

# Identifying the product deletion decision-making process at a large multinational company

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# ABSTRACT

**Date:** 2023-06-04

**Title:** Identifying the product deletion decision-making process at a large multinational company

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**Keywords:** Product deletion process; Product deletion decision-making; Product portfolio management - product deletion,

**Aim:** The purpose of this study is to identify how a large multinational company is managing its product portfolios, specifically how they conduct product deletion, and examine to what extent those decisions are influenced by external actors

**Research question:** How does a large multinational company manage its product deletion decision-making and what role do external actors' influences play?

**Methodology:** This study is qualitative and utilizes an abductive approach where a theoretical framework has been created based on gatherings from a literature study combined with the empirical results based on five semi-structured interviews conducted with both local and global product managers at a large multinational company.

**Conclusion:** This study has successfully identified how a large multinational company works with product deletion decision-making. The conclusion of this study is that the studied company has no formal ways of working with product deletion and that there is currently no way of evaluating a product deletion decision. This study has also identified that the influence that external actors have varies greatly depending on the actor, and the precise amount of influence is impossible to measure.

# SAMMANFATTNING

**Datum:** 2023-06-04

**Titel:** Identifiering av beslutsfattandet kring produktborttagningsprocessen på ett stort multinationellt företag

**Nivå:** Examensarbete på mastersnivå inom civilingenjörsprogrammet i industriell ekonomi, produkt- och processutveckling - 30 högskolepoäng

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**Nyckelord:** Produktborttagningsprocessen; Beslutsfattande avseende produktborttagning; Produktportföljshantering – produktborttagning.

**Syfte:** Syftet med denna studie är att identifiera hur stora multinationella företag hanterar sina produktportföljer, specifikt hur de bedriver produktborttagning och hur mycket dessa beslut påverkas av externa aktörer.

**Forskningsfråga:** Hur hanterar ett stort multinationellt företag beslutsfattandet avseende produktborttagning och i vilken grad påverkar externa aktörer beslutsfattande?

**Metod:** Denna studie är kvalitativ och använder sig av en abduktiv ansats där ett teoretiskt ramverk skapats utifrån en litteraturstudie som kombinerats med ett empiriskt resultat. Det empiriska resultatet har tagits fram utifrån fem semi-strukturerade intervjuer som genomförts med lokala och en global produktchef hos stort ett multinationellt företag.

**Slutsats:** Denna studie identifierar hur ett stort multinationellt företag arbetar med produktborttagning. Slutsatsen är att det studerade företaget saknar formella processer för hur de ska arbeta med produktborttagning och att det saknas verktyg för att utvärdera ett produktborttagningsbeslut. Denna studie har också identifierat att externa aktörers inflytande över produktborttagning varierar kraftigt beroende på vem den externa aktören är, det är dessutom i dagsläget omöjligt att mäta hur stort inflytande den externa aktören har.

## ACKNOWLEDGEMENTS'

The following study marks the concluding part of our studies within Industrial Engineering and Management at Mälardalens University, at the School of Innovation Design and Engineering. This study's scope covers 30 ECTS on an advanced level and was conducted during the spring of 2023.

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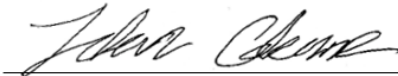
Once again thank you, and we wish you a pleasant reading!

**Thank you!**



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Alan Abdulrahman  
Västerås June 2023



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Johan Glenne  
Västerås June 2023

## TABLE OF CONTENTS

<b>1.</b>	<b>INTRODUCTION .....</b>	<b>1</b>
1.1.	BACKGROUND .....	1
1.2.	PROBLEM STATEMENT .....	2
1.3.	PURPOSE AND RESEARCH QUESTION .....	3
1.3.1	<i>Research question.....</i>	<i>3</i>
1.4.	SCOPE .....	3
1.5.	DISPOSITION .....	3
<b>2.</b>	<b>THEORETIC FRAMEWORK .....</b>	<b>4</b>
2.1.	PRODUCT PORTFOLIO MANAGEMENT .....	4
2.1.1	<i>Portfolio Management Methods .....</i>	<i>5</i>
2.1.2	<i>Challenges of Product Portfolio Management .....</i>	<i>5</i>
2.2.	THE PRODUCT DELETION PROCESS.....	6
2.3.	PRODUCT DELETION AS A STRATEGIC DECISION .....	8
2.3.1	<i>Reasons Behind Product Deletion .....</i>	<i>8</i>
2.3.2	<i>Product Deletion from a Sustainable Angle .....</i>	<i>9</i>
<b>3.</b>	<b>RESEARCH METHOD .....</b>	<b>10</b>
3.1.	RESEARCH APPROACH AND METHOD .....	10
3.2.	COMPANY SELECTION .....	11
3.3.	THEORETICAL LITERATURE COLLECTION .....	12
3.4.	EMPIRICAL DATA COLLECTION .....	12
3.4.1	<i>Semi-structured Interviews .....</i>	<i>13</i>
3.4.2	<i>Operationalization.....</i>	<i>13</i>
3.5.	DATA ANALYSIS .....	15
3.6.	RESEARCH QUALITY .....	15
<b>4.</b>	<b>EMPIRICAL RESULTS.....</b>	<b>17</b>
4.1.	DECIDING IF A PRODUCT SHOULD BE DELETED FROM A LOCAL AND GLOBAL PERSPECTIVE .....	17
4.2.	WHAT STEPS ARE TAKEN DURING A PRODUCT DELETION PROCESS? .....	18
4.3.	MEASURING THE OUTCOME OF PRODUCT DELETION.....	19
<b>5.</b>	<b>ANALYSIS.....</b>	<b>21</b>
5.1.	WHAT ARE THE DECISIONS BASED ON? .....	21
5.2.	PRODUCT DELETION PROCESS STEPS.....	22
5.3.	MEASURING THE OUTCOME OF PRODUCT DELETION.....	25
<b>6.</b>	<b>DISCUSSIONS AND CONCLUSIONS.....</b>	<b>27</b>
6.1.	DISCUSSIONS AND CONCLUSIONS.....	27
6.1.1	<i>How does a large multinational company manage its product deletion decision-making? .....</i>	<i>27</i>
6.1.2	<i>What role do external actors' influences play in a large multinational company's product deletion decision-making?.....</i>	<i>28</i>
6.2.	SUGGESTION FOR FUTURE RESEARCH.....	29
6.3.	RECOMMENDATIONS TO THE STUDIED COMPANY.....	29
	<b>REFERENCES.....</b>	<b>30</b>
	<b>APPENDICES .....</b>	<b>34</b>
	<b>LIST OF FIGURES .....</b>	<b>36</b>
	<b>LIST OF TABLES .....</b>	<b>37</b>

## 1. INTRODUCTION

*This chapter will introduce the topic of the study by providing a background and stating the problem of the studied subject. The aim of this study and the research question used to achieve the aim of the study will then be presented, with the chapter ending with outlining the limits of this study and an overview of the entire study.*

### **1.1. Background**

Product portfolio management involves different activities, those activities are deciding what products a company has in its portfolio by choosing them, developing the products over time, and deciding how to spend resources managing those products (Kester et al., 2011). Product management refers to the activities of managing a few selected products while a product portfolio manager has a wider perspective containing more products and responsibilities such as good results. Recently product portfolio management has mostly revolved around new products, managing current products, etc., however, product deletion which is an important aspect of product portfolio management has received less focus both in practice and in academia (Zhu et al., 2018). Product deletion, which in this study will be referred to as the process of retiring or discontinuing a product in a company's portfolio. Product deletion decisions become relevant and executed typically when financial numbers are lacking and sales volume and profits are decreasing (Pourhejazy et al., 2020). In recent years in a competitive business environment, the strategic focus has leaned toward a rapid and timely response to current demands and possible opportunities (Hao et al., 2018).

The issue of product deletion has become increasingly important, particularly for large multinational companies that manage complex product portfolios. This is correlated to research that shows that the deletion of products generates opportunities for new products and ideas, but also poses a challenge for companies (Avlonitis et al., 2000). External influences of stakeholders, the market, and sustainability could be of importance in product deletion decisions in a multinational context (Bai et al., 2018). Product deletion is a complex process that might result in unwanted consequences where customer dissatisfaction is an important aspect together with reduced market shares in terms of revenue and eventually profits (Argouslidis et al., 2015).

The decision to delete a product becomes a sensitive subject due to the consequences that different actors might face after a product deletion decision (Muir & Reynolds, 2011). Product deletion decisions become critical managerial practices for large multinational companies in this situation, particularly when freeing capacity for new products and services (Bai et al., 2018). Despite the growing interest in this topic, there is not a thorough overview of current research or a clear research agenda for future studies that specifically address the methods large

multinational companies use to manage their product portfolios and determine when to discontinue a product.

Product deletion can be seen as a strategic and or as a tactical factor whereas Muir & Reynolds (2011) describes the tactical one as a more natural action for a company. A study by Zhu et al. (2021) provides a starting point for this area of research by identifying gaps in the literature and recommending a research agenda for future studies. However, their review focuses primarily on the fragmentation of the existing literature and does not specifically address the decision-making processes used by large multinational companies.

## **1.2.Problem Statement**

Product portfolio management revolves around looking over the company's products to balance them, connect them with the overall business strategy, and maximize the entire portfolio's value (Tolonen et al., 2014). There are challenges related to wide product portfolios and these may affect cost and revenue from a product life cycle perspective (Ward et al., 2010). These challenges can also lead to other problems such as increased costs for research and development, marketing, inventory costs, and longer cycle times. The challenges with wide product portfolios may also cause problems down the road such as inventory costs. The product portfolio can therefore be built around the most important products. Often 20 percent of the products generate 80 percent of the total revenue, this is also known as the Pareto principle (Brynjolfsson et al., 2011).

