created, leading to both higher profit and a more satisfied customer. Pricing kits rather than spare parts gives the seller an opportunity to use value-based pricing by communicating the gain the kit provides, like less maintenance cost, higher reliability, increased efficiency. A jet turbine engine manufacturer that used value-based pricing with kits nearly doubled the price compared to the initial cost-based recommendation. (Docters et al. 2004)

Kennedy et al. (2002) argues that in order to calculate spare part kits, it is suggested to investigate the ratio between the total expected usage and a figure containing acquisition cost and the savings made by having spare parts close at hand. It is also essential to note that some kits have both spare parts and tools, which are called field repair kits. (Kennedy et al., 2002)

2.4 Research issues related to spare part pricing

In order to fulfil the purpose of this master thesis two research questions related to spare part pricing have been formulated. The pricing strategies cost-based, market-based and value-based pricing have been introduced. A cost-based pricing strategy is based on the product's purchasing or production cost. The market-based pricing strategy is established by taking into account the competitive situation. Whereas, a value-based pricing strategy considered the value of a spare part provided to the customers. These three pricing strategies will be investigated and act as the foundation of the suggested spare part pricing strategy at Atlet.

When developing a price strategy it is essential that the strategy supports a sustainable profitability. Referring to gaining short-term profitability without compromising the long-term profitability, in terms of reduced customer loyalty or value destroying prices. Therefore, this master thesis first research question is:

- What pricing strategies for spare parts at APL facilitate a sustainable profitability?

When introducing a spare part pricing strategy it is essential that the strategy is operatively applicable. In order to enable this, several focus areas within spare part pricing have been identified. These focus areas are displayed in Table 3 and affect how the pricing is conducted with the pricing strategy as a base.

Table 3 - Spare part pricing focus areas

Focus Area	Explanation
Spare part pricing methods	The vast amount of spare part articles makes it both difficult and time consuming to handle and price each article individually. Spare part pricing methods facilitates the spare part pricing execution and provides a pricing logic.
Market adaption	Both customers' price sensitivity and competitive situation differ dependent on market, implying that market adaptions of prices are a necessity when acting on a global market.
Discount Policy	Discounting of prices is a commonly used method to stimulate the customers buying behaviour.
Captivity	The OEM is the sole supplier of the captive parts. Due to this absence of competition these part should be priced based on this specific situation.
Life-cycle pricing	The spare parts are supplied throughout the primary product life cycle with a declined value of the primary product. It is therefore important to consider this when pricing spare parts.
Kitting	To bundle spare parts and sell the parts together as a kit is a commonly used procedure in the manufacturing industry. The price of these kits needs to be handled separately.
Price elasticity	Since the volume and price correlate with each other this relationship need to be considered when suggesting how Atlet should price their spare parts.
Spare parts competition	The high margins generated on the aftermarket have increased the incentives for competitors to enter the spare parts market. In order to have a sustainable pricing strategy it is therefore essential considered competitors prices when pricing spare parts.

- Based on these focus areas how can the spare part pricing strategy at Atlet be improved?

2.5 Pricing Tools

There is a number of pricing tools in the form of software for both business-to-business (B2B) and business-to-consumer (B2C) markets. Furthermore, among the B2B pricing software there are some that are specialised in spare part pricing. This section will first describe general knowledge about B2B pricing software and then continue to a more specialised spare parts pricing software.

2.5.1 Pricing Software for B2B

The market for price optimization and management software, which supports B2B commercial activities is increasingly getting more attention. In 2010 the pricing software market generated $180 to $190 million. There are five trends that are pushing towards more price technologies in B2B enterprises. First, the widespread use of spreadsheets for analysing and managing prices is increasingly viewed as inadequate, if not harmful. Second, many providers of software have successfully satisfied many major customers. Third, the software vendors are more experienced in supporting different B2B segments on a global level. Fourth, third party consultancies, such as Accenture and Deloitte, are increasingly pursuing pricing opportunities, raising awareness of the associated business potential. Fifth and last, software-as-a-service (SaaS) are provided, which eases the implementation and therefore improves time to value. (Dunne, 2011)

Price optimization and management software for B2B commercial activities consists of three parts (ibid):

- A package of price analytics that supports processes to understand trends from e.g. transactional data, impact of market dynamics and pricing anomalies.
- The price optimization
- The price execution that focus on functionality support.

Tohamy and Keltz (2008) suggest that there are two rules of thumb when working with pricing improvement. First, it is almost always the wrong approach to implement pricing technology without process redesign. Secondly, they consider that there are three categories of pricing technologies: analytics, optimization, and execution. Companies should always start with the analytics because working with analytics helps to understand how pricing affects the company. An additional advantage is that there is a short payback time on price optimization investments, which can be seen in Figure 11. It is worth mentioning that the industrial sector has the fastest payback with 10,9 months. (ibid)

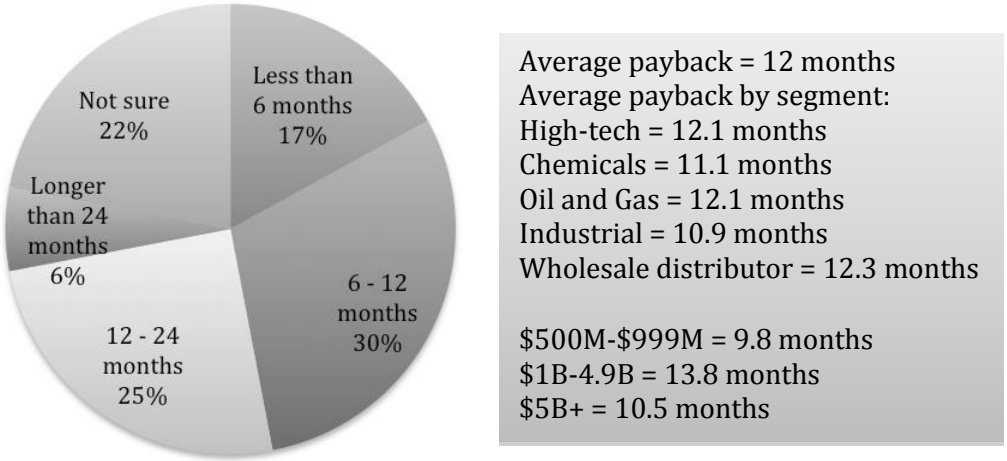

Figure 11 - Average payback on the investment of price software by industry (Tommy and Keltz, 2008)

According to the Gartner report provided by Dunne (2011) there is a number of B2B pricing software such as Model N, Navetti, Oracle, PROS, SignalDemand, Servigistics, Vendavo, Vistaar Technologies and Zilliant. PROS and Vendavo received the highest score while Vistaar Technologies and Zilliant ended up in the second place. (ibid)

2.5.2 Pricing software for Spare Parts

Due to the large number of spare parts, especially in relation to finished goods inventory, pricing of spare parts requires some technology solution to capture data inputs like part demand trends, price elasticity in various markets and competitive price information. In the survey from Vigoroso (2005) about half of the respondent managed more than 10,000 discrete service part articles and almost a one-fifth managed more than 100,000 service parts articles. This makes it nearly impossible to determine optimal price for each part at a certain point in time without technology support. The result of this, which can be seen in Figure 12, is that pricing software outperforms spreadsheets. Yet, nearly 40% of the respondents in Vigoroso's (2005) survey relayed on spreadsheets for their service parts pricing.

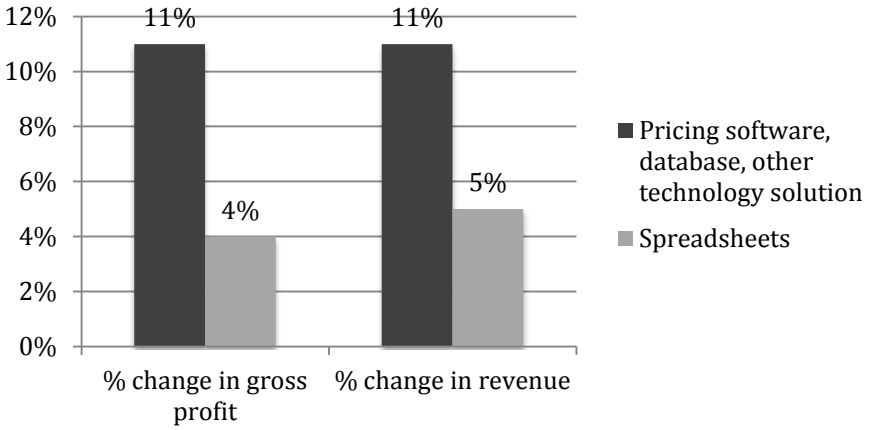

Figure 12 - Percental change in gross profit and revenue (Vigoroso, 2005)

Vigoroso (2005) divide the users of pricing tools into three groups; laggards (30%), industry average (50%), and best in class (20%), and the difference spare part revenue and gross profit between best in class, average, and laggards can be seen in Figure 13. The laggards primarily use spreadsheets, the industry average uses their ERP system, and the best-in-class firms uses pricing software provided by third party, or in-house developed pricing software. Vigoroso (2005) defines the industry average as the ones using a cost-based users pricing. Whilst, the best in class companies uses a market-based pricing (demand trends, competitive/comparable prices) in combination with optimized (measuring price elasticity of each part in order to maximize gross profit, life-cycle pricing).

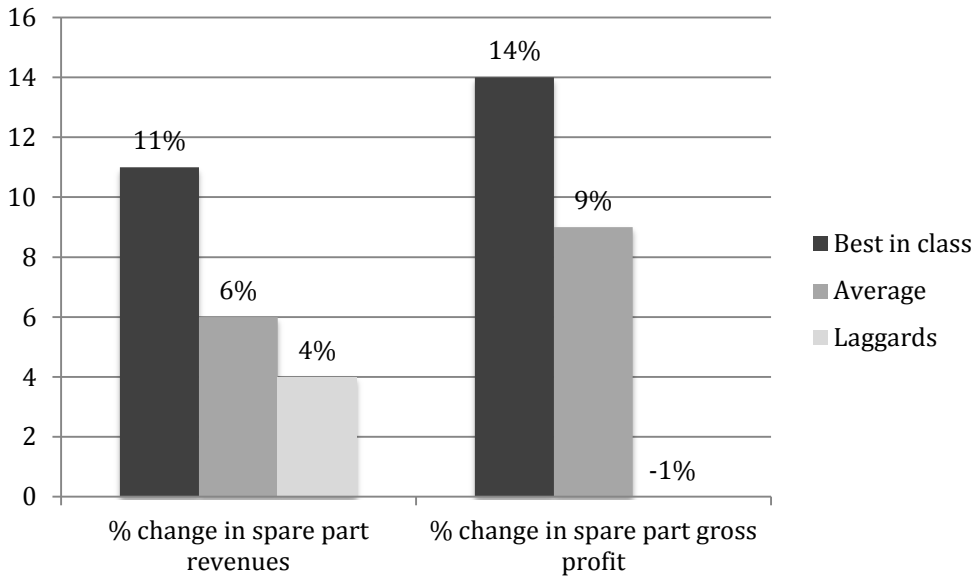

Figure 13 - Difference spare part revenue and gross profit between Best in Class, Average, and Laggards companies in percentage of respondents (Vigoroso, 2005)

In the benchmarking done by Dunne (2011) two price optimization software were specialized in spare parts price optimization; Navetti and Servigistics. Another vendor that provides pricing software is Syncron. Moreover, Accenture provides a pricing solution specialised on captive parts. Instead of providing pricing software, their customers send all their captive parts to Accenture's lab where the prices are established (Noeuvéglise and Chevenement, 2011).

2.6 Research issues related to choice of pricing tool

Due to the vast amount of spare part articles, a pricing tool might be required to execute the new pricing strategy. Otherwise it is very difficult to handle and evaluate the prices. Pricing tools include spreadsheets, ERP system, and dedicated pricing software. This thesis examines B2B pricing tools to assess if Atlet can use these tools. Therefore the final research question is:

- Which pricing tools can support the execution of recommended pricing strategy?

3. Methodology

This chapter presents the methodology used for the study, including research strategy, methods for data collection and quality of research.

3.1 Research Strategy

Research strategy refers to a general orientation to the conduct of business research, and can be divided into quantitative research strategy and qualitative research strategy. The *quantitative research* strategy emphasis on quantification in the collection and analysis of data. (Bryman and Bell, 2007)

Qualitative research strategy focuses on words rather than quantification in the collection and analysis of data (Bryman and Bell, 2007). Qualitative research strategy can however include both quantitative and qualitative data (Backman, 2008). Two situations where a qualitative research strategy is preferred are where the knowledge of the research problem or opportunity is limited, and where previous research only to some extent or incompletely explains the research question (Hair et al., 2007). Bryman and Bell (2007) argue that in qualitative research theory and concepts emerge from data, whilst in quantitative research theory and concepts get tested.

The research strategy used in this study lies within the frame of qualitative research since the purpose is to develop a strategy rather than test research theory and concepts. The purpose of this thesis is to propose a pricing strategy for spare parts on behalf of Atlet, this thesis focal company. Data will be gathered on how APL presently prices spare parts, the preconditions for a future pricing strategy, and information on APL's vision for the future pricing strategy. Furthermore, information on how comparable companies are working with spare part pricing will be gathered. Data will be gathered on pricing software tools supporting the spare part pricing. The information gathered will then be used to develop suggestions for a future pricing strategy at Atlet's spare parts.

3.1.1 Case study

A case study includes detailed and intensive analysis of a single or multiple cases (Bryman and Bell, 2007). The focus is on collecting information concerning a specific event or activity, often within a particular organization of industry (Hair et al., 2007). The objective of a case study is to obtain multiple perspectives of an organization, situation, event, or process at a specific point of time or during a period of time (Cooper and Schindler, 2011). This is a popular design within business research where usually two or more organizations are compared. Multiple case study allows researchers to compare the findings that derive from the different cases. (Bryman and Bell, 2007) An advantage with multiple-case study is that it is considered more compelling, contributing to a more robust study, compared to single case studies (Yin, 2003). Therefore the choice was made to conduct multiple-case study.

The companies included in the case study, presented in Table 4, were chosen based on three basic criteria in order to ensure relevance and comparability. Firstly, they produce comparable products in relation to Atlet. Secondly, the chosen companies act on global markets similar to Atlet's market. Thirdly, all the

companies chosen have a well-defined pricing strategy for spare parts. Furthermore, the pricing tool used by the companies affected the choice of case companies. The reason for this was to gain an increased knowledge of the practical applicability of pricing tools that might be of interest for Atlet. All the investigated companies are anonymous since the field of spare part pricing might contain sensitive information.

Table 4 - Case study companies

Company	Products	Market	Pricing Tool
Company A	Production-enhancing solutions.	Global	Navetti PricePoint
Company B	Transport solutions for commercial use.	Global	Syncron Global Price Management (GPM)
Company C	Supplier of production-enhancing solutions.	Global	Spreadsheets and ERP
Company D	Agriculture machinery	Global	In-house developed software
Company E	Provide solutions for transport and handling of water and wastewater.	Global	Navetti PricePoint

Company A was chosen mainly because of two reasons. Firstly, the product is similar to Atlet, as Company A's products and Atlet's forklifts aim to enhance their customers' production. Secondly, Company A uses a pricing software system from Navetti, called PricePoint, which might be of interest for Atlet. The information used in this case study was collected through a face-to-face interview with the Manager Business Development at Company A.

Company B was chosen due to two primary reasons. Firstly, Company B manufactures similar products as Atlet, both produces a type of vehicle. Secondly, Company B uses a pricing software system from Syncron, named Global Price Management (GPM). The information for this case study was collected through a face-to-face interview with the Global Product Manager for aftermarket engines and factory remanufactured components and the former Price-System Manager and Global Pricing Manger.

Company C was chosen because of two main reasons. Firstly, the product is similar to Atlet, since both Company C's products and Atlet's forklift aim to enhance their customers' production. Secondly, Company C is, like Atlet, a company with limited resources when it comes to employees working with spare part pricing. The information for this case study was collected through face-to-face interviews with the Service Manager and the Spare Part responsible.

Company D was chosen due to three reasons. Firstly, Company D products have similarities to Atlet's forklifts. Secondly, Company D is, like Atlet, a company with limited resources when it comes to employees working with spare part pricing. Lastly, it is of interest to know why Company D had after a having dialog with a pricing software vendor chosen to develop an in-house software. The information for this case study was collected through face-to-face interviews

with the Project Leader Information System and the Product Manager Parts, and Accessories.

Company E was mainly chosen as a case company due to two reasons. Firstly, Company E supplies their products to an industrial market similar to Atlet. Secondly, Company E uses the pricing software PricePoint from Navetti, which might be of interest for Atlet. The information for this company was collected through a face-to-face interview with the Product Manager Spare Parts and the Operating Price Handler.

3.1.2 Pricing Software tools

Two software tools available on the market have been identified as interesting for Atlet. These previously mention tools are Navetti's software PricePoint and Syncron's software Global Price Management (GPM). Both these firms offer have an interesting pricing software solution for spare parts that might be of interest for APL. Furthermore, several companies acting in the same context as Atlet use both of the software. Atlet is already a customer of Syncron's Global Inventory Management software, abbreviated GIM. This might ease integration and implementation of the GPM. Moreover, the pricing strategy and methodology used by these software vendors are presented.

3.2 Data Collection

This section will include a description on how the data collection was conducted. The data collection methods presented are interviews, observations and collection of quantitative data.

3.2.1 Interviews

In qualitative research the interview is the most widely employed method for data collection. The flexibility of the interview makes it an attractive method. Interviews are less time consuming compared to the alternative extended periods of participant observations. (Bryman and Bell, 2007)

In this thesis interviews are seen as a favourable data collection method, since large part of the study lies within the field of qualitative research strategy (Yin, 2003). In order to gain a comprehensive understanding on how Atlet presently is pricing spare parts, the preconditions for a future pricing strategy, and information on APL's vision for the future pricing strategy, interviews with employees have been conducted. The interviewees at Atlet have been selected based on the relevance of their current or past position within the company. Moreover, a representative at Nissan forklift BV Europe, Atlet's parent company, was interviewed.

The interviewees selected for the case study, was chosen based on the relevance of their position in the companies. All interviewees were currently or had been recently working with strategic pricing of spare parts on a managerial level. See Appendix D for a complete outline of interviewees.

In order to get an increased understanding of the software tools on the market interviews with vendors, that supply pricing software for spare parts, were carried out. These vendors were chosen based on the suitability of their software

in terms of Atlet's needs. The interviewees at the software vendors were all specialized in pricing software.

The structured interview is designed to be used in quantitative research and because of this not suitable for the qualitative research conducted in this thesis. The two other alternatives in qualitative research are unstructured interviews and semi-structured interviews. In order to ensure cross-case comparability of the multiple case study approach of this thesis semi-structured interviews were conducted. (Bryman and Bell, 2007)

Semi-structured interviews
In semi-structured interviews the interviewer has a series of structured general questions. It is however possible to vary the sequence and content of the questions. The questions are more general than found in a structured interview. Furthermore, the interviewer has more liberty to ask additional related unanticipated questions that were originally not included in the interview template. (Bryman and Bell, 2007; Hair et al. 2003) This may result in unexpected and insightful information (Hair et al. 2003). Using a second interviewer, as in this thesis, is considered valuable for semi-structured interviews, which are common in qualitative research (Bryman and Bell, 2007; Hair et al. 2003).

Questions
In general there are two types of questions, closed and open-ended question. With closed questions there are a number of options that the respondent can choose from. With open-ended questions there are no constraints on the respondents who are free to answer in their own words. Open-ended questions are relatively easy to develop because the researcher does not have to specify the answers ahead of the interview. If the researcher does not know the answer (as in exploratory research) the open-ended questions are the only alternative. (Hair et al. 2003) Therefore in this study open-ended questions were used.

Telephone interview
Qualitative research is usually performed in a face-to-face manner but time and money can restrict this, making telephone interview an alternative. There are several advantages with telephone interview. The telephone interview is easier to supervise which is a particular advantage with several interviewers. Furthermore, the interviewers are not affected by the characteristics of the interviewer, which can remove the potential bias to a significant extent. There are also several disadvantages. Firstly, this less personal context removes the interviewers chance for observations, like unease when asked a certain question. (Bryman and Bell, 2007; Hair et al. 2003) Secondly, a telephone interview hinders the interviewers from collecting subsidiary information that could otherwise be collected during a visit. Thirdly, respondent will not tolerate as long interviews as during face-to-face interviews (Hair et al. 2003). Fourth and last, the telephone interview prevents the use of visual aids, like the use of whiteboards and drawings (Bryman and Bell, 2007; Hair et al. 2003).

Because of the cost and time lost by extensive travelling, telephone interviews have been in a limited extend be conducted. This was only done when it is considered that the interviewee had experience of communicating well through telephone. A telephone interview was done with Robbert Kreber, Part Sales/Marketing & Truck Fleet Sales Manager, Nissan Forklift BV Europe. Both the two pricing software vendors were also interviewed by telephone. The information from Navetti was collected through a joint telephone and Internet interview with Senior Partner and Consultant at Navetti. A combined telephone and Internet interview with Pricing Consultancy Manager at Syncron, was carried out to gain information from Syncron.

Recording and transcription
In qualitative research the interview is usually recorded and transcribed whenever possible. There are several advantages with recording and transcribing interviews:

- Helps correct the natural limitations of our memories.
- Gives opportunity to a more thoroughly examination.
- Can use repeated examination of the interviews answer.
- Opens the possibility for others to examine the result.
- Can be used to counter accusations of bias.
- The data can be reused for purposes in other ways than the intended.

The problem with transcribing interviews is that is very time consuming. Bryman and Bell (2007) suggest five to six hour to transcribe a one-hour interview because the transcription produces a large amount of pages. One large benefit of transcription is that it's easier to see the pages up-front than going back and forth through a recording. There is no need to transcribe material that will not be fruitful but it could mean that some information will be missed, especially something that can become significant only later on. (Bryman and Bell, 2007)

Due to the beneficial nature of recording and transcription in combination with rather few interviewees and much time available, both recording and transcription have been conducted.

3.2.2 Observation
In order to gain a better understanding of Atlet and the forklift industry as well as the working process carried out at APL, presence at the office was on a daily basis. The observations at Atlet also involve guided tours at Atlet office and factory. Moreover, the observations included webinars on price optimization software to further increase the knowledge within this area.

3.2.3 Quantitative data
Quantitative data is defined as measurements in which numbers are used directly to represent the characteristics of something. Since the data is numerical, they facilitate statistical analysis. (Hair et al., 2007) Quantitative data that was collected from documents at Atlet such as price list, sales data, inventory turnover, current pricing strategy, and more. Furthermore, data was

collected from available software systems used at APL, such as Syncron Global Inventory Management and the ERP Epicor iScala. Statistical analysis was then used to analyse the data, to understand the pricing strategies used today, and to detect possible improvements in the pricing process.

3.3 Quality of the research

In order to ensure the quality of the research *validity* and *reliability* are evaluated. According to Hair et al. (2007) validity is associated with the accuracy, that what is supposed to be measured actually is measured. Whilst reliability is associated with consistency of the measure, furthermore it refers to if the same result would be gain if the study was repeated (Bryman and Bell, 2007). Two different types of validity are internal validity and external validity. Internal validity is connected to that accuracy of the measure whilst the external validity refers to the degree to which the result can be generalised (Cohen et al., 2007). Reliability is a necessary contributor to validity but it is not by itself enough as a condition for validity, since if a measure is not valid it hardly matters if it is reliable (Cooper and Schindler, 2011).

Since the field of spare part pricing is continually developing and alternative pricing strategies, methods and tools might have been developed in the future, the result would probably differ if this study was conducted during a later time period. Furthermore, the information gathered through the comparable case studies might be somewhat different in the future. This is because the entire effect of the relative newly implemented pricing strategy might not yet be evident. However, if the case studies were conducted again at the same time span the reliability can be seen as sufficient since the same standardised questions were used during both the internal and external interviews to ensure the reliability.

The information presented on the focus company, the pricing software vendors and the comparable case studies were gathered through interviews. Owing to the fact that these interviews where recorded and transcribed, the information was looked through at several occasions, and ambiguities were followed up to ensure the validity. Moreover, information has been gathered from several different sources and actors to increase the validity of the used information.

Since the purpose of this master thesis is to propose an applicable pricing strategy for APL and to identify methods and pricing tools supporting this strategy, the results are only applicable on to other companies where the conditions correspond to the conditions at Atlet. Thus, the possibility to generalise the results of this study thus the external validity might be limited. The frame of reference can be applied to study other companies with similar conditions since a large share of the pricing strategy and the eight focus areas still are quite general.

In order to further ensure the validity and reliability of the research triangulation are used. Triangulation is a comparison of findings from several qualitative methods or when combining qualitative with quantitative methods. (Cooper and Schindler, 2011) Since the data collection at the focus company is a

mix of qualitative studies (e.g. interviews) and quantitative studies (e.g. pricelists and price matrix) this is a method thought to be beneficial. The triangulation method in thesis is called data triangulation, which refers to the comparison of data collected from several sources at different times. This has been done since several sources of information have been used. In this qualitative research the same interview templates have been used for several interviewees to ensure both the accuracy and the comparability of the data collected. Quantitative findings at the focus company have also been validated trough comparison of the qualitative findings (Cooper and Schindler, 2011), and vice versa. (Hair et al., 2011)

4. Pricing of Spare Parts at Atlet

This chapter presents the focus company Atlet AB. Firstly, a company background is given, followed by a section on the primary products provided by Atlet. Furthermore, Atlet's spare part handling and current pricing strategy for spare part are presented. The last part of the chapter presents the pricing execution and Atlet's competitors.

4.1 Company Background

The company was founded in Sweden 1958 by Knut Jacobsson outside Gothenburg as Elitmaskiner i Göteborg AB, a name that was changed to Atlet in 1966. The headquarter and production facility is located in Mölnlycke. Jacobsson family owned Atlet until 2007 when Nissan Motor Corporation Ltd. (Nissan Motor) through its subsidiary Nissan Forklift Europe B.V acquired Atlet AB. Atlet produce warehouse forklifts at the headquarter located in Mölnlycke. Moreover, Atlet has counterbalance forklift included in their product brand range through Nissan Forklift Europe BV. The yearly production volumes in Mölnlycke are around 6000 forklifts. Today Atlet has roughly 1000 employees and a turnover of approximately €190 million. (Moberger, 2008; Atlet, 2012)

The largest manufacturers of warehouse forklifts are located in Europe whilst the largest counterbalance forklift manufacturers are located in USA and Japan. The customers of warehouse forklift are mostly located on mature markets where it is common with more advanced materials handling equipment and large warehouses. These markets are mainly northern and western Europe, USA, and Japan. Atlet has a strong presence in Northern and Western Europe and Nissan Forklifts has a strong market present in Japan, Asia, Europe and USA. The European warehouse forklifts manufacturers are generally more advanced within the aftermarket field than their American and Japanese competitors, which therefore often have a higher total profitability. [1]

4.2 Atlet's Primary Products

Atlet provide warehouse forklifts but counterbalance forklift are also included in the product range, see Appendix A. The product groups are:

- Forklifts for Loading, Unloading and Transportation
- Stackers
- Reach Trucks
- Double Stackers
- Narrow Aisle Forklifts
- Order Pickers
- Counterbalance Forklift

Figure 14 – Atlet's product range (Source: Atlet, 2012)

Atlet's own brand is the dominant brand produced. Nonetheless, other OEM forklift brands such as some of Nissan, Still/Linde and Lafis product variants are in addition produced at Atlet's production facility in Mölnlycke. The product is however the same, excluding the colours and brand name, independent of brand which it is sold under.[2] Still and Linde are part of the German competitor KION group, which does not have a four-way forklift and purchase this from Atlet to complete their product range. Lafis is a forklift manufacturer that Atlet acquired in 1998. Nissan complements their product range with Atlet's warehouse forklifts. Atlet used to provide Toyota's counterbalance forklift to complete its product range but this cooperation ended when Toyota acquired the Swedish forklift manufacturer and competitor to Atlet, BT Industries. In addition, cooperation with Mitsubishi/Caterpillar started in order to expand Atlet's offer with counterbalance forklifts. This was followed by cooperation with Nissan Forklifts and Atlet has today their product range complemented by Nissan's counterbalance forklifts. [1]

The products are made-to-order after specifications defined by the customer and the sales representative. Atlet's uses a modularisation system that is based on seven basic chassis and 3500 components. This modularisation enable many modular variations whilst, production can be kept efficient and the amount of spare parts is kept down. (Atlet, 2012)

Figure 15 – Atlet's Modularisation System (Source: Atlet, 2012)

One of the benefits with Atlet's modularisation system described in Figure 15 is that Atlet's service engineers can store the 600 most frequently used parts in their service vehicles. This is something none of the other competitors can do. As a consequence the competitors' service organisations look different compared to Atlet, since their services are more work and time consuming. This might be crucial since each minute a forklift stands still results in vast costs for the customer. Hence, one of the competitive advantages of Atlet is that they can place a service engineer on site fast and with the right parts. Consequently Atlet provides 95% first-time-fix-rate, which is the highest on the market.[3]

4.3 Spare part handling at Atlet

Atlet Parts Logistics, APL, is located under the Aftersales organisation that is located under the Market organisation. The aftersales start when the forklift

[2] Anders Ytterberg, Manager Production technology at Atlet, 2012-01-17

[3] Joakim Krona, Sales Manager at Atlet Sweden, 2012-04-02

enters the unloading area in the factory and continues throughout the life cycle of the forklift.[4]

APL has three warehouses for spare parts, one central sourcing warehouse located within the manufacturing facility in Mölnlycke, Göteborg Mölnlycke Warehouse (GMW), one regional warehouse located in Netherland, Central Europe Warehouse (CEW) and one regional warehouse located in England, United Kingdom Warehouse (UKW). The Inventory management system used is Syncron's Global Inventory Management (GIM).[1]

Today 15 persons are employed by APL in Mölnlycke. Among these there are a Parts Supply Chain Manager, a Senior Purchaser, three Purchasers/ Material handlers, three employees responsible for reception of orders, a warehouse manager and six warehouse employees. The additional numbers of employees at APL's other facilities are nine at CEW, six at UKW and a Senior Consultant Special Project. See Appendix B for organisation chart.

