Chair of Service Operations Management

Prof. Dr. Cornelia Schön

Supervisor: *Title Prename Surname*



Bachelor/Seminar/Master Thesis

**Title**

Candidate in the “XXX “ program  
Prename Surname   
University E-Mail XXXX@XXXXXX.de  
Matr. No. XXXXX

*Place,* *DD.MM.YYYY*

**Abstract** (Optional for Bachelor/Seminar Thesis)

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus.

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci. Aenean nec lorem. In porttitor. Donec laoreet nonummy augue. Suspendisse dui purus, scelerisque at, vulputate vitae, pretium mattis, nunc. Mauris eget neque at sem venenatis eleifend. Ut nonummy. Fusce aliquet pede non pede. Suspendisse dapibus lorem pellentesque magna. Integer nulla.

Donec blandit feugiat ligula. Donec hendrerit, felis et imperdiet euismod, purus ipsum pretium metus, in lacinia nulla nisl eget sapien. Donec ut est in lectus consequat consequat.

Etiam eget dui. Aliquam erat volutpat. Sed at lorem in nunc porta tristique.

Table of Contents

[List of Tables IV](#_Toc187665120)

[List of Figures V](#_Toc187665121)

[List of Symbols (optional) VI](#_Toc187665122)

[List of Abbreviations (optional) VII](#_Toc187665123)

[1 Introduction 1](#_Toc187665124)

[1.1 Problem Definition and Motivation 1](#_Toc187665125)

[1.2 Ambition of the Thesis 1](#_Toc187665126)

[1.3 Thesis Structure 1](#_Toc187665127)

[2 Fundamentals of XXX 1](#_Toc187665128)

[2.1 Basic Terms 1](#_Toc187665129)

[2.2 XXX 1](#_Toc187665130)

[2.3 A 1](#_Toc187665131)

[2.3.1 A1 1](#_Toc187665132)

[2.3.2 A1 1](#_Toc187665133)

[3 A Model for Optimal Pricing 2](#_Toc187665134)

[3.1 Model Assumptions 2](#_Toc187665135)

[3.2 Data Basis 2](#_Toc187665136)

[3.2.1 B1 3](#_Toc187665137)

[3.2.2 B2 3](#_Toc187665138)

[4 Case Study 3](#_Toc187665139)

[4.1 Mathematical Problem 3](#_Toc187665140)

[4.2 C2 4](#_Toc187665141)

[5 Discussion of Results 5](#_Toc187665142)

[5.1 D1 5](#_Toc187665143)

[5.2 D2 5](#_Toc187665144)

[5.3 D3 5](#_Toc187665145)

[6 Conclusion and Avenues of Future Research 5](#_Toc187665146)

[Appendix A VII](#_Toc187665147)

[Appendix A.1: Socio-Demographics of Participants VII](#_Toc187665148)

[Appendix A.2: Notation VII](#_Toc187665149)

[Appendix B VII](#_Toc187665150)

[Appendix B.1: Analysis Results VII](#_Toc187665151)

[List of References VIII](#_Toc187665152)

[Eidesstaatliche Erklärung (Affidavit) IX](#_Toc187665153)

# List of Tables

[**Table 1:** *This is the name of your table* 4](#_Toc187663984)

# List of Figures

[**Figure 1:** *This is the name of your figure* 2](#_Toc187663987)

# List of Symbols (optional)

standard deviation

mean

C correlation matrix

# List of Abbreviations (optional)

C/D Confirmation/Disconfirmation

EM Expectation-Maximization

FM Finite Mixture

FMR Finite Mixture Regression

# 

# Introduction

XXX

## Problem Definition and Motivation

XXX

## Ambition of the Thesis

XXX

## Thesis Structure

XXX

# Fundamentals of XXX

XXX

## Basic Terms

As a reference management tool you might use the open source tool Zotero, for more information please consult: [Zotero | Your personal research assistant](https://www.zotero.org/).