Companies might miss out on opportunities if they have an underdeveloped product portfolio that they assess and manage (Tolonen et al., 2014). In the best of worlds, the product portfolio is managed to naturally pick up new products as they are introduced while older ones are deleted. The challenges companies may face can take many shapes but may be related to too wide product portfolios making them harder to manage, if having similar products, they may take up the spotlight from each other. There are also challenges related to how the products are managed, if the life cycle for a product is not planned, then a launch of a new product might cannibalize on others. Another challenge is also the lack of methods for reviewing and deleting products from the product portfolio.

Given the importance of product deletion decisions, it is critical to understand the factors that large multinational companies consider when making these decisions and the impact of these decisions on stakeholders. The topic of product deletion is not gathering as much attention as new product development in either academia or practice (Zhu et al., 2018). While there is some existing research on this topic, there are still significant gaps in the understanding of best practices for managing the product deletion process (Zhu et al., 2021).



### **1.3. Purpose and research question**

The purpose of this study is to identify how a large multinational company is managing its product portfolios, specifically how they conduct product deletion, and examine to what extent those decisions are influenced by external actors.

#### **1.3.1 Research question**

- How does a large multinational company manage its product deletion decision-making and what role do external actors influences play?

### **1.4. Scope**

The scope of this study is that it has been directed toward the manufacturing industry of technological products used in other industries through the examination of how a large multinational company within that industry operates. Furthermore, this study has focused on one business area and division within that company by conducting interviews with both global and local product managers. This has been done to identify how this large multinational company works with product deletion. This study has also been delimited by the choice to only look at how this company works with its decision-making process. This study will only examine the process of choosing a product to delete and how the process goes from initiative to a firm decision, not the process of deleting it. Since both local and global product managers have been interviewed the scope of this study is not limited to any specific country and thus it will provide a perspective from both global and local functions.

### **1.5. Disposition**

The core of this study is based on the aim of this study and the research question. They have been presented in this introductory chapter of this study, together with the background and problem formulation as well as the delimitations. The problem formulation acts as a way to present the current lack of academia within the subject of product deletion decision-making. This study will then proceed with a deeper theoretical framework for product deletion. This study uses an abductive approach and is purely qualitative, and this will be introduced in the third chapter of this study as well as the chosen method for conducting this study. The fourth chapter consists of a compilation of empirical data gathered from conducting interviews. The fifth chapter of this study consists of an analysis of the theoretical framework and the gathered empirical data that will be the foundation of this study's conclusions. This study will end with recommendations for future research and how the studied company could improve its product deletion decision-making process.

## 2. THEORETIC FRAMEWORK

*This chapter will present the theoretical framework for this study by first introducing the concepts that are central to this study. The concepts will then be developed further with the help of previous theoretical frameworks based on previous studies of the subject.*

### 2.1. Product Portfolio Management

Product portfolio management is important since it allows a company to stay competitive, spend resources on the right things, and select what to focus on since it is related to the company's business strategy (Cooper et al., 1999). A general description of a portfolio is a grouping of programs and or projects related to fulfilling business targets (Jugend & da Silva, 2014). A company's product portfolio can impact the company's growth and profitability in a long-term perspective (Cooper et al., 1999; Lahtinen et al., 2021; Mikkola, 2021).

Product portfolio management requires working with a long-term perspective, which aligns the products with the company strategy (Koh & Crawford, 2012). Product portfolio management revolves around making choices around the content of the portfolio, where to spend the resources, what products to focus on, and how to balance the content of the portfolio (Cooper et al., 1999). Kester et al. (2011) describe the act of managing a portfolio as the activities related to choosing and developing the product and business for new products with the end goal of profit over time. Since a company's products pass through different phases during their life cycle, different decisions will be made for each product depending on which phase they are at (Seifert et al., 2016). The product portfolio manager is responsible for the different decisions that must be made regarding what products to focus on, when to do it, and how much focus should be put on a single product (Kester et al., 2011). Successful portfolio management means well-planned resource allocation (Doorasamy, 2015).

A portfolio manager is responsible for aligning the products with the company's strategy and managing the resource allocation for the product portfolio (Koh & Crawford, 2012). Portfolio managers also work closely with the financial, sales, and marketing teams to achieve results and monitor the competition. Portfolio managers are involved in the different steps of a product, they are a part of the product development, they ensure that the budget is kept for the product, and they still monitor and make decisions for the product after development. Product portfolio management affects different parts of a company, therefore cross-functional management teams can be used to make decision-making better (Tolonen et al., 2015; Seifert et al., 2016). Senior managers are also involved with product portfolio management as this is related to the business results and the business strategy (Koh & Crawford, 2012).

Product portfolio management involves taking strategic decisions to allow the company to continue to grow, such decisions can be to focus on new products (Doorasamy, 2015). Another type of decision is product deletion which is a decision that is taken most often when a product is old or it has problems (Argouslidis et al., 2014). Currently, companies are moving towards

more complex products as well as wider product portfolios containing more and more products since more products are introduced than there are products being deleted (Tolonen et al., 2015). Developing new products is seen as exciting while product deletion is seen more negatively, this has resulted in a lack of willingness to delete products, however, this activity can be seen as critical despite the current negativity revolving around product deletion (Golrizgashti et al., 2022).

### **2.1.1 Portfolio Management Methods**

Different methods can be used when managing a portfolio, financial, scoring, and graphs or diagrams are typical methods used when receiving and making decisions (Cooper et al., 1999; Jugend & da Silva, 2014). Financial methods mean to evaluate the different products within the portfolio from a financial perspective by looking at different metrics such as return on investment, and this method is used to figure out which products that may yield the biggest return (Oliveira & Rozenfeld, 2010). Scoring methods refer to the use of different criteria that is selected and then comparing the products in the portfolio with the criteria and then giving a score to the reviewed product, the products can be compared to each other and the different criteria with this method (Coldrick et al., 2005). Graphs and diagrams can be used to display where on the graph a product is related to different parameters, and they can also display where the company is at in terms of its product portfolio concerning the company strategy (Cooper et al., 1999). Combining the different methods yields better results than just using one approach for companies.

### **2.1.2 Challenges of Product Portfolio Management**

Senior management may not always have a good understanding of a company's complete product portfolio, the variations, and exactly how many different products the portfolio holds (Lahtinen et al., 2021). The lack of knowledge of the product portfolio reflects the lack of profit knowledge from a life cycle perspective, this has led to a larger focus on introducing new products rather than focusing on existing products or products at the end of their life cycle. A reason behind this is the lack of interest by senior management (Tolonen et al., 2014). Doorasamy (2015) found that non-existing executive support is a big challenge related to portfolio management.

There are challenges with having a wide product portfolio especially if the products are similar. Since it will be more complex to forecast and increase the vulnerability to demand volatility, which may also affect cost and revenue during the product's life cycle (Ward et al., 2010). These challenges can also lead to other problems such as increased costs for research and development, marketing, inventory costs, and longer cycle times. By identifying the most critical products a company can develop a product portfolio around their most important products.

Tolonen et al. (2014) mention different challenges with product portfolio management such as wide portfolios, lack of processes and systems, and uncertainty regarding the product owner. The size of product portfolios is becoming a problem, there are too many products in the portfolios, and even in newer companies the product portfolio contains too many products to maintain. Having too many products in a product portfolio is not only a challenge in terms of managing them all, but the profit per product also decreases (Tolonen et al., 2014) and thus the market shares and profits can no longer increase with the market (Tolonen et al., 2015). A challenge with the increasing product portfolios is keeping the products profitable and doing so throughout their life cycle (Lahtinen et al., 2021). Products are too similar, and different versions of the same products are being sold, and they share customers and thus steal attention from each other (Tolonen et al., 2014).

Focus on developing new products are higher than the deletion of old products for most companies, ideally, the introduction of new products happens simultaneously with the deletion of others (Tolonen et al., 2014). Lack of product renewal in current and later product stages has led to an increase of products in the product portfolio which is the reason behind the challenges of wide product portfolios (Lahtinen et al., 2021).

Another challenge is how product portfolios are seen and handled, instead of seeing the entire product portfolio, the focus is instead on single products and there is a lack of a life cycle perspective for new products (Tolonen et al., 2014). Previously product portfolio management has been neglected or misunderstood, resulting in a heavy focus on the development of new products instead of maintaining and managing products in their later life cycle phases (Lahtinen et al., 2021). Zhu et al. (2018) also state that product management has had a heavy focus on managing new and current products rather than the product deletion process, this can also be seen in the lack of academia on the subject.

Tolonen et al. (2014) discusses that the absence of processes that assists with decisions making based on facts and analysis also becomes a challenge for the product portfolio manager. Another challenge related to product deletion is how it affects customers and business relationships, there is a risk that it may have severe consequences on customers (Homburg et al., 2010). This might also lead to problems with the relationships between the customer and the company, the product's importance to the customer is directly related to how the customer perceives the product deletion process.

## **2.2. The Product Deletion Process**

Deleting products that are not meeting their expectations is a critical part of product portfolio management (Zhu et al., 2021). Product deletion allows companies to manage their product portfolio in a way that allows them to focus more on other products, it also paves the way for new products (Argouslidis et al., 2014). However, deleting a product is not an easy process and it may have consequences for different actors (Muir & Reynolds, 2011; Homburg et al., 2010).