APL provides Atlet Genuine Parts as well as spare parts for other brands. These other brands are for example Caterpillar and Toyota, which Atlet has been selling in order to complement their warehouse forklifts product range with counterbalance forklifts. Atlet also provide counterbalance parts manufactured by Nissan and parts for Lafis' forklifts, as well as competitors' spare parts.

There are approximately 25.000 items that are assigned an Atlet article number. In total there are around 13,000 articles in the GMW warehouse and approximately 8,000 are Atlet spare parts, the other are parts of brands that Atlet has or had cooperation with such as Toyota (reseller), Mitsubishi/Caterpillar (reseller), Nissan (owner), Lafis (bought brand), and Dambach (builds a forklift). In addition, Atlet builds forklifts for Nissan, which to some extent contain the same parts as the Atlet forklifts. Therefore can there not be any visible branding on the spare parts, nonetheless are the boxes that contain both Nissan and Atlet parts branded as genuine parts.[5]

4.3.1 Spare Part distribution

Atlet's spare parts are distributed through the distribution channels viewed in Figure 16. Atlet's subsidiaries are located in Sweden, Denmark, Norway, England, Belgium, Holland, Germany and France. Atlet International division handles customers in other countries not covered by Atlet's Subsidiaries. There is a separate OEM business area that handles spare part sales to other forklift OEMs, and other competitors' forklifts. In addition, there are several levels of distributors and resellers that provide Atlet's parts.

[4] Mark Sigvardsson, After Sales Manager at Atlet, 2012- 01-24
[5] Patrick Magnusson, Parts Supply Chain Manager at Atlet, 2012-03-22

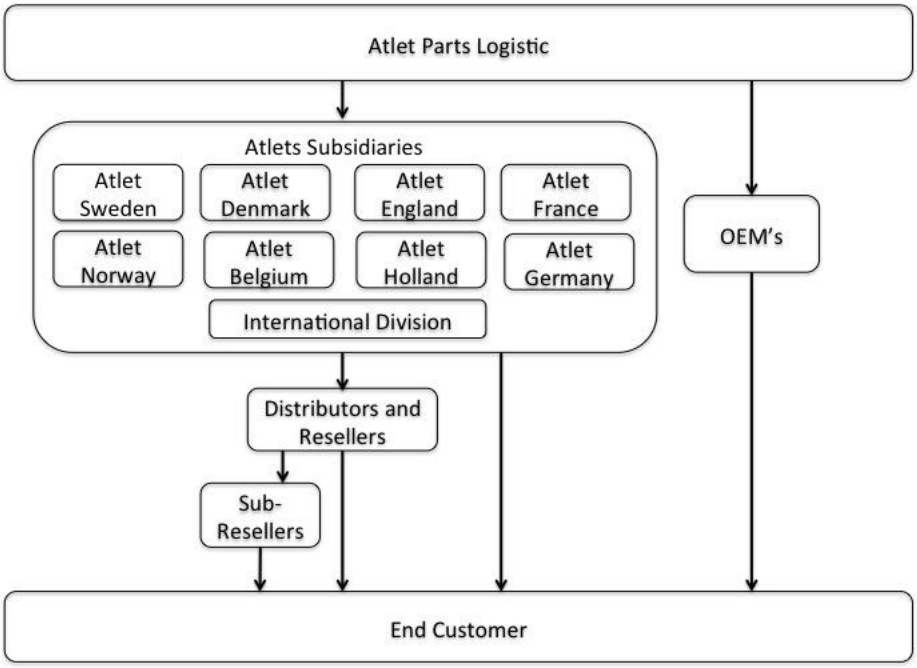

Figure 16 - Distribution Channels for Atlet's spare parts

Large shares of the spare parts are sold in connection with service provided to the customers through service engineers. This could be Atlet's subsidiaries own service engineers as well as service engineers at resellers or other OEM forklifts providers. For Atlet's own service engineers a vast amount of spare parts is sold through different kind of service deals or rental contracts. Moreover, there is a spare part catalogue that displays each of Atlet's forklifts and the parts out of which they are assembled. Moreover, APL's customers can order their spare parts directly online through an Internet based web shop.[5]

GMW both replenishes the two regional warehouses and send parts directly to subsidiaries, distributors and resellers, service technicians and end-customers. This implies a large variety in the order quantities and order lines are handled.[1]

4.4 Spare part pricing strategy

APL work with a cost-based pricing strategy when pricing spare parts. The tool used is a cost-plus matrix that segments the spare parts on how difficult it is to acquire the part on the open market as well as the cost level. The strategy is however manually adjusted on some occasions, such as when purchasing or production costs are increased for already expensive parts. A strict cost-based strategy would in these situations, lead to unreasonable price increases. In order to avoid this, APL aim to only add the increased cost on top of the existent price. This manual adjustment results in a decoupling from their cost-based pricing strategy, as well as in lowering the traceability of the price level. In addition, this manual adjustment is not consistently conducted. Therefore, the risk of losing customer due to severe price increases in such situations is still an issue. Furthermore, the prices are never lowered on the price list, as a discount can be used if a lower price is required to stimulate sales. APL has experienced that the price is sometimes hard to motivate towards customers. Furthermore, APL has

noticed that by analysing how large share of the captive parts compared to others parts that are sold it is possible to estimate the market potential. The retained information has showed that APL has potential to sell non-captive parts in certain markets. An example is that a smaller amount of diesel engine filters are sold than the estimated potential. This is of course problematic for APL due to lost sales opportunities. In addition, this can be a problem for the customer since their machines can be damaged. The customers either change their filters too seldom or might be compelled to purchase non-original filter with the risk of lower quality.[5]

4.4.1 Spare part pricing methods

When creating the list price for Atlet's spare parts, some differentiation is used. The parts are categorised in the four categories:

- *Easy accessible parts*, or group 11, are parts that can be easily accessed from additional sources.
- The *medium accessible parts*, or group 12, are standard parts from APL's subcontractors that not easily are available on the market. Parts are, however, in addition placed in this category if they neither are a good fit for the other categories. Thus, contributing to that parts secluded from previous definition of group 12 also might be placed in the category. Furthermore, it can occur that APL's subcontractor through additional distribution channels unexpectedly starts to distribute a part included in group 12. This part then needs to be transferred to the group 11.
- *Hard to access/ Atlet unique parts*, or group 13, are mainly captive parts. These parts are drawing-specific and design by Atlet and cannot be accessed by competitors. Occasionally it can also be parts that APL is convinced that competitors do not have any interested in supplying.
- *Not classified parts*, or group 10, includes the spare parts that not have been classified.

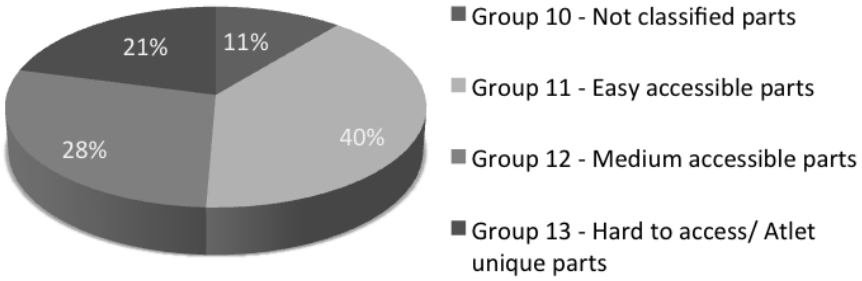

Figure 17 - The percentage relation of the part categorisation

The percentage relations between the spare part categories can be viewed in Figure 17. In addition, a value dimension is added when pricing the spare parts in

the categories. The price in each category is further marked-up in five different price groups dependent on the cost level of the article. A spare part with a low cost receives a higher mark-up, thus a higher price in comparison to the cost and vice versa. Of Atlet's spare parts 8024 have a set price.[5]

4.4.2 Market-adapted prices

The list prices in SEK and EUR are created at the parent company, the SEK price list is used by Atlet Sweden. Atlet delivers a recommended net price list, referred to as the EPP price list (European Part Pricelist), to the sales organisations. The EPP price list displays the recommended market price, and what the suggested price should be after discounts are given. The market adjustments are then realised both by variation in the mark-up factor on the EPP price list by different sales organisations and the discount structure used on different markets. The level of the mark-up factor is decided by the individual subsidiary.[5] Different mark-up factors on different markets, results in an unharmonised pricing. For example, Netherlands uses a lower mark-up factor than France, which increases the customers' incentives for cross-border business.[6]

Furthermore, Atlet's international division sell spare parts to customers on various markets. The same price level is used on all of markets independent of acceptable price levels and labour cost, which might provide incentives to customers in countries with low labour cost to repair rather than purchase a new spare part.[5]

4.4.3 Discounts

Atlet has different discount structures on diverse levels within the organisation. Firstly, a predefined discount policy related to the distribution channels is used. Different discounts are given to subsidiaries, distributors, resellers or other OEM forklift suppliers that act as resellers of Atlet's spare parts, see Table **5**.

Table 5 - Relationship between given discount and distribution channel

Category of Sales Organisation	Discount
Atlet's own Subsidiaries	Highest
Distributor or Reseller	Middle
Other forklift OEM's	Lowest

Secondly, the individual subsidiaries, distributors, resellers and other OEM's then decide on the discounts given to end-customers or sub-resellers. In order to provide the customer with an incentive to purchase larger volumes the discount is often raised, consequently to secure profitability the mark-up is then further raised by the sales unit. However, if the volume purchased by the customers then decrease the high discount is no longer motivated. It is however generally considered unacceptable by the customer to lower the discount, with the result of an inflation of discounts.[5]

In addition, APL can use a special discount on specific articles, specific product groups or/ and to specific customers to stimulate sales. An example of discount

[6] Ab Wolters, Senior Consultant Special Project at Atlet AB, 2012-02-02

on a specific product group is that wheels were discounted on a specific market in order to stimulate the resellers to provide Atlet's original wheels instead of non-original wheels provided from other sources. [7]

Customer discount can be given to large key account customers that has a strong barging power due to the their size and the extent of the business with Atlet. A reasonably high discount can be given on the existing pricelist but the price on selected articles can be also adjusted. The special discount on these types of customers is decided at the concerned subsidiary. APL can however help the subsidiary by providing a monetary kick-back in order to keep the business alive, even though the margin for the subsidiary might be low. In this type of business it is important to analyse the total cost and total revenue connected to the business to make sure that the sales prices still provide a consolidated profit for Atlet.[5]

4.4.4 Life-Cycle Pricing

A forklifts' length of life is approximately six to fifteen years, on occasion even longer. Generally, small forklifts have a short lifetime whilst larger forklifts have a longer lifetime. Furthermore, the forklifts field of application also have a large leverage on the lifetime.

Today the primary product life cycle is not taken into consideration when pricing Atlet's spare parts. Atlet is, however, currently looking into how the spare part prices can be adjusted in the en end-of-life phase of the primary product. The intention is to lower the price for "dying" articles, which occurs when the sales of the primary product diminishes on the market. This is done in order sell the reaming articles present in stock, through usage of the logic that when the articles enter a slow selling class the price should be decreased. The definition for an article into slow selling class is an article not sold for eight months. When an article is defined as a slow selling part it is displayed in APL's Inventory Management System. There is however another parameter that needs to be taken into consideration, the articles previous selling frequency. Articles that have a previous consistent selling frequency should be included in this logic while the articles that are erratic and slow selling should be excluded.[5] Another issue identified at APL is that spare parts only are required during breakdowns or when they are worn out. It is therefore very difficult, if not impossible, to stimulate the demand. Customers want to purchase components that their forklifts require instantly, and not to purchase components just because the price is attractive.[6]

Atlet has identified that if the spare part price is perceived as too high during the end of the primary product life cycle, there is a large risk of losing the spare parts sale. Customers tend to purchase used or less expensive non-original parts in the final phase of the primary product life cycle. Therefore, if priced right an end-of-life article can keep the forklift "alive". The forklifts' nominal value is relatively low in the end-of-life phase, nonetheless it is still a running forklift. If a spare part is too expensive there is a risk that the forklift will be scraped. By lowering

[7] Håkan Gäfvert, Senior Paschaser at Atlet AB, 2012-03-15

the price of these spare parts the forklift can be kept running, witch in turn might contribute to both customer satisfaction and opportunities for Atlet to provide service and sell additional spare parts for that forklift. This might be beneficial since the margin on the aftermarket business is higher than the margin on new forklift sales. It is however central to be aware that it is the new sales that feeds the aftermarket.

It can be quite costly to supply old spare part, in terms of resources needed in comparison to revenues gained. Furthermore, volumes needed are often low leading to high production cost if the part is not available in stock. Therefore, APL tries to limit the resources put on old parts. If an inquiry on a part above 15 years is received the material handler provides the part if it is easy to source, but do not put resources on identifying the part through drawings, sampling etcetera.[5]

4.4.5 Kitting

Kits provided by Atlet can be divided into two types, service kits and recommended part kits. The purpose of the *service kits* is to ensure that spare parts are being exchanged correctly. The service kits consist of main components and supporting components such as screws and gaskets to ensure the quality of additional used components, which can have an affect on the forklifts lifetime. These kits are used by Atlet's own service engineers, reseller service engineers or the sub-resellers service engineers. Service kits are priced in in the unique part category, independent of the part category in which the main component is included.[5]

Recommended part kits can be ordered with the new forklifts. These kits aim to provide the most commonly used spare parts in the forklifts' early life. It is, however, common that these kits are kept at the sales organisations that stock them and sell the constituent components individually. This behaviour is encouraged, since these kits are priced based on the summarised price of incorporated components and an added discount.[8]

The Parts Supply Chain Manager argues that as a consequence of assembling the kits, the cost often are higher than just selling the individual components. Thus, the profit from each kit is lower than the potential profit from the components if they were sold individually. Because kits ease the purchasing process for the customer it can contribute to an increase in sales volume. In order to elude these high kitting costs the work to assemble kits can be transferred to the supplier. Therefore, it is essential to investigate the possibilities of creating kits already at the forklift design and part sourcing. This approach can lower the stockholding costs since a kit that is delivered in a parcel can be handled as a single article, which tin turn lowers the total number of administrated and handled stock keeping units.[5]

4.5 Pricing Execution

The tool used today to price Atlet's spare part is an excel-based cost-plus matrix. This matrix was developed in 2004 due to a lack of pricing policy. Since the

[8] Göran Andersson, Aftermarket Manager at Atlet Sweden, 2012-04-19

current pricing is manually conducted, each update or change requires a manual activity and the source of error is substantial. Another effect of the manual pricing is that there is no direct connection between updates on the purchasing cost and the list price. Hence, if the prices and costs are not updated at the same time there is a risk that it will be forgotten. As a consequence of the lack of traceability on previous price changes it is difficult to follow up and control pricing activities.

APL's database currently lacks a lot of data such as weight, volume, and other technical specifications. In order to get hold of this type of data a large effort needs to be put in. The data available today is current price and the product group in which the part is included. Moreover, the Parts Supply Chain Manager at Atlet also stress that there is a risk that the spare parts included in the unique part category might already be priced sufficiently high. This might limit the possibility to increase the overall margin.[5]

Furthermore, Atlet's parent company Nissan Forklift Europe BV uses the same pricing software as for Nissan Motors other products spare parts, and car spare parts in particular. The software is in-house developed during the last 25 years. Atlet is owned by Nissan Forklift Europe BV it might be possible for Atlet to acquire this pricing software[9]

4.6 Atlet's competition

When identifying Atlet's competition it depends on which area within the organisation that is viewed[5]:

- *Forklift sales.* Other forklift companies
- *Service.* Other forklift companies but also independent service organisations.
- *Spare Parts.* Mainly non-original providers

Since Atlet primarily produces warehouse forklifts in the high-end segment the main competitors are Toyota/BT, Jungheinrich and Linde/Still.[1] Atlet is consistently conducting benchmarks where the net prices of selected components are compared to other forklift manufacturers. The information might, however, be somewhat difficult to gather. Recent results show that Atlet has a lower price on some components and higher price on other ones. The overall price level of their spare parts is in line with their major competitors' of new forklifts.

The Parts Supply Chain Manager, stress that these types of benchmarks might be misleading if they only considered the competitors and Atlet's list price. The net price might still be unknown as the discount given may diverge widely on different markets. For forklift service it is common that forklift suppliers provide services not only for their own brand, but also for external forklift brands. This

[9] Robbert Kreber, Part Sales/ Marketing & Truck Fleet Sales Manager at Nissan Forklift Europe BV, 2012-04-24

implies that Atlet competes with other forklift companies and independent service organisations.

Concerning spare part sales it are non-original spare part suppliers that are Atlet's main competitors. It is hard to compete on sales of parts included in group 11, since the current matrix prices these articles rather high. In order to handle this, Atlet has lowered the price through discounts, with the risk of lowered prices on articles that might not be affected. This in turn lowers overall profits.

The largest competitor of Atlet in the segment non-original spare parts is a company specialised in selling spare parts for several forklift brands in the European market, called TVH. The spare parts sold by TVH are typically high volume parts that are easy to copy, typically parts that are included in Atlet's spare parts group 11. Nevertheless, the quality of these copies might differ. TVH also purchases original spare parts directly from Atlet which cannot be copied or that would be unprofitable to copy. Because a customer may own forklifts from several forklift providers. By offering a wide range of spare parts for both Atlet's forklifts and other forklifts, TVH can offer the customers to purchase spare parts for different brands at the same time.

It is uncommon that customers bypass Atlet and source the parts directly from the sub-contractor. Nonetheless, occasionally Atlet has failed to secure the spare parts leading to that the sub-contactor freely can supply the parts on the market. Specific spare parts such as wheels are frequently supplied from specialised wheel-distributors. The spare parts sold by these specialised distributors can be the from the same supplier as Atlet's original spare parts, however also non-original parts from other supplier that fit Atlet's forklifts are sold. In addition it is important to mention that even if the non-original parts have the same supplier brand as Atlet uses, they often do not have the same specifications. In many cases the parts sold to manufacturing companies hold a higher quality than the ones sold at the open market. Sometimes parts are being repaired instead of being replaced. This is typically done in countries with low salaries.

Furthermore, if a reseller or distributor identifies other sources than Atlet for spare parts it is hard to regain this business. If discount campaigns or similar activities then are used to retrieve the business with the reseller or distributor there is still a large risk that this behaviour will be repeat.[5]

5. Pricing Strategies of Pricing Software Vendors

This chapter features two pricing software of interest for Atlet. Moreover, the pricing strategy and methodology used by these software vendors are introduced. First, the company Navetti that supply the pricing software solution PricePoint is presented. The second pricing software presented is Global Pricing Management that is supplied by Syncron. Several of the investigated companies use the pricing strategies, pricing methodology and pricing software supplied by these vendors.

5.1 Navetti

Navetti is specialised in providing pricing software solutions to the manufacturing industry. A part of Navetti's offering is to help companies to implement their pricing–software solution, PricePoint. The other share of Navetti's offering is that they provide management consultant services to support the transformation and implementation of pricing strategy. Navetti was founded in 2003 in connection with an initiative within a world leading industrial manufacturing company to establish a completely new pricing methodology for their spare parts business. Navetti is currently present on markets in Sweden, USA, Germany, Netherlands, Belgium, Denmark and Finland. Navetti's customers are mainly large Swedish export companies within the manufacturing industry. Some examples are Atlas Copco, ABB Robotics, Electrolux, Alfa Laval and Linde Material Handling (Navetti, 2012).

5.1.1 PricePoint

Navetti describes PricePoint as a solution that offers complete support for the pricing process throughout the whole organisation. It is essential for global companies to have a distinct pricing process where the international reference price is created, so that this price further can be adjusted in line with local competitive situation for different groups of assortments on different markets. The consultant state that the pricing logic provided by PricePoint can raise the customers' trust and profitability.

PricePoint has a modular design, which means that the modules can either be used separately or in combination with other modules depending on the needs of the customer. The four main modules are:

- *Price Management* enables to set value- and market-based international reference prices depending on the product characteristics.
- *Market Management* supports adjustments of the international reference price to the local market conditions.
- *Business Intelligence* enables analysis of sales data as well as creation of dashboards and reports.
- *Cost Tracker* supports companies efforts to monitor and study the cost structure of different suppliers and present the best alternative.

Pricing Strategy

Navetti works with three pricing strategies, value-based pricing, market-based pricing and to a certain degree cost-based pricing. Different types of articles correspond more or less well with different pricing strategies. Generally speaking in-house manufactured articles that are not exposed to competition fit

well with value-based pricing. Commercial articles and in-house manufactured articles that are exposed to competition fit well with market-driven pricing, while pure commodities often can be priced according to the cost.

Spare Part Pricing Methods

The first method is categorisation, where parts are categorised on price sensitivity and competition. This is further presented in the case study on Company A. The second categorisation is done in the Price Management module which structures the spare part inventory to part families and develops a price logic within these families according to the customers' perceived value. PricePoint helps to set international value- or market-based prices dependent on the product characteristics. A logical price structure can be created based on a single or several attributes, such as weight, that are the value drivers of the article. Another example can be viewed in Figure 18, where diameter is a value driver for bearings. Since the articles within the families are priced based on their value drivers a homogenous pricing can be achieved, implying that value equivalence line can be plotted based on these value drivers. This also eases pricing of new components since they should be priced directly based on their family's value drivers. This methodical way of pricing reduces the common dependency of a certain employees' competence in pricing of new articles.

Figure 18 – Example of value equivalence line based on the attribute as value-driver

There are several possibilities when creating pricing logic. Nevertheless, it is always necessary to have the customer perspective as a staring point, because it is essential to understand which attributes the customer values the most when buying the component. It is possible to work with several value drivers for each article, as the software has no limitations on this number and Navetti's customers have on occasion worked with up to six or seven value drivers. Two value drivers are, traditionally viewed as sufficient to enable the customer to visualise and grasp the price logic. Moreover, in certain cases it might not be enough and it is necessary to apply a series of value drivers. The criticality of a component should also be considered when pricing spare parts. This is something that should be considered when creating the target price curve of the spare part family in order to optimise the price level within the family. When changing a price in PricePoint it is possible to use damping on existing prices to

raise the price quality over time until the international reference price is reached.

Another method used by Navetti is to price components in relation to the primary product. The Senior Partner at Navetti emphasises that it can be a good complement to secure that a logic price level is kept within certain families, but that this should not be seen as the final solution. It should more be seen as a yardstick to compare ratio-to–complete between different product models internally, than the actual determinant of the component's price.

Market-adapted prices
Navetti's module Market management makes it possible to create local list prices in local currencies. The international reference price can be adjusted in line with the different market conditions by creating factors for different markets. This differentiation will create a price corridor for the different markets. Price corridors can then be altered based on the customer's incentives to look for alternatives, buying power of the customers and the risk of cross-border business. For instance where the customers' incentives to search for alternatives globally are high the price corridor should be slim and local price optimisation is possible. The local list prices should reflect the local market conditions. This is an adjustment that is possible to carry out not only on the total international reference price, but also on individual segments.

When entering PricePoint as a central user the consolidated business will be displayed, whilst a local user can view their local business. The local user can moreover view the price logic, and by having a clear and picture of the pricing logic the sales force can gain good arguments to motivate the prices to their customer.

Competition
The interviewees argue that it is essential to have a good comprehension on how the price is positioned compared to competitors. When benchmarking commercial articles against competitors it is necessary to understand which premium price that can be set compared to other substitutes. It can also be of interest to benchmark towards other forklift manufactures, on how they priced their key components. The possibility provided by the Market Management module facilitates to adjust prices on different markets depending on the level of competition.

Discount Policy
The discount logic that is possible to create in PricePoint supports both transfer pricing with discounts within the company as well as discounts at local units towards customer. Discounts on local level can be given based on loyalty, characteristics of the customer, segments etcetera. It is also possible to create a discount corridor in which the sales personnel are allowed to act within, when operating beyond the limits of this corridor approval are needed. This can be realised in two ways, either by setting firm limits or to have recommended limits and evaluate how close to these limits the sales personnel are at monthly or quarterly follow-ups.

Life-Cycle pricing
The different life-cycle stages of the product can be defined and a set of rules can be created in PricePoint life-cycle management function to adjust the articles target price depending on the products current life-cycle stage. This can for example be done by adding or deducting 5% each year towards a predefined price celling/floor. Typically this refers to raising the price in order to stimulate modernisation and upgrading.

Kitting
PricePoint has functionality to handle kits. Navetti has experienced that many of their customers have had issues when it comes to maintaining their kits' prices if the incorporated components prices are increased. This type of functionality is included in PricePoint, and the customer can choose if the price of kits either should be automatically updated or if the price change should be paused until upcoming price revision.

When setting a good price on the kits in comparison to the incorporated components the Senior Partner at Navetti claims that kits can be priced with a small discount, approximately 5%, the same price as the sum of the incorporated components or in some extreme cases it can be a premium price above the sum of the incorporated components. Nonetheless, if the kits have a premium price it is essential to secure that the kit generates an extra value to the customer. The Senior Partner further stated that a low discount is often advantageous.

Price elasticity
The Senior Partner at Navetti argues that price elasticity should be used with caution since the consumption on the article level of a spare part is often stochastic. The demand for spare parts occurs when something is broken and sometimes a certain article might only be demanded every second year. Therefore, it can be difficult and deceptive to analyse and draw conclusions of an activity based on sales data. It is nonetheless essential to evaluate price changes that have been conducted. This evaluation should be performed somewhere between a quarter to a year after the price change. The effect that the price change has on volume should be included in the evaluation. The textbook price elasticity is however difficult to apply on the aftermarket.

Analytics and Cost Tracker
The PricePoint module Business Intelligence deals with performance measurements. It facilitates analysis of sales data, and creation of dashboards, reports and simulations. Other types of report alerts can be configured directly in the Price Management module dashboard, and alerts on important focus point can be given when users login to the system. Moreover, this software module enables various types of simulation.

The cost tracker module monitors different sourcing efforts and enables to study the cost-structures for these sourcing efforts. The sourcing alternatives are then evaluated and benchmarked based on their cost-structure, generating sourcing suggestions.

5.1.2 Implementation

The first step in implementation of PricePoint is to arrange a web-meeting where Navetti is introduced to the company's challenges and goals. The next step is an on-site visit for approximately two to two and a half day where Navetti introduces the methodology, preferably in connection to a work-shop. Navetti's consultants collect article data, sales data, and gives recommendations on how to proceed. The minimum data required in the start-up phase is article number, description of the article and cost of the article.

The next phase of the implementation is to develop the new pricing strategy. For a company of Atlet's size this means that consultants spend approximately four weeks to develop the new strategy. It is however possible to adjust the ambition level of the implementation depending on available resources and choose which areas to focus on. It is possible to start with a pilot, where around 25% of the spare part business is tested.

Furthermore, Navetti provide three different approaches for their customers to access PricePoint:

- *Licence agreement*, an up-front license is paid and then a maintenance fee of 20% is paid each year.
- *Subscription,* the customer leases the software. Which can be beneficial for smaller companies since the investment is distributed over several year.
- *Software-as-a-service,* the system is provided as a cloud software, and installation on local servers is not necessary.

During the implementation it is crucial to support the global organisation, evaluate the consolidated profitability of value-based pricing and support the local price structure in order to maintain customer trust. Furthermore it is essential to involve the local units in the early stages of an implementation in order to anchor the new pricing methodology.

According to the Senior Partner at Navetti the work intensity of PricePoint, when up-and-running, does not need to be higher than a manual cost-based pricing process. PricePoint contributes to a more efficient pricing process and minimises the number of ad-hoc adjustments.