To have an In-Text citation at the end of a sentence go to the Zotero Tab and choose Add/Edit Citation to select the citation (Caimi, 2009). In case you want to write about specific pages click on the chosen citation and insert the pages (Caimi, 2009, pp. 7–12). For the case of stating that Caimi (2009) came up with a concept click on the chosen citation and exclude the author, after typing the name in normal text. For multiple citations you may choose them all while entering it in the Zotero Window (Caimi, 2009, pp. 7–12; Helber et al., 2011; Irnich & Desaulniers, 2005; Jalil et al., 2011).

To ensure that you adhere to APA guidelines check the APA Style guide: [Publication Manual of the American Psychological Association, Seventh Edition (2020)](https://apastyle.apa.org/products/publication-manual-7th-edition?tab=4) or [APA Style](https://apastyle.apa.org/) and for examples feel free to consult: [APA 7th Ed. - Citation - LibGuides at California State University Dominguez Hills](https://libguides.csudh.edu/citation/apa-7).

## XXX

XXX

## A

XXX

### A1

XXX

### A1

XXX

# A Model for Optimal Pricing

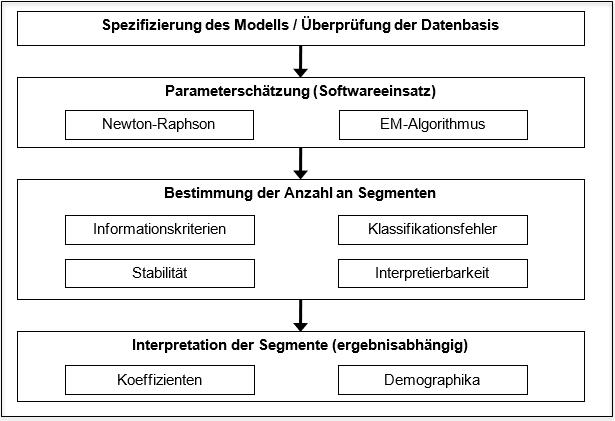
XXX

## Model Assumptions

XXX

## Data Basis

**Figure 1:** *This is the name of your figure*

  
The figure should be self-provided if possible.

### B1

XXX

### B2

XXX

# Case Study

XXX

## Mathematical Problem

When presenting an optimization problem in your thesis, it's important to structure it clearly and methodically. Here's how you can do this, using a retail optimization problem as an example to illustrate each step. Always use “formulas” to write mathematical notations.

To ensure consistency in formatting the mathematical formulation of the model feel free to add the example as a “quick table” in word, this automatically formats and numbers your formulation. As you can later add the new rows from via the “quick table” function and then insert your objective function or constraints.

|  |  |  |
| --- | --- | --- |
|  |  | (1) |

Start by identifying and defining all the parameters and sets involved in your problem. This establishes the foundation of your model and ensures that readers understand the elements you're working with. Consider a retail store that needs to decide the optimal quantity of various products to stock for the upcoming season. We define the collection of all products available for stocking indexed by . Each product is assigned a purchase cost and selling price in Euro per unit, storage space required in cubic meters, as well as an estimated demand in units. To ensure applicability in the organization the total budget and storage capacity in their warehouse are considered.

Next, specify the variables that represent the decisions to be made. These variables are typically the quantities you will solve for in your optimization model. In the formulation of our model, we consider as our decision variables denoting the number of units of product to stock.

Construct an objective function that represents the goal of your optimization problem. This function should be expressed in terms of your decision variables and parameters. Linking functions in text can be done via the cross-reference capabilities of word. Our objective (2) is to maximize the total profit from selling the products. The profit for each product is calculated by subtracting the purchase cost from the selling price and multiplying it by the number of units sold. The following is an example for an optimization problem:

|  |  |  |
| --- | --- | --- |
|  |  | (2) |
|  |  | (3) |
|  |  | (4) |
|  |  | (5) |

List all the limitations and requirements that must be considered in your model. Constraints ensure that the solution is feasible and adheres to real-world limitations. Explain how each part of your model relates to the real-world scenario. This helps readers understand the practical implications of your mathematical formulations. The budget constraint (3) ensures that the store does not spend more money on inventory than it has allocated. The storage capacity constraint (4) reflects the physical limitations of the warehouse; we cannot stock more products than the space allows. The demand constraint (5) prevents overstocking by ensuring we do not order more than is expected to sell, thus minimizing potential losses from unsold inventory.