Another barrier to product deletion is that existing decision-making tools are not developed enough and do not consider the complexity of product deletion (Golrizgashti et al., 2022). Deletion decisions are important to product portfolio managers, terminating projects that are not estimated to generate adequate profits or are no longer aligned with the firm's goal. Decisions to delete and liberate resources, making a place for new, perhaps more profitable, opportunities (Kester et al., 2011).

Product deletion is advantageous in terms of reducing obsolescence, securing sufficient and preferable resources for promising future products, making room for new products, and even mitigating the negative effect of having similar products available known as sales cannibalization. That is caused by a high-level of product parity, where the products steal customers from each other (Argouslidis et al., 2015). However, such beneficial outcomes are contingent on the firm's capacity to accomplish all activities between the identification of items as candidates for deletion and their actual removal successfully and quickly if necessary (Avlonitis, 1987).

Prior research by Avlonitis (1985) identified five models used by companies to arrive at elimination decisions. These models include the Managing Director/General Manager-Management Group, Board of Directors, Managing Director/General Manager-Parent Group Board, Ad Hoc Elimination Committee, and Product Planning Committees. The study found that marketing played the most significant role in these decision-making groups, followed by finance and engineering (Avlonitis, 1985). The researcher identified five models used by companies to arrive at elimination decisions:

- **Management Group's Managing Director/General Manager:** A more compact team management group is set up in this instance, with individuals from marketing who were crucially interested and involved included. Next, in terms of importance and level of engagement, there were the financial and technical or production employees. The company's leader, though, exploited this group for support and had a considerable final say. It is also reported that, in a more controlled setting, a small group of engineers and marketing executives were also utilized, with the CEO stepping in for a final judgment in the event of a dispute (Avlonitis, 1985).
- **Director's Board:** This may entail several components and depending on the degree of engagement and roles or titles in companies, it is important for their influence on the decisions being debated and worked on (Avlonitis, 1985).
- **General Manager/Managing Director of the Parent Group Board:** Depending on the decisions or size of the product, an internal group may be utilized to first discuss elimination before it is sent to a board known as the "parent group" for their approval (Avlonitis, 1985).
- **Ad hoc Removal Committee:** When a weaker product portfolio or product is proposed, this committee or group is formed. A managing director decides without

consulting a committee if the introduction of a new product renders the one that already exists outdated (Avlonitis, 1985).

- **Product Development Committees:** In this case, it turns out that more cooks are needed due to the size of the product. Despite having a review committee, the parent group board makes the ultimate approval decision for around half of the enterprises in the study. The managing director, who makes the final decision, and the sales manager also communicate (Avlonitis, 1985).

### **2.3. Product Deletion as a Strategic Decision**

Companies can allocate capital more efficiently when having comprehensive decision-making processes (Strauch et al., 2019). When companies lack a comprehensive process, they tend to fall into something called a reactive strategy which is described as adjustments to the environment that does not follow a clear line and is a stable defect (Hauser et al., 2019). This is also when companies tend to become drifters, which is explained as companies with focus and efforts in other directions and lack clear patterns of standardized strategy. It is also common when a company may be too occupied with keeping the company running. The structure within the company in the form of characteristics is likely to have an impact on strategic decisions and if they are well connected and worked on, it may even enable better future outcomes (Dicle & Okan, 2021). Research showed primarily that product deletion decision-making did not show any strategic methods, it was based on several performance criteria or factors that managers used to evaluate the product performance that could eventually lead to deletion (Hart, 1989). Subsequently, product deletion decision practices are commonly active during different external circumstances and do not always have to be directly involved with a weaker product. A common strategic decision for product deletion can vary and occur to actively reduce the variety (Hart, 1989). Strategic decision approaches may differ from company to company depending on their size and growth as well. When the number of employees increases along with the company's growth, the gap between managers and organizational members increases as well and it may even become less centralized (Hart & Banbury, 1994).

#### **2.3.1 Reasons Behind Product Deletion**

Product deletion is a complex process and when looking at product deletion different parts must be looked at and examples of those are financial performance, stakeholders, and resources (Zhu et al., 2018). Product deletion is a critical key in product portfolio management and the decision to delete a product is based on and influenced by different internal functions (Zhu et al., 2023). According to Zhu et al. (2023), the following functions influence the product deletion decision; organizational, accounting, operational, marketing, sustainability, and financial. There are however risks related to product deletion, one of them being the risk of losing sales from customers. The reason behind product deletion can both be internal and external (Avlonitis et al., 2000; Zhu et al., 2018).

There are different reasons behind product deletion, Avlonitis et al. (2000) describe different categories that product deletion decisions can be placed in, both internal and external. Zhu et al. (2018) also agree that both internal and external forces can be the reason behind product deletion decisions. There exist products that are influenced by external forces and the reason for initiating product deletion comes from those external forces (Avlonitis et al., 2000). An example of such a force is regulations and there is little a company or its management can do to influence this type of reason for product deletion where according to Avlonitis et al. (2000) the only possible solution, in this case, is to proceed with product deletion. Older products can also be deleted because they have reached the end of the life cycle and thus can be identified by the decline of sales volume, decreasing profit margins, and their current stock level (Avlonitis et al., 2000).

Products can be deleted due to low volumes, lack of sales, and generally decline both as a product and also if the market is declining (Avlonitis et al., 2000). Products can also be deleted to release resources and focus on other strategic decisions. Those products are often old and require a lot of the company's resources. New products that become unsuccessful might also be deleted meaning that if the profitability expectations are not met with a large margin they might be deleted (Avlonitis et al., 2000). Products that are new to the market and fail in terms of their technical ability might also be deleted. Products that have performed well in the past might also be deleted even if they still perform well, if the company sees a future decline in their market, it is a possibility that they might delete them. This type of product is often replaced due to pressure from external actors. If a product is performing well, it is less likely to get deleted especially if the cost dimension is showing good results (Zhu et al., 2023) and according to Zhu et al. (2021), a product portfolio manager's responsibility includes deleting such problematic products.

### **2.3.2 Product Deletion from a Sustainable Angle**

Currently, the theoretical data regarding product deletion from a sustainable angle is rather limited. Bai et al. (2018) mention that they are one of the first to look at product deletion from a green and sustainable angle whereas previous research on the subject has not looked at the deletion of green products. This is because adding sustainable products to the decision of product deletion is resulting in a more complex task (Bai et al., 2018). They found that it is possible to evaluate green products from a sustainable point of view. Zhu et al. (2018) discuss the current gap in product portfolio management knowledge related to how product deletion can be done to develop a more sustainable supply chain. Both Bai et al. (2018) and Zhu et al. (2018) propose a model that considers environmental aspects when evaluating sustainable products.

### 3. RESEARCH METHOD

*This chapter will provide a thorough presentation of the methods used to conduct this study, this will be done by first describing the approach and methods that were used, introducing the studied company, describe how data was collected and analyzed. Furthermore, this chapter will present the operationalization of the interview questions and how quality was secured throughout the entire study.*

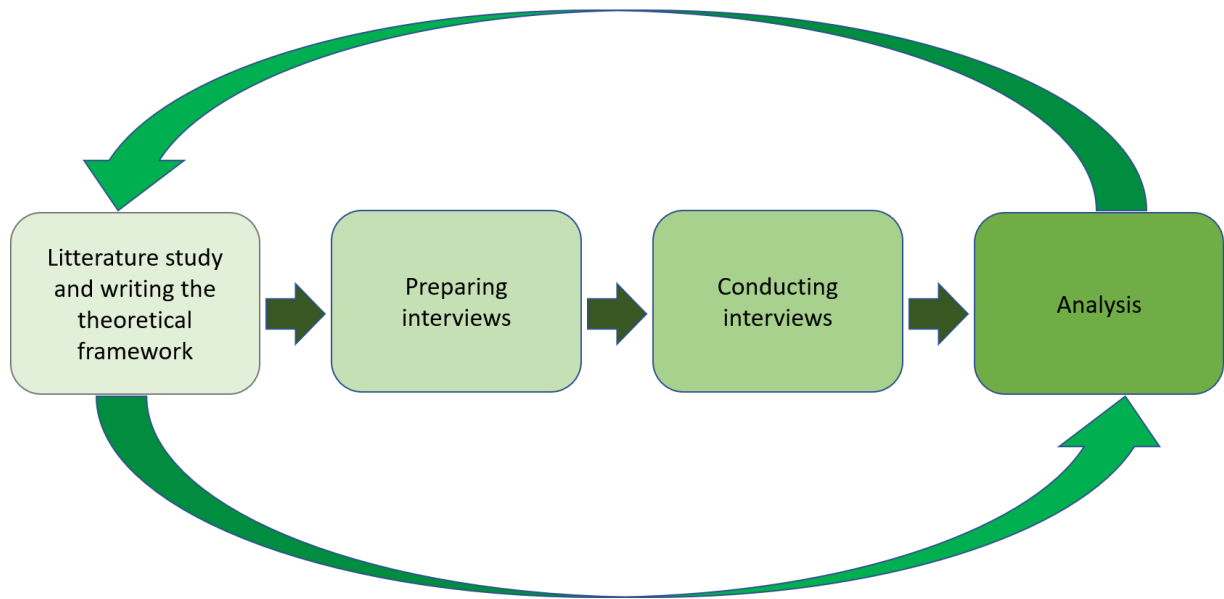
#### **3.1. Research Approach and Method**

This study is based on a qualitative methodology that utilizes interviews to gain a deeper understanding of how large multinational companies manage their product portfolios, especially how they decide when a product should be deleted. Qualitative studies mean that the study aims to understand a problem and describe it (Bryman & Bell, 2017). Qualitative studies use interviews and are not measurable in terms of numbers, it is also characterized by a semi-structured empirical collecting method (Blomkvist & Hallin, 2014). By conducting interviews with both local and global product managers to identify a large multinational company's process of product deletion from their perspective this study is fully qualitative. Thus, the qualitative approach was appropriate for this study because it enabled a rich and in-depth examination of the research issue and captured the complexity and subtleties of the different product managers' experiences and points of view.