5.2 Syncron

Syncron is specialised in delivering global supply chain solutions by providing software and services. Syncron provide six different software systems: Global Inventory Management, Global Order Management, Global Price Management, Master Data Management, Business Process Platform, and Advanced Analytics. Syncron has offices in Sweden, Japan, Germany, Poland, United Kingdom, and United States. Syncron's customers are located in 96 countries, with large customers in the manufacturing industries such as JCB, Volvo, Komatsu, Atlas Copco, Mazda, BAE Systems, Tetra Pak, Metso, Toyota, Electrolux, Astra Zenecka, Scania, Renault, and Alfa Laval.

5.2.1 Global Price Management

Three large companies that use the Global Price Management (GPM) system are, Volvo Construction Equipment, Konecranes and Hitachi Construction Machinery

Pricing Strategy

It is most commonly not recommended to base price on cost, there are however a few exceptions. The exception where cost-based pricing works is on items with very low volume, which are for example sold once in a product life-time, nonetheless still need a price. The other exception is standard parts such as bolts and screws that need some kind of price and then cost-based pricing is good enough. A situation where pricing on cost can cause problems is, when the purchasing department has done a great work with the suppliers and lowers the cost. Then, if a strict cost-based strategy was applied, the savings generated are given away to the customers, since lower cost can lead to a price decrease. Another problem occurs if the price of the spare part is set when the primary product, in which the parts are incorporated, is still in production. Then the parts are still produced at a high volume to a low cost, however when the primary product is taken out of production the spare part price is low compare to the new production or sourcing cost. Consequently, the price would be low compared to the new higher cost. Cost-based pricing has another weakness since it requires updated purchasing costs from the supplier. Furthermore, to attain information on articles with low volumes might be too time-consuming. Thus, also a reason to not base price on cost, but instead for example use value drivers that already are known. Another effective method is to base price on competitors' list prices which are easy to collect for commercial parts. This means that a company does not need to administer the value drivers.

Spare part pricing methods

The price execution tool in GPM where each item can be priced is named *set price*. Here, all relevant information is gathered so that the price executer price items correctly. There are different codes for marketing, product group or product line, sensitivity code, commonality, and life-cycle stage. All these codes are used to segment the items. Nevertheless, the numbers of possibilities to segment are infinite. Syncron uses eight different parts pricing categories and these are:

- Captive items
- Captive consumables
- General items
- Commercial unique
- Commercial commodity
- Standard items
- Remanufactured items
- Kits

Captive items are the spare parts manufactured in-house and usually the most profitable ones with a high turnover. The Price Consultancy Manager recommends having a percental relation pricing to other products on these parts. One strategy is to ask the customer what percentages that would be reasonable

through a "value survey methodology", however the Price Consultancy Manager considers this method less effective than the conjoint analysis. The reason for this is that the Price Consultancy Manager considers this too be too abstract for the customer and the customer tends to want to pay as little as possible. However, talking to the service engineers can give better results. Captive items are suitable to sort into spare part families that will have at least one value driver. Then the value survey can be used to see if the price corresponds to what the customer considers reasonable. These spare part families can then be visualised in a price logic curve, in accordance with the logic in Figure 18, called value equivalent line by Navetti.

Captive consumables are captive parts that also are wearing parts. These can be priced with a method that is similar to the previously explained economic value estimation (EVE) where other OEM comparable parts are used as a price reference where the economical benefits are added to get a final price. Syncron referred to this as a type of "life-cycle pricing" with the captive consumable as more profitable for the customer during the product life cycle even if it was more expensive to purchase.

General items are the parts that can be perceived as quite simple but are often rather complex. Examples of these parts are shafts with special surface tolerance and specific machining requirements. These can be priced by conducting a market survey that establishes the possibilities of competitors to copy the item. If it is very easy to copy then the mark-up compared to the competitor has to be low. The product families can be set to reflect the complexity of the item and if it is a homogenous group a technical value driver, like weight, can be set. Mark-up targets, the different mark-ups for low, medium, and high surface tolerances, can reflect complexity and price sensitivity of the product family. Some general parts may require cost-based pricing and other high value items can use the same methods as for captive parts, e.g. value survey or conjoint analysis.

Commercial parts are divided into two different subcategories, commercial unique and commercial commodity parts. Conjoint analysis is done to establish the price premium over the collected competitors pricing. In order to optimize the price, discounts are given depending on price sensitivity of the customer. Then the competitor actions on price changes are monitored. Depending on the company and industry, it can sometimes be suitable to add commercial parts, and most likely commercial unique items, into spare part families and price these by using value drivers. Still, market conditions are always important for commercial parts due to competition. Commercial parts usually have a high turnover and this attracts competition.

On the *standard parts* the competition is fierce and those parts are commonly supplied as a service, in forms of one-stop shopping, for the customer. These parts are generally very good to sell in kit. *Remanufactured parts* are the parts that are returned from the customer, reused to manufacture new parts, and sold again at a generally lower price, targeting more price sensitive customers. *Kits* are used to group articles together, in order to sell more but by providing one-stop shopping for the customer. This category is further described below.

Syncron has conducted conjoint study to compare scheduled maintenance with critical situation and results have shown that the willingness to pay do increase when critical parts are needed. Charging a premium price for critical parts is preferable. In addition, this is often more important on the commercial parts than the captive ones which are already priced premium. If the critical parts are always in the warehouse and can be served quickly then they could be charged with premium price. Increasing captivity on the critical parts is also considered beneficial because it raises the value of the part.

It can be of significance to mention that GPM can support the purchasing department. The price logic curve can be used for the purchasing cost by building a cost logic curve. Procurement cost does not follow price logic curve, however the curve can be used to identify if a cost is higher than expected. If a component is produced and sold in various sizes, such as diameter, it is common that the medium size component has the highest volume and thus the lowest cost. Circled in Figure 19 is a cost that is positioned in the middle, which is higher than the others to the left and right. The reason that this cost does not follow the cost logic curve can depend on the characteristics of the component or on a bad deal with the supplier. This curve helps the purchasing department to identify the unreasonably high procurement cost in order to either negotiate a better deal with the current supplier or to find other sourcing alternatives.

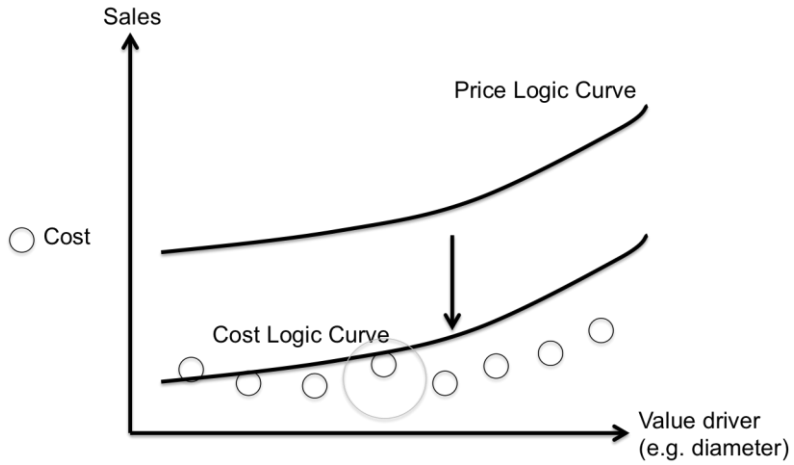

Figure 19 - The cost logic curve with a circle on a cost that could be further investigated

Market-adapted prices

For Syncron that works with export-oriented companies it comes quite natural to support pricing on global, regional, and local level. In their system, there are three levels; global, regional, and local, which correspond to price logic, price list, and price setup. In price logic, price logics to items are implemented, such as one formula for a certain type of components. When the price logics are set they will generate different price lists. After this it becomes interesting to use the price lists to conduct different market adaptions. There can be one base price list with euro prices that is connected to the German, Swedish, and UK price list. Pricing Setup is connected to the customer and the discounts they should have, which is called the discount model.

For captive parts it is of less importance to adapt prices based on market conditions and they can have rather similar prices in one region. Nonetheless, for commercial parts the market condition can be quite different and the prices need to be adapted in line with the country specific requirements. The same reasoning holds for general parts. In some countries where the salaries are low, customers tend to repair and manufacture parts by themselves. With different prices in various countries there is however a risk for cross-border business. For instance, between Germany that is a high-price country and Poland that is a low-price country. Price harmonisation between the resellers that are situated close to the national borders, can mitigate the risk that resellers, distributors or subsidiaries get involved in cross-border trade.

Competition
There is a function in GPM called competitors, which gives the users possibilities to price spare parts in comparison to the competitors' price. It is possible to tie the price of a specific item to a comparable item, such as similar items from other primary product competitors. This can be done by relating for example SKF's price on their bearing and tie that information to some of the own items. One problem with competitive pricing is that the information can be quite tricky to gather. For instance, there are 2000 items that should be priced competitively, which requires some simplification. This is done by sorting out some items and pricing them competitively. These articles are in turn used as a reference for the pricing of other parts.

Discount Policy
There are four different discount models that can be set in the price adjustment models:

- The first basic approach is to give one customer one discount on all items, like 15% on all items for one customer.
- The second approach is to investigate customers' purchasing pattern and try to increase sales by using discounts on items where there sales potential. For instance, if the customer does not buy filters the discount on filters could be raised to ensure that it is an acceptable deal for the customer.
- The third approach is if a customer buys a significant quantity of an item the customer will gain a higher discount if a certain level is reached. This can be quite effective when dealing with customers using a high list price to give the discounts. Simultaneously, if the own company supplier may use a volume discount ladder this can further increase profit. In addition this could be one way to meet the competitor's price on commercial parts.
- The fourth and last discount model is a reversed discount for extra costs such as tolls or freights. The customer can be presented with different mark-up charges for freight depending on the delivery speed. One price could be for delivery the next day, this can be critical items that need to be delivered fast. Another could be if the customer can accept two weeks waiting time, which for example can be items for a scheduled

maintenance. This will allow the cost to be decoupled from the price and instead referred to the delivery time.

Customers can be divided into discount segments depending on factors such as loyalty, price sensitivity, product knowledge, organizational capabilities, supply chain channel characteristics, and cost-to-serve. For example, resellers require a discount because they both have their own warehouse and marketing cost. Discounts can be managed analytically by plotting customers with respect to net price level and sales volume as in Figure 20. A strategy could be to increase volume among the high net price level customers and review the discounts on the high volume but low net price level customers. The new discounts could mean that the resellers will receive higher discounts with a higher market share, which in turn pushes the resellers to increase the sales.

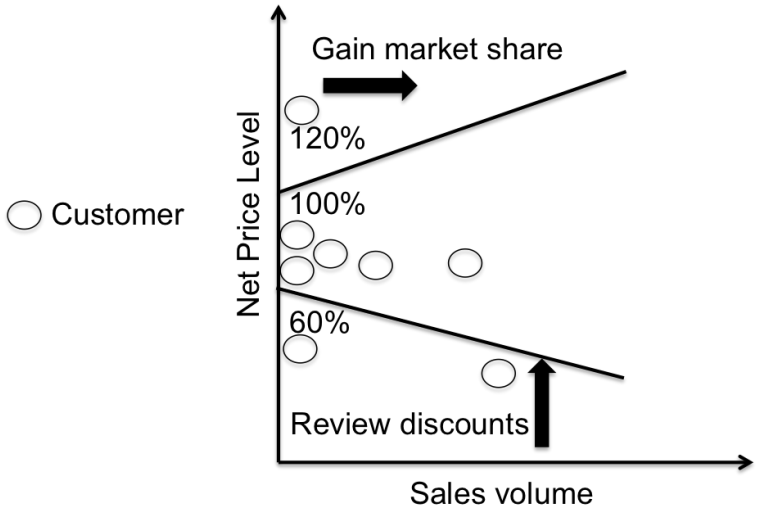

Figure 20 - Plot on the relationship of net price level and sales volume

Life-Cycle pricing

Information which facilitates life-cycle pricing can be retrieved from GIM, that automatically reports the life-cycle stage on each item into GPM. The price can be lowered and raised as an extra attribute depending on scenarios. In general most of the customers increase the price in the end of the primary product life cycle but there are those that try to time so that no parts would be left in the warehouse. The Pricing Consultancy Manager considers this to be a logistical rather than a pricing problem. In other words, the logistics should minimize the surplus stock and pricing should capture as much of the value as possible. Here the GIM software should help by restricting that parts in the end of the primary product life cycle only should be purchased from the supplier upon inquiry. The Pricing Consultancy Manager does not recall any examples of setting a lower price on old spare parts in order to keep the primary product from scrapping. The reason to do the opposite and put a higher price is that serving these old machines becomes expensive due to insufficient economies of scale.

Kitting

Each kit has an item number that includes all the items in the kit. The prices of items are summarised and a kit price factor, discount, is set. The right price for

kits, referring to the right discount level, is very hard to set and varies from case to case. The Pricing Consultancy Manager considers 15% as a heuristic, and between 5% to 20% as reasonable discount levels. Conjoint studies can be made to establish a price but the Pricing Consultancy Manager argues that the customers often choose the most important part, which in a maintenance kit could be a shaft and a bearing and then compares those and not all the items in the kit. Often the customer would like to buy the cheap items in a kit, like an O-ring. In addition the customer consider it convenient to order and receive all parts required at the same time.

Price Elasticity

On the aftermarket price elasticity is not directly connected to every increase and decrease in price. Instead, based on information from conjoint studies, the price in relation to volume has a reversed S-shaped form, as in Figure 21, for spare parts. It is however essential to mention that some customers have a tendency to only source parts from competitors and some have preferred tendency to always source original spare parts from OEM. Spare parts are only needed by the user that have forklifts so even if the prices are lower it is not possible get a higher volume. Today GPM uses a k-factor in the simulation to forecast future volumes but this function is currently revised and will probably be improved in the near future. The simulation and price elasticity is a part of the what-if analysis. Due to the amount of resources required to measure price elasticity it is not recommended to do this more than once every second year. It is considered more valuable to put resources on tracking competitors' prices.

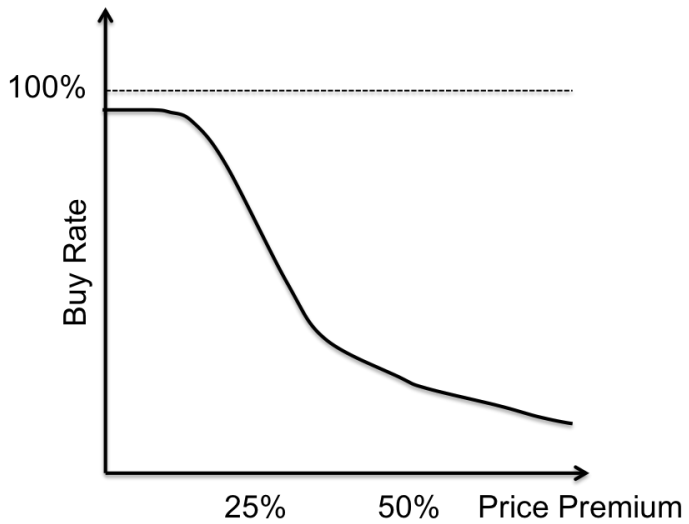

Figure 21 - Price elasticity from conjoint study on spare parts in the aftermarket

Price elasticity can be used to measure how much more an original spare part can be priced compared to a non-original part. The price elasticity from Syncron conjoint studies have shown that around 20% higher price can be charged before starting to lose a lot in market share. This can be seen in Figure 21 where the reversed S-shaped curve has a steep slope in the middle. On the other hand, there are companies that have 100% higher prices than their competitors and still have a large market share. This is motivated by the fact that conjoint analysis is not always applicable to B2B and spare parts aftermarket. It is unusual that

customers compare spare parts by placing two items next to each other. In general, it is possible to charge 15% to 20% price premium for the truly competitive parts compared to non-original spare parts, whereas a much higher price can often be charged for other parts. It is central to start by having a good logic on a global level and after that set the discounts depending on how price sensitive the customers are on the regional and local level.

5.2.2 Implementation

According to the Pricing Consultancy Manager the work intensity of GPM is depending on the number of articles and how advanced the pricing logic is. The Pricing Consultancy Manager does not consider it more problematic for small companies to implement the system compared to large companies, except that it could be too expensive. Many of Syncrons' customers are very large. The Pricing Consultancy Manager estimates a KPI for the number of employees needed for GPM and considers one person for every SEK 200 million in spare parts turnover and between 20,000 to 50,000 article numbers, alternatively two to three on part time.

If the technical attributes such as weight, length, and other specifications are missing it is essential to find them in the ERP-system or, if possible, in a product data management system. Other methods to acquire this information can be to investigate drawings or contact suppliers.

The contact between Syncron and the company starts with someone in the company recognising the potential in pricing and then a pre-study is initiated. After that, the software vendor is contacted. A demo of the software is presented where it is displayed how the software can handle the customers requirements and the resources required. Furthermore, an evaluation is conducted and this is finalised with procurement. This can take between three to four months to one year.

When implementing GPM, it can be beneficial to first apply the new pricing logic on the parts with highest profit potential in order to have a faster return on investment. This can be done by first applying value-based prices on a small portion of the assortment. Moreover, the implementation primarily first focus on a correct global price list. When this is in place the focus can be on the market level and lastly customer discounts can be introduced. The Pricing Consultancy Manager has not experienced any customer trying to implement global price list, adapt prices to market conditions and customer discount at once.

As in the example of Atlet, where the GIM software is in place, Syncron knows where they can gather article numbers, sales data, and bring the forecast from the sales volume from GIM to GPM. With GIM in place some of the project costs should be lowered. Furthermore GPM can send its price list for different regions to iScala, Atlet's ERP-system, through which the price list can be distributed around the world. If attributes, like weight, are set in GPM it can forward that information to the ERP-system.

Communication
GPM can provide the local salesmen with valuable sales information by signalling if a market campaign with lower prices might be beneficial or by providing analyses on customers' price sensitivity.

6. Pricing of Spare Parts at Investigated Companies

This chapter includes four empirical case studies of external companies pricing strategy and pricing tools. The case studies are presented in the following order on the companies Company A, Company B, Company C, Company D and Company E.

6.1 Pricing of Spare Parts at Company A

Company A, included in Company A Group, is one of worlds leading suppliers of production-enhancing solutions. Company A Group operates in approximately 100 countries with about 135,000 employees. Company A has three production facilities, in Sweden, in China, in Japan. The company has installed more than 190,000 production-enhancing solutions globally.

6.1.1 Aftermarket and Spare Parts

Company A has approximately 20,000 spare parts and keeps spare parts available at least 10 years after the end of serial production. The company offers new, exchanged and repaired parts. Exchanged parts refer to parts that are returned and repaired at Company A, which customers can purchase for 60% of the price of a spare part. This requires, however, that the customers return their damaged part so it can be repaired and sold to another customer. This program is also seen as a good way to remove damaged parts from being repaired and sold by potential competitors of Company A. The possibility of exchanging the part is however limited to a certain predetermined number of items, which do not cannibalise the sales of new parts. Customers have the possibility to send their part to one of Company A three global reparation centres for reparation. The distribution is carried out through sales units located all over the world. A transfer price is used for sales to the sales units, which have contact with the final customer.

Spare part competition

Company A has experienced that several non-original spare part competitors have entered the spare part market during the last few years. The Manager Business Development claim that this is not a fight that is possible to win in the long run. Instead it is vital to communicate the extra value that Company A's spare parts provide in terms of availability and fast deliveries. Furthermore, the Manager Business Development argues that an original component can be priced up to two times of a non-original component. This is very much dependent on how exposed to competition the component is and the type of business it refers to.

6.1.2 Pricing Strategy

In 2006 Company A had good profitability but experienced a trend of increasing complaints from customers. The complaints were mostly related to a lack of logic in the pricing. Company A identified that if the price was considered to be unfair there might be a risk of losing customer. The pricing process used was a manual process and the tool used was spreadsheets. The risk of pricing in this way was that if the customer experienced the price to be too high they might never buy another spare part or even go to another supplier of the primary product. In addition there was a risk of pricing too low with a potential loss in profit as a result.

When the current pricing strategy of Company A, was developed three project goals were of importance. The first goal was to increase the earning by at least 5%. The second goal was to increase the customer trust by having a good awareness of their own prices and offering a fair price to the buyer. Finally, Company A's goal was to have a pricing that is sustainable over time. In order to gain insight on how to best achieve these goals interviews were conducted, both internally and externally. Product-owner, service engineers and sales personnel were interviewed to gain knowledge on how to design the pricing strategy. A few products were chosen and the pricing on these products was studied, in order to gain knowledge on how the pricing was carried out. Company A looked at the effect of various price changes on different markets, product families, volume value distribution, and the lifecycle. Furthermore, a survey on perceived value was constructed and sent to customers. The Manager Business Development argues that when a customer is asked whether a products value reflects a certain monetary number they almost always will say it is too expensive regardless of the number presented. If the product instead is put in a context and compared to something else a more fair perceived value can be generated. A conjoint analysis can contribute to the product valuation by putting it in relation to other products.

The goal of a 5% increase in earning was a total goal, meaning that some markets experienced overall prices increases and some general prices decreases. The reason for this is that some industries and hence specific types of products, are large on certain markets and are therefore more or less affected by price increases as well as price decreases. For example, there was a total price decrease in USA since a great part of the products sold to USA are larger production-enhancing solutions for the car manufacturing industry and the overall price of component for larger production-enhancing solutions decreased.

The Manager Business Development stress that delivery speed has a great leverage on the customers' perceived value, and price. For instance a standard component that can be delivered in 24 hours or less has a high perceived value. When implementing their new pricing strategy delivery speed was kept high and customer complaints were few even though prices were changed. Another example of this connection is, that during the up-turn after the financial crisis of 2008, Company A had an increased delivery time due to an amplified demand, leading to increased complaints on price rather than delivery time. Both these examples indicate that the delivery time and willingness to pay have a strong correlation.

Spare part pricing methods

The logic behind the new strategy, used by Company A, is the customers perceived value on components in relation to the product or the main component. This means that, if viewing the whole product, the main components are given different prices based on percentage of their value in comparison to the total price of the primary product. The sub-components included in a main component of the product are also given a value in relation to the main component and priced in this manner. An issue with this way of pricing is that

several spare parts might be included in several products, meaning that these parts are priced differently based on the product in which they are included. In order to solve this issue Company A selects a price somewhere in the middle that seems fair. Nonetheless, this might lead to that the customers perceive that the parts incorporated in the smaller products are priced too high.

The basic categorisation of the spare parts is based on customers' perceived value and competition. Based on these two variables the spare parts are divided in to four categories displayed in Figure 22.

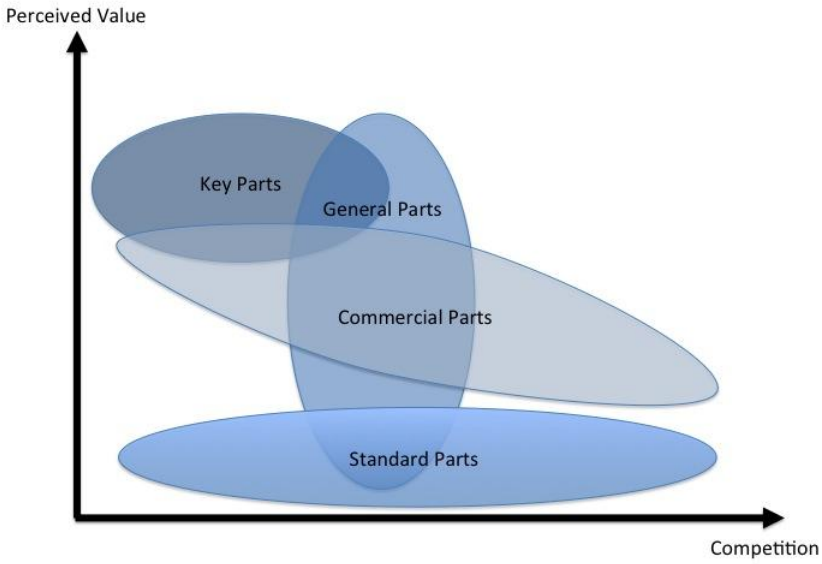

Figure 22 - Categorisation of parts at Company A based on perceived value and competition

The characteristics of the four part categories are:

- *Key parts* are the unique parts that can only be provided by Company A and the perceived value for these parts are high.
- A *standard part* is exposed to competition and can easily be found at wholesalers. Price information on these parts can typically be viewed on the Internet, so these parts cannot be priced too high compared to competitors. They can however be priced somewhat higher since purchasing these parts from Company A means a one-stop-shop for the customer, that can purchase other parts at the same time instead of purchasing components from many different suppliers.
- *Commercial parts* can be accessed from other sources but only from specialised dealers. It is not possible to buy these parts from wholesalers. There is a wide range within the commercial part segment based on how exposed to competition the part is.
- *General parts* are not totally unique, as it is possible to either make reverse engineering or to get hold of an equivalent part. There is also a wide range within the general part category. Including both parts that are almost as unique as key parts and parts that are nearly as easy to get hold of as standard parts.

After this categorisation each product family was plotted, in order to identify a value driver. The result of such a plot was that the logic on pricing of these families was lacking So the next step was to adjust the prices, meaning that changes had to be done both upwards and downward, to reach an ideal curve and a consistent pricing logic. In case of an engine this value driver could be the torque. Therefore the torque might be plotted on one axis and the price on the other. The result of such a plot was that motors with lower torque sometimes were priced higher than stronger motors. A challenge when conducting this is the lack of required data on the articles in terms of attributes such as weight that might be chosen as value drivers. Or the master data in the ERP-system might be misspelled and therefore leads to inconsistent data. It is a precondition to have a good awareness on the state of the master data when implementing this type of strategy.

Market-adapted prices
Company A does not have diverse price lists for different countries, instead they have price lists in different currencies such as Euro, USD, GBP, Yen and SEK. The Manager Business Development argue that there are several benefits of keeping diverse price list on different markets, however the work required to keep these price lists updated needs to be considered. He further stress that diverse markets are variously price sensitive. Asian customers are for example more price sensitive than European.

Discount Policy
In order to secure a unified price to the end-customer, Company A has a goal to not have a larger variation on the list price than +/- 10% at their sales units. Furthermore, Company A works actively to achieve this goal through good communication with sales units and by conducting continuous reviews. It is also crucial to ensure that the price changes reach the market, and not only cause a profit-split change between production unit and sales unit.

Since there is a direct and very strong correlation between price increase/ decrease and profit a principle that the discount should be based on a number of factors is used:

- *Commitment.* The customer might buy four items today but be committed to buy a total of 500 items during a year.
- *Volume.* The customer buys a large volume at once.
- *Prioritised customer.* Which customers that are prioritised customers need to be decided upon at a rather high level within the organisation. In addition, it is essential to motivate why the customer is prioritised, it should be linked to either commitment or large volumes.

There are many variants of discounts, however the essential issue is to have some kind of policy on how to handle discounts and who should have the authority to handle discounts. It is important for sales personnel to have a barging room, but this bargaining room needs to be clearly pre-defined. Inconsistence in pricing will harm the customers' trust.

Captivity
When pricing is based on customers' perceived value the price should be grounded in both the captivity and the criticality of a component. The component that is both unique and critical to the customer can be highly priced without any larger complaints. Critical but not captive components might be easy for the customer to get hold of, and therefore cannot be priced as high as components that are both critical and captive. A way to increase the customers' value for critical components and price the component higher, is to have a good availability and delivery speed. The captivity of the components can be increased through a design change that makes the OEM's components more unique. Another way to increase captivity is to remove the subcontractors' brand from the component, and make it harder for the customer to identify the source of the component. This can also be done by adding the OEM's brand on the component.

Life-Cycle Pricing
The product's life cycle is primarily related to the cost connected to supply. As long as the component is in serial production and the volumes bought are high, the purchasing cost can be kept low. However, these volumes drop drastically when serial production ends, as the suppliers might not be interested to supply the part if their price is not raised. Hence, in order to secure the profit the sales price needs to be increased. Methods to counteract this fluctuation in price levels can either be to use a variable or somewhat stable price level. If the price is variable the customers will notice a large increase when the serial production ends. Whereas if the price is somewhat stable the profit margin is higher in the early stages of product's life cycle while the cost of the component still is low. Company A prefers to work with a somewhat stable pricing since it is easier for the customers to accept this price. In the later life-cycle phases there are however often substantial price increases since these parts might be hard to get hold of.

Company A considered the products' life cycle by working with their life-cycle concept. The first phase is the *active phase* where the primary product still is being produced. In the end of the active phase the responsibility of the full spare part assortment is transferred from production to the aftermarket division, and the *classic phase* starts. In this phase, that lasts between eight to ten years, the production has stopped but the demand from the aftermarket is still high. The *limited phase* is the third phase, when the supply of the products spare part is declared as limited, Company A still delivers spare parts for the primary product nonetheless some parts are excluded. In this phase the price of the spare part is somewhat increased to secure the profit when the purchasing or production cost of the part increase. This phase lasts as long as it is economically viable to supply the part and greatly depends on the type of product and how many customers that owns the product. It is common that the limited phase lasts for several years, maybe up to ten years. Conversely, if there is a large visible decrease in the demand the limited phase will be shortened. The last phase, is the *obsolete phase* and it lasts one year. During this year Company A sells the remaining stock.

