Your project title

Your name

A project report/dissertation/thesis in partial fulfilment of the requirements for the degree

Baccalareus / Magister / Philosophiae Doctor
(Industrial Engineering)

in the

Faculty of Engineering, Built Environment, and Information Technology

University of Pretoria

October 21, 2020(or just 'November 2017')

Abstract

Title:	Your project title as formally registered
Student name:	Your full names
Student number:	u01234567
Supervisor:	Prof. Some C. Person

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

Contents

List of Figures

List of Tables

Acronyms

CTD	Centre for Transport Development
UP	University of Pretoria

Chapter 1

Introduction

Consultancy firms typically sell services, a product with an instantaneous expiry date. Traditional approaches of inventory managed assume that a product can be held in inventory to satisfy a later demand, an approach that does not hold when you're selling time. To combat this, consultancy firms must ensure that their resources are running optimally. However, if resources do not have work then their utilisation will be low. To combat this, it is proposed to create a new product at a discounted rate to entice customers to purchase additional work - a concept used in airlines for ticket sales. Pricing considerations.

A company has i projects that are scheduled for time t. There is a resource pool that may do these projects. Each resource can take a max of 8 hours per day for a project. Projects have a resource requirement. Discounted project must be scheduled to maximise the utilisation of resources over certain time period.

Assume projects are certain. Assume project created will be bought and implemented.

1.1 Background

There is usually some introductory text before you just jump in with `\section{...}` and `\subsection{...}` commands.

1.1.1 Subsection

You have to ensure that there is proper flow through your document. One suggestion is to plan your document by only adding the various section and subsection headings. You should have flow through them. And once there is logical flow at the structural level, you can start populating the different sections.

In LaTeX, when you want to start with a new paragraph, you simply leave open a line in the source `*.tex` file, without adding specific line break commands '\\'. The formatting of the paragraphs so that each subsequent paragraph starts with the first line indented, and *no open space between lines*, is sorted out by LaTeX during compilation.

Chapter 2

Literature review

So at the start of a new chapter, the first use of the acronym University of Pretoria (UP) should be written in full again. I doubt Manson (2006) will think this is a rigorous review.

Chapter 3

Model

And here is some mathematical formula expressed in (3.1).

$$y = mx + c \tag{3.1}$$

where m is the gradient of the line.

Note: If you want to create a note for yourself, for example during the preparation of your preliminary report, on what must still be done, then you can use this `\noteToSelf{...}` command we programmed for you.

(jwj: Alternatively, there is a command in the preamble of this template that allows you to create a custom comment command, just replace the `yourInitials` with, you guessed it, your own initials)

3.1 Preliminary model

$x_{it} \triangleq \begin{cases} 1 & \text{if project } i \text{ is underway during time } t \\ 0 & \text{otherwise} \end{cases}$

$y_{jt} \triangleq \begin{cases} 1 & \text{if improvement project } j \text{ is underway during time } t \\ 0 & \text{otherwise} \end{cases}$

q_t resource availability at time t
r_i resource requirement for project i
r_j resource requirement for improvement project j
$\tilde{z}_{it}$ probability of project i occurring at time t

The parameter $\tilde{z}_{it}$ can be expressed as random variable and is derrived from the stage a customer is in the sales funnel. Projects that are ongoing or started are indicated as 1. We can include a cost of normal project and the cost of a improvement project as different.

$$\max z = \sum_{i \in I} x_{it} r_i \tilde{z}_{it} + \sum_{j \in J} y_{jt} r_i \tag{3.2}$$

Subject to

$$\sum_{i \in I} x_{it} r_i \tilde{z}_{it} + \sum_{j \in J} y_{jt} r_j \leq q_t \qquad \forall t \in T \qquad (3.3)$$

Chapter 4

Results and discussion

Chapter 5

Conclusion

This is the chapter where you add *concluding* remarks. It is not a summary.

Bibliography

Manson, N. (2006). Is operations research really research? *ORiON: The Journal of ORSSA*, 22(2):155–180.

Appendix A

Some data as appendix