This study's research approach has been abductive, which refers to the act of using both theory and empirical findings while going back and forth between these two to modify the theoretical framework based on the finding of the empirical findings (Blomkvist & Hallin, 2014). This benefits the study in terms of a greater understanding of both the empirical data and the theoretical literature, this may however be a more extensive approach as the analysis may take longer due to new topics being researched along the way. The abductive approach allows the study to go back and forth between empirical and theoretical during the study and thus creates a deeper understanding of the subject, which also leads to a more accurate description of it. This is because it is possible to capture and use not only the systemic nature of the interview's empirics, but also the systemic nature of theory models, and adapt the study based on the findings. It must be remembered that the matching procedures for analyzing do not follow any clear patterns which can make this analysis method more flexible (Dubois & Gadde, 2002).

The abductive approach was chosen for this study since the topic, product deletion, is not heavily researched. During the interviews, new topics of discussion were brought up that had not been included in the theoretical framework before the interviews. The abductive study was therefore beneficial since the authors could develop the theoretic framework further and compare it to the interviews in the analysis, which can be seen in Figure 1. The Abductive approach was therefore a key element in eliminating any limitations that the first theoretical data collection would impose.





**Figure 1.** *An illustration of the abductive approach used in this study (own construction)*

### 3.2. Company Selection

For this study, a company has been used to conduct interviews with local and global product managers. The company is a large multinational company with over 100 000 employees that operates in over 100 different countries globally. With a wide product portfolio divided across different business areas and divisions. For this study, people from a single business area and division were selected to use for interviews. In the pursuit of the research objective, namely, to understand the product deletion decision-making in a large multinational company and how much those decisions are influenced by external actors, the choice of company was therefore critical for this study. The selected company suited the needs for this study with it being both a large multinational company but also a company with a wide product portfolio.

As market conditions fluctuate, the case company must be selective in its product offerings, balancing what products to retain and what to discontinue. These decisions impact a range of organizational aspects from financial performance to the brand's reputation. These decisions, however, are not made in isolation. Numerous external actors, including customers, competitors, and broader market trends, influence the case company's product decisions. The interplay of these external influences often necessitates a reassessment of the case company.

The interviews conducted with the local product managers provided insights into the decision-making process at the regional level, where the direct influence of local market conditions and customer preferences. The global product manager that was interviewed offered a more relevant view for this study, explaining how the case company handles product decisions across different regions and manages the global product portfolio.

The choice of this case company was intentional. It presented the opportunity to explore the research question in depth, offering a dynamic case study that mirrors the complexities faced by large multinational companies worldwide.

### **3.3. Theoretical Literature Collection**

The theoretical literature has been collected by using different search engines for scientific articles and books such as Mälardalens University's Primo and google scholar. Databases such as ScienceDirect, SpringerLink, Elsevier, and EmeraldInsight have been used to find scientific articles by using keywords such as product portfolio management, product deletion, product lifecycle management, and product lifecycle. The literature that was collected and used to write the theoretic framework as well as used to operationalize the interview questions were mainly peer-reviewed scientific articles.

Without regard to the year of the literature's publication, a literature review was carried out to gain a thorough understanding of product deletion as a research field. This implies that an effort to compile literature to understand how the field's research has advanced. The literature review, therefore, focused on looking for both older and more recent studies. Besides browsing different databases for scientific articles, the snowballing method was used. The snowballing method was used to the act of using both reference lists and citations of other papers to find more sources (Badampudi et al., 2015). Depending on if the reference list or the citations are used the type of snowballing act is called either backward snowballing when using a reference list or forward snowballing when using citations. According to Badampudi et al, (2015), this method is at least comparable to using keywords and browsing a database but could even be more reliable depending on the situation. By using already relevant literature and using the citations in that article even more relevant literature could be found, thus the snowballing method was used in this study to increase the theoretic framework by finding more literature on the researched subject.

### **3.4. Empirical Data Collection**

Empirical data was gathered through interviews with different product managers within the company, both local and global. Since interviews make up all the empirical data it qualifies as primary data since it has been collected by the researchers themselves (Blomkvist & Hallin, 2014; Bryman & Bell, 2017). Five semi-structured interviews with different product managers were held and represented all the gathered empirical data, information about the interview dates, respondents, and duration of the different interviews can be found in Table 1. The semi-structured interviews were qualitative, which is also the most common type of interview when collecting empirical data (Blomkvist & Hallin, 2014). The main focus of these interviews was to gain an understanding of how the company works with product deletion and thus the different product managers gave their perspectives on how they work with it. The questions asked in the interviews helped with answering both parts of the research question, whereas the

global product managers could describe the first part of the research question about describing the product deletion process, the local product managers gave a clearer answer to the second part of the research question regarding the role product deletion has on its customers. The interviews were held in Swedish and were then translated into English afterward while transcribing them.

**Table 1.** *Information about the date and duration of conducted interviews (own construction).*

Respondent	Role	Date of interview	Duration of interview
Respondent 1	Local product manager	2023-04-11	52 minutes
Respondent 2	Local product manager	2023-04-13	43 minutes
Respondent 3	Local product manager	2023-04-14	44 minutes
Respondent 4	Local product manager	2023-04-17	32 minutes
Respondent 5	Global product manager	2023-05-05	29 minutes

### 3.4.1 Semi-structured Interviews

The empirical data was collected through conducting semi-structured interviews, which means using a crafted interview guide with predetermined questions, however, these can be asked in any order and the interviewer can also ask questions if need be (Bryman & Bell, 2017). All the interview questions can be found in Appendix 1 and the interview questions had been operationalized before the interview to ensure qualitative answers.

The interviews were recorded and later transcribed, thus allowing the writers to go back and process the information again which can help with being more thorough and ensuring that the answers provided by the respondents were understood (Bryman & Bell, 2017). Due to the recordings of the interviews, it was then easier to focus purely on the interview at the time and ask follow-up questions. Notes were also taken during the interview to help with finding key takeaways and in case a technological error would occur, and the recordings disappear. The purpose of using both local and global product managers was to see the differences in how they operate, while the global product managers are more responsible for product deletion the local product managers work closer to the customers and thus get a different perspective.

### 3.4.2 Operationalization

The operationalization of the interview questions was done to connect the different questions to the relevant theory to answer the research question. First, the research question was divided into two parts. Part one is “How does a large multinational company manage their product deletion decision-making” and part two is “What role do external actors’ influences play”. The interview questions were then created to be categorized into three different categories, category one answering the first part, category two answering the second part, and category three

answering both of these and the research question as well. The questions were divided into three main categories, those being deciding if a product should be deleted, how to proceed with product deletion, and lastly measuring the success of product deletion. See Table 2 for the description of the operationalization of the interview questions.

**Table 2.** *Operationalization of the interview questions (own construction)*

Theory	Relation to the theoretical framework
<b>Deciding if a product should be deleted</b>	
<ul style="list-style-type: none"> <li>• What variables do you take into account when considering whether or not to delete a product?</li> <li>• What do you base your decisions on?</li> <li>• How often do you evaluate the different products?</li> <li>• How do you evaluate the impact of product removal on stakeholders like consumers, workers, and shareholders?</li> <li>• How can external factors, such as market trends and competitor activities, affect product removal decisions?</li> <li>• What is the most common reason behind eliminating a product?</li> <li>• Do you plan product development with product deletion in mind?</li> <li>• How does that work with sustainability?</li> <li>• How do you balance the need to free up capacity for new goods with the revenue loss that may result from retiring an existing product?</li> </ul>	<p>Product portfolio management is currently more focused on the introduction of new products rather than eliminating current ones (Lahtinen et al., 2021). With the risk of building too wide product portfolios, it is important to identify the most important products and base their product portfolio around those (Ward et al., 2010). Identifying the most important and critical products is complex but different methods can be used (Jugend &amp; da Silva, 2014), the purpose of the questions is to explore how large multinational company works with their filtering process regarding which products should be deleted. By understanding this the process can be evaluated and understand why certain decisions are made.</p>
<b>What steps are taken during a product deletion process?</b>	
<ul style="list-style-type: none"> <li>• Can you describe your involvement in managing the product portfolio and making product deletion decisions?</li> <li>• What are the steps that are taken during a product deletion?</li> <li>• Do you have a certain strategy for product deletion?</li> <li>• How do you follow that strategy?</li> <li>• Who is involved with creating the strategy for product deletion?</li> <li>• Could you describe the most recent product deletion?</li> <li>• What different roles play a part in the product deletion process?</li> <li>• Who is the decision maker?</li> <li>• How do you include cross-functional teams and stakeholders in the product deletion decision-making process?</li> <li>• How do you work from a decision to communicating it to the entire company etc.?</li> <li>• How do you handle the communication and message surrounding a product's discontinuation to avoid negative effects on stakeholders?</li> </ul>	<p>There are different ways to proceed with product deletion, steps to follow and decisions to be made (Avlonitis, 1985). The different ways utilities different teams and people and the decision taker can differ. Deleting a product is not an easy process and it can affect different actors (Muir &amp; Reynolds, 2011). The purposes of the questions are to explore how a large multinational company works with and during its product deletion process. This allows for a thorough description of how a large multinational company works with this.</p>
<b>Measuring the outcome of product deletion</b>	
<ul style="list-style-type: none"> <li>• How do you measure the success of product deletion choices using metrics?</li> <li>• How do you evaluate the impact of product removal on stakeholders like consumers, workers, and shareholders?</li> </ul>	<p>The decision to delete a product might affect the customers of that product, if the product is very critical to the customer the perceived loss of that product is high relative to another</p>