Company A has in the past tried to stimulate demand on parts that are close to become obsolete by lowering their prices somewhat. This has not lead to any visible increase in selling volume. A customer either requires a new part since their old part is broken or there is no demand for the part at all. Customers do not purchase spare parts just because they are cheap.

Kitting
The kits that have the highest sales at Company A are picking kits. The value of these kits equals the value of the all the included components. The potential of kitting, that Company A has identified, is however not exploited as much as it could be. Kits could be priced lower and higher than the sum of all the included components, and in that manner contribute to profit either by increased volume sales or higher margins of the included components.

6.1.3 Pricing Execution

The Manager Business Development emphasises the importance of communicating the new pricing methodology. It is essential that all concerned personnel understand the potential of the pricing methodology. During Company A pricing strategy implementation they worked very actively with communicating the price changes to their front-end personnel such as sales personnel. This was done through:

- Sales training on how a pricing change should be communicated.
- A pocket guide for internal use was developed.
- An FAQ with standardised answers of expected questions were developed.
- A video where price was excluded and instead benefits such as delivery speed and availability was stressed to motivate their sales personnel to sell more on provided value than price.
- Several powerpoint-presentations that facilitate the communications towards the customers were developed.

Company A considered if there was to do a step-by-step implementation during several years or a single large implementation when introducing their new pricing strategy. They decided to go with a single large implementation and were prepared to receive customer complaints. The number of complaints were however low and the implementation was successful. A key success-factor, identified by Company A, is their thoroughgoing preparations and the extensive communication, involvement and support to the front-end personnel throughout the whole process. This type of change cannot be pushed out to the market, as the involvement from the personnel that have relationships with customer is crucial. The major benefit of how the pricing is carried out today is consistent spare part prices that are easy to motivate.

Software
A pricing software makes spare part pricing efficient. For instance, a tool eases the work of searching for specific parts, but also makes it possible to visualise consequences of previous changes. Moreover, employees can make notes in the system with regard to the price changes. All together, pricing software provides

more possibilities than usage of spreadsheets. The Manager Business Development stress that it is essential to view the starting point of the company. If not pricing tool is used the implementation of spreadsheets with some segmentation can be a vast improvement.

The price optimisation tool used at Company A is Navetti's PricePoint. Company A describes PricePoint as somewhat labour-intensive, and has three employees that price 20,000 spare parts. On the other hand if corresponding work would be carried out on spreadsheets instead of a more sophisticated system more staff would be required. The number of employees required also depends on the business it refers to, how large the volume-change of articles is during a year and how many new articles are added each year. Furthermore, during an implementation of a software pricing system it is essential to have a good data quality and a unified data. So before implementing a price optimisation system these issues need to be taken into account.

6.2 Pricing of Spare Parts at Company B

Company B is part of Company B Group, which is one of the world's leading suppliers of transport solutions for commercial use. Company B Group had 2011 a net sale of SEK 310 billion and an operating income of SEK 27 billion. The sales globally for Company B were in 2011 SEK 65 billion. Company B is the fourth largest company within its industry with a global market share of 7%. Company B is a global manufacturer with production facilities in Europe, North America, South America and Asia.

6.2.1 Aftermarket and Spare Parts

Every product that is not sold with the new machines is a part of the aftermarket division. The products sold by this division are wear parts, maintenance parts, repair parts, factory remanufactured components, lubricants, accessories, and attachments. There are four regions: Americas, EMEA (Europe, Middle-East, and Africa), Asia-Pacific, and China. The global parts price department is situated in the regional headquarter in Sweden, which is also the headquarter for components and Customer Solutions.

The numbers of spare parts are around 2 to 3 million depending on what the company regards as spare parts. However, the ones that have received a price are fewer. The spare parts that are not priced are marked as passive components. These can be sourced if needed. Critical and many wearing spare parts are priced and available at the reseller already before the primary product is launched on the market. If a spare part is lacking price then there is an internal policy that pricing should be provided within 48 hours. Another policy is an availability of 98% towards the customer. The Global Product Manager estimates that lower than half of the spare parts are in the warehouses, five regional and one central.

Spare Part Competition

The competition on the spare parts market depends on how mature the market is. In the mature markets in North America and Europe customers do not want to compromise on quality by buying non-original parts. Nevertheless, in Asia the price is much more important than other factors, and the customers are

prepared to wait in order to get the cheapest part. On the other hand there are ways of competing against competitors in these markets as well. Company B's acquisition of the third largest competitor in China, has improved their competitiveness towards the local low price competition.

By knowing the service intervals and the machine population Company B can calculate if the reseller will buy more or less than expected. If the reseller buys more it may not be that problematic but there is a risk that the reseller is conducting cross-border sales, which is not encouraged by Company B. If it is less than expected, then the reseller may be purchasing from a competitor or conducting grey-import of the part from another reseller. This can be mitigated by service agreements where the reseller gets limited quantities, which in turns implies that they have to sell what they get.

6.2.2 Pricing Strategy

By providing good arguments, price sensitivity can be reduced. This means that the price is only the seventh or eight most significant factor for the customer sourcing a particular spare part. The primary factors are a better product, known brand, a global presence, better support than the competitors, and a higher availability. The hardest and most important factor is the availability through effective supply chain management. The tactics that Company B use is to place the critical components as close to the customer as possible or if components are known to breakdown in 4000-4500 hours a service can be planned and those components can be exchanged before breakdown.

The Global Product Manager argues that a value-based pricing requires more resources than a cost-based. There is no need for a dedicated price function with a cost-based strategy, since the purchasing department can execute the pricing. This might also come natural for a small company, however a change towards value-based pricing with dedicated resources can be reached by providing the executives with information of the profit potential within value-based pricing. That these dedicated resources are needed is emphasised by the Global Product Manager. The pricing department needs to answer to the customer, set the prices, evolve pricing strategies, segmenting, handle the pricing logic and more, which would be difficult to do without proper resources.

With cost-based pricing the company lets the suppliers set the price to the market without having the proper market knowledge. According to the Global Product Manager the price should firstly be set based on market conditions and cost should more be viewed as a yardstick. If the margin is too low there should then be a discussion with purchasing in order to lower the sourcing costs. Furthermore, benchmarking towards other OEM spare parts prices might expose that competitors are able to set lower prices for comparable parts. Purchasers can then use this information as a negotiation argument with the supplier.

Spare part pricing methods

One of the challenges of pricing spare parts is the sheer number of the articles. If 200,000 to 300,000 parts are going to be handled effective they need to be categorised. Company B's categorisations starts when the engineering

department creates the first four digits in the pricing reference number based on the technical properties. Nonetheless, this technical information is not sufficient for pricing of the spare parts. Therefore the pricing department adds an additional code, based on the grouping of similar parts. For instance one group are filters and another group are motors. In the case of Company B there are 20 groups and in these there are additional couple of hundred parts categories that also have their digit in the pricing reference number.

The matrix in Figure 23, which illustrates the price sensitivity and sales volume for the spare parts, and can be used to analyse the parts. If a diagonal line were drawn from the top of price sensitivity to the top of the volume the parts below the diagonal would be priced for profit. Although the parts over the diagonal line would be priced on how much the brand and image could motivate an increased the price.

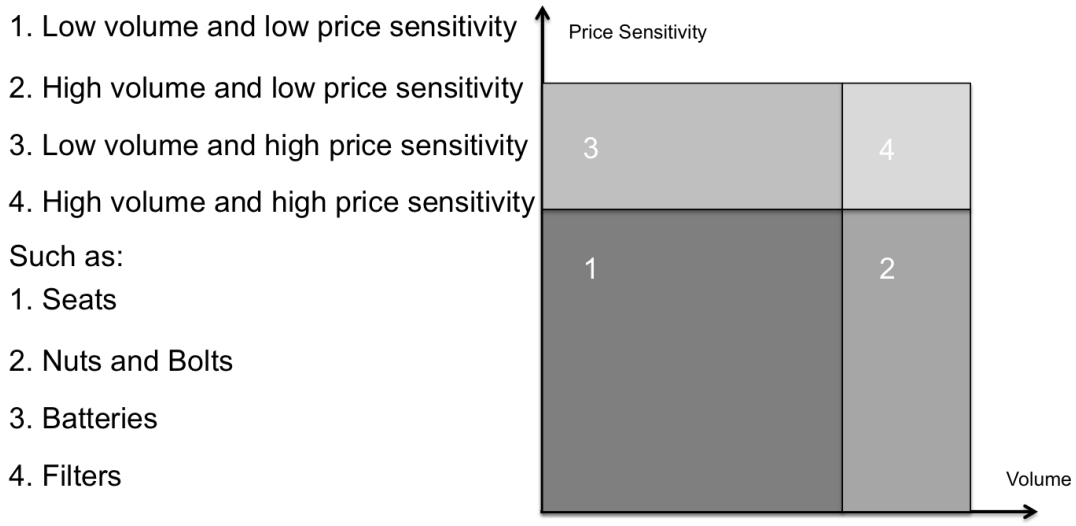

Figure 23 - Parts divided by price sensitivity and volume

Market-adapted prices
The next part is to segment prices depending on market. This is conducted through benchmarking and thereafter deciding to be some percent over or under the competitor. The reason for this could be that it might be beneficial to have a price 5% above one filter supplier and 2% lower than another filter supplier. This can be done by using the suppliers price lists and connect it to the items. While generic filters often are priced by technical attributes like the volume or the weight, they can also be priced by the motor size that should be used.

The main rule is that the sales personnel always must be able to easily explain and motivate the price to the customer. Instead of motivating that the material, e.g. titanium, is very expensive it is simpler to say that it is heavier, since the technical knowledge of the customer may not always be that extensive. The only time where it may work to motivate the price by complexity is when the product itself is complex. Around 2/3 of all parts are priced on value drivers and half of these are strictly adapted to market conditions. The others have the market levels more as a guideline.

With the market codes in place, around 220 to 230 in total each with thousands of articles, pricing starts to get manageable. Still it is rather many for 12 persons to handle so another digit is added, a strategy ID. The strategy ID states the price sensitivity of the customer in relation to the specific spare part. A lower digit means a more strategic article, such as seats. In this case the customer is not likely to shop for seats somewhere else and the price level is of less importance. However when it comes to oils or lamps, which are very price sensitive, the employees have to take more time to work with the price of these articles.

Discount Policy
The discounts are set after the market code groups and not often single articles. This is first done globally and then negotiated with the regions and the resellers. There is a risk that a certain segment might get too many special prices, which can be a sign that certain components or groups of components within this segment need to create an own segment with another price level. Still, there is a need to leave some room for negotiations for the regions and resellers to use, but there are certain limits which they cannot exceed without permission from the global level. The regions cannot change the market code under the year, but they can use special prices on article level or use One-offs, where a discount only is given at one time of sale. The special price is used until the end of the year and One-offs is valid for only one day.

It can be hard for a large organisation like Company B to implement innovative discount policies. An example of such discount policy is to give discount on the sales potential of a customer. Company B managed this in Brazil, where a reseller had a goal to sell based on its potential and if it succeeded it was rewarded with 2% extra discount during two months, meaning that they had to keep their monthly targets. This discount policy also strengthens the bond between Company B and the reseller. There are other tools to strengthen the bonds and this is by rewarding the individual sales units. This gives a direct impact by increased sales and the sales units are, if they manage to be in the top three, invited to a travel event. Events like this can be much easier to implement at a smaller company, of course than in a smaller scale. The reason for this is the shorter decision channels for small companies compared to larger companies.

Captivity
With good arguments higher prices can be acceptable, nevertheless it also depends on if the part is captive or non-captive. The non-captive part can be so simple and easy for the customer to get hold of that a high price can be hard to motivate. The captive part is often perceived as very technically complicated and the customer can often accepts to pay a premium price due to arguments that there are 40 years of engineering behind the components. There is however an upper price limit before the customer will start to search for alternatives, regardless of how captive the part is.

Life-Cycle Pricing
The aftermarket parts are life-cycle priced based on where the primary product is in its life cycle. The first part of the life cycle is until the primary product are seven to eight years old and are supplied with Genuine Parts that are new and

fresh. The second part is called Reman, factory remanufactured components. These are some critical components, like engines, that are brought back and remanufactured with the same specification as if it would come from production. They receive the same warranties and are sold to a much lower price. This is suitable for the more price sensitive second-hand buyers. This kinds of spare parts are also very profitable since the material cost already is paid. The last part is a kind of product range called Components for Classic Machines (often entitled Reman Classic). These could be really old machines where a new component could cost about half of the new machine.

An additional life-cycle price list, called Clearance list, was also implemented. This Clearance list includes spare parts for the primary products that are at the end of their life cycle.[10] Clearance list is visible in the internal Company B reseller-network and used in suitable markets. This list was done as an experiment without marketing and was an instant success. It helped Company B push out the last old parts from the warehouse, lowering the cost of obsolescence. The Global Product Manager further argues that it is crucial to be careful with this tactics, since lowering prices can trigger dangerous market mechanism, causing cannibalisation or other value destroying activities. Many of the parts that are available for the first share of the life cycle are not supported for second and third life, partly because it is difficult to keep contract with the suppliers on all components.

Kitting and Bundling
The Global Product Manager states that bundling can be very underestimated. When it is performed in a correct way it can increase the amount of customer re-purchase. Company B provides bundling in many different forms. One type of bundling is together with the repair of a main component. Then other smaller components that are needed, such as gasket or filters, can be provided at the same time. Another is to change some of the main components at the same time as a bundle. Based on knowledge of the machines, overhaul-kits can be provided. These kits are large and provide everything that is considered necessary to be exchanged. This provides the customer with the value of one-stop-shopping as well as OEM's quality assurance, for instance that the part fits well.

The bundling and kitting are done in order to raise volumes and a discount of at least of 5% is given, more if there are campaigns. By increasing sales volume Company B both increases revenues from the customer and lowers cost by being able to increase purchasing volumes. The Global Product Manager considers it short sighted to take a higher price on the kits than the sum of its parts. The price complaints may be more costly than the income that increased kit prices may bring. Selling a kit with 50 parts with a discount of 5% is not overly generous but it sounds much better than an extra charge. The Global Product Manager further argues that there are other tools to increase customer loyalty than bundling, like service agreements.

[10] Approximately beginning at an age of 10-15 years and have not been sold for over one quarter.

Price elasticity
It is essential to measure price elasticity depending on how often the customer reviews prices. Within the industry in which Company B operates, the customer reviews the price list once a year, so the price elasticity is also measured one time a year. It is not reasonable to measure for each article because of the high number of variables. On the other hand the Global Product manager considers it relevant to measure annually on a consolidated level (on the segments) to see if the changes on price affected volume.

6.2.3 Pricing Execution
The main philosophy of pricing at Company B is to always be able to motivate the price towards the customer and this is why Company B uses the price codes. This means that there is no automated pricing. Instead the automated price function gives a recommendation and then it is always a person setting the price. Therefore it is central for Company B to have the resources needed for setting the prices.

Price changes are revised on an annual basis. Some resellers have automated systems, and to other resellers the price list is sent to regional managers that forward it to the resellers. Direct price list to customer is only sent out to key account customer and for these negotiations are done annually.

The Global Product Manager claims that if no resources are available the segmentation could be put on the engineering department. By letting them set the market code and then let the system work automatically. Only having one person adjusting the price levels. This solution is however not a preferred one. With 220 segments that need to be analysed each year it becomes impossible for one person to manage. However, the Global Product Manager argues that if the segments are fewer, for instance tens of segments on 8000 active articles, it may work for one person to manage.

6.3 Pricing of Spare Parts at Company C
Company C supplies production-enhancing solutions for the industry. Company C currently has 350 employees and a turnover of €72 millions 2011. The production units are located in Sweden and Italy. Sales and service units are located in Denmark, Japan, China, North America, Poland, Sweden and Germany. Agents are used on other markets where the sales units not are present.

Company C's largest market is in Europe with approximately 45% of all received orders. Other large markets are North- and South America, Asia and Scandinavia. Scandinavia is seen as a separate geographical market and is therefore not included in the European market. The car and domestic appliance industry are the largest customer segments, with regard to orders received per market segment.

6.3.1 Aftermarket and Spare Parts
Company C work with modules in order to keep down the total number of components in the products and has therefore a relatively low number of spare parts articles, with around 3500 spare parts. A stop in production caused by a breakdown can be very costly for Company C's customers so it is crucial that

spare parts are delivered fast. A large proportion of the customers in Sweden are promised deliveries within 24 hours. There are only some minor stocks regionally otherwise the spare parts are kept in stock close to the production facilities in Sweden. Instead Company C aim to sell the spare parts to the customers so that the customers keep their own stocks of critical parts.

Company C competitors on the spare part sales are their own suppliers, implying that the customer can bypass Company C and purchase spare parts directly from the subcontractor. However, by working with the concept, One Responsible Partner, Company C aims to supply all the required sparer parts and providing additional value to the customer. That only needs to handle a single supplier. No notable low price competitors of non-original spare part providers have been identified by Company C.

6.3.2 Pricing Strategy

The pricing strategy presented in this case will focus on a specific division within Company C. In this division one employee is responsible for all activities related to spare parts, such as sourcing, pricing, handling orders, selling, and shipping.

The pricing strategy used at Company C is cost-bases pricing with some differentiation based on whether the article is purchased or produced in-house. The percentage added to retain the sales price on articles produced in-house is higher than the percentage added on purchased articles. There are also some additional adjustments on the percentage added. The percentage is larger if the purchasing or production costs are low and the added percentage is smaller if these costs are high. The articles priced on a yearly basis are the articles included in the spare parts catalogue, implying that all articles are not priced each year. An issue, identified by Company C, with their pricing is that the purchase or production cost for a certain item might increase heavily when it is not serially produced anymore. Due to the additional adjustments and fluctuating cost the true price paid by the customer might not always be the prices in the spare part catalogue.

Some of the prices have also been manually adjusted in retrospect. When components related to each other are illogically priced these prices are adjusted. For instance the prices of the same component type with different sizes are manually adjusted to attain a logical pricing. The reason for this is that a larger component that could be perceived as more expensive might be cheaper than a smaller component as the price is based on the procurement costs. These adjustments contribute to a more logical pricing where the customers' perceived value of the components in relation to each other is considered.

When a customer buys a product, Company C compile a spare part suggestion for the customer. This suggestion is presented in a document and includes the parts incorporated in the product or production line that might be needed as spare parts. Company C has traditionally recommended their customers to buy the parts included in these documents. The quantity, article number, denotation, delivery time, and the price are specified for all the included parts. The included parts are classified in A, B, or C depending on the frequency of demand:

- *Class A* includes wear-parts
- *Class B* refers to parts where failure might occur
- *Class C* includes parts where failure is uncommon.

Recently Company C has started to offer customer to rent availability instead of buying each spare part. Rather than buying all the parts included in the document customer can rent the availability of these parts for three years. During these three years Company C is obliged to deliver these parts in a pre-determined delivery time, e.g. 48 hours for Germany. The renting price is based on the capital cost and the risk of obsolescence. There are however some parts that are customer specific and not possible to sell to other customers. The customers are bound to purchase these parts even in this solution. For the customers this solution means a lower total price but still a high availability. For Company C this solution means that they can "sell" the same standard parts to several customers. This lowers the amount of spare parts produced or purchased from suppliers in order to avoid the risk of keeping customer specific items in stock while they still provide a good availability to their customers. This solution is still in start-up phase but has showed to been successful in the German market. The Service Manager further states that this solution is still in start-up phase but has showed to been successful in the German market.

Discount Policy
All Company C sales units are given a 20% discount and customers with service deals have 10% discount on all articles. The discounts given to the agents differ depending on the agreement signed with each agent. There is also a possibility to get volume discount. The conditions and size of these discounts are however dependent on the context and are thus determined for each specific situation. It is however necessary to also view the total discount given. Contractual discount and a volume discount might be given to the same agent and lead to profit loss. There is nevertheless no outlined policy on how these discounts should be given, as this needs to be approved by the employee responsible for the spare part activities at the viewed division at Company C. The discounts given by the sales units to the final customers are decided by the sales unit and not regulated on a central level.

Life-Cycle Pricing
Many of Company C's products have a long lifetime, up to 30 years. However, some of the more complex components such as electronic components are only produced during relatively short periods of time. In order to solve this issue Company C has in some cases contracted another supplier to produce a certain number of corresponding components that Company C is obliged to purchase over a certain period of time. In other cases customers might need to purchase the whole module since a single component of the module would be too expensive even if possible to produce. For example, a customer might be compelled to purchase a new control system instead of switching a component in the old control system. It is essential to make sure that it is profitable to provide the components.

Company C works with refurbishing of some components. In this case a customer that returns the broken component will receive a lower price for the new component. Company C can then refurbish the returned component and sell it to another customer. In addition, Company C customers are provided with the offer to purchase customer specific spare parts before a product phase out that product.

Kitting
Company C sells construction kits that facilitates for assembly at the customers' site to assembly so they can get their product running themselves. The kits are price using the same cost-based logic as single part. However, since kits might include both purchased and in-house produced components the mark-up is based on the in-house produced components. Therefore the kit price is often higher than the summarised price for the components if bought separately.

6.3.3 Pricing Execution

Spreadsheets are the pricing tool used by Company C for the generation of the selling price based on the purchasing or production cost. The price is also manually inserted into the ERP system so that the price is documented and visible for all concerned employees. In order to ease the work with providing a spare part suggestion to their customers Company C has developed a software system where information on spare parts included in the primary product easily can be generated.

A negative aspect of how the pricing currently is carried out is that Company C is very dependent on the knowledge of the employee that is responsible for the entire spare parts activities. The logic on how the spare parts are priced is sometimes based on this persons experience and might therefore be difficult to understand for other employees within the company.

6.4 Pricing of Spare Parts at Company D

Company D manufactures machinery for the agriculture sector. Company D was founded as a family company in 1962 and the family still runs the company. The company has in total of 900 employees, 700 employees at the headquarter facilities and 200 at the 12 sales subsidiaries in 12 European countries. Furthermore, in the western European countries there are around 70 to 100 resellers in each country. In the countries lacking subsidiaries there are instead distributors carrying out the sales activities. The advanced agricultural machinery fits both mature markets like England, Germany, Sweden, and for emerging markets such as Russia and Ukraine.

6.4.1 Aftermarket and Spare Parts

The service provided by Company D is minor because the farmers often have their own workshop and tools, since their primary products include several mechanical parts that are not too complex to repair. The demands for spare part is very seasonal as the machines are only are used during a certain period of the year. Company D tries to even out this demand by recommending maintenance and service during winter, and therefore gives seasonal discounts. Furthermore, the weather impacts on the demand of wearing parts. During dry seasons the wearing is more evident leading to an increased demand for wear parts.

Farmers tend to be positioned in areas that are hard to reach geographically. Therefore the accepted delivery time tends to be higher than for many other industries. The farmers are often well prepared with own workshops and tools because if the weather is good it is of outmost importance to have the machines up and running as fast as possible.

The number of spare parts is around 22,000 articles with 8000 stocked in warehouse. The articles sold annual are around 10,000 to 11,000, which results in a spare part sales revenue of around SEK 225 million for the parent company. Both the subsidiaries and the resellers have warehouse stocks of spare parts. The parts kept in these stocks are parts required emergently when the machine breakdown since wearing parts often are ordered in good time before they wear out. Further, there are different types of deliveries and they are free of charge if not ordered as express freight.

Spare Part Competition
Company D's competitions on spare part sales are mainly non-original parts suppliers. Their competitors' advantage is that they sell spare part for all of the machines owned by the farmers, thus providing one-stop-shopping. In addition, they have no production cost and can specialise in trading. Company D has a strict policy not to sell any parts to these competitors. In this way then try to limit the number of articles available at other sources. In industries where primary product manufacturer sell service contracts to most customers, the repair service is also provided for competitors' machines and then there is a need to purchase competitors parts. Company D and their competitors' customers' seldom demand services. Therefore neither Company D nor their competitors do sell or purchase spare parts with each other's brand. This can be compared to the forklift industry where the primary manufacturer sells spare parts to each other and do service on each other's forklift. In less mature markets there is also small workshops that can copy Company D spare parts but this is a minor threat compared to providers of non-original parts in the developed countries. In the mature markets the large providers of non-original parts uses advanced logistic arrangements with large central warehouses and are therefore very effective competitors.

6.4.2 Pricing Strategy
Pricing based on cost by solely applying a mark-up on all parts is a strategy Company D left for 20 to 30 years ago. Company D is right now implementing a new software system based on the result from a recently conducted pre-study on pricing strategies and tools.

Spare part pricing methods
Parts categorisation is a method that has been used for a rather long time at Company D, around 10 years at least. The spare parts were sorted into article type, for example wearing or hydraulic. The old categorisation did however not take material or competition into consideration. The new pricing software facilitates a more extensive spare part categorisation. The part classification

includes both article type and main material, e.g. plastic. In addition, information of the spare part groups' competition are added and monitored.

Company D uses three different discount groups to categorise spare parts: group 10, 11, and 12. Group 12 includes the parts with largest volume value and tough competition from non-original suppliers. In group 10 there is a lot of standardised wearing and industrial parts, like bearings and fasteners. Group 11 includes Company D unique parts, parts that are very hard to copy and parts that not are of interest for competitors due to low demand.

Market-adapted prices
Company D's machines are exported to many countries and prices must be adapted to the currency and market conditions. Large price difference then increases the risk for unwanted cross-border business. Which is an issue in France, Poland, Germany, and the Czech Republic. All of these are members of EU, which makes it easy to trade. A central feature with the new pricing software is to support the ability to detect and act fast when risks of cross-border business occur. Nonetheless, to stretch it as far as to have a harmonisation of prices to reseller's that are positioned geographically close to each other is not of interest. Company D prefers a national price list.

Discount Policy
Discounts are set in order to create a trade margin for the subsidiaries and resellers. This marginal is set with regard to logistics and freight costs. Moreover, discounts are given when freights are done by pallet, a discount that encourages smart logistic planning from the subsidiary and reseller. Furthermore, large warehouse orders with pallets shipments and unbroken wrapping are encouraged through discounts in order to lower the logistic costs. Discounts are also used to increase the share of pre-season orders to even out the workload due to high seasonal variability in agriculture.

Captivity
According to the Project Leader Information System it is possible to take a very high price if the part is extremely captive. However, if priced too high the customer gets annoyed, with the risk of damaging the trademark of Company D. The effects of such behaviour can start to affect the sales of new machines.

Life-Cycle Pricing
Company D has a policy of providing spare parts from all machines produced 1962 and later which means all machines ever produced. Therefore the spare part division get inquires on really old spare parts that can be somewhat problematic to source. It is possible but they generally do have a high cost. In short term it would probably be profitable for Company D not to supply these old spare parts. However, this would go against the policy to provide spare parts for all machines, which is a promise of dependability to the customers. Since this is an important part of the marketing, it is considered beneficial for the company's total profitability.

Kitting
Company D works extensively with kitting in order to offer a total solution with one-stop-shopping for the customer, providing nuts and bolts together with the main components. When changing one part it is therefore recommended to change other parts, for instance not to reuse fasteners. The strongest motivator is the customer service the kits provide. In addition, by providing a kit the customer generally focuses less on price comparisons. If Company D wearing parts are sold together with bolts and nuts it is more acceptable to charge a slightly higher price than the non-original competitors.

Price elasticity
The Project Leader Information System states that there is a theoretical optimum for price and sales volume, and stress that they are very open minded in finding that optimum. There are two different demand situations, the urgent one and the one where the waiting time is acceptable. It might be beneficial to charge more in an urgent demand situation by providing a separated price and logistic cost. However, Company D considers it essential to gain trust from the customer by providing the real net prices, which means to also include logistics in the price. In some sense, since the pre-season ordering customer pays less, there are already price differentiations between these two groups. The Project Leader Information System further stress that spare parts do not have the same type of price elasticity as a consumer product since spare parts that are not wearing become demanded during breakdowns. Some market shares can be gained with a price cut but true price elasticity is not valid for spare parts sales.

6.4.3 Pricing Execution
The tool previously used for pricing of spare parts at Company D was an excel-model with VBA-programming that was developed and put into action in 2002 and has until quite recently been used when setting new prices. However, for conducting price audits it have during these 10 years only been used two to three times. Therefore, the tool was constructed for the setting of new prices, and calculating the revised price from the current cost without taking the current price into consideration. Thus, leading to high price fluctuations.