Organize your presentation so that each section logically follows the previous one. Use consistent notation throughout and make sure all variables and parameters are clearly defined before use. Finally, review your model to ensure that it includes all relevant factors and accurately represents the problem you are addressing. Validate your model by considering whether it makes sense in the context of your specific scenario. Clarity and thoroughness are key when presenting complex problems. Ensure that all components of your model are well-explained and justified, enabling readers to follow your reasoning and appreciate the rigor of your analysis.

## C2

XXX

**Table 1:** *This is the name of your table*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *XXX* | *XXX* | *XXX* | *XXX* | *XXX* | *XXX* |
| XXX | XXX | XXX | XXX | XXX | XXX |
| XXX | XXX | XXX | XXX | XXX | XXX |
| XXX | XXX | XXX | XXX | XXX | XXX |
| XXX | XXX | XXX | XXX | XXX | XXX |
| XXX | XXX | XXX | XXX | XXX | XXX |

*Note:* Here you can provide details and further information to the reader. X: XXXXX

# Discussion of Results

XXX

## D1

XXX

## D2

XXX

## D3

XXX

# Conclusion and Avenues of Future Research

XXX

# Appendix A

## Appendix A.1: Socio-Demographics of Participants

Change page number start (currently VII) if page numbers at the beginning have been added/deleted!

## Appendix A.2: Notation

XXX

# Appendix B

## Appendix B.1: Analysis Results

XXX

# List of References

Caimi, G. C. (2009). *Algorithmic decision suport for train scheduling in a large and highly utilised railway network* [Doctoral Thesis, ETH Zurich]. https://doi.org/10.3929/ethz-a-005947637

Helber, S., Schimmelpfeng, K., & Stolletz, R. (2011). Setting Inventory Levels of CONWIP Flow Lines via Linear Programming. *Business Research*, *4*(1), 98–115. https://doi.org/10.1007/BF03342728

Irnich, S., & Desaulniers, G. (2005). Shortest Path Problems with Resource Constraints. *Springer Books*, 33–65.

Jalil, M. N., Zuidwijk, R. A., Fleischmann, M., & Nunen, J. A. E. E. van. (2011). Spare parts logistics and installed base information. *Journal of the Operational Research Society*, *62*(3), 442–457.

# Eidesstaatliche Erklärung (Affidavit)

*Hiermit versichere ich, dass diese Abschlussarbeit von mir persönlich verfasst ist und dass ich keinerlei fremde Hilfe in Anspruch genommen habe. Ebenso versichere ich, dass diese Arbeit oder Teile daraus weder von mir selbst noch von anderen als Leistungsnachweise andernorts eingereicht wurden. Wörtliche oder sinngemäße Übernahmen aus anderen Schriften und Veröffentlichungen in gedruckter oder elektronischer Form sind gekennzeichnet. Sämtliche Sekundärliteratur und sonstige Quellen sind nachgewiesen und in der Bibliographie aufgeführt. Das Gleiche gilt für graphische Darstellungen und Bilder sowie für alle Internet-Quellen.*

*Ich bin ferner damit einverstanden, dass meine Arbeit zum Zwecke eines Plagiatsabgleichs in elektronischer Form anonymisiert versendet und gespeichert werden kann. Mir ist bekannt, dass von der Korrektur der Arbeit abgesehen und die Prüfungsleistung mit „nicht ausreichend“ bewertet werden kann, wenn die Erklärung nicht erteilt wird.*

Place, Handover Date

WRITTEN SIGNATURE

Prename Surname

**Affidavit (translated version not legally binding)**

*I hereby declare that the paper presented is my own work and that I have not called upon the help of a third party. In addition, I affirm that neither I nor anybody else has submitted this paper or parts of it to obtain credits elsewhere before. I have clearly marked and acknowledged all quotations or references that have been taken from the works of others. All secondary literature and other sources are marked and listed in the bibliography. The same applies to all charts, diagrams and illustrations as well as to all Internet resources.*

*Moreover, I consent to my paper being electronically stored and sent anonymously in order to be checked for plagiarism. I am aware that the paper cannot be evaluated and may be graded "failed" ("nicht ausreichend") if the declaration is not made.*