<ul style="list-style-type: none"> <li>• Have you experienced any consequences of product deletion?</li> <li>• How do different stakeholders react to product deletions?</li> <li>• What are the underlying factors that are used to evaluate the product deletion?</li> </ul>	<p>customer that perceives the same product as not important at all (Homburg et al., 2010). The product deletion process is a complex process where the outcome cannot be measured easily. The purpose of the questions is to get an understanding of how the company works with measuring the outcome of product deletion and how stakeholders might be affected. This allows for a thorough description of how a large multinational company works in the aftermath of product deletion decisions.</p>
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### 3.5. Data Analysis

During the course of this study, the authors were engaged in an abductive process by perusing the relevant literature to gain a deeper comprehension of the extant theory and empirical data. This is intended to increase the level of critical thinking through writing and discourage the acceptance of glaring errors (Blomkvist & Hallin, 2014). The data that was gathered from the interviews were analyzed by using a thematic analysis methodology. This entails recognizing patterns and themes within the data and organizing them into meaningful categories. As new insights and themes may arise from the data as it is analyzed, the analysis becomes an iterative process. By dividing the answers from the respondents into different thematic categories new findings were discovered. The new findings that were discovered also resulted in a need for further development of the theoretic literature, thus the abductive approach was used to develop it even further.

To initiate the analysis, the interviews were transcribed word-for-word and reviewed by the writers. The transcripts were then coded, which entails designating descriptive identifiers to sections of text that pertain to particular themes or concepts. This process involved both deductive coding, which is based on previously established theories or concepts, and inductive coding, which permits new themes and concepts to arise from the data. After the transcripts had been coded, it was organized into themes and reviewed, and finally refined by multiple researchers to ensure reliability. The themes were presented coherently and logically. Throughout the process of analysis, referring to the literature review and other pertinent background information to help contextualize the findings and identify any understanding gaps. The analysis process is documented and transparent, permitting replication by other researchers or ongoing analysis if new data becomes available.

### 3.6. Research Quality

The most common terms when it comes to the quality of a study are reliability and validity, however, these two are more oriented towards quantitative studies (Bryman & Bell, 2017). There are alternative criteria that can be used for qualitative studies, trustworthiness, and authenticity. trustworthiness is made up of four sub-criteria; credibility, dependability, transferability, and confirmability (Bryman & Bell, 2017).

The credibility was ensured through the utilization of well-planned interviews with different, as well as several product managers and peer-reviewed articles. Credibility refers to the act of connecting a study's findings with reality and thus making it credible, this is done to clearly show that the study can be trusted (Bryman & Bell, 2017). Since the respondents all worked with product management daily their answers were credible and thus the credibility of this study increased.

Dependability refers to the act of conducting a study in such a way that the progress and steps taken can easily be followed thanks to detailed documentation (Bryman & Bell, 2017). Other parties can then read the study and follow the steps taken to ensure that the study and its results seem feasible. This can also be called an external audit conducted by a peer. Dependability was ensured in this study by clearly describing how the study was conducted, what roles the respondents had and their answers to the interview questions. Multiple external audits were conducted by peers during the course of the study, in the form of peer opposition.

The transferability in this study was gained through conclusions and answers from the interview were incorporated to let the readers engage with the data in a direct and more personal manner. Although it was not direct quotes to honor the anonymity the respondents requested. Transferability in a qualitative study means that the results of the study can be applied in other contexts, and thus transfer the results into other settings (Bryman & Bell, 2017).

Confirmability in this context means that the study's findings are shaped by what has been studied and the results of interviews etc. rather than the biases of the researcher (Bryman & Bell, 2017). The method of triangulation was used in this study, meaning that different methods of data gathering were used (Bryman & Bell., 2017; Heale & Forbes, 2013). The literature study that resulted in the theoretical framework is one type of method while the interviews were another type of method that was used. By combining these two methods of gathering data, triangulation was achieved. All the different approaches done in this study according to the sub-criteria of trustworthiness were done to increase the overall trustworthiness of this study (Bryman & Bell, 2017). Authenticity refers to creating an authentic description of the studied subject (Bryman & Bell, 2017). This study has been authentic since only people working as product managers have been interviewed to create an as authentic view as possible of the studied company's way of working with product deletion. By interviewing different product managers, it also creates an authentic description of how they work individually with product deletion.

## 4. EMPIRICAL RESULTS

*In this chapter the results of the empirical study will be presented, offering a clear insight into how the different respondents from the studied company replied to the different interview questions about the product deletion process.*

### **4.1.Deciding if a Product Should be Deleted From a Local and Global Perspective**

Respondents 1, 2, 3 and 4 are not involved in the product deletion decisions as they are taken globally, they are only able to choose where to direct the product focus on a domestic market. This is done by choosing which products get to be focused on. Respondent 1 discussed that as a local product manager, choose which products are marketed, and the choice is based on what is profitable and what has the potential to be profitable. Respondent 1 also explained that there are sellable products that gets no focus at all since it requires more investment into competence and staff as well as hunting for new customers for that product. To chase new markets, they must look at the potential and what it requires in terms of investment and time, the choice of where to direct the focus is based on the evaluation of the potential of a market. Respondents 2, 3, and 4 also described their influence over focus as the possibility to adapt their portfolio based on domestic demands, respondent 4 has yet to come across a product that has not been well received on the domestic market. Respondent 5 stated that their division use metrics when making their decisions: Respondent 5 base their decisions mostly on metrics such as profitability and sales volume and sometimes external factors. These metrics act as indirect feedback from domestic markets all over the world. Sometimes external factors play a role in the decisions making, soon an energy efficiency demand from EU will require them to delete certain products similar to the car production industry and their requirements for lower emissions from cars.

Respondent 1 mentioned that there is no process that they follow to evaluate products based on a timed interval, each country is free to choose their products and some of them are not focused on at all. Respondent 2 explained that this is done annually while respondents 3 and 4 mentioned that this is more of a continuous process based on feedback from local customers. If the same feedback is heard from multiple sources this will be brought up with the factory. Respondent 5 pointed out that since the business for this type of product is long term this is not done often globally, production deletion is only used when necessary.

Competitors play a minor part in the decision-making according to respondents 1, 3, and 4 and they hear about competitors sometimes and keep an eye on them but that is mostly for marketing purposes. However, respondent 2 emphasized how product deletion might nudge current customers toward competitors since changes in the products could open up for competitor solutions. Respondent 2 further elaborated on this declaring that the worst-case scenario for a product deletion might result in a loss of market shares. All the respondents

expressed that since the life cycle of their products and businesses is very long term the customer wants to be able to purchase the same type of products each time.

Respondents 1 and 5 described that sustainability is a part of product deletion but is forced from external actors with energy efficiency demands. Respondent 5 also elaborated on this saying that the sustainability thinking behind product deletion is a new aspect, but the energy efficiency demands are making the processes greener. Respondent 2 mentioned that it is important to consider environmental aspects during product deletion, the best way is to make changes that allow the customers to keep their installed base and integrate new products with the old ones.

Respondent 1 stated that all the products in their product portfolio are for sale, but they do not focus on selling all their products, and when a global decision is taken to delete a product a new product can almost every time replace the old one. Respondents 3 and 4 have yet to meet a product that does not fare well on the domestic market, this has led to them not having to make a local decision to not focus on a product. They do however split the focus between the products depending on what sells the most, therefore they cannot see that they do any form of local product deletion where they do not market a product at all.

Respondent 5 expressed that it is very costly to delete products, each time a product is deleted they have done calculations to motivate the decision, thus the loss of revenue for the old product is outweighed by the gain of revenue for the new product. All the respondents have multiple versions of the same product but with different levels of features and designed for different applications. Respondents 2, 3, and 4 believe that they can match the customer demands better since there are products for different applications with more or fewer features. Respondents 3 and 4 also added that, earlier the customers did not have as many options which resulted in a loss of customers when they could not meet their demands or when they offered products with too many features that the customer was not willing to pay for.

## **4.2.What Steps Are Taken During a Product Deletion Process?**

Respondents 1, 2, 3, and 4 highlighted that their involvement in managing the product portfolio and making product deletion decisions is purely for the local market, respondent 1 mentioned that there is a portfolio manager for each division within the company that makes these decisions based on input from global product managers, marketing managers, etc. Respondents 1, 2, 3, and 4 also pointed out that besides adjusting their local portfolio they also act as a communication channel between the global side and the local organization, here they communicate the deletion decision made by the global organization. They also prepare information for customer sales responsible to share with external customers.

Respondent 5 acknowledged that they are the person responsible for starting the product deletion process. Their job is to communicate with different departments such as sales, research and development, and production among many others. The input from these discussions results



in a business case based on facts, where the global product manager also presents this case and their proposal to a divisional management group also known as a divisional committee. The divisional committee then makes the final decisions on what to do. Respondent 5 mentioned that there is no formal strategy or process that they must follow, instead how they work is very individual, but they are looking over this currently. Since respondent 5 does not belong to any team this process means that the cost of product deletion must be justified by another unit such as production or sales. If a product has low margins or a low sales volume this is often the biggest reason for product deletion according to respondent 5.