An essential part of the present pricing strategy is to set a good long-term price from the beginning, where the price fluctuations due to changed cost are limited. Due to the correlation of procurement cost and volume is it important to understand the future sales volume when setting a price on a new spare part. This facilitates a consistent price. Cost is still a significant factor but it is not directly used to set the price, at least not when setting new prices. During Company D's pre-study of spare parts pricing they consider setting the right price from the beginning as absolutely the most critical and significant factor.

There are also other pricing factors like market conditions that Company D takes into consideration. When pricing a new spare part it is central to evaluate if there in the future might be a risk of competitor on a specific part. If so the price should be set so low that the competitor will be less interested in providing the part. Furthermore, the price level of the parts in the same product group needs to be considered. It is crucial that two parts with similar appearance have a

related price, since it otherwise might be perceived as illogical and damage the customer trust. The new software solution therefore includes a function where two articles that are similar but have different volume and cost can have a similar price. Finally, it is important to mention that it is central to select which spare parts that are going to obtain more resources for pricing. Because of the vast amount of articles is it too time consuming to use the same amount of recourses on all articles. Company D has one employee that sets and revises the spare part prices. Of this employee's total responsibilities are around 30% of responsibilities related to spare part pricing, but this varies during the year. Moreover, according to the Product Manager, Parts & Accessories this can increase to a 100% full-time employment during price revision or if many new spare parts are priced due to construction of new primary products.

Software

Company D believes in developing an in-house pricing software solution rather than purchasing a pricing software solution available on the market. A reason for developing an in-house software were that it would be considerably more expensive to purchase a price optimisation software on the market. Back when Company D conducted their pre-study on pricing only one alternative, Navetti PricePoint, was evaluated. The Project Leader Information System believes that the lack of competition on spare part pricing software were the reason for the high price on that system. Another reason for developing their own software is that Company D's IT-department has a long and plentiful experience of developing their own software solutions. The Project Leader Information System is fully aware of the risks with developing their own application, such as knowledge loss if the developer resigns. Company D do still considers an in-house developed pricing software beneficial, due to the lower costs and the in-house competence available within the company. Company D is able to mitigate this risk by extensive documentation.

The new software uses Windows Presentation Foundation (WPF) and .NET framework. It is integrated with the ERP-system Company D uses, Jeeves, which is considered very flexible so there is no need for a separate database. All tables and columns can freely be inserted in the ERP-system and reached both from its own interface and external inteface. An own application for pricing gives much more control and flexibility than using the ERP-system, especially with graphs and diagrams. Furthermore, the application will be complemented with an analytical module based on QlikView's application, which will be used for simulation during price revision to foresee what effects changes in costs and price have on volumes and profitability. Furthermore, Company D has worked with specifying the workflow during price setting and revision. When the new price list has been created the software provides analytics that gives information when it is suitable to conduct price revision. The reason that a price revision might be suitable to conduct can be because of a loss in volume, changed prices by competitors, changes in cost, current business cycle, global politics, raw material costs, or currency fluctuations. Changes in currency do not mean that the basic price should be re-calculated instead a "shortcut" in the workflow is used and the sales price is changed. Although, Company D's spare parts are not consumer products the software supports rounding of prices so that a part is

priced 269 instead of 273, thus might be more appealing for customer. The price revision is done once or twice a year and depends upon current market business conditions. During a price revision the price is never recalculated from cost but calculated from existing sales price.

6.5 Pricing of Spare Parts at Company E

Company E is a global leader providing solutions for transport and handling of water and wastewater. Company E has around 6.300 employees worldwide and a turnover of around SEK 25 billion. Company E has sale units located in roughly 40-45 countries and a market presents in 140 countries through distributors and agents. Company E's main production facility is located in Sweden, but there are also smaller production facilities located in Argentina and China.

6.5.1 Aftermarket and Spare Parts

The turnover for Company E's spare parts is around USD 225 million. A central warehouse for spare parts is located in Sweden. This warehouse supplies the Scandinavian, US, Canadian and Australian markets. There is a second central warehouse located in France, from which the rest of Europe is supplied. In addition, there are minor warehouses connected to the production facilities in Argentina and China.

Company E has around 25.000 articles including both spare parts and accessories. Of these approximately 18.000 are spare parts. 6000 of the 18.000 spare part articles are stocked at the Swedish central warehouse. Sales units and distributors have small warehouses, the largest share of orders is however distributed directly to the customers' site. A general rule applied is that an article with a turnover rate above eight times a year, should be kept in stock. There are however some exceptions for certain strategic articles that also are kept in stock.

Spare Part Competition

Company E has one large global competitor that supplies a specific type of wear part with a good quality at a lower price than Company E. Therefore it is mainly this type of part that is exposed for global competition. There are however several small local competitors that supply key component with variable quality on the specific market. On markets where the labour costs are low it is common that customers prefer to repair rather that replace their components. Furthermore, Company E monitors their competitors and uses their development lab to evaluate the quality of the non-original parts. Moreover, the Product Manager Spare Parts state that it is reasonable for OEM's to price their standard articles that are exposed to competition approximately 15% to 20% above the non-original parts provided by competitors.

6.5.2 Pricing Strategy

The current pricing strategy at Company E was initiated in 2006 when a pre-study together with Navetti was conducted. The new value-based pricing strategy is based on Navetti's methodology and was implemented together with the software PricePoint in 2008. Company E's customers' have a rather high willingness to pay for Company E's products and spare parts since they are the market leader.

Spare part pricing methods
Company E uses Navetti's pricing methodology with the following categorisation of parts:

- Standard Parts
- Commercial Parts
- General Parts
- Key Parts

This pricing methodology is complemented with Company E's own price groups to create the International reference price list (IPL). Company E's own price groups are categorised by attributes such as if they are made in-house or bought, materials and size. Out of the 18.000 spare parts, a very high number, around 72% or 13.000 of the parts are captive or key parts. Key parts are further sorted into part families and provided with a value driver, such as weight, material and size. The maximum number of value drivers used per product family is two. For several parts it can be easy to identify and set a value driver while value drivers for other parts are still lacking. Some of the information used to identify these value drivers was stored in the company database, while others had to be established through viewing the drawings.

The price levels for the key parts that are sorted in part families are set based on the result from a large value survey. In the value survey participants estimated the price of a spare part as a percentage of the primary product. The value survey was conducted at sales subsidiaries in eight countries and the chosen markets represented around 70% of the total spare part sales. Regardless if the country was a high cost or a low cost country, the percentages in the survey were still very similar. A general rule for the percentage was that the repair, including both the spare part cost and the cost of a service engineer, of the product could not be priced higher than 60% of the price of a new primary product. If a part is used in more than one primary product it is the volume leader that is used to set the price. In situation where this might be difficult to establish or when there is too large difference in price between the primary products, the average price is used. One practicality with establishing percentage on components for Company E's products is that it is this component that is actually priced and sold. For more complex products, like cars, the key components need to be analysed further into lower levels. When studying ratio-to-complete this becomes even more evident. The ratio-to-complete is defined as the ratio between the cost of the parts incorporated in a primary product and the cost of the primary product. A car can have a ratio-to-complete of 10 and the Product Manager Spare Parts stated that for Company E's products it varies from 2 to 4.

Furthermore, the parts families IPL price level is adjusted so that the average customer net price level has the same relation to the IPL for all part families. By using the same percentage relation between IPL price and customer net price on all part families, it is possible to adapt prices to market conditions. If this not is conducted it is not achievable to use predetermined market factors to lower the price from the IPL price, since it is impossible to know the market factors affect on the customer net price. For Company E the average net price level in relation

to the IPL price was 50%, however when individual part families were viewed, this number could vary substantially. Figure 24 illustrates an example on how the IPL prices were harmonised, with a goal of a customer net price of 50% of the IPL price on all part families.

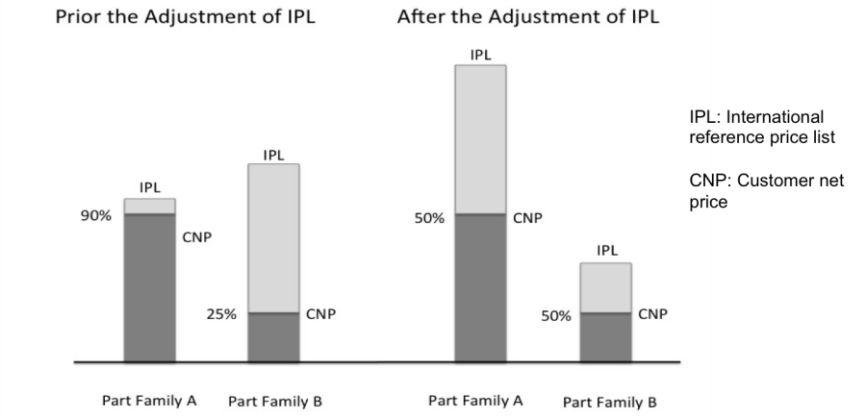

Figure 24 – Example of IPL adjustment

When viewing Figure 24 it is apparent that *part family A* had a too low IPL price while *part family B* had a two high IPL price. The IPL price was therefore adjusted with an increase for *part family A* and a decrease for *part family B* to reach the goal of a customer net price of 50% of the IPL price.

Market-adapted pricing

Company E's process to set market-adapted prices is displayed in Figure 25. The IPL price is set based on the prices attained through the spare part pricing methods previously described. A transfer factor is set to generate the transfer price for the different markets and a level factor is set to generate the recommended local list price. Transfer factors and level factors vary for different markets to achieve market-adapted prices, a local list price. A discount is then added to reach the customer net price, while the size of the discount is decided by the individual sales units. It is also the size of this discount that affects the local sales units margin. Company E cannot force the sales units to use the recommended local list price. It is essential to communicate the benefits, such as being able to motivate the price with the increased price logic. Another benefit is that the parent company provide the local price list as a service to the sales units, the sales units do not need to adapt the price themselves. So far approximately 15 sales units have applied the local price list fully. Company E actively works on this in order to increase this number. Moreover, cost is considered and can be used to display the margin of the parent company.

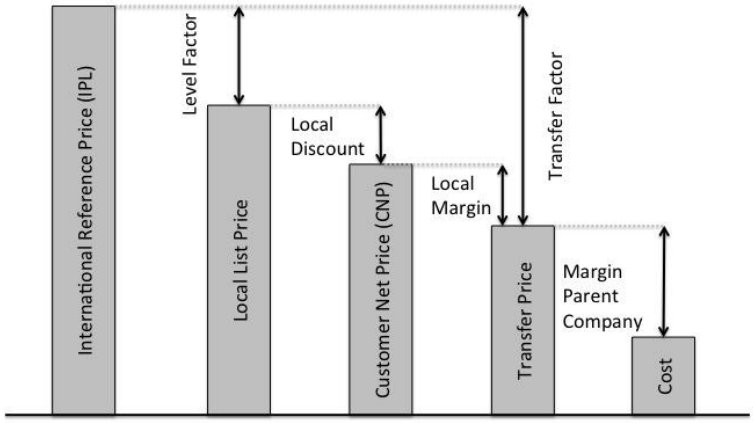

Figure 25 – Process to adapt prices to market conditions at Company E

A result of the previous value survey was that the overall value of the components was quite homogeneous, however since the overall price level on the primary product is higher in Norway than in Sweden the price level of the spare parts becomes higher. Due to this price difference between Sweden and Norway cross-border business has also occurred. The Product Manager Spare Parts claim that it is quite difficult to harmonise the price levels. It is however important to be aware of issues related to cross-border business when local list prices are recommended.

Discount Policy
The discounts towards the single sales units are not that common, with the exception of two situations when this type of discounts are provided:

- Spare parts handled as special-orders
- Spare parts included in the standard assortment

Special-orders refer to articles that are made-to-order, for example spare parts for primary products that have been constructed based on specific criteria's to meet the customers needs. The department, that has the overall responsibility for all activities related to special-orders, sets the price of these spare parts. These discounts are set based on predetermined process used when pricing special-order spare parts. It is moreover possible for the sales units to receive discounts on spare parts included in the standard assortment. These discounts are provided on inquires, since the sales units needs to motivate why they should receive the discount. These inquiries are becoming more frequent due to tough market environments on certain markets. However, the Product Manager Spare Parts emphasises that this not is a major problem as long as the consolidated business still is profitable.

At the sales units no recommendations or limits of the discounts on the recommended local list prices are used. The individual sales units decide the

customer net price, and as the sales units margin directly affect the size of the discounts it is usually not an issue. The sales units do not tend to provide too generous discounts since this would erase their margin. Furthermore, Company E has recently implemented a Service Partner Program, on a few chosen markets, with the intention of tying independent service shops to Company E. This is realised through a small extra discount, provided by the sales units, if the independent service shops source all spare parts required from Company E. By tying the independent service shops to Company E a larger volume of spare parts can be sold. The Service Partner Program further aims to reduce the incentives of independent service shops ito purchase from local spare part suppliers.

Life-Cycle Pricing
Company E uses a yearly mark-up to adapt the prices of the spare parts during the primary product life cycle. The articles incorporated in phased-out primary products, which still are supplied as spare parts, receive a 5% yearly mark-up. Articles exposed to fierce competition are however excluded since they otherwise might be priced higher than what the market accepts. In order to avoid that the article becomes unreasonably expensive there is in addition a limit on how many years this mark-up is added. The information on articles incorporated primary products, which are phased out, is generated through PricePoint. The Spare Part Price Coordinator sorts these articles and excludes the articles where a price increase is not desirable.

Kitting
Company E has many kits, and kits are considered to lower the price sensitivity and increase the customer satisfaction by one-stop-shopping. The most important kits are the repair kits, which contain the parts needed for the service when the Company E's product is three years old. During the first year of the product's life a simple inspection or change of some O-rings might be sufficient. After three years it is common to change the axis seal (a key component), bearings, and some O-rings. These kits are Company E's volume kits and are provided for almost all their products. An 8% to 10% discount on the sum of the total price of the incorporated part is used when pricing these kits.

There are also other kits of lower volume, for refurbishing and upgrading, so the total amount of kits provided by Company E is extensive. The Product Manager Spare Parts states that kits provide many benefits for the customer. Some of these benefits are lower price of the incorporated parts, ordering a kit through a single article number, and that the kits often facilitate direct delivery form stock. This is advantageous for Company E as they can see an increase in additional sales. Standard parts such as fasteners are not included in the repair kits. Product Manager Spare Parts stress that these types of standard parts often do not need to be changed that frequently to be included in these kits. Still, investigations are currently being conducted to offer kits that only including standard parts.

Price Elasticity
When the new prices were established a quite extensive study on how the price changes affected the sales volumes were conducted. The result showed that the

changes in price did not have any affect on the volume, with the exception of one part family, bearings. These are produced with high quality from SKF but have the disadvantage that they are supplied on an open market. Company E handled this by conducting a conjoint study on the bearings in order to establish a more competitive price.

6.5.3 Pricing Execution

Once the pre-study was finished in 2006 a pricing project was initiated. This pricing project resulted in a vast amount of data on the perceived value of components. A limitation matrix was used, in order to restricted how much the prices were allowed to vary on an article during a certain time period. Implementation of new pricing lasted for two to three years. In retrospect the Product Manager Spare Parts stresses that it might have been better to do a single large implementation. The reason for this is that it was hard to repeatedly motivate price changes during one year for instance on an article towards the sales units. A larger price increase once might be easier to motivate, since the discussion it brings on only need to be carried out on one occasion.

Some price complaints were received after the changes, but it was far less than expected. The Spare Part Price Coordinator states that the customers rather contacted them with questions on the new prices. Moreover, the pricing issue the sales units actually found hardest to accept with the new prices were when the price on an article decreased. If an articles price decreases the value of the sales units stocks also decreased, thus affecting their margin. The same complaints were furthermore received from some other customers carrying stocks.

Today, two persons are working with spare part pricing at Company E. One person is working with operative pricing and one person handles the strategic issues. Company E has a rule where price changes only can be carried out once every quarter, at the same time the new prices are communicated to the sales units. A large yearly price revision is conducted in the end of each year. Price changes are preferably executed during this yearly price revision, in order to keep down the number of price changes. Company E has experienced that the price changes seldom are communicated from the sales units, agents or distributors towards the end customers. Moreover, the Product Manager Spare Parts emphasise that communication of price changes is more common on primary products than spare parts.

Software

The software tool used at Company E is Navetti's PricePoint. Benefits with PricePoint identified by Company E are that a distinct methodology for pricing of spare parts now allows the prices to be adapted to market conditions to a larger extent. How the change of pricing strategy and pricing tool affects profitability has been investigated, which is rather difficult to estimate. However on certain spare parts where it has been possible to distinguish this connection the affect on profitability has been positive. Moreover, Company E has experienced that the usage of PricePoint is less time-consuming than the manual pricing. It is also important to note that a large amount of the data required to create the pricing logic could be retrieved from the company database or product drawings.

Company E is very satisfied with the performance and support of the consultants from Navetti during the implementation of PricePoint. A negative aspect was however that for a few part families the goal was not fully reached when the consultants left and Company E continued pricing project themselves. Furthermore, both during the implementation and during the continuous updates there is a high consultant dependence that needs to be considered when implementing these types of software. Continuous updates refer to the general functions in PricePoint. Therefore the special adaptions required to meet the customers' needs are excluded. Company E has thus experienced that this consultant dependency is amplified for updates of the functions in PricePoint where special adaptions to meet Company E's specific needs had been carried out. In addition, Company E incorporates the pricing data of their other product in PricePoint, but the price methodology described is only used for spare parts and some other accessories. The vast majority of the spare parts have today been priced based on Navetti's methodology. However, there have been some difficulties to fully apply this price methodology on the accessories.

7. Analysis

This chapter presents the analysis of the data, through the application of the theoretical framework or the empirical information attained in order to answer the research questions. The three different pricing strategies are analysed. Furthermore, the chapter includes analysis on spare part pricing methods, market-adapted pricing, discount policy, captivity, life-cycle pricing, kitting, price elasticity and spare part competition. Finally, pricing execution and software is analysed.

7.1 Cost-based pricing strategy

The current pricing strategy of spare parts used at Atlet, cost-based pricing is widely criticised among academics, the studied pricing software vendors and the industrial companies included in the case studies. Researchers have for a long time argued that cost-based pricing leads to lower than average profitability. Another issue is that since the cost is not fixed, but instead often depends on the production or purchasing volume, there is a great risk of the so called death spiral illustrated in Figure 5. In addition, Syncron emphasises that pricing based on cost can cause problems when the purchasers negotiate and lower the purchasing costs. Therefore a cost-based strategy would result in lower sales prices for the parts, and thus give away the potential profit. The same reasoning can be transferred to lowered costs due to production improvements of in-house produced articles.

APL try to avoid these cost-based pricing issues by never lowering the list prices or by manual adjusting the price when there is risk of severe price increases. Therefore, they only add an additional cost on top of already expensive parts to avoid unreasonable price increase. If consistently conducted, both of these procedures dampen these types of price issues. However since manual adjustments are used it decouples the prices from the cost-based strategy used, with the result of illogical prices and low traceability of the current price levels.

Company D further stresses the importance of setting a good price from the beginning when pricing a new part in order to avoid unnecessary variation in price. If using a cost-based strategy in the early life of the components, when the primary product still is in production, the large batch sizes reduce costs and therefore generates a lower price. When the primary product is taken out of production the drastic drop in volume will cause a severe cost increase, and thus consequently a price increase. It is therefore important to understand the future volume-cost relationship when using cost-based pricing in order to set a sustainable and stable price from the beginning. Moreover, due to variation in the purchasing costs there might be difficult to get hold of up-dated cost data for parts seldom sold.

Furthermore Nagle and Hogan (2006) state that cost-based pricing often cause over pricing on weak market and under pricing on strong products. Since APL uses a matrix that only classifies the parts in three categories and no market adjustments are used, it is fair to assume that pricing potential is lost. It might however be hard to estimate the sizes of this potential. The lack of consideration of competition and customer willingness to pay is another issue related to cost-based strategy of spare part pricing. This can in APL's case lead to losses both in

revenues and sales, as well as customer dissatisfaction. Hence, in the long run this causes an unsustainable pricing with customer loss as a result. Company B further emphasise this by stating that a consequence of cost-based pricing is that the suppliers are the once actually setting the prices. As a result prices become decoupled from market requirements.

Nevertheless cost is still an significant factor when pricing, but should more be used to control and analyse the price level. Company D has developed their new software so that their analytic tool through simulation can foresee the effects cost and price have on volumes and profitability. Hinterhuber (2003) also emphasises that cost is a significant factor when analysing how a price increase and decrease affect the demanded volume in order to maximise profitability, to do a CVP analysis.

Both Navetti and Syncron emphasise that cost-based pricing, despite previous negative aspects, can be successfully used when pricing pure commodities such as bolts and screws, where a cost-based strategy might be good enough. Syncron further state that cost-based pricing can be used for pricing of parts with very low sales volume throughout the primary products lifetime. This can be parts that are priced only when an inquiry is made. It is essential to note that if motivated, through increased margin, other strategies such as value-based pricing can be used when pricing on inquiry. This strategy does however require knowledgeable pricing personnel. For APL there is also another advantage with cost-based pricing which is of importance. The amount of data required is minimal, since the information on cost already is available and ready to use. Therefore, the continued use of APL's current pricing strategy probably requires fewer resources than if APL would change to a value-based strategy. Nevertheless, due to previously mentioned negative aspects with cost-based it is not a long-term sustainable pricing strategy.

7.2 Market-based pricing strategy

Today APL has a somewhat inadequate view and control on the competitive situation and customers' willingness to pay on different markets. Navetti stresses the market-based pricing as a good fit when pricing commercial articles or in-house manufactured articles that are exposed to competition.

A risk with market-based pricing, if based on competitors prices, identified by Gallagher et. al (2005), is that it might lead to a value destroying price spiral. The prices should therefore not only be decreased to match the competitors' prices and increase sales. Instead it is better to compete with a more long term sustainable competitive advantage such as improved distribution or product differentiation. The correlation between a customer's willingness to pay and distribution or delivery time is also emphasised by Company A, which has identified clear connection of decreased delivery time to increased price complaints and the other way around. Company B further stress this, stating that by providing a superior product, known brand, higher availability, a better global presence and support functions, price sensitivity can be reduced.

It is however still important for APL to understand and track competition, both in terms of spare part competitors such as TVH and comparable spare parts from other forklift manufactures. This is stressed by Vigorso (2005) that state that OEMs always should have access to up-to date information on the prices of the competitive spare parts. Competitive prices should more be used as a yardstick, rather than the only base for pricing decision.

7.3 Value-based pricing strategy

Value-based pricing strategy is increasingly considered in both literature and companies as superior compared to the other strategies. The idea of value-based pricing is to understand the customer's willingness to pay or the value delivered to the customer when setting the price. This can be seen as a reversed process compared to cost-based, displayed in Figure 6, which focuses on the product and the cost to set the price instead of the customer and the value. Since it is the customer that decides if the price is reasonable, it is not strange that a price that is aligned with the customer's willingness to pay generates higher profits and fewer customers' complaints. It is therefore of interest to use this strategy on pricing APL's spare parts.

In order to use value-based pricing for parts exposed to competition, Nagle & Hogan (2006) proposes EVE, displayed in Figure 7**,** and Hinterhuber (2003) a similar method EVA, displayed in Figure 8. The similarities between EVE and EVA make it possible to view them as a single method. Some spare parts can be priced with these method but far from all.

7.4 Spare Part Pricing Methods

It is hard to execute a value-based pricing strategy, two methods are EVE and EVA. EVE/EVA is comparable with the total cost of ownership because the aim of these methods is to demonstrate that the product is a superior choice compared to other alternatives during its life-time, regardless of the purchasing price during the point-of-acquisition. This method can be suitable for value-based pricing on industrial products, especially for new products that requires considerable amount of marketing and selling arguments, which this method provides. Unfortunately, it is less suitable for the pricing of spare parts, as this method is not applicable for all spare parts. In addition, it would be far too time consuming to price all spare parts with these methods.

Still, it can be valuable to do EVE/EVA on a few parts that are known to have superior quality compared with the once provided by competitors. It can then be argued that the original spare parts save labour cost, energy, time, material, etc. for the customer. These savings would result in a lower total cost during the spare parts lifetime compared to the competitor's spare parts even with a higher purchasing price at the point-of-acquisition. The customer would hopefully then assume that this applies for all spare parts.

As stated above, EVE/EVA is not suitable on a large amount of parts and would be too time consuming to use on a vast amount of parts. In order to create a global list price for all spare parts through other strategies than cost and market-

based pricing, there are primarily three methods presented in the theoretical framework by Zinoecker (2006):

- Categorisation on parts based on complexity and competition
- Consistency-oriented pricing with product families that are priced in relation to each other
- Price the spare part in comparison with the new primary product

Categorisation of parts
Zinoecker (2006) uses a graph/matrix to categorise parts, similar graphs/matrixes are also used for categorisation at Navetti/Company A, by Docters et al. (2004) and at Company B. There is however some variations among the factors on the axis that are used to attain the four different categorisation, which can be seen in Table 6. The factors that are on the y-axis on the graphs are not the same nonetheless closely connected. This furthermore accounts for the factors on the x-axis where Zinoecker (2006) and Navetti/Company A are exactly the same, but the two other are slightly different. The more complex parts are generally perceived as more valuable, more unique (proprietary position), have inelastic demand, and less price sensitive. The same thing generally holds for competition, part velocity, and volume. The highly competitive parts have in general high velocity and high volume. Still, the factors are not exactly the same and can vary. It is important to mention that these graphs sometimes should more be viewed as a support rather than a precise technique for categorisation.

Table 6 - The different graphs/matrix that can be used for categorisation

	Zinoecker (2006)	**Navetti/Company A**	**Docters (2004)**	**Company B**
Graph	Figure 10	Figure 22	Figure 9	Figure 23
Y-axis	Complexity	Perceived Value	Proprietary Position/Price Elasticity	Price Sensitivity
X-axis	Competition	Competition	Part Velocity	Volume

These graphs can be compared with the categorisation APL uses. APL's current pricing assumes that the factors on the y-axis "complexity, perceived value, proprietary position / price elasticity, price sensitivity" and the factor on the x-axis, competition, are similar.

- APL's group 11, are parts that are exposed to high competition because they are *easy accessible parts* or have a low complexity, low perceived value, low proprietary position, elastic demand, and high price sensitivity.
- Group 13, is the complete opposite, these parts are exposed to low competition because they are *hard to access/ Atlet unique parts* or have a high complexity, high perceived value, high proprietary position, inelastic demand, and low price sensitivity.
- The *medium accessible parts* or group 12 are positioned in the middle between the two other groups. Each group have its own matrix where the parts that are more expensive receive a lower price compared to those

that are cheaper, actually which the others do not use, but this can be connected to a cost-based strategy.

Navetti and Syncron use more groups than APL, the groups are displayed in Table 7. One large difference is the group called general parts including not totally unique parts, that are possible to either make through reverse engineering or to get hold of equivalent parts. Furthermore, the group that Navetti refers to as key parts, and Syncron refers to as captive parts, can correspond to group 13, however some of these parts might fit in the other part categories. Many parts in APL's group 11 and 12 could be placed in the group commercial parts used by Navetti or be divided into commercial unique and commercial commodity used by Syncron.

It is interesting that Syncron and Navetti separates commercial and standard items, the parts that are mixed in group 11 by APL. Of course, all standard parts are in group 11, but the group also includes parts that would considered to be commercial. Today kits are priced as group 13 and should, according to Syncron, be placed in a separate category. Navetti also supports kitting but deos not refer to kits as a part category. Syncron has two more categories, captive consumables and remanufactured items, which is something that is of limited interest for APL.

Table 7 - Navetti PricePoint and Syncron GPM categorisation of parts

Navetti PricePoint	**Syncron GPM**
Key Parts	Captive Consumables
	Captive Items
General Parts	General Items
Commercial Parts	Commercial Unique
	Commercial Commodity
Standard Parts	Standard Items
	Remanufactured Items
	Kits

The old categorisation of spare parts in terms of group 11,12 and 13 might be good enough for cost-based pricing strategy. With a new pricing strategy for APL that includes market- and value-based pricing methods APL should change its current categorisation. Different graphs can be used as a support for understanding rather than direct classification. Competition is not unimportant but will not be used directly as a factor for the categorisation. There is no question that the parts categorised as commercial and standard to a greater extent will have a much tougher competition than the general and captive parts. Other methods to handle this are discussed below.

If APL starts to use software they should apply the categorisation which this software support. Both PricePoint and GPM provide good categorisations that are more complete than the categorisation used by APL today. The graphs/matrix can be used to understand and analyse the spare part assortments.

Consistency-oriented pricing
Consistency-oriented pricing requires that it is possible to group similar spare parts into part families and that each part family has at least one distinct value driver that can be used for pricing. This method is widely used by the price software providers, i.e. Navetti and Syncron, and consequently by their customers Company A, Company B, and Company E. From these companies four advantages of consistency-oriented pricing have been identified:

- Firstly, the cost data, which the price is based upon, is generally not available until the purchasing price has been negotiated with the supplier. If a value driver, such as weight, is known the price can be set even prior the negotiation with supplier. Then the problem to retrieve updated cost data, identified at APL, is eliminated.
- Secondly, pricing based on value driver logic has been shown to have a high customer acceptance as it is easy to motivate the price to customers.
- Thirdly, the same logic used for pricing can be applied on the purchasing costs to build a cost logic curve, see Figure 19, which purchasers can use in their work.
- Fourthly, there is a decoupling from the competence of specific employees that otherwise often is required when pricing new articles.