Respondents 2, 3, and 4 discussed that the product deletion process is long, and the products pass through a life cycle with different phases. Respondent 3 explained that old product component prices and lead time might increase with age and thus making it easier to motivate a new product launch. Respondent 4 pointed out the same and added that it takes a long time between the product deletion decision to the time when the product is no longer purchasable. It was pointed out that during these stages, the price is increased to motivate the customers to make the switch to the new product.

Respondents 2 and 3 described the life cycle plan for products containing four steps, active which refers to the phase where they are sold normally and before a product deletion decision has been made. After the decision to eliminate a product has been made it passes through to a classic face, this is where the prices are increased but the product is still sold. During the classic phase, the new product is introduced. The next phase is limited, during this phase the supply, service, and support are limited and after that the next step is obsolete and this is where the product is replaced. Respondents 2 and 3 highlighted that this is a long process, it takes many years before a product is fully eliminated since there are a lot of installed bases that need service and replacement parts product deletion cannot be enforced from one day to another.

Respondents 1, 2, 4, and 5 have all been involved in a product deletion process during the last year while respondent 3 has not been involved in this process since 2013. All respondents except respondent 2 shared that product deletion happens seldom, respondent 5 mentioned that a rough estimate would be that once every three years a product is deleted. Respondent 2 explained that products within their product portfolio are deleted every year however this is mostly due to a wider product portfolio and cheaper products than many other areas within the division. Respondent 5 communicates the decisions to the different local organizations when a product should be deleted. Respondents 1, 2, 3, and 4 communicates the product deletion decisions to the local organization so that the local customer responsible can take the discussion with their customers.

### **4.3.Measuring the Outcome of Product Deletion**

Respondents 1, 2, 4, and 5 pointed out that it is possible to use sales numbers to measure the success of product deletion. Respondent 2, therefore, believed that you must understand the customer's business to make reliable measurements of product deletion since sales numbers do

not consider other things such as market shares, recessions, etc., however, the sales numbers are a good enough metric to base decisions on what to focus on. Respondent 5 also mentioned that their method of evaluation is not good enough currently, the use of sales volume and margins might be misleading as there might be other factors playing a part, but this is the only way they can measure it at this moment.

Respondents 1 and 3 described that there are occasions where products that do well on the domestic market are canceled. Respondent 3 also mentioned that this has caused problems in the domestic markets when the decisions affect local customers that can no longer purchase products from them. Respondent 5 noted that they sometimes hear about cases where customers are dissatisfied with a product deletion decision, but the largest indicator is that some customers stop purchasing from them. Respondents 1, 3, 4, and 5 felt that the number of customers that leaves are very low, and the negative impact of those leaving is far too low compared to the sales volume of newer products. Respondent 3 shared a story about a product a few years ago that performed extremely well on the local market and became a critical product for a few companies however this product overperformed locally and underperformed globally and was therefore eliminated. Every time respondent 3 visits the areas near those customers they complain about that decision, since there is currently no other possible product that can substitute it not even from competitors.

Respondents 1,3,4 and 5 highlighted that customers often want the same product for a long time and even when it is time to switch to a newer product, they still want to keep the same product. Customers in this industry are less prone to want new features in their products, they are paying for long life cycles and high quality. Respondent 2 pointed out that customers are often happy with new product launches since it often comes with new features, but it has happened that a new launch has occurred where the old product is still available and has more features available than the new product. This has caused a situation where new products suffer at first before all features become available which may take a while sometimes.

## 5. ANALYSIS

*This chapter will present the analysis of this study's results by utilizing the theoretical framework that was presented and the empirical results from the interviews. The theoretical framework and the empirical results will be linked to answer the study's research question. The analysis is based on the thematic analysis described in the research method chapter.*

### **5.1.What are the Decisions Based on?**

Kester et al. (2011) refer to portfolio management as all the activities related to picking out and developing products to profit from them over time, these activities consist of choosing the products that should get the most focus, how much focus they should get, and how to do it. Respondents 1, 2, 3, and 4 revealed that they are all making decisions based on sales volumes and profitability in mind when managing their local product portfolio. They choose what to allocate their resources to, according to Doorasamy (2015), planning resource allocation is a part of successful portfolio management. Respondent 5 also uses profitability and sales volume when making decisions on creating business cases with the goal being product deletion. Deleting products that are performing below their expectations is critical (Zhu et al., 2021).

Deciding to delete a product is costly and must therefore be evaluated from a financial perspective according to respondent 5 which resonates with what Cooper et al. (1999), Lahtinen et al. (2021), and Mikkola (2021) says regarding the product portfolio and its possibility to influence the entire company's profitability. Deciding on product deletion can thus impact the company. Cooper et al. (1999) discuss how portfolio management is about making choices regarding the products and where to allocate resources. This process seems to be shared with what the local product managers are doing according to the interviews. Respondent 1 also explained more thoroughly that they must base their decisions on future potential and evaluate how they should proceed with different products within their product portfolio.

Portfolio management means working closely with financials, sales, operations, and marketing to realize good results (Koh & Crawford, 2012; Zhu et al., 2023). Respondent 5 described that they communicate closely with other departments such as production, financial, sales, and research and development, and get information from them. This is also shown in their answer since they base their decisions on profitability and sales volumes. The local product managers work more towards sales while keeping communication with the factories. The local product managers are not as connected to the production and new product development in their role as the global product manager.

The theoretic approach to product portfolio management suggests the use of tools to evaluate products, such tools can be financial, scoring, and graphing tools (Cooper et al., 1999; Jugend & da Silva, 2014). The product managers all revealed that they use profitability as a measurement when making decisions both on a local and global level, this is a method that uses

financial metrics such as return on investment (Oliveira & Rozenfeld, 2010). None of the respondents interviewed mentioned the use of a scoring method that allows the products to be measured against different predetermined criteria, this tool even lets the products be compared to each other (Coldrick et al., 2005). However, companies that use a combination of different evaluation tools can expect better results (Cooper et al., 1999).

The interval for each product evaluation also depends, the different product managers evaluate the products at different times while respondents 1 and 5 do it if they see a sudden need to do it, respondent 2 does it every year and respondents 3 and 4 have a continuous type of evaluation. Respondent 5 mentioned that their products and business type are very long-term and that they cannot delete products very often, their products are meant to last about 20 years so they must adapt their way of working to this. Respondent 5 answer resonates with what the theoretical framework presented since managing a product portfolio requires a long-term perspective (Koh & Crawford, 2012).

The reasons behind product deletion decisions are often internal and based on sales volumes as mentioned by all the respondents however respondents 1 and 5 also mention the influence that external actors might have over products. External institutions such as the EU can and might enforce requirements that make certain products obsolete by enforcing energy efficiency demands as mentioned by respondent 5. Products can be influenced by both internal and external forces, external forces can be regulations forcing the company to follow the rules (Avlonitis et al., 2000). When external forces of that caliber, meaning institutions, etc. are forcing companies to comply there is nothing that can be done about it. None of the respondents however says that competitors influence their decisions except respondent 2, since respondent 2 is afraid of losing customers if certain critical products are deleted, they tend to not wish for product deletion.

Respondent 2 also highlights the important aspect of thinking sustainable when deleting products, customers need to be able to integrate new products with their current products even if some of the products are eliminated. This allows customers to keep their installed base without having to swap everything out each time a product is canceled. The topic of product deletion related to sustainability is relatively unexplored, however, there are possibilities to evaluate products from a sustainable point of view (Bai et al., 2018; Zhu et al., 2018).

## **5.2. Product Deletion Process Steps**

During the interview respondent 1 pointed out that there is a portfolio manager responsible for each division, and that manager makes portfolio decisions based on input from other managers high up in the hierarchy. Respondent 5 explained the decisions for each product are taken by a divisional committee at the divisional management level, but their job is to create a business case when they feel the need to eliminate a product and replace it with another. This process is similar to some of the models identified by Avlonitis (1985), more specifically the management group's managing director/general manager. The model revolves around a management group

with people from different departments related to that product who helps the management take a decision, but where the company's leader gets the final say.

While the method described by the respondents has similar bits to that model there are also major differences. While the model mentions a company's leader as the final decision maker the respondents describe a divisional leader however, they might be very similar depending on how the divisional leader operates. According to Avlonitis (1985) study, marketing plays the largest role in product deletion decision-making, financial and technical representatives are also a part of it but do not play as large a role. Respondent 5 opinion does not concur with the model management group's managing director/general manager since financial numbers are the biggest factor when looking at product deletion and not marketing as stated by Avlonitis (1985). According to Lahtinen et al. (2021), senior management's lack of understanding of the complete product portfolio and the profit knowledge of the product from a life cycle perspective has led to more introductions of products rather than deletions. According to Ward et al. (2010), this leads to having a tougher time to forecast future demands.

Avlonitis (1985) identified 5 models that companies used to follow when considering product deletion, these 5 models are formalized and have a specific roadmap that should be followed. According to respondent 5, there is no formalized way of working with product deletion yet, it is up to everyone in their position to go their way. Respondent 5 has chosen to create a business case based on conversations and data from different departments however there is no must in conducting the process in this way and another global product manager can approach product deletion differently based on individual preferences. Tolonen et al. (2014) mention that the lack of a process for decision-making might become a challenge when managing a product portfolio.

A part of product management is to allocate resources to certain products, those resources can be time, financial resources, etc. (Cooper et al., 1999; Doorasamy, 2015). Companies that have complete decision-making processes in place can allocate resources more effectively (Strauch et al., 2019). Respondent 5 stated that the choice on how to initiate a product deletion process was up to the individual in their position, according to Hauser et al. (2019) companies that lack standards for decision-making processes face the risk of becoming drifters. Drifters are companies that lack a standardized strategy. Looking back at the company description they were described as a large multinational company, a leading global technology enterprise. Companies often become drifters when they just focus on keeping the company running (Hauser et al., 2019). The description of the studied company does not sound like a drifter, a company that is just focused on running cannot be world-leading, yet there seems to be a lack of formal ways of working with product elimination. The only formal process seems to be that the divisional management group makes the decisions as mentioned by respondent 5.