One interesting finding was that at Company C, where no formal strategy to use consistency-oriented pricing existed, the prices were manually adjusted in accordance with consistency-oriented pricing since it seemed illogical not to price based on certain attributes. This finding supports that a consistency-oriented pricing is perceived as logical. The advantage of this pricing method is that the personnel should be able to easily motivate the prices towards the customer.

The type of parts that are suitable for consistency-oriented pricing depends on the industry. Company E only do consistency-oriented pricing on captive spare parts. This can relate to that most part for them are captive. Company B states that they do consistency-oriented pricing on more than 2/3 of their parts besides the captive once, and half of these receive a strict market adaptation. Syncron provides examples of captive, general, and commercial unique that are price according to consistency-oriented pricing. It is however up to the implementer to choose the extent. Furthermore, for some general parts it might be difficult to use consistency-oriented pricing. These parts may not be related to other parts or it might be to complex to identify a value driver. Hence for these parts a cost-based strategy can be used.

APL can use consistency-oriented pricing after the implementation of the first categorisation. APL can start to use consistency-oriented pricing for some captive parts that have a spare part family and at least one value driver. Captive parts have very little or none competition and are therefore the most suitable parts for pricing in line with value-based rather than market-based pricing. Furthermore, it is common that captive parts have the highest profit potential. Since this method requires resources, APL can prioritise which part families that

first should be priced according to this method. Roughly estimated APL has 17 captive part families. Therefore it might be preferable to start with these.

Pricing of spare part in comparison to the primary product
According to the investigated companies and software vendors is consistency-oriented pricing is mostly used on captive parts, some commercial unique, and some general parts. This method can and often should be complemented with the method: "pricing the parts in comparison to the primary product". This is a method suggested both from Navetti and Syncron, and has been successfully implemented at Company A and E. The benefit with this method is that the price seems acceptable from the customers' point-of-view. When Company A asked their resellers and a customer to price the main components in percentage comparison with the new product, the prices suggested by the customers were very similar and in some occasions the customer even priced higher than the resellers. Company E received similar results when they conducted a large value survey that covered 70% of their market. The results of the survey showed that the estimated percentages differed very little between different countries as well as sale subsidiaries, reseller, and customers. A general rule from Company E is that the repair cost, including parts and man hour, can not exceed 60% of the primary product price, and this is similar to the 50% to 70% suggested by Zinoecker (2006) in the theoretical framework. The value-based survey does not have to be performed by the customers. Navetti state that it is the customer perspective that is important, and Syncron argue that service technicians often have an understanding of the customer perspective. Syncron suggests their clients to start with the consistency-oriented pricing and when the parts are plotted, the percentage from the primary product can be compared with the parts to see if there is a potential to lift the pricing logic curve and thus get a higher price.

A problem with this method occurs when spare parts are included in several products, which is very apparent at Atlet with their modularisation concept. Company E suggested to let the volume leader set the price and Company A suggested the part with the average value driver of the spare part family can be used to determine the price in these situations. APL has to examine if there is a clear volume leader, or otherwise the average can be used.

The ratio-to-complete on the spare parts can vary. For Company E products this number is somewhere between 2 and 4, and for a more complex product such as a car this number can be up to 10. This information should more be seen as a yardstick, and the percentages established in the value survey are the primary information that this method should be based on. In Figure 26 the Atlet forklift *high-level order picker forklift Atlet OPM* has received fictional estimated percentages of the component compared to the forklift new price. This has not been estimated through a value survey and should more be seen as an example of how this method could be applied on an Atlet forklift.

Component	Percentage
Mast	30%
Forks & Basket	15%
Hydraulic cylinder	30%
Drive unit	20%
Chassis	20%
Computer	20%
Electrical system	15%
Hydraulic system	30%
Other	10%
Total	190%

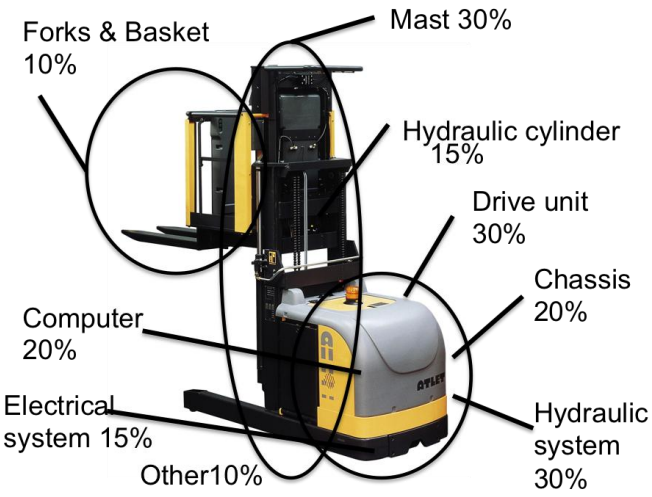

Figure 26 – Percentage level of component price in comparison to the High level order picker forklift Atlet OPM

APL can use this method, starting with the captive spare part families. In these spare part families value drivers have to be establish to get the price logic curve. Thereafter, a value-survey, to determine reasonable percentages for each component, can be conducted. Lastly, APL can identify where the price logic curve should be lifted or lowered, in order to maximise profit and minimize customer complaints.

Further considerations for spare part pricing methods
It can be central to note that both the constancy-oriented pricing and pricing in comparison with primary product should be seen as yardsticks. Furthermore, Company B stated that they consider it important to let a person set the prices and not use automatic pricing. The awareness of why the mark-ups for the three different categories are set to specific percentages, is low among the personnel that set the price since this was decided when the matrix was created. Instead of this rather mechanical way of pricing, it would be beneficial if the pricing personnel could have a screen displaying valuable pricing information, such as the data acquired from above methods, and use this knowledge to price.

All these methods are time consuming and require resources. However as argued by Company B the cost of resources that value-based pricing requires can easily be motivated by the strong increase in profitability and customer satisfaction. Moreover, it is not all parts that require this amount of resources. If the volume of the part is too low then cost-based pricing is more suitable. If the part is exposed to heavy competition then the price needs to be market-based.

Furthermore, Company E further emphasises that in order to adapt the list price to the market it is essential that the parts families' International Reference Price level is adjusted, so that the average customer net price level has the same relation to the International Reference Price for all part families, see Figure 24. This adjustment is a necessity for APL if a market-adapted pricing should be realised. Otherwise there is an impending risk that the prices will not reach the markets. In order to use cohesive notation the concept *International Reference Price,* used by Company E and Navetti, is to set equal to the concept *global list*

price, used by Syncron. Both concepts refer to a global reference price from which market adoptions are conducted.

7.5 Market-adapted pricing

The studied software vendors and the industrial companies included in the case studies highlight that a local list price should reflect the local market conditions, as different markets display variation in price sensitivity. Today the price list generated at APL lacks market adaption as the same EPP price list is used independent of market, excluding Sweden. It is up to the sales organisations to adjust the prices individually with market mark-ups and discounts. The market-knowledge possessed by the sales organisations is very valuable when attaining prices adapted to market conditions. However since there is no cohesive market-adapted pricing from APL there is a large risk that the transfer prices towards their subsidiaries, resellers or distributors either are set at a too high or a too low level. With the result of loss in potential profit for relative price insensitive market where the price is set too low, whilst for price sensitive markets where the price is set to high the distributor, reseller or even subsidiary might select alternative sources for non-captive parts. If a customer is aware of other sources it might also difficult to retain this customer for future business. Owing to the fact that the market mark-ups for Atlet spare parts are set by the subsidiaries, it may lead to different price levels for countries located close to each other and increase the customers' incentives to conduct cross-border business. Furthermore, Atlet International division has the same price level, mark-ups, on all markets without considerations of elements such as accepted price level and the labour cost.

Syncron recommends companies implementing a new pricing strategy to start at a global level, i.e. to first set the global list price. Thereafter market levels can be established and finally customer discounts can be developed. The global list price should be established based on the spare part pricing methods described. With this global list price and market factors APL can then make market adaptions, where different market factors should be used to decrease the global list price on different markets. This is an approach that provides a distinct and visible pricing logic. Furthermore, can market-adapted prices efficiently be attained when updating prices and pricing new parts. Setting a "high" global list price and then decreasing prices through market factors is in line with the concept of gain-loss farming. Referring to that the list price should be set high since customers experience possible price decreases that they do not receive as a gain forgone. The acceptance level of this gain forgone is much higher than if the customers would have been asked to pay a premium price. Moreover, if market factors are used a price corridor can be created. With a price corridor APL can do market adaptions by adjusting the prices on different markets based on:

- Customers incentives to look for alternatives
- Buying power of the customer
- Risk of cross-border business

For APL this could mean, having a similar if not identic price list for well-developed countries located close to each other such as France and Germany.

The price list for countries where labour costs are lower should be set to a lower price level, since the incentives to repair old parts rather than buy a new part are higher in these countries. By adjusting the global list price with predetermined market factors these market price levels are attained. Figure 25 in the Company E case provides a clear outline on how the global list price/ international reference price can be adapted to particular market conditions. By using two "market factors", both a level factor to attain a recommended local list price and a transfer factor to reach a transfer price, market-adapted prices can systematically be provided. This requires that APL first develops a global list price and adjusts it so that the average customer net price level has the same relation to the global list price for all part families. Since it is difficult, if not impossible, to force the sales units to use the recommended list price it is instead essential to communicate the benefits, such as improved price logic and increased pricing simplicity to the subsidiaries. In order to streamline the adaption of prices to market conditions for Atlet International division it is possible to divided the countries into regions where countries with similar price sensitivity are grouped. This simplifies the adaption of prices to market conditions since the amount of market factors could be kept to a minimum.

Demand, price sensitivity and competition might however differ among parts families on different markets. Therefore it could be argued that a predetermine market factor for the entire market is insufficient and might even lead to sub-optimisation. Hence, it is of interest to further adjust the factor on specific parts or part families to ensure a well-adapted market price. If part families are priced based on attributes this logic can simply be adjusted with market factors, see Figure 27.

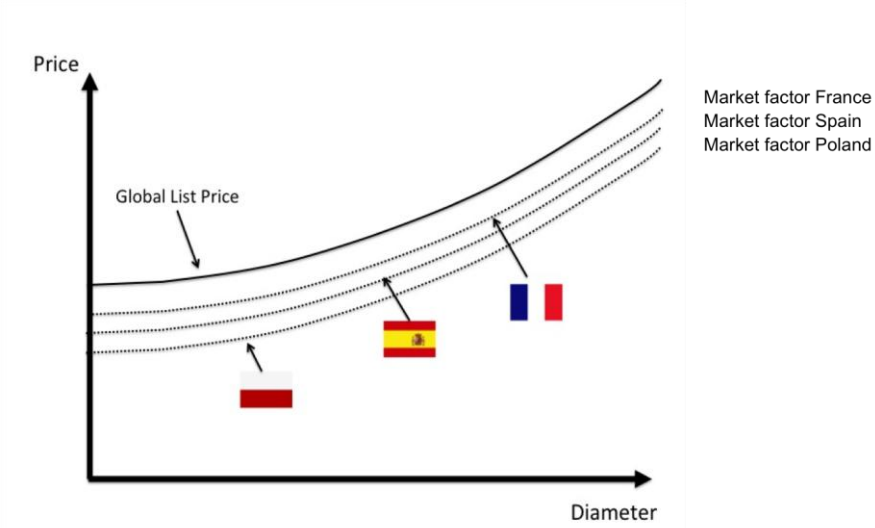

Figure 27 - Example on a pricing corridor for a part family priced on attribute.

Another element that needs to be considered when creating market prices, are currency changes. This is something that is exemplified in the Company D case, stating that if a currency change occurs that makes the 5% price difference into a 10% to 15% price difference, there is an impending risk for unwanted cross-border business. Consequently, it is essential to track how currency changes between markets affect the relationship, among market factor, between markets.

Moreover, it is essential to be aware of that the market factors should not be fixed at the price level first set, as they need to be continuously updated in order to attain a sustainable market-adapted pricing.

Syncron further emphasise that the importance of market-adapted prices depends on which part category it refers to. For captive parts it is of less significance to adapt the prices after the market conditions. For commercial parts the market conditions can be rather different and there is a need to adapt the prices in line with the current market conditions. Moreover, for general parts market-adapted prices can be important in countries with low labour costs, since a too high price level provides great incentives to repair the old parts rather than to purchase a new part. Independent of part category, it is essential to monitor if certain markets are underperforming based on their potential, which could refer to the parts where the sales are below the expectations. In order to capture the potential sales, promotions as well as good communication of the value of original spare parts, can be used.

Moreover, the amount of resources and work required for APL to keep these price lists or market factors up-to-date need to be considered. There might also be a risk that if differentiated prices on various markets are used, they provide incentives for cross-border business rather than the reduction of these incentives. It might therefore be needed to harmonise the prices for neighbouring markets where trade is well establish. Syncron argue that resellers that are situated close to the different borders can have their prices harmonised in relationship to each other, and thus mitigate the risk of cross-border business. This is, however, according to Company D not of interest as they argue that a national price list is sufficient. Company E argue that it is quite difficult to harmonise the price levels, but it is important to be aware of issues related to cross-border business when local list prices are recommended.

7.6 Discount Policy

APL gives discounts to sales middlemen such as subsidiaries, distributors, resellers, and other forklift manufacturers. These middlemen then provide discounts to the end-customers. In that regard, APL can be viewed as a centralised global pricing coordinator that sets the list prices. In order to avoid discrepancy in the discount pricing strategy there is a need for combining of the centralised pricing knowledge at APL with the market knowledge from the middlemen into a discount policy. If an inconsistent discount policy is used it might harm the customer's trust.

In the theoretical framework two key approaches to improve decision-making for discounts are identified:

- The use of discount limits for the sales personnel
- The incentives of the discount decision-makers and the goal of the organization need to be aligned

Discount limits can be used to control that the discount policy set is followed. The discount limits can either be a firm limit or a recommended limit. If a firm limit is

used APL or their subsidiaries need to have a predetermined upper limit for discounts. An example of this is Company B, where the sales units have an upper limit, discounts above this limit need to be authorised centrally. This procedure still leaves some room for negotiation, but the upper limit is firm. Discount limits can moreover be set as recommendations. For instance, at Company A, the price given to the customer should not vary more than +/- 10% of the list price at the sales units. This goal is then controlled and communicated through continuous reviews.

Having a firm limit may cause a somewhat hierarchical discounting system, which might be time consuming for both APL and the sales personnel at the subsidiaries. On the other hand the control of the discount levels will increase. Moreover, when a firm limit is used there is a risk that the sales personnel adapt to the discount limits and often use the upper limit due to convenience. In spite of that it is more profitable to adapt the discount after the specific business it concerns. If the discount limit is recommended, the room for negotiation and adaption will be greater. It will probably also be less time-consuming for both APL and the subsidiaries to utilise recommended limits. There might however be a risk that discounts will be set at undesirable levels if these recommendations are not well communicated and no continuous feedback from the centralised organisation is given.

Navetti's pricing software PricePoint has a function called discount corridor, where either firm or recommended limits can be set. If recommended limits are used feedback on how these recommendations are followed can be retrieved through the software. Another approach is not to use any limits, as Company E. Company E argues that if a too high discount is given at the sales units it directly affects the sales units' margins and therefore it is uncommon that the sales units exceed these discount limits. For this to be efficient there is a need for market-adapted pricing, both concerning recommended local list prices and transfer prices.

Alignment of incentives is the second approach that APL can use to guide the middlemen into following the pricing strategy and discount policy set by the organisation. Since the incentives affect the performance of the sales personnel it is essential for APL to have incentives that increase the profitability. This is not necessary the same as increased amount of sales. If sales volume or number of sales were to be rewarded there is a risk that it might lead to higher discounts, which can lead to a loss in potential profit. Instead Smith (2012) argues that the incentives should be tied to revenues or profit with higher rewards for sales personnel when prices are above a predefined target level.

In section 2.1.4 transaction pricing, it was showed that the lack of a discount policy leads to that the most generous discounts are given to the customers with best connections, and not to the largest or the most profitable ones. In order to detect this issue the pocket price waterfall and pocket price band can be used. In addition, with the pocket price waterfall APL can identify if there is a discount or extra cost that can be raised without losing customers. Furthermore, it is important to base the discount given on cohesive principles since there is a risk

of an inconsistent discount policy. The sales personnel need be well aware of what the discount should be based upon, and which customers that should receive the discounts. Company A provides three factors that should be considered when discounts are given:

- Commitment of the customer
- Volume
- Prioritised customer

It is also essential that the sales personnel at Atlet is aware of why a customer is prioritised, which usually is connected to the two factors above.

In order to stimulate sales APL can use discount based on the estimated sales potential on a certain market or a certain customer. If APL should do this they first need to estimate the sales potential. An example is Company B that rewarded their Brazilian customers with 2% extra discount when they reached their potential. Company E uses a similar approach, where loyal independent service shops are rewarded with a small additional discount. Another approach, stressed by Syncron, is to use discount based on the estimated sales potential on a certain product family. This can be done for the product family on the global list price and chosen markets, or be based on certain customer's buying potential for the specific product family.

7.7 Captivity

APL has a limited number of captive parts. They account for approximately 21% of the total number of parts. Captive parts can be priced high due to absence or low extent of competition. If priced too high there is a risk that the customer gets so annoyed that it harms the sales of new machines. Therefore it is central to price captive parts based on what the customer considers reasonable, like a percentage of the new forklift from value survey or conjoint analysis.

Another dimension that is crucial in spare part pricing is the criticality. How critical the part is for the machine. Increased captivity of critical parts, through for example design changes, can be a quite profitable strategy. This does however require good availability and delivery speed because without the critical part the forklift is standing still and this is usually very costly for the customer. Additionally, the cost of the design changes has to be compared with the extra income from the parts sales.

Another way of increasing captivity can be to make the supplier remove their brand or even add the OEM's brand. One problem with adding the Atlet brand on the spare parts is that APL is not allowed brand the parts with Atlet’s brand since the parts are assembled in the Nissan forklifts produced at Mölnlycke. One solution could be to add the Atlet brand at the warehouse before sending the part. The disadvantage is that this might require resources and space that is not available.

7.8 Life-Cycle Pricing

As previously mentioned, lowering the amount of "dying" articles in stock is currently being investigated. This relates to how the spare part price can be adjusted in the end of a forklifts life cycle as there are different ways to handle throughout the spare part supply throughout the primary product life cycle. Both Company A and B have divided the life cycle into several phases with a certain time frame or demand pattern, see Table 8. The approach towards life-cycle pricing is somewhat different when comparing the findings from the two case studies. Company A life-cycle pricing has a focus on the different phases of new original spare parts, whilst Company B both focus on this and the remanufacturing of parts. It is however important to notice that Company A and Company C also offer remanufactured, refurbished parts or/ and repairs of customers' spare parts. Using remanufactured or repair parts can be an effective way to supply the aftermarket. In this manner old parts can be reused and therefore sourcing and material costs can be kept low. Furthermore, a lower priced component can be offered to price sensitive customers. However, there is a risk of cannibalisation of new parts' sales when remanufacturing or repairing parts. These types of offers do require a very effective reverse logistic flow and resources to remanufacture, refurbish or repair the components. Due to the large impact of logistics and other pre-conditions, consequently out of scope for this thesis, this alternative is not further discussed, nonetheless it is significant for APL to be aware of this process for the spare parts supply throughout the product life cycle.

Table 8 - Life-cycle phases for Company A and Company B

Company A		**Company B**	
Active Phase	The primary product is still in serial production and the production unit supplies the aftermarket	**Genuine Parts**	The parts supplied are new and they are supplied until the primary product is seven to eight years.
Classic Phase	The production of the primary product has ended but the demand from the aftermarket is still high	**Reman**	Components are brought back, remanufactured and sold to a lower price
Limited Phase	The demand has decreased and this phase lasts as long as it is economically viable. The price is increased somewhat to make sure the costs are covered	**Reman Classic**	Remanufactured components for really old machines where Reman parts would be too expensive.
Obsolete Phase	One year, and the remaining stock are sold.	**Clearance List**	Spare Parts at the end of the primary product life cycle, beginning at the age of 10 to 15 years that not have been sold for a quarter. The price is lowered.

An interesting aspect for APL is the limited and obsolete phase used by Company A and the clearance list used by Company B. The possibility of lowering prices to stimulate sale might be difficult both due to the nature or spare part demand and due to the increased cost for sourcing spare parts in the end of the primary product life cycle. The pricing manager at Syncron argues that it is more common to raise the price to secure the profit since the sourcing costs are high when the volume required is low. At Company A's limited phase the price is increased for spare parts with low demand and high sourcing costs. This is something that can be transferred to APL, where a cost-based strategy can be motivated for parts that are seldomly demanded. These parts might be parts where either the selling frequency drastically has decreased, as for parts that are in a later stage of the primary product life cycle or parts with a low and infrequent demand from the start. These parts are mostly priced on inquiry and the resources used to source these parts should be controlled so that the costs do not strip away the profit. In order to avoid this problem the age of the parts, as currently used at APL, might be a fair yardstick for the amount of resources spent on these inquires. Increasing the prices during the life cycle is further emphasised by Company E and Navetti. At Company E a 5% yearly mark-up is added on the price of articles incorporated in phased out primary products, which are still supplied as spare parts. This approach might however not be applicable to the same extent in the case of APL, since the share of captive parts is far less. If competition on the part exists it might be difficult to apply a yearly mark-up. Hence this logic can only be applied on the parts that are Atlet unique, a category that can be compared to captive parts.

Company A's obsolete phase or Company B's clearance list only refer to parts already in stock. The sourcing costs for these parts are already paid, and the risk that these parts will be scraped and not generate any revenue is impending. The logic should, therefore, be to retrieve a small profit or alternatively to cover the procurement cost or some share of these costs in order to get some contribution for these spare parts. This has been an instant success and facilitates these parts being pushed out on the market. Company B managed to market this concept by making the clearance list visible at their internal reseller-network. APL has been investigating if a similar clearance list could be implemented. It is however essential to be cautious with this tactic since price decreases may trigger value-destroying activities or lead to cannibalisation. Moreover, it is argued by Company A and internally at APL that spare parts are only demanded when a need emerges. This is emphasised by Braglia (2004) and Vigoroso (2005) that stress that the demand of spare parts is difficult to forecast, because breakdowns are hard to predict. Therefore it is very difficult to stimulate spare part sales. This is somewhat contradictive to the introduction of a clearance list. However since the prices are lowered for these parts it can also contribute to the sales of components that would otherwise be perceived as too expensive. In other words these sales would never have been realised and the forklift would have been scraped rather than repaired. So by offering these old spare parts to a lower price, old forklifts can be kept on the market. Contributing to that additional spare parts might be sold, increasing profit, customer satisfaction as well as decreases obsolescence and warehouse costs.

Regarding the timeframe for the creation of a clearance list it is hard to determine that spare parts of a certain age or the parts included in forklifts of a certain age should be added on the list. It is probably more effective to look at the demand pattern for potential future life-cycle pricing. The parts added on the list should be in a slow selling class with a previously consistent demand pattern. The definition of a slow selling class depends on the individual industry. APL has chosen to define it as articles not sold for eight months. This can be estimated by investigating when the volume drops and when the risk of obsolescence increases. The selling frequency is also of great importance spare parts that are slow selling and have a very erratic demand pattern should be excluded. However, these parts might however be of interest to add to the clearance list, if they are still in stock at the end of the life cycle. However since this might be difficult to detect based on demand pattern it would probably be better to add these parts on the list manually. There is however a risk of having a clearance list. When emptying the stock from parts in the end of the forklifts life cycle it often then is difficult to supply these parts and this might have a negative affect on the customer satisfaction. This is trade-off that needs to be considered before introducing a clearance list.

7.9 Kitting

APL provides two different kits, recommended part kits, which can be purchased with the new forklift, and service part kits for the service engineers. The recommended parts are sold with a discount and the service parts are positioned in the highest mark-up group, group 13.

All studied case companies price their kits based on the sum of the price of all the included articles and a small discount added. A reasonable discount, based on information from the interviewed company, is between 5% and 20% depending on the different recommendations. The discounts are displayed below in Table 9.

Table 9 - Recommended Discount

Company	Recommended Discount
Company B	5%
Company E	8-10%
Syncron	5-20%
Navetti	5%

According to Navetti a common issue with pricing of kits is that it is difficult to maintain the kit prices when the prices of the ingoing components are changed. If a pricing software is used it is possible to either change the kit price automatically when the price of the ingoing components is changed. Otherwise the price increase could be paused until next price revision. Kits are a good way to increase sales as price sensitive standard parts can be bundled. This can be connected to the psychological concept of "importance of end-benefit" presented in the theory. Where it is stated that customers are less price sensitive if the price is small in comparison to the total expenditure. In the example of standard parts, the price of nuts and bolts are small in comparison to the total price of the kit but the margins on these standard parts can be quite high.

It is even possible to offer bundled kits during a service, such as an oil inspection and oil change instead of selling only oil and filters, making it easier to set prices and communicate on value. Increasing sales of kits provide increased revenues and facilitate lower purchasing costs. Other benefits are that the customer prefers to receive all parts at one place and that price comparisons become more difficult, when in turn makes customers less price sensitive.

Kits should be constructed so that they stimulate additional sales. The discount on the kits would otherwise erode margins. APL stress that there are costs connected to creating and handling kits that can be higher than selling the parts individually. Therefore, it is essential to keep these costs lower than the additional profit earned. Company B has a conflicting opinion and claims that this strategy is not sustainable since the customers will eventually discover that the sum of the price of the incorporated articles is lower than the price of the kit. This only occurs if all the parts can be purchased separately. If the kitting is done at the supplier and the incorporated parts in the kit cannot be purchased individually, then the kit can be priced with other more value-based methods.

7.10 Price elasticity

Before trying to estimate price elasticity for APL's spare parts there are primarily three things that need to be mentioned:

- The market for APL spare parts are only for those that use Atlet forklifts.
- The demand for spare parts only arises when the forklift breaks down.

With this said it can still be valuable to measure price elasticity, not often and not on a single article but annually at an aggregated level. It can also be beneficial to understand the elasticity, especially for high volume wearing parts exposed to fierce competition. The reversed S-curve displayed in Figure 21 illustrates that the price increases are accepted until a certain point. After that point the demand drops drastically. Usually, price decreases in order to gain market shares tend to be a bad decision since it requires a hefty increase in volume and might cause price wars. Then other strategies such as promotions or bundling are preferable strategies to gain market share. Nevertheless if it is possible to increase the market share from very low to a substantial share, bear in mind the deep slope in the middle part of the reversed S-curve in Figure 21, a decreased price could be a good strategy. The exact price premium is hard to establish and can vary. The results from Syncron's conjoint analysis was that the customer accepted around 20% price premium but there are companies pricing 100% price premium and still have large market shares. The knowledge about price elasticity of spare parts is still in its early stage, progress on this field is expected in the near future. Today it is somewhat of a disputed area, where the opinions of the pricing professionals are in disagreement.

Company E has not seen any negative impact on sales volume when their prices have been increased, with the exception of one specific part, bearings. These bearings that are sold on an open market have a high quality and are supplied by SKF. In order to establish competitive prices on these bearings a conjoint

analysis was conducted. The result from the price elasticity measurement provided support for pricing captive parts with spare part families in combination with comparison with the primary product. Furthermore, it is suggested that parts sold on the open market with should be priced competitively or based on the market conditions.

79% of all spare parts at APL are not unique, they are exposed to some kind of competition. In addition, 40% of the spare parts are classified as easy accessible parts and thus exposed to heavy competition. Company E experienced a change in volume when changing the price on the competitive parts. For APL to try to optimise profit based on price elasticity on these parts might lead to a substantial volume increase, which could require investments in warehouses and logistics capacities

7.11 Spare part competition

Atlet, Company A, Company B and Company D have all experienced an intensified competition from non-original spare part suppliers. Company B has discovered a pattern, according to which it is more likely that customers in Asia purchase non-original parts since they are more price sensitive than the customers in Europe and North America, where quality often is viewed as more important than the price. Another factor that is stressed by Atlet, Company A and B as crucial to pricing is availability and fast delivery. By having a high availability and efficient distribution a price premium can be accepted by the customer. The spare parts supplied by non-original providers are mainly commercial parts but also, if demand and volume motivate it, general parts.

Standard parts are exposed to heavy competition, these are on the other hand supplied by wholesalers rather than specialised non-original suppliers. These parts might however also be included in kits when purchasing main components from either the original part supplier or a non-original part supplier. For APL, the main competition is on spare parts included in group 11, a group that can be viewed as mix of commercial and standard parts.