Product elimination does not need to be formal or be related to any strategical method, managers can evaluate products easily by looking at their performance and comparing it with their criteria (Hart, 1989). The way of working can vary between companies and for large companies with many employees the organization might become even more decentralized

(Hart & Banbury, 1994). According to Dicle and Okan (2021), the structure of the company might play a role in how the company deals with strategic decisions. According to respondents 1 and 5, the company is organized in a way with different organizations, local and global where different management groups on higher levels are the decision makers. According to the company description, it is a large company divided into divisions and business areas. The studied company, therefore, seems to be centralized and thus might require centralized ways of working. Regarding how product elimination does not need to be formal, this is somewhat similar to the studied company. Respondent 5 expressed that they work based on individual preferences and decisions, yet they must build their business case and present it to a higher level of management that makes the decision.

All the product managers have been involved in product deletion however only respondent 3 has not partaken in product deletion during the last year as they happen seldom according to all the respondents but respondent 2. According to respondents 2, 3, and 4, the process of product deletion takes a long time from decisions to an obsolete product, it may take years before a product is fully deleted. Seifert et al. (2016) discuss the need for making decisions based on where a product is in its life cycle. The local product managers are doing this by utilizing different life cycle phases, instead of deleting a product abruptly they are giving the customers time to adapt. Ward et al. (2010) mention how having large product portfolios might affect cost and revenue during a product's life cycle. According to respondent 3, this is true as the component price, as well as lead time might increase towards the end of a product's life cycle.

To avoid product cannibalization Avlonitis (1987) suggest that quickly identifying which products should be deleted and then deleting them shortly after that, makes room for new products that will not cannibalize previous products. Argouslidis et al. (2014) also mention how product deletion can be used to redirect the company's focus to other products, paving the way for them. This is contradicting how the studied company works with product deletion and the different life cycle phases that products go through after a product deletion decision has been made. However, respondent 2 also highlights the issue of this by sharing how sometimes the old product is still purchased after a new product launch due to it having a higher number of features available at the time. All the respondents, however, claim that when deleting a product there is often a replacement product, thus by deleting products they make room for another.

Tolonen et al. (2014) mention that large portfolios and a lack of processes and systems are challenges with product portfolio management. Some of the interviewed respondents have extremely large portfolios containing many different products and according to Tolonen et al. (2014), that might cause challenges for product managers. Lahtinen et al. (2021) bring up the issue of keeping increasing product portfolios profitable and according to Tolonen et al. (2014), increasing portfolios leads to similar products which might get in the way of each other. Generally, the focus on introducing and developing new products is higher than the focus on deleting old products, in an ideal world introduction of new products happens when an old product is deleted and vice versa (Tolonen et al., 2014).

According to respondent 5, a product is deleted once every three years, and a new product is introduced once per year. Commonly, companies introduce more products than they delete according to Tolonen et al. (2015) and Seifert et al. (2016). Product introduction is more exciting than product deletion, and this has led to companies lacking the will to delete products (Golrizgashti et al., 2022). Deleting products is a critical activity despite the lack of excitement regarding it (Golrizgashti et al., 2022), the most optimal scenario is where a product is deleted and another is introduced (Tolonen et al., 2014). Tolonen et al. (2014) also mention that having too many versions of a product might steal attention from each other. Respondents 3 and 4 however felt the opposite of that, with the addition of multiple versions of the same product with different feature levels they felt that they could reach a broader audience with their products.

### **5.3. Measuring the Outcome of Product Deletion**

Respondent 5 pointed out that there is a lack of a way to measure the success of product deletion, it is possible to look at sales numbers however respondent 2 mentioned that one should be wary of just looking at sales numbers as there might be more than meets the eye behind these.

There have been occasions where product deletion has caused problems in local markets where the product has been selling well however globally the total sales have not been as good according to respondents 1 and 3. Product deletion might have consequences for different actors (Muir & Reynolds, 2011) and respondent 3 presented a case where a customer was left without any usable product to replace what they previously had been buying, this left the customer in a bad situation since no other competitor could supply their needs as well. Homburg et al. (2010) discusses the risk of severe consequences that product deletion might have on customers. The more important the product is to the customer the loss is perceived worse. In the worst-case scenario, this means relationship problems between the company and the customer. Comparing this to the case with respondent 3 the company loses a customer and the relationship between them might worsen afterward. Respondent 2 was also afraid of losing market shares due to deleting a product and thus nudging the customers towards their competitors. Respondent 5 also have heard of customers choosing other suppliers due to product deletion, however, they felt that the upside of deleting that product outweighed the leaving customers, respondents 1, 3, and 4 also felt the same way about this thus believing that the freed-up capacity for new products outbalanced the revenue lost from deleting products.

Respondents 1, 2, 3, and 4 work with communicating the product deletion after a decision has been made, when the information is received from a factory, it is then spread internally and prepared information for the sales responsible to share with the customers. The information is important to spread so that customers can prepare themselves and take necessary action. There is no theoretical framework backing this up however it might be beneficial to have good communication to avoid occasions such as the one described by respondent 3 where a customer felt left behind after a product deletion.

Respondent 2 often receives good feedback from new product launches however sometimes when the new product is not as available as the former product this has caused cannibalization during the timeframe when both products are still purchasable. Product deletion makes room for new products and mitigates the troubles that can occur when two interchangeable products exist at the same time when they cannibalize on each other's markets (Argouslidis et al., 2015). The scenario that respondent 2 describes appears to be a limited time frame of product cannibalization where customers purchase the old product instead of the new which can be avoided by conducting the deletion process quickly from beginning to end and thus making sure that there is no product to cannibalize off (Avlonitis, 1987). Respondents 1, 3, 4, and 5 however feel that even after it is time to switch to the new product, they are hesitant to do it. The markets that the studied company operates in are conservative and where the customers want the same product over and over and they pay for products with a long-life cycle and high quality.



## 6. Discussions and conclusions

*This chapter presents the final discussions and the conclusions of the study before presenting future research suggestions as well as recommendations to the studied company.*

### 6.1. Discussions and conclusions

The purpose of this study was to identify how a large multinational company is managing its product portfolios and how they decide when a product should be deleted by answering the following question: *How does a large multinational company manage its product deletion decision-making and what role do external actors' influences play?*

#### 6.1.1 How does a large multinational company manage its product deletion decision-making?

The studied company uses techniques similar to the ones mentioned in the theoretical framework of this study. The studied large multinational company utilizes global product managers as initiative takers, they create a business case if they feel the need to delete a product. The business case is based on multiple variables such as profitability and other metrics that the global product manager receives from different relevant departments such as sales, finance, and research and development. A divisional management group then makes the final decision based on the business case that the global product manager provides. However, according to the studied company, the basis of the business case is based on the global product manager's individual preferences, meaning that the business case is based on how the global product managers choose to present it. Comparing this to the literature, it is quite different. While in the literature the processes are more formal mostly, following a standardized format while the studied company works more ad hoc up to the decision making. The format for having a group that takes the decision is similar to the theoretical framework that has been laid out for this study. However, there are still differences, in theory, there is a manager that makes the final decision, yet this has not been mentioned during any of the conducted interviews. The theoretic framework also presents different ways to evaluate products through formal ways however the studied company says that they have no good evaluation tools at their disposal and that they mainly use financial numbers and thus this is a major difference between the theory and the studied company. The theory suggests using different evaluation tools to improve the result, this is perhaps something that the studied company could use to improve their product deletion decision-making.

Once the studied company takes a product deletion decision it takes a long time before that product is fully deleted. This might cause product cannibalization where similar products steal customers from each other. However, the reason behind the long time it takes to delete a product is to ensure that the customers have support and service for their installed base for years to come. Having product cannibalization is a trade-off for the studied company since it

allows them to offer service, sell spare parts for higher sums of money, etc. The theoretic framework discusses the possibility of quick product deletion if need be. However, this does not seem like anything that the studied company follows as their product deletion process takes time.

Both the studied company and the theoretical framework agree on the potential risk of leaving customers behind when deleting a product. The studied company chooses to proceed with product deletion even though it considers global sales. As a respondent pointed out, a product might fare well on this domestic market but if it becomes a failure on other markets the overall gain is lower than the potential of other products that might fare better on multiple markets. The studied company has to consider multiple markets when making decisions rather than just one, this is not mentioned in the literature. This study has successfully identified how a large multinational company manages its product deletion decision-making and the biggest conclusion that can be drawn from this is the current lack of formalized ways of working. There is also currently no way of evaluating a product deletion decision, there is no way for the studied company to see if the decision was successful.

### **6.1.2 What role do external actors' influences play in a large multinational company's product deletion decision-making?**

The studied company bases its product deletion decision-making on a global product manager's business case. The business case is based on inputs from different departments working with the product and mostly on sales volumes and margins. This could mean that the product deletion decision-making is influenced by external actors, since the sales volume is directly connected to what the customers are buying this means if they do not purchase high enough volumes there is a risk that the product might be canceled. The global product manager also explained that the current factor that they use is indirect feedback from the markets. Institutions can also enforce requirements such as energy efficiency that the studied large multinational company must obey. In those circumstances, the external influence is high since the company must base its decisions on what rules they have to follow. This means that the product deletion decision-making is based on external actors and that they have an influence, there is no way no certain way to know how big that influence is, as there could be other factors playing a part, however, the conclusion that external actors influence a large multinational company's product deletion decision making can be drawn.