It is crucial to have a good comprehension on how the price is positioned in comparison with the competitors. A yardstick of a 15% to 20% increased premium prices on standard or commercial parts compared to other non-original spare parts suppliers, has been established, throughout the interviews with Atlet's representatives, the companies included in the case studies as well as the pricing software vendors. There might however be some variations depending on the industry it refers to. Furthermore, a price premium is motivated by the price-quality perception presented in the theory, where it is argued that a higher price is connected to the perception of a higher product quality. In addition, there is a psychological perceived risk in using non-original parts as the machine may be less worth or damaged with non-original parts. As an original spare part supplier APL can therefore take a somewhat higher price, which depend on factors such as product quality, delivery speed availability, technical support and service, one-stop-shopping, etcetera. By having a good performance on these factors price sensitivity can be somewhat reduced. It is thus vital to communicate these values. When the customers compare Atlet

Genuine Parts to non-original parts it is central that the price is motivated so that the customer can make a fair comparison. Moreover, by having easy explainable price logic, for example based on attributes, the price is considered more reasonable and the sales representatives can more easily motivate a higher price.

In order to help APL to control that the price level is market-based, another important yardstick can be used. APL can compare the price of comparable spare parts with other forklift manufacturers. This is carried out through occasional benchmarks. A possibility is to tie the price of a part sold by APL to the price of the comparable part. A problem with this procedure is that the true prices can be hard to retrieve and it is complicated because there are many parts to price.

This can furthermore be done for non-original spare parts. Nevertheless it is essential to have a price level that is somewhat higher than the non-original spare part to avoid a value-destroying spiral that in worst case leads to a price war. If only the comparable/competitive parts list price is considered there is an impending risk that the customer net price still is unknown as the discount given might diverge widely on different markets. There are some advantages to use competitors' list prices as reference price as the prices are easier to retrieve, and compared to the benchmarks previously carried out at APL it is less time consuming and fewer resources are required. Furthermore, if a good reference price can be retrieved there is a possibility to price spare parts in comparison to competitors' prices. Provided that APL has an insight of the discount level used by their competitors it is possible to estimate the customer net price level based on the list price. A list price that can be of interest to use is APL's main competitor TVH's list price. There the article numbers actually are based on APL's article number, but comparable parts from other forklift brands also supplied by APL can be used since the information is easily accessed.

Nonetheless, the vast amounts of price data require simplifications. By attaining price data on some selected spare parts, other spare parts can be priced based on the same reference, meaning that a pricing factor is obtained and then used for pricing of similar parts where the data has not been retrieved.

7.12 Pricing Execution and Software

In order to implement and generate a sustainable pricing strategy APL requires a pricing tool that facilitates pricing based on customers' perceived value and a pricing tool that enables market-adapted pricing. Pricing software is becoming more common since it enables value-based pricing strategies to be executed. In order to further analyse if the proposed pricing strategy discussed above require pricing software or if other tools such as spreadsheets could be sufficient the eight focus areas are considered.

Spare Part Pricing Methods

A few competitive high volume parts, such as wheels, can be priced and marked by EVE/EVA. Because there are a few of these parts this can be done manually. This can be done with spreadsheets and graphs. In order to price the other parts the other presented pricing methods are quite handy. First, a categorisation gives information on how to price the parts. It is suggested by practical reason to

use the same categorisation as the software provider if a software provider is chosen.

All captive or key parts can be grouped into spare part families. It might also be suitable to group some general and commercial unique parts into spare part families. If software is used it is easier and therefore more likely to create more spare part families. If a software is not implemented APL can use group 13, which includes around 17 spare part families. Value drivers have to be identified and selected for each part family regardless of whatever APL chooses to use manual or software based tools. If software is installed this information can be inserted into the system. Otherwise spreadsheets have to be used. If APL waits with pricing software, value driver data can still be gathered, as it can be valuable for a future pricing software implementation. In the mean time spreadsheets can be used to build a pricing logic and to increase the understanding for these parts. Still, this requires many pages of spreadsheets, which will not be easily understood and the information will not be shared that easily. If a software system is used the pricing logic will be clearer and a more long-term sustainable solution will be provided. The software vendors have a better understanding and experience on how the price logic curve should look like, but since the investment is substantial an in-house price logic curve can be temporarily utilised.

The last consideration is the price optimisation on these parts and that is done through a value survey. The result of Company E's value survey showed that the percentages on the key components in comparison to their primary product price was very similar between reseller, customer, markets, and countries. This support that the value survey provides a price acceptable to the customer. In order to investigate the profit potential of a new pricing strategy APL can use a web-based Internet survey whose question the service engineers can answer. If all work is done manually, the percentage from the value survey can be compared with the price logic created in the spreadsheets. Otherwise the pricing software would support this.

Market-adapted Pricing

In order to adapt the global list price to market conditions a tool is required. This market adaption is possible to do by setting up a matrix in spreadsheets, as displayed in Table 10. The matrix constitutes of spare part families on one axis and different markets on the other axis. For each market and part family a level factor and a transfer factor can adjust the global list price to gain a local list price and a transfer price.

Table 10 - Example of market-adapted pricing matrix. The level factors and transfer factors are fictive.

	Market 1		**Market 2**	
	Level Factor	Transfer Factor	Level Factor	Transfer Factor
Part Family 1	0,7	0,5	0,9	0,7
Part Family 2	0,7	0,5	0,9	0,7
Part Family 3	0,6	0,4	0,9	0,7

However it might be difficult analyse the effect of changes in the factors if a pricing software solution is not in place. Moreover, a software system facilitates generation of recommended local list prices and transfer prices automatically.

Discount Policy
Two key approaches to improve decision-making for discounts have been discussed, to use discount limits for the sales personnel and to align the incentives of the discount decision-makers and the goals of the organisation. In order to control and provide feedback on discount limits or recommended discount limits, pricing software needs to be implemented both at APL and at the local subsidiaries. This requires heavy investments and resources for implementation and maintenance. It is preferable for APL to first focus on pricing software that provides a good global list price, which improves the pricing logic. Alignment of the incentives of the sales personnel requires good communication and rewards based on common goals.

Captivity
Today, APL today prices captive parts (group 13) highest and this is done through spreadsheets and the ERP-system. These parts are priced highest because of the lack of competition for these parts. This price may not represent what the customer thinks is reasonable. In order to use the spare part pricing methods with spare part families to get logical pricing and value surveys to establish price potential, can both increases profit and lower the amount of customer price complains. A rough estimation is that the parts in group 13 can be divided into 17 groups. This can be done with excel but it becomes impractical to handle, the same account for using the information from the value survey to identify profit potentials. Therefore, some of the work, like establishing value drivers, can be done before software. Software is needed for good control.

Life-cycle pricing
Two possibilities for APL to work with life-cycle pricing have been identified, to raise the price for the captive part that no longer are frequently demanded and to lower the price on “dying” articles kept in stock. Both of these methods can be conducted without pricing software support, it might however be easier to track the demand pattern if a pricing software is used. Rising of the price on captive parts into the end stage of primary product life cycle might be somewhat complex to do without pricing software support. The price of articles incorporated in phased-out primary products can, if spreadsheets are used, be raised based on mark-up that is considered reasonable. This does however require that requested data on these articles can be retrieved easy. The data required are primarily:

- Information on which parts that are exposed to competition
- Information on which articles that are incorporated in in phased-out primary products
- Demand frequency

Retrieval of this data might be difficult and time-consuming without pricing software. In addition, if handled separately it might be hard for APL to follow the

logic of life-cycle pricing. If it were possible to make notes on why the price is changed in the ERP system, spreadsheets would be a sufficient tool. Since the articles classified as "dying" are displayed in the Global Inventory Management system used at APL these articles can easily be transferred to spreadsheets where the priced can be lowered with a predetermined factor to find an reasonable price level. Manual adjustments based on demand patters might be required if the clearance list is generated without a pricing software. Nevertheless, it is important to notice that both GPM and PricePoint support life-cycle pricing.

Kitting
It is recommended to use a discount on the kits instead of an increased mark-up as currently used, which can be realised through the use of spreadsheets at APL. APL can execute this by using a specific kit group where a chosen discount for kits is applied, instead of using group 13 for kits. It is central to notice that the studied pricing software facilitates pricing of kits. Moreover, in PricePoint it is possible to link the price updates of articles incorporated in the kits to the price of the kits, thus facilitating an updated and correct kit price.

Price Elasticity
Measuring price elasticity is rather difficult and still somewhat disputed within the spare part pricing field. If price elasticity is to be measured at APL a pricing software solution is required since it is to difficult and time consuming to do these types of measures without the IT system support. A benefit with pricing software is their ability to do simulations before the change in price. This is further emphasised by Hinterhuber (2003) that argue that it is beneficial to test a suggested change in price before implementing a significant one.

Spare Part Competition
The spare parts that are mostly exposed to competition are the once in group 11, which constitute of 40% of APL spare parts. Nonetheless, the non-captive parts that are exposed to competition constitute 79% of the parts (if group 13 is classified as captive). Taking competitors price into consideration when using spreadsheets becomes unmanageable when the amount of part is vast. Even with pricing software a large share of work is still required to attain competitive spare part prices, which need to be categorised to reduce the number of articles handled. Furthermore, competitive data have to be gathered and stored. Syncron suggests that list prices can be used since the resources required for gathering these are moderate. In addition, it is vital to understand and handle that the list prices do not represent the true customer net price. Other data such as benchmarks from competitors can practically be inserted into software. Software does facilitate automated pricing but this should be treated with caution, since there is a high value in being able to motivate the prices towards the customers. If prices would be automated towards a profit maximisation goal based on the price elasticity, it would be a psychologically bad motive that the customer would not accept. It is better to do as Company B and display all central data for the price executer and complement this with a recommended price and let the price executer estimate if the price is reasonable. This makes the pricing decision rather easy and fast but still based on facts. In addition, if a customer complains

about prices, the pricing software makes it is easier to view if it is the correct parts and prices that are compared. It should also be stated that a risk with competitive pricing is the value-destroying spiral of a price war. Therefore it is important not to give the market signals that APL is lowering prices to gain market shares. This is an additional reason not to use automated competitive pricing since it is more likely that a person detects this danger.

Further considerations on pricing execution and software
Even if a pricing strategy can be established without a software support it becomes hard to sustain. Everyone with customer contact should be able to motivate the price without any complications. This is quite difficult if the customer contact at APL cannot easily find the information directly from a computer system. If the customer contact would instead search through ERP-system and spreadsheets it would take much time before the right price motivation could be provided to the customer. Moreover, if considering the psychological aspects, persons generally perceive products more valuable if they are viewed in the order from most expensive to least expensive, rather than vice versa. This has not been examined empirically, however since it is supported to use it in theory APL can apply it in their web-shop. This method might decrease the customer's price sensitivity and has therefore a profit potential.

It is essential to estimate the resources required for implementing and maintaining the value-based pricing strategy and new pricing software. Concerning the implementation, it is fair to assume that a severe amount of consultant hours will be required. This can be somewhat decreased if APL can prepare and collect the data required themselves. Furthermore, Company E stress that both during the implementation and during the continuous updates there were high consultancy dependence, which is amplified if special adaptions are included. Concerning the internal resources at APL, Syncron provides an KPI on the number of employees required for GPM, one person for every SEK 200 million in spare parts turnover and between 20,000-50,000 article numbers, alternatively two to three employees on part time. Moreover, Company E, with a sales turnover on spare part of approximately seven times Atlet's, has two employees dedicated to strategic and operative spare parts pricing. It is therefore reasonable to assume that either one employee full time or some personnel with shared responsibilities would be sufficient for APL. Today there is no one solely responsible for spare part pricing at APL. It might be possible to have one employee responsible for both spare parts sales and pricing. If this is realised there still might be a need for additional support for the operative spare part pricing.

Company E decided not to change their price list during one large implementation. Instead individual part prices were changed gradually, which in retrospect might have been a poor strategy. Contrary to Company E, Company A introduced their new price list in a single large implementation, a strategy that resulted in very few price complaints. In addition, during the price changes Company A focused on communication of the value they provide in terms of delivery speed, product quality in order to shift the focus from price to value. This insight can be of value for APL if a new price strategy is implemented.

However, it is essential to clarify that Company E, refer to repeated price changes on individual parts. It might therefore be possible to implement a new price strategy gradually as long as the price changes on the individual parts not is conducted repeatedly. Nevertheless, the implementation on for example certain categories may still be possible to conduct gradually. In fact, it might be preferable for APL to first set new prices on parts where the profit potential of a new pricing strategy is high, to retain a faster return on investment.

7.12.1 Pricing Software of interest for APL

Payback time for pricing software is fairly short, which can be seen Figure 11. The reason for this is the strong profit potential in pricing when it is possible to generate higher revenues immediately. If APL considers that there is a pricing potential with pricing software, then APL has to choose between different pricing software vendors. There are a number of B2B pricing software on the market and many of these support spare part pricing. However, only three pricing software vendors specialised in spare part pricing have been identified: Syncron, Navetti, and Servigistics. Syncron, with their software GPM and Navetti with their PricePoint are both position in Stockholm Sweden. Meanwhile Servigistics is an American vendor position in Atlanta. The Gartner report about B2B pricing software mentioned nine B2B pricing software vendors, Navetti and Servigistics was two of these. All others are US based and some of these did receive a higher ranking than both Navetti and Servigistics. In addition some of these other software vendors does also support spare part pricing though not specialised in it.

In addition, both Company D and Nissan Forklift have their own software solutions. These solutions provide a better pricing methodology than the spreadsheets that are currently used at APL, but are not as advanced as the pricing software provided by Syncron and Navetti. Company D developed their own software since they considered themselves to posses the in-house knowledge required and because it would be more expensive to purchase a pricing software on the market. Developing this type of pricing software requires resources and knowledge that are currently not available at APL. Furthermore, there is an impending risk that the personnel who develops the software starts to work at another company, with the loss of knowledge at APL as result. There might be some possibilities for APL to acquire ”cheap” software but since there are implementation costs and a risk that the software needs to be replaced anyway, caution is recommended. Accenture provides a pricing solution specialised on captive parts. Instead of providing software their customers send all their captive parts to Accenture’s lab where the prices are established. As a consequence Accenture will posses all the pricing knowledge, and some of the value in professional pricing is to be able to motivate prices to customers.

When further investigating the three identified spare part pricing software it is essential to consider the context in which they have been developed. In USA there is a sizable domestic market, hence many of the manufacturing companies focus on supplying this domestic market. Swedish manufacturing companies have on the other hand very large exports and small domestic market. The Swedish software vendors market their pricing software as a software with good

global support, since their software were developed together with large Swedish manufacturing companies that are dependent on export and act on a global market.

Choosing between Syncron's GPM and Navetti's PricePoint is difficult. Both are quite similar and have advantages. APL is already a client at Syncron since they uses Syncron's Inventory management solution, GIM. Therefore, some of the integration required might already be in place at APL. Navetti on the other hand has been present on the market for a longer time and is solely specialist in providing spare part pricing software, and used by many companies. PricePoint has also received a good review in the Gartner report, where GPM was not mentioned.

8. Conclusion and Recommendations

This chapter aims to fulfil the purpose of this master thesis, by providing a conclusion and recommendations for APL. In order to do so the three research questions, related to the pricing strategy, the eight concepts associated with spare part pricing, the pricing execution and software, are answered. In addition, a suggested timeframe for the execution of the suggested pricing strategy is provided. Finally this chapter presents some suggestions for future studies.

The purpose of this master thesis is to propose an applicable pricing strategy for APL and to identify methods and pricing-tools supporting this strategy. In order to fulfil this purpose the answers to the three research question are provided below and the first question is:

- What pricing strategies for spare parts at APL facilitate a sustainable profitability?

In order to answer the first research question, it first needs to be concluded that both the characteristics of spare parts and the resources required implementing an effective pricing strategy affect the choice of pricing strategy. It is suggested for APL to change pricing strategy from their current cost-based pricing strategy to a combination of cost-, market-, and value-based pricing strategy. The pricing strategy needs to be adapted to characteristics of different parts, where a value-based pricing strategy can be used for parts with no or limited competition, whilst for other parts that face competition a market- or even cost-based strategies are more suitable. Moreover, a cost-based strategy is suitable for low volume parts with infrequent demand where the amount of resources to price the parts should be kept low.

- Based on these focus areas how can the spare part pricing strategy at Atlet be improved?
  - Spare part pricing methods
  - Market adaptions
  - Discount policy
  - Captivity
  - Life-cycle pricing
  - Kitting
  - Price elasticity
  - Spare part competition

In order to answerer the second research question related focus areas are considered. First, a spare part categorisation has to be conducted in order to identify when a cost-, market-, or value-based pricing strategy should be used. After this categorisation the spare part can be priced based on the category in which they are included in, displayed in Figure 28.

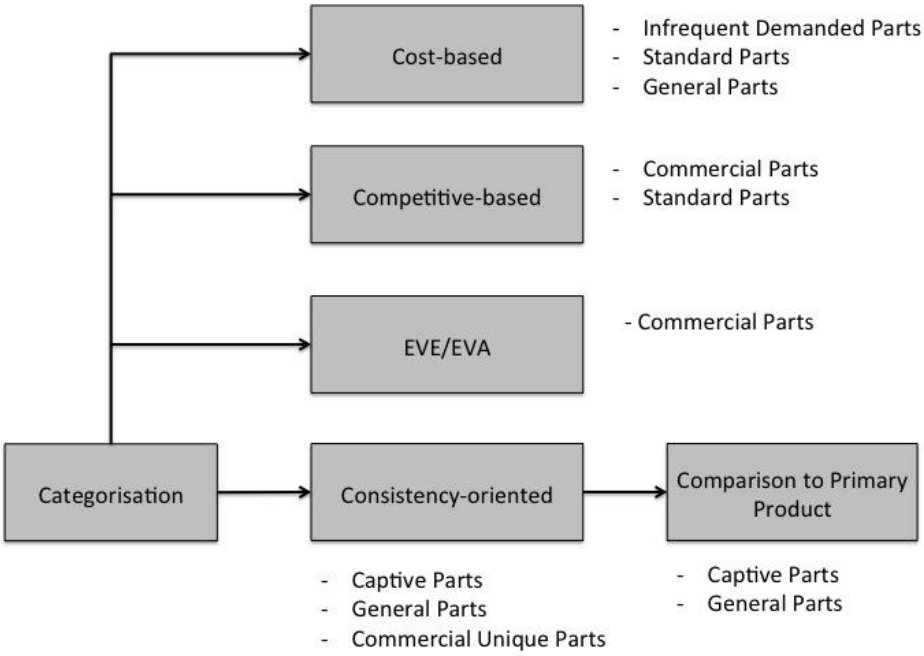

Figure 28 - Methods for spare part pricing

Standard parts and those parts with a very infrequent demand should be priced based on a *cost-based* method. *Cost-based* pricing can also be sufficient for some general parts that are not related to other parts or parts where the identification of value drivers is too complex. When pricing standard and commercial parts a *competitive-based* pricing should be used. For standard parts cost-based pricing can be used as a base but the competitors' prices should be used as a yardstick to adjust the price level. Owing to the fact that commercial parts often tend to be high volume parts it is even more important to secure the price level with regard to competitors. Some of these parts prices can therefore be directly linked to the prices of competitors or comparable parts. It is also crucial to consider the value of an original part compared to a non-original part when pricing standard or commercial parts. An estimated price premium is 15% to 20% more than the competitors' prices. A few commercial parts that are exposed to competition, and especially high volume articles such as wheels, can be value-based priced with *EVE/EVA*. However this method requires additional resources and should only be used for those parts that are known to have a superior quality towards non-original competitors. These parts are then priced based on both market conditions and the value provided towards the customer. It is then essential to communicate the extra value that the original part provides for the customer.

All of the captive parts, some of the commercial unique parts, and some of the general parts should be sorted in spare part families with at least one value driver for each part family. Thereafter, these parts should be in line with the *consistency-oriented* methodology priced based on the value driver to attain a price logic curve, which provides the benefit of a logical pricing for both the customer and APL. If *consistency-oriented* pricing is conducted on commercial unique parts the competitive information needs to be combined with this method. However, if consistency-oriented pricing is used for general parts the

risk of the parts being copied needs to be considered. For all the captive parts, some of the commercial unique parts, and some of the general part these part families should be combined with pricing in *comparison to primary product*. In order to acquire this information value surveys can be used. Value surveys have proven to generate a price that is reasonable from the customers' perspective. This price should then be used to see if the price logic curve should be lifted or lowered, which can increase revenues and customer satisfaction, and lead to a sustainable profit

When APL has established the global list price, based on the spare part pricing methods, *market adaption* of this global list price can be conducted. It is essential to execute this in the described order, since high quality price logic is required before the global list price successfully can be market-adapted. A suitable procedure to adapt the global list price to market conditions is to use a level factor and a transfer factor to attain the recommended local list price and transfer price for each market. This is necessary since the demand, price sensitivity and competition might differ on different markets. In addition, APL can adjust these factors further on specific parts or part families to ensure a well-adapted market price.

Discount policy is a central issue when developing a price strategy. But if the prices are market-adapted, with market adjusted level and transfer factors, the focus on discounts can be somewhat reduced. If APL decides to use market-adapted prices the transfer factor decides the discount to the sales units. Moreover, if recommended list price is well communicated towards the sales units it limits the size of the discounts towards their customers due to the visible connection to their margins. It might still be of interest to use a recommended or firm discount limits for the APL's subsidiaries. However this should be viewed as a future possibility and not have a high priority today. Another approach of interest for APL, is to stimulate sales through discounts based on sales potential of certain markets, customers or part families.

The pricing methods for captive part have been outlined above. Nonetheless there are additional considerations with regards to the *captivity* of spare parts. Due to the lack of competition on captive parts the profit potential is high. Consequently, if possible it is in APL's interest to increase the amount of captive parts. This mainly concerns parts with high volume or critical parts. It has to be mention that this approach when applied to critical parts requires good availability and delivery speed due to the characteristics of critical parts. This in turn places extra pressure on the logistic functions. Furthermore, it is important to thoroughly calculate the investments necessary to increase the captivity of spare parts.

Two different aspects of *life-cycle pricing* are of interest for APL. Firstly, a yearly mark-up can be added on captive parts to ensure that the costs not strip away the profit. Secondly, a clearance list can be used to decrease the number of "dying" articles in stock to retrieve some contribution from parts that would otherwise be scraped.

APL should use *kitting* to gain additional sales, lower price sensitivity, and increase customer satisfaction. The service kits should therefore not be placed in group 13. Instead the prices of all ingoing components should be summarised into a kit price, which then receives a small discount. What is of greater importance when pricing kits is that there should be a discount rather than the actual size of this discount. The vital issue is that the customers do not discover that the kits are cheaper if components are purchased individually and feel deceived. A fair yardstick on the size of this discount is somewhere between 5% to 20%.

It is quite difficult to measure *price elasticity* on spare parts but price changes need to be evaluated. The parts for which price elasticity is of most interest are the competitive parts. This information should however be a complement to previously presented methods and should therefore not be viewed as a pricing method by itself.

The third and final research question is:

- Which pricing-tools existing on the market can support the execution of recommended pricing strategy?

In order to answer this research question it is central to first clarify that this master thesis do not provide a final alternative for a pricing tool. Instead a few pricing tools that support the execution of the recommended pricing strategy is presented.

Two pricing software have been examined, PricePoint and Global Pricing Management. Both of these pricing software provide advanced spare part pricing solutions for global companies and support the suggested pricing strategy, even though the execution might differ somewhat. A few other B2B pricing software which also might be of interest for APL are identified in the thesis. If a pricing software is to be chosen all alternatives need to be more thoroughly investigated. In addition, some of the pricing areas of interest can be executed through the usage of simpler tools such as spreadsheets. This can be an adequate short-term solution but should not be viewed as a sustainable solution over a longer part of time.

8.1 Timeframe and consideration when executing the new pricing strategy

In order to gain a clear view of how a new pricing strategy could be implemented and executed a timeframe is provided. The timeframe, displayed in Figure 29, is divided into three phases. It is essential to first start on a global level, to gain a clear price logic at APL. When this price logic is in place the focus on regional or local pricing should be increased. Even if recommended to start on a global level it is important to involve all stakeholders at Atlet. This especially concerns the front-end personnel, in order to attain a successful implementation of a new pricing strategy and tool.

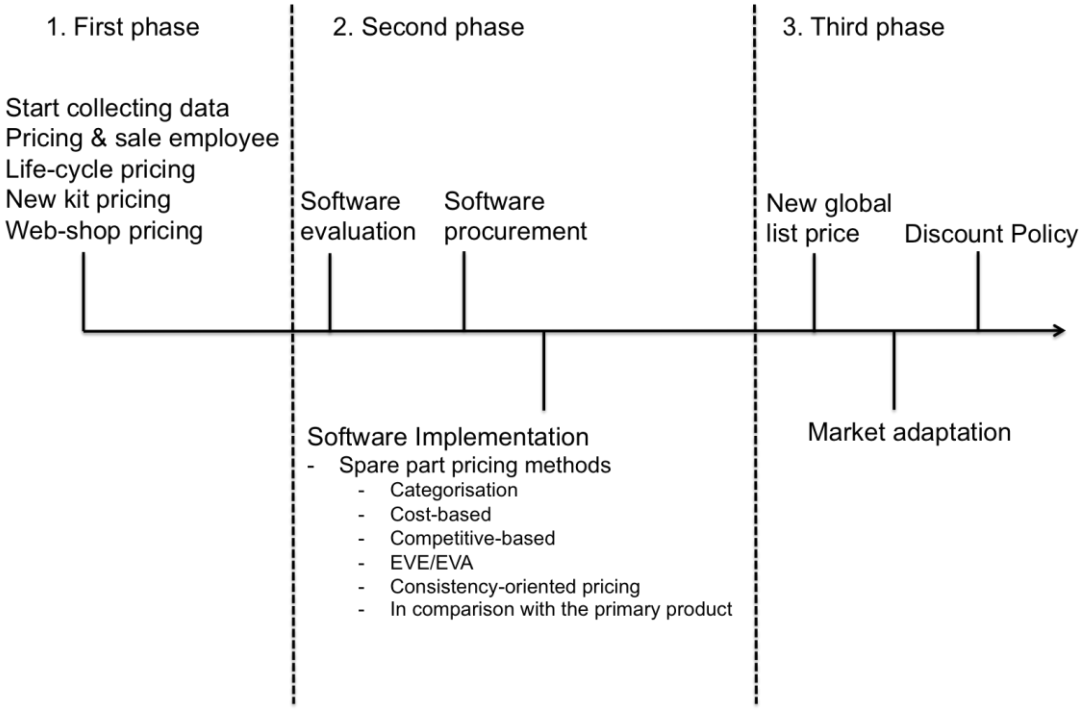

Figure 29 - Timeframe of how the suggested new pricing strategy could be executed

8.1.1 First phase

The first phase of the timeframe is those things that APL can start with directly. This phase constitutes of the following suggestions on how APL can proceed:

- Web-shop pricing
- New kit pricing
- Life-cycle pricing
- Start collecting data
- Pricing & sale employee

Most pricing strategies require dedicated resources, but managing the web-shop by ordering the listed prices from highest to lowest requires little work. In order to change the kit prices so that the prices are based on the summarised price of all ingoing components together with a small discount requires some resources, however still not a substantial amount. As previously stated this excludes the kits where the ingoing components are not sold separately. Pricing kits can be done manually but the examined software does however include functions that support the pricing of kits. Thus, APL can handle this in a smoother and more sustainable manner. The same accounts for life-cycle pricing, which can be conducted with information from GIM and spreadsheets. Still, it is more practical to handle life-cycle pricing with pricing software. Data required for consistency-oriented pricing can start to be collected as soon as spare part families and value drivers have been identified. Moreover, to evaluate the profit potential of a value-based pricing, a value survey can be conducted. This value survey enables generation of data on whether the components' prices are acceptable for the customer. An efficient way to execute this is through a web-based value survey targeting the service engineers. The information should then be used to compare the captive spare part families with the percentages from the value survey in

order to identify the profit potential on the captive parts. Furthermore, data required to price high volume competitive parts based on EVE/EVA can be collected in the first phase.

Even though the spare parts become more manageable when sorted into categories and families there is still a vast number of items that needs to be priced. Efficient pricing requires that someone is responsible for the practice of the pricing. This might be difficult with the resources available at APL today. A solution could be to combine the pricing responsibility with a sales responsibility. This can be beneficial since there are synergies between these functions. If a pricing software is implemented an employee should start by collecting and preparing all data, thus keeping the implementation cost down. A spare part sales responsible can use the information from EVE/EVA to promote that the original spare parts are superior to non-original spare parts. There is however increased costs connected to an additional employee, which need to be considered. In contrast when evaluating this it is essential to bear in mind the high profit potential, increased pricing logic, and the high margins of spare parts.

8.1.2 Second phase

The second phase of the timeframe constitutes of topics that are directly related to a pricing software solution. These topics are:

- Software evaluation
- Software procurement
- Software implementation

Spare part pricing methodology

The second phase starts with software evaluation. It is important to be aware of the pricing methodology provided by potential software vendors already in the first phase, to ensure that the correct data are collected. Moreover, it is recommended that the pricing employee is greatly involved in the software evaluation[11], procurement, and implementation. By involving the pricing employee early, it is possible to gain in-house knowledge, lower implementation costs and reduce consultant dependency. When the pricing software is chosen the methodology, additional data and categorisation can be implemented together with the software vendor's consultants. Furthermore, the implementation process should be faster since a large share of the data already should have been collected, as APL should have gain insight into spare part pricing strategy and methodology from the first phase. Knowledge of the software vendor is very valuable when the pricing parts is taken to the next step with cost-based, competitive-based, EVE/EVA, and consistency-oriented pricing. The last step of the methodology is the comparison with the primary products that includes value surveys, either by using the previous results or by doing a more extensive survey. If a second survey is conducted it should focus on a wider range of front-end personnel such as employees at the sales units, but it could also be valuable to include some customers. This can be complemented with conjoint studies for further understanding. Moreover, the pricing logic for kits

[11] Appendix C

and life-cycle pricing should be added into the pricing software with the expertise from the consultants. Software makes it possible to automate the pricing process, this is however not recommended because one of the most central benefits with professional pricing is to be able to motivate the prices. Instead it is suggested to use the software to provide recommendations on how to carry out the pricing, but that these need to be approved by personnel at APL.

8.1.3 Third phase

This last phase occurs when the global list price is ready for the market. So this section describes recommendations on how APL can proceed with:

- The new global list price
- Market-adaption
- Discount policy

When the pricing methodology and software are in place it is possible to generate a new global list price. The new prices should be on the market as soon as possible, to facilitate a fast return on investments. Furthermore, with visual price logic of the pricing software, based on data such as value drivers, historical prices and competitive situations, it becomes possible for the employees to motivate the price level. With a high quality global list price in place it becomes interesting to adjust the prices after market-conditions, to create recommended local list and transfer prices. When conducting this market adoption it is essential to communicate the price logic and the benefits it provides, in order to motivate the sales units to use and accept the new prices. As previously mentioned, by first adapting the price to market conditions, the focus on discounts can be somewhat reduced. It is however still of interest for APL to use recommended or firm discount limits and to develop discount policies, based on the sales potential. With all changes in place this should facilitate pricing strategy and methodology for sustainable profit and increased customer satisfaction at APL.

8.2 Suggestions for future academic studies

This master thesis has analysed the pricing of spare parts. Pricing is one of the cornerstones in marketing but has been little academic attention and especially within industrial marketing. Spare parts have mostly been investigated in the field of materials planning and the aftermarket has also been neglected by academics and the industry. Therefore in the field of pricing, pricing on the aftermarket, and the aftermarket in general, there is a lot of room for further research.

In addition, this thesis has integrated pricing strategy with the purchasing of pricing software. ERP-systems are discussed in the literature but the topics related to pricing software are not academically covered at all academically. This, provide a wide room for academic research. During the last ten years many large companies have implemented spare part pricing software. Therefore an interesting field of research is to evaluate the effects of these implementations. The evaluation can be conducted as a comparative case study, which would include the examination of companies' performance based on profitability and

customer loyalty, prior to and after the implementation. Furthermore, the companies that today have advanced spare part pricing software are very large companies. An additional field of interest would be to do research on implementation of spare part pricing software at companies that are somewhat smaller, approximately 1000 to 2500 employees. A research question that could be studied regards the possible trade-off between the investments required and the potential profit connected to the size of the company.

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Loading, unloading and transportation

PICCOLO PLL
Compact pedestrian pallet truck

For loading/unloading on dock levellers and short distance internal transport. Comfortable and safe to drive with offset tiller arm. ATC for PIN code access, driver category setting and on-board diagnostics. Climbing wheels.
Lift capacity 1450/1800/2000 kg

DUO PLE
Compact pedestrian pallet truck with fork lift

For shopfloor replenishing, order picking and short distance internal transports. Comfortable and safe to drive with offset tiller arm. ATC for PIN code access, driver category setting and on-board diagnostics. Climbing wheels.
Lift capacity 1800 kg
Lift height 730 mm

PRESTO PLP
Stand-on pallet truck

For internal transport and loading/unloading on dock levellers. Foldable platform and foldable side protection bars or fixed driver platform. Friction Force for optimum traction in all conditions.
Lift capacity 2000/2500 kg

ERGO ALL/XLL
Stand-in and sit-on low lifters

For internal transport in heavy-duty operations, long travel distances. Excellent visibility. Wide range of options and handling attachments. AC. Stability Support Systems S3. ATC for PIN access code (XLL).
Lift capacity 2000/3000 kg

Stacking

SOLO PSL
Compact pedestrian stacker

For loading/unloading, stacking and short internal transport. Light weight suitable for higher raised floors.
Lift capacity 1250 kg
Lift height up to 2,1 metres

ALTO PS
Compact pedestrian stacker

For stacking and short distance internal transport. Ideal in tight spaces. Offset tiller arm, AC and four-wheel design. Pin code access and on-board diagnostics with Atlet truck computer.
Lift heights up to 3.6 metres
Lift capacity 1250 kg

ALTO PSH
Heavy duty version up to 4.8 metres lift
Lift capacity 1600/2000 kg
Lift heights up to 4.8 metres

NOVA TSP
Stand-on pedestrian stacker

Versatile ride-on stacker for stacking, internal transport, double pallet handling and order picking. Foldable or fixed driver platform. Foldable side protection bars.
Lift capacity 1200/1400/1500 kg
Lift heights up to 5.4 metres

ERGO A
Stand-in stacker
Pioneered by Atlet

Versatile, space saving, stand-in stacker for efficient stacking, internal transport, double pallet handling. Foldable side stabilisers for higher residual capacity. Junior and senior versions. AC. Stability Support System (S3).
Lift capacity 1600/2000 kg
Lift heights up to 6.3 metres

ERGO X
Sit-on stacker
Pioneered by Atlet

Versatile and space saving. For stacking, internal transport and double pallet handling. Foldable side stabilisers for higher residual capacity. Junior and senior versions. ATC truck computer with PIN code access. AC. Stability Support System (S3).
Lift capacity 1600/2000 kg
Lift heights up to 6.3 metres

ERGO XML
Sit on double stackers

Lift capacity 1600 kg
Lift height 1.5 metres

ERGO ATF/XTF
Telereach stacker stand-in and sit-on telescopic forks

Telescopic forks to reach double-pallet depth into racking or block stacks, and for extra reach when loading vehicles. Normal handling with forks retracted.
Junior and senior versions. ATC truck computer with PIN code access. AC. Stability Support System (S3).
Lift capacity 1000 kg
Lift heights up to 6.3 metres

TERGO® ULS
Narrow chassis reach truck

Nimble and efficient reach truck for warehouse or factories in medium intense operations. High quality, performance and ergonomics for lowest total cost. Available with a wide range of options for perfect adaption to your material handling solution.
Lift capacity 1200/1400 kg
Lift heights up to 7.25 metres

TERGO® UND
Narrow chassis reach truck

Narrow chassis together with a strong wide mast gives lifting performance in top class. Suitable for different logistic medium intense solutions including drive-in racking where small dimensions and cost efficiency is prioritised.
Lift capacity 1400 kg
Lift heights up to 8.95 metres

TERGO® UMS/UHD/UHX
Reach truck

Market leading ergonomics with fully adjustable operator environment, makes the operator focused and efficient all shift. Along with personal settings for top personal performance. Stability support system, S3 and superior features like Active Spin Reduction, ASR and Level Assistance System, LAS makes this a really efficient reach truck. Multi shift operation is supported with the unique Fast track motor power battery change system.
Lift capacity 1600/2000/2500 kg
Lift heights up to 12.1 metres

TERGO® UMS-TF/UHD-TF/UHX-TF
Reach truck. Telescopic forks

Specially-designed to work in space saving double deep applications, Atlet's heavy-duty reach trucks are also available with telescopic forks. This is stability, performance and ergonomics without compromises – for your warehousing productivity.
Lift capacity 2000/2500 kg
Lift heights up to 12.1 metres

TERGO FORTE UFS
Four-way reach truck

Multi-directional reach truck for stacking and transport of long and awkward loads in tight spaces. Also suitable for general palethandling duties.
Lift capacity 2000/2500 kg
Lift heights up to 9 metres

Double stacking

DOPPIO PSD
Compact pedestrian stacker for double pallet handling

For loading/unloading on dock levellers, double pallet stacking and short distance internal transport. Dual lift capability for unloading 2 pallets at once from double stacked lorries. Offset tiller arm. Pin code access and on-board diagnostics with Atlet truck computer.
Lift capacity 1250 kg, 1600 kg on the straddles
Lift heights up to 2,1 metres

PRESTO PLP CD
Stand-on compact double stacker

For loading/unloading on dock levellers, double pallet stacking and internal transport. Dual lift capability for handling two pallets at once. Foldable platform and foldable side protection bars, or fixed platform. Friction force for optimum traction in all conditions. PIN code access and on-board diagnostics with Atlet Truck computer.
Lift capacity
800–1000kg / 2000kg on straddle lift.
Lift heights 1,7 meters

Narrow aisle handling

TERGO FORTE URF
Swivel reach truck
up to 10.35 meters

Very narrow aisle, man-down, swivel reach truck for stacking in guided aisles down to 1.6 m. A manoeuvrable truck for VNA and free-ranging around the warehouse. High stacking and high capacity with maximum comfort.
Lift capacity
1250/1500 kg
Lift heights
up to 10.35 metres

ESP ERGO STACKER PICKER
VNA man-up stacker/picker

Very narrow aisle, man-up stackers/order pickers. For efficient stacking in rail or wire guided aisles from 1.5 m. Rotating or shuttle/telescopic forks. Option of semiautomatic system with positioning device.
Lift capacity
500/1500 kg
Lift heights
up to 15.85 metres

Order picking

TEMPO PP
Low level order picker

Tempo PPL – with low step-in for ground and occasional first level picking. Stability Support System (S3) and servo steering optional.
Lift capacity 2000/2500 kg

Tempo PPD – with rapid driver platform lift for more frequent first level picking. Stability Support System (S3) and servo steering optional.
Lift capacity 2000/2500 kg

Tempo PPF – with adjustable fork height. Stability Support System (S3) and servo steering optional.
Lift capacity 1200 kg
Lift height 990 mm

Tempo PPC – combining rapid driver platform lift with adjustable fork height. Stability Support System (S3) and servo steering optional.
Lift capacity 1200 kg
Lift height 990 mm

Tempo PPS
– heavy duty scissor lift version with the option of rapid driver lift platform. Stability Support System (S3) and servo steering optional.
Lift capacity 2000 kg
Lift height 900 mm

OP
High level order picker

OPM – picking up to 4.6 metres. For picking up to level 3.
Lift capacity
1000 kg

OPH – picking up to 6.9 meters. In wide and narrow guided aisles for racking or shelf storage.
Lift capacity 1000 kg

OPC – picking up to 7.8 meters. "Diagonal lift". Optional positioning of controls and steering. In wide and narrow guided aisles for racking or shelf storage.
Lift capacity 1000 kg

OPS – picking up to 9.85 meters. Exceptional stability and safety for operating at extreme picking heights in wide or VNA guided aisles. Optional positioning of controls and steering.
Lift capacity 1000 kg

Counterbalance

BALANCE RANGE, ELECTRIC

The ET/EF/EH electric counterbalance trucks are silent, easy-to-drive and efficient. They have top-class ergonomics with a fully adjustable driver compartment.
On board truck computer offers PIN code access and service diagnostics. AC drive motor gives high class performance and low running costs.
The Balance truck range comes with a full range of mast systems and an efficient battery changeover system.

ET
3-wheel
counterbalance truck

48V three wheel CB truck for loading/unloading, stacking and internal transport, ideal for warehouses and terminals.
Lift capacity
1250/1500/1600/1750/1800/2000 kg
Lift heights
up to 7.0 metres

EF
4-wheel
counterbalance truck

48V four wheel CB truck for loading/unloading, stacking and internal transport. Four wheel for comfort on uneven surfaces, ideal for warehouse and factory floors.
Lift capacity
1600/1800/2000 kg
Lift heights
up to 7.0 metres

EH
4-wheel
counterbalance truck

80V four wheel CB truck for safe and efficient indoor and outdoor operations. Comfortable counterbalance truck that satisfies demanding and heavy lifting requirements.
Lift capacity
2000/2500/3000 kg
Lift heights
up to 7.0 metres

BALANCE RANGE, IC

The G/D internal combustion (LPG/diesel) counterbalance trucks with car-like driveability – featuring advanced safety and efficiency enhancing technology. The meter panel provides on-board diagnostics for trouble-shooting.
This truck range meets demanding environmental, financial and heavy lifting requirements. The Balance trucks come with a full selection of mast systems.
Balance G-RANGE – LPG engine: ECO selector for ECO mode gives significantly lower fuel consumption.
Balance D-RANGE – Diesel engine: Reliable and easy-to-start with rapid preheating.

GL/DL
4-wheel
IC counterbalance truck

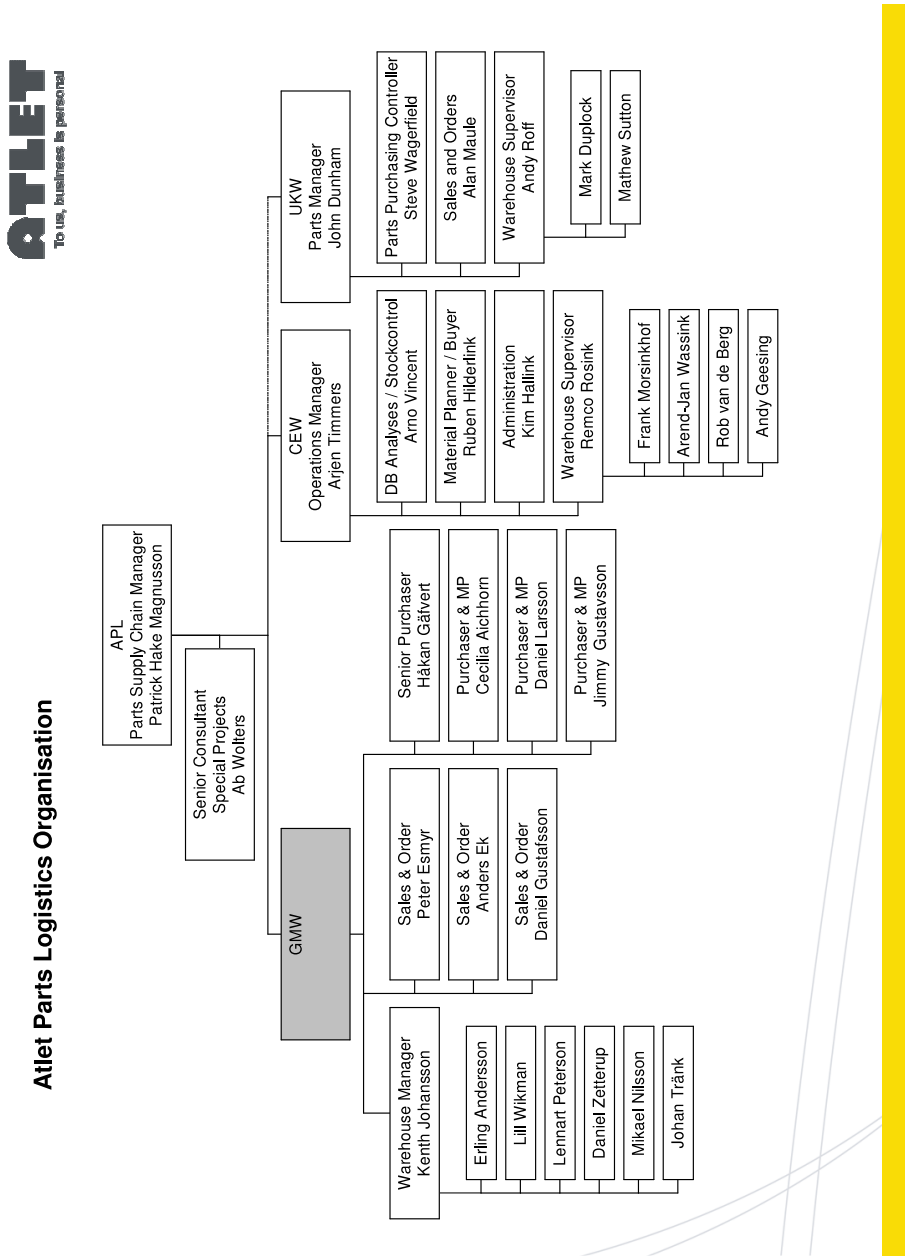
CB truck with world-class internal combustion engine. The universal counterbalance truck for rapid internal transport and loading/unloading.
Lift capacity
1500/1800/2000/2500/3000/3200/3500 kg
Lift heights
up to 7.0 metres

GH/DH
4-wheel
IC counterbalance truck

CB truck with world-class internal combustion engine. Wide range of optional extras ensures optimal adaptation to handling needs.
Lift capacity 3500/4000/4500/5000 kg
Lift heights
up to 7.0 metres

ATLET
To us, business is personal

Appendix B


ATLET
To us, business is personal
Atlet Parts Logistics Organisation
APL
Parts Supply Chain Manager
Patrick Hake Magnusson
Senior Consultant
Special Projects
Ab Wolters
GMW
Warehouse Manager
Kenth Johansson
Erling Andersson
Lill Wikman
Lennart Peterson
Daniel Zetterup
Mikael Nilsson
Johan Tränk
Sales & Order
Peter Esmyr
Sales & Order
Anders Ek
Sales & Order
Daniel Gustafsson
Senior Purchaser
Håkan Gäfvert
Purchaser & MP
Cecilia Aichhorn
Purchaser & MP
Daniel Larsson
Purchaser & MP
Jimmy Gustavsson
CEW
Operations Manager
Arjen Timmers
DB Analyses / Stockcontrol
Arno Vincent
Material Planner / Buyer
Ruben Hilderlink
Administration
Kim Hallink
Warehouse Supervisor
Remco Rosink
Frank Morsinkhof
Arend-Jan Wassink
Rob van de Berg
Andy Geesing
UKW
Parts Manager
John Dunham
Parts Purchasing Controller
Steve Wagerfield
Sales and Orders
Alan Maule
Warehouse Supervisor
Andy Roff
Mark Duplock
Mathew Sutton

Appendix C

Pricing software selection and Implementation

The different software can look very similar so it can be hard to understand which one that suites the company needs best. Meehan et al. (2011) suggest a five-step evaluation process, which can be seen in Figure 30, and will be explained further below:

Figure 30 - The five software evaluation steps (Mehaan et al. 2011)

In addition, there are six questions that are valid to ask when procuring pricing software:

- Do the software match the scope and requirements of the problems?
- Is it our processes and pricing strategy that is driving the selection of the solution instead of the other way around?
- Is it possible to improve existing tools and systems to meet the needs more cost-effectively than a new system that will generate significant selection and implementation expenses?
- Can the existing IT system and capabilities complement or complicate pricing software implementation and use?
- Can the current processes be implemented in the new software or do some internal improvements need to be solved first?
- Have the employees been trained to implement, use, and maintain the proposed pricing technology?

Defining Scope and Approach

This can be done by starting with asking where the company are today and then where the company wants to be, a Gap Analysis, and then continue with the scope and the finish with the approach.

Define Requirements and Prepare for Vendor Demo

Before contacting the vendors for a Request for proposal (RFP) there are a number of issues that have to be solved. The first phase is to understand the business processes that need to be changed, the new profit metrics, as well as governance issues. The new pricing software may change how the sales force is compensated or how the daily workflow is prioritized. The second phase is to prepare for the vendor demo. This is often done by letting the vendors demonstrate the most difficult business scenario, a use case, the company can envision. But this view has flaws, the solution should be to fit the most common cases rather than the unlikely ones. So to proceed there is a need for:

- Collecting the most common cases for the demo
- Create a cross-functional team to evaluate the software
- Build an assessment framework
- Let the company IT group work with the vendor so they base their demo on internal data.

Conduct Vendor Demos and Follow Ups
The vendors often have a talent in creating presentation and even if user interface are an important criteria it is just one of others. During the demonstration with its artificiality it can be hard to understand the capabilities of the software, there are, however, methods for this. When the vendors demonstrate the most common cases, the company can present two fresh situations: one new case and one modification of an existing one. If the vendor is required to make adjustments on the spot the evaluators can witness the modification. This makes the vendor to move from the demo-only presentation to actual usability and configuration. The evaluation team gets a better insight and understanding on how to customize the software for e.g. integration with the company´s system. As an example, a company gave the software vendors a case with regional English-language price list in Australian dollars and during the presentation the vendors were asked to modify their support to multiple languages and currencies. Furthermore, they had to add a new case to support index based pricing. The vendors dislike this practice but the company was a clear winner in finding a well-suited software solution. (Meehan et al. 2011)

Develop Final Vendor Recommendation
Using the assessment framework developed in the second step the evaluator score the vendors demonstration. Examples of criteria can be:

- Standard functionality requirements
- Differentiating functionality requirements
- Technical requirements
- Vendor profile and viability
- Costs
- Customer references and executive visits
- Product demonstrations
- Implementation approach

Initiate Procurement Process
This last step is the details of the procurement and when excluding payment and pricing these criteria can be considered:

- Software licensing
- Implementing services
- Technical and implementation team training
- User conferences
- Technical support and service-level agreements
- Annual maintenance
- Core system enhancements and customizations
- Ownership of data and intellectual property
- Warrantees and performance guarantees
- Vendor references or success stories demonstrating qualifications

Appendix D

Table 11 - Interviewees at investigated companies

Company	Title	Date
Company A	Manager Business Development	2012-02-20
Company B	Global Product Manager	2012-02-29
Company C	Service Manager	2012-03-06
Company C	Spare Part responsible	2012-03-06
Company D	Project Leader Information System	2012-03-27
Company D	Product Manager, Parts & Accessories	2012-03-27
Company E	Product Manager Spare Parts	2012-05-07
Company E	Operating Price Handler	2012-05-07

Table 12 - Interviewees at pricing software vendors

Company	Title	Date
Syncron	Price Consultancy Manager	2012-03-15
Navetti	Senior Partner	2012-03-21
Navetti	Consultant	2012-03-21

Table 13 - Interviewee at external company

Interviewee	Company	Title	Date
Robbert Kreber	Nissan Forklift Europe BV	Part Sales/Marketing & Truck Fleet Sales Manager	2012-04-24

Table 14 - Interviewees at Atlet

Interviewee	Division	Title	Date
Ab Wolters	Atlet Part Logistics	Senior Consultant - Special Projects	2012-02-02
Håkan Gäfvert	Atlet Part Logistics	Senior Purchaser	2012-03-15
Patrick Magnusson	Atlet Part Logistics	Parts Supply Chain Manager	2012-03-22 2012-04-17
Håkan Ek	Atlet Market	Fleet Management/Used/Key Account	2012-03-23
Anders Ek	Atlet Part Logistics	Sales & Order	2012-03-29
Jimmy Gustavsson	Atlet Part Logistics	Purchaser & Material Planner	2012-04-02
Joakim Krona	Atlet Sweden	Sales Manager	2012-04-02
David Ruxton	Atlet International	General Manager	2012-04-04
Göran Andersson	Atlet Sweden	Aftermarket Manager	2012-04-19

Appendix E

Interview Template – Atlet Parts Logistics, APL

The purpose of these interviews is to increase the knowledge about Atlet, but also to gain insight on the employee's opinion on pricing conducted today as well as expectations and thoughts on future pricing strategy. The interviews will be conducted with managers from different departments at Atlet, as well as key persons employed at APL.

1. Tell us about your role within the company.
    a. What are your main tasks and responsibilities?
    b. Which other departments are you working closely with/have been employed at?

2. Order how you perceive that the following factors influence APL customers when choosing spare part supplier, start with the most important one:
    a. Supplier's reputation
    b. Product quality
    c. Delivery Speed
    d. Technical support/ Service
    e. Price
    f. Delivery reliability

3. Describe the distribution channels in used for spare parts.
    a. Subsidiaries
    b. Resellers
    c. Distributers
    d. Original Equipment Manufacture

4. What role does price occupy in the overall marketing strategy?

5. Which are your largest competitors? Are there any difference depending on which market is referred to?

6. Describe how APL pricing currently are carried out.
    a. Segmentation (Product groups, markets, attributes etc.)
    b. Competition
    c. Rebates/Discount (Policy for this)
    d. Service deals

7. Do you work with kitting of spare parts? How is the price established for these?

8. Is the price affected on where in the life cycle the product presently is?

9. What are the major benefits on how the pricing is carried out today?

10. What are the major drawbacks on how the pricing is carried out today?

Interview Template – External Companies

The purpose of these interviews is to gain knowledge on how different industrial companies work with pricing of spare parts. The companies interviewed have products that share some characteristics with Atlet's product, thus can benchmarking and comparisons to Atlet be made. Both pricing strategies and tools used within the different companies will be of interest.

1. Tell us about your role within **[Company]**.
    a. What are your main tasks and responsibilities?
    b. Which departments are you working closely with/have been employed at
    c. What background do you have outside of the company?
    d. In what way have you worked with pricing strategy of spare parts?

2. Tell us about **[Company]** and the department you work for?
    a. Number of employees
    b. Turnover
    c. Market presence
    d. Distribution channels and warehouses
    e. Competitive situation (for primary products and spare parts)

3. Tell us about the characteristics of your spare parts:
    a. How many spare parts articles do you have?
    b. Roughly how many of these articles are kept in stock?
    c. How large is the volume sold on a yearly basis?
    d. What are the characters of the orders? (Like, number of order lines, large volumes or small more frequent)

4. Describe the distribution channel used for spare parts
    a. Subsidiaries
    b. Resellers
    c. Distributers
    d. Original Equipment Manufacturer

5. Order how you perceive that the following factors influence your customers when choosing spare part supplier, start with the most important one:
    g. Supplier's reputation
    h. Product quality
    i. Delivery speed
    j. Technical support/service
    k. Price

6. Which factors do you consider order qualifiers and which are order winners?

7. Describe your competitors on your spare parts market:
    a. Who are your competitors?
    b. Are there any difference depending on which market is referred to?
    c. How does this competitive situation affect the price?

8. Pricing can affect customer loyalty, which is a huge profit lever. Do you measure customer loyalty/customer re-purchase? How?

9. Tell us about your pricing strategy and pricing methods for spare parts:
   a. What role does price occupy in the overall marketing strategy?
   b. Describe how pricing of spare parts currently is carried out?
   c. Do you segment the spare parts? (Product groups, market, attributes, etc.?)
   d. Are your prices affected on where in the life cycle the product is situated?
   e. How do you work with discounts? Are there any discount policies?
   f. If you know the demand from the customer, let say that you know that the customer is buying 60% the spare parts he should need. What do you think of giving a bonus if he reaches 90-100?
   g. Can you describe how valuable communicating the price changes is?
   h. Providing OEM-parts can be seen as an extra value, as a rule of thumb, how much in percentage do you think that this value is worth?
   i. What are the major benefits how pricing is carried out today?
   j. What are the major drawbacks on how pricing is carried out today?

10. In theory there are an optimum price/volume-ratio to maximize profit, what do you think about raising and/or lowering price to find this optimum? Does this only work for some types of parts?

11. There is a method of pricing spare parts where you start with the whole product as 1 and then price the different components in relationship to the whole product price (like 0,4 for a main components and with a total sum that then is higher than 1), what do you think of this method?
   a. And if you use this or think it is a good method, do you have a rule of thumb of what number the total sum should be for the whole product?
   b. We have heard a recommended figure for this for components and their parts, do you know any sum or that there is a rule of thumb on this?
   c. If this tactic is used it is possible to price the same spare part differently depending on which primary product it is included in, do you think this is a good idea?

12. Do you work with kitting of spare parts?

13. If you use kitting, do you think that it is the increased sales through the bundling or the opportunity to value-price (then with a higher price) that is most interesting? Or something else?

14. Tell us more about the tools that are use for pricing:
   a. What tools (spreadsheets, software etc.) are used to support the pricing strategy?
   b. What do you think of using price optimization software?

15. What difficulties have you experienced during and after the implementation of the pricing strategy / tools currently used?

16. What do you think of replacing components instead of repairing parts? Do you have a rule of thumb of how much a maximum price on the component, in percentage in comparison to the price of the truck, could be?

17. Do you have any primary product that is more critical for breakdown than others? Are the spare parts related to these products handled in a different way? (E.g. components that normally might not be seen as strategic items is classified as strategic items due to short response time is needed)