To summarize, the role that external actors' influences play on the studied company's product deletion decision-making has been identified as varied. It depends on who the external actor is, institutions influence can be extremely big while actors such as customers' grade of influence are currently impossible to measure due to the lack of evaluation tools.

## **6.2.Suggestion for Future Research**

This study has explored and described how a large multinational company works with product deletion decision-making and what role external actors' influences play. The answer is that external actors have a role in a company's product deletion decision-making process, but it is not possible to say how big it is. This could be studied further by looking at what external factors such as customers base their purchase decisions on, for the same product that is evaluated by the product deletion committee. Another study suggestion could be looking at the trade-offs between deleting a product fast and removing service and spare parts quicker versus having a long product deletion process allowing customers to ease themselves into the next generation of products. It could also be studied how product elimination can affect sustainability. The study also showed the lack of evaluation tools regarding measuring the success of decisions, future studies could research how product deletion decisions could be evaluated.

## **6.3. Recommendations to the Studied Company**

The studied company utilizes different approaches to product deletion decision making however there are several improvement areas. They currently do not use enough formalized methods, instead, they use individual preferences, and the results may vary. They lack multiple evaluation tools that could help them in their product evaluation and by combining those the best result can be achieved. They also lack a clear way of evaluating their product deletion decisions. They should therefore create a formal strategy for how product deletion decisions should be initiated and conducted, implement more evaluation tools and create a tool for measuring the success of product deletion decisions.

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## APPENDICES

### APPENDIX 1 - Interview Questions

#### **Background questions:**

- Name
- Title
- Respondent's role and function.
- Brief background (Interviewee's education, previous positions, and employment history)
- About the department, number of employees, and focus area.

#### **Questions regarding the product deletion process:**

- What variables do you take into account when considering whether or not to delete a product?
- What do you base your decisions on?
- How often do you evaluate the different products?
- How do you evaluate the impact of product removal on stakeholders like consumers, workers, and shareholders?
- How can external factors, such as market trends and competitor activities, affect product removal decisions?
- What is the most common reason behind eliminating a product?
- Do you plan product development with product deletion in mind?
- How does that work with sustainability?
- How do you balance the need to free up capacity for new goods with the revenue loss that may result from retiring an existing product?

#### **Questions about their involvement in the product deletion process**

- Can you describe your involvement in managing the product portfolio and making product deletion decisions?
- What are the steps that are taken during a product deletion?
- Do you have a certain strategy for product deletion?
- How do you follow that strategy?
- Who is involved with creating the strategy for product deletion?
- Could you describe the most recent product deletion?
- What different roles play a part in the product deletion process?
- Who is the decision maker?
- How do you include cross-functional teams and stakeholders in the product deletion decision-making process?
- How do you work from the decision to communicating it to the entire organization etc?
- How do you handle the communication and message surrounding a product's discontinuation to avoid negative effects on stakeholders?

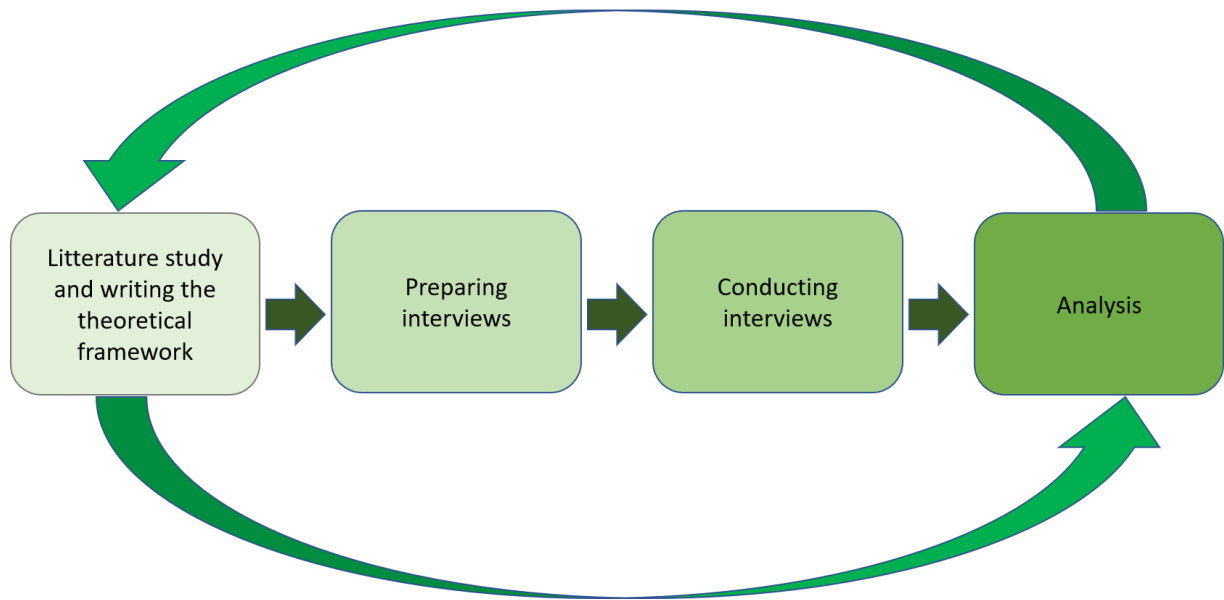


**Questions about how they evaluate the product deletion**

- How do you measure the success of product deletion choices using metrics?
- How do you evaluate the impact of product removal on stakeholders like consumers, workers, and shareholders?
- Have you experienced any consequences of product deletion?
- How do different stakeholders react to product deletions?
- What are the underlying factors that are used to evaluate the product deletion?

## List of Figures

**Figure 1.** *An illustration of the abductive approach used in this study.*



## List of tables

**Table 1.** *A table containing the date, duration, and respondent of each interview (own construction)*

Respondent	Role	Date of interview	Duration of interview
Respondent 1	Local product manager	2023-04-11	52 minutes
Respondent 2	Local product manager	2023-04-13	43 minutes
Respondent 3	Local product manager	2023-04-14	44 minutes
Respondent 4	Local product manager	2023-04-17	32 minutes
Respondent 5	Global product manager	2023-05-05	29 minutes

**Table 2.** *Operationalization of the interview questions (own construction)*

Theory	Relation to the theoretical framework
Deciding if a product should be deleted	
<ul style="list-style-type: none"> <li>What variables do you take into account when considering whether or not to delete a product?</li> <li>What do you base your decisions on?</li> <li>How often do you evaluate the different products?</li> <li>How do you evaluate the impact of product removal on stakeholders like consumers, workers, and shareholders?</li> <li>How can external factors, such as market trends and competitor activities, affect product removal decisions?</li> <li>What is the most common reason behind eliminating a product?</li> <li>Do you plan product development with product deletion in mind?</li> <li>How does that work with sustainability?</li> <li>How do you balance the need to free up capacity for new goods with the revenue loss that may result from retiring an existing product?</li> </ul>	<p>Product portfolio management is currently more focused on the introduction of new products rather than eliminating current ones (Lahtinen et al., 2021). With the risk of building too wide product portfolios, it is important to identify the most important products and base their product portfolio around those (Ward et al., 2010). Identifying the most important and critical products is complex but different methods can be used (Jugend &amp; da Silva, 2014), the purpose of the questions is to explore how large multinational company works with their filtering process regarding which products should be deleted. By understanding this the process can be evaluated and understand why certain decisions are made.</p>
What steps are taken during a product deletion process?	
<ul style="list-style-type: none"> <li>Can you describe your involvement in managing the product portfolio and making product deletion decisions?</li> <li>What are the steps that are taken during a product deletion?</li> <li>Do you have a certain strategy for product deletion?</li> <li>How do you follow that strategy?</li> <li>Who is involved with creating the strategy for product deletion?</li> <li>Could you describe the most recent product deletion?</li> <li>What different roles play a part in the product deletion process?</li> <li>Who is the decision maker?</li> </ul>	<p>There are different ways to proceed with product deletion, steps to follow and decisions to be made (Avlonitis, 1985). The different ways utilities different teams and people and the decision taker can differ. Deleting a product is not an easy process and it can affect different actors (Muir &amp; Reynolds, 2011). The purposes of the questions are to explore how a large multinational company works with and during its product deletion process. This allows for a thorough description of how a large multinational company works with this.</p>

<ul style="list-style-type: none"> <li>• How do you include cross-functional teams and stakeholders in the product deletion decision-making process?</li> <li>• How do you work from a decision to communicating it to the entire company etc?</li> <li>• How do you handle the communication and message surrounding a product's discontinuation to avoid negative effects on stakeholders?</li> </ul>	
<b>Measuring the outcome of product deletion</b>	
<ul style="list-style-type: none"> <li>• How do you measure the success of product deletion choices using metrics?</li> <li>• How do you evaluate the impact of product removal on stakeholders like consumers, workers, and shareholders?</li> <li>• Have you experienced any consequences of product deletion?</li> <li>• How do different stakeholders react to product deletions?</li> <li>• What are the underlying factors that are used to evaluate the product deletion?</li> </ul>	<p>The decision to delete a product might affect the customers of that product, if the product is very critical to the customer the perceived loss of that product is high relative to another customer that perceives the same product as not important at all (Homburg et al., 2010). The product deletion process is a complex process where the outcome cannot be measured easily. The purpose of the questions is to get an understanding of how the company works with measuring the outcome of product deletion and how stakeholders might be affected. This allows for a thorough description of how a large multinational company works in the aftermath of product deletion decisions.</p>