

**THE ANALYSIS OF RESEARCH AND  
DEVELOPMENT (R&D) ON COMPANIES' PERFORMANCE:  
(Empirical Study of Mining Company Listed on Indonesia Stock Exchange)**

**THESIS**

Presented as Partial Fulfillment of the Requirements for the Degree of Sarjana  
Ekonomi (S1) in International Financial Accounting Program Faculty of Economics,  
Atma Jaya Yogyakarta University



Compiled by:

**Christia Putri Antika**

**Student ID Number: 07 15 16634**

**FACULTY OF ECONOMICS  
ATMA JAYA YOGYAKARTA UNIVERSITY  
NOVEMBER 2011**



**Faculty of Economics**  
**Atma Jaya Yogyakarta University**

I hereby recommend that the thesis prepared under my supervision by

**Christia Putri Antika**

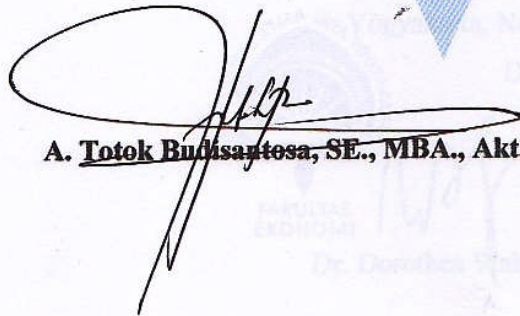
**Student ID Number: 07 15 16634**

Thesis entitled

**THE ANALYSIS OF RESEARCH AND  
DEVELOPMENT (R&D) ON COMPANIES' PERFORMANCE:  
(Empirical Study of Mining Company Listed on Indonesia Stock Exchange)**

Be accepted in partial fulfillments of the requirements for the Degree of Sarjana  
Ekonomi (S1) In International Financial Accounting Program Faculty of  
Economics, University of Atma Jaya Yogyakarta

Advisor,



**A. Totok Budisantosa, SE., MBA., Akt.**

**Dates September 12<sup>th</sup> 2011**



This is to certify that the thesis entitled

**THE ANALYSIS OF RESEARCH AND  
DEVELOPMENT (R&D) ON COMPANIES' PERFORMANCE:  
(Empirical Study of Mining Company Listed on Indonesia Stock Exchange)**

Presented by

**Christia Putri Antika**

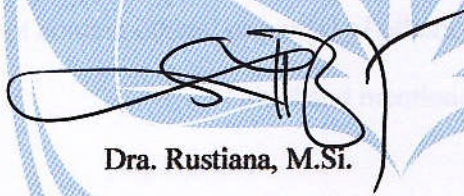
**Student ID Number: 07 15 16634**

Has been defended and accepted towards fulfillment of the requirements for the  
Degree of Sarjana Ekonomi (S1) in International Management Program  
Faculty of Economics, Atma Jaya Yogyakarta University

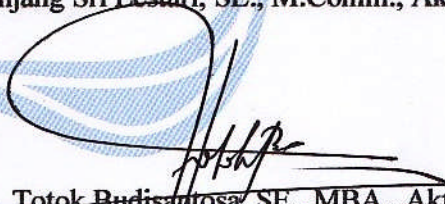
**Examination Committee**

Chairwoman

Members

  
Dra. Rustiana, M.Si.

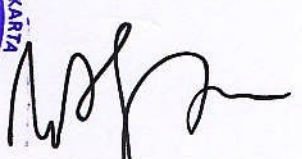
  
Jenjang Sri Lestari, SE., M.Comm., Akt.

  
A. Totok Budisantosa, SE., MBA., Akt.

Yogyakarta, November 4<sup>th</sup> 2011

Dean



  
Dr. Dorothea Wahyu Ariani, SE., MT.

## **AUTHENCITY ACKNOWLEDGEMENT**

I, Christia Putri Antika, hereby declare that I compiled the thesis with the following title:

**THE ANALYSIS OF RESEARCH AND  
DEVELOPMENT (R&D) ON COMPANIES' PERFORMANCE:  
(Empirical Study of Mining Company Listed on Indonesia Stock Exchange)**

is really my own thinking and writing. I fully knowledge that my writings does not contain others' or part(s) of others' writing, except for those that have been cited and mentioned in the references.

Yogyakarta, September 12<sup>th</sup> 2011

  
Christia Putri Antika

## ACKNOWLEDGEMENT

Firstly, I would like to thank and praise to thank to God, for His blessing on me, so I can finish this thesis. I would not be able to accomplish this thesis without help from anyone. So many people have assisted me finishing this thesis, therefore, I would like to say thank you to:

1. Mr. A.Totok Budisantosa, SE., MBA., Akt., as my advisor in doing thesis. Thank you very much for your lecture, guidance, time, patience and attention in the class and also pay attention on my progress and gives me directions to complete this thesis so that I could meet the deadline.
2. All of my family; my father, mother, and brother; for giving me support both immaterial and material, and who always motivate me to never say give up.
3. My best friends, Priska Yeniriatno, Yesi Amanda and Viera Cristalia Probawati for all their time to support, love, and care during the good times and bad times. Thank you so much for supporting me all the time to finish my thesis. And always makes me smile when I felt like meeting a dead end on my thesis.
4. My IFAP friends batch 2007, Wulan, Ling, Levina, Sasa, Beny, Indra, Agung, Davin and Olson, thank you very much for supporting and cooperation with me. I miss the time we were in class together.
5. My KKN Tematik's friends, thank you very much for the experiences that I have got from them during rural development internship in

Merapi, it is so meaningful and always make me happy. Thank you guys for making our KKN a memorable one. I hope we can still be friends forever. Keep in touch. I'll always miss you guys. ☺

6. All the lecturers, that I could not be able to mention them one by one. Especially, all the international program lecturers. They assisted me to learn many things during my study in University of Atma Jaya Yogyakarta.

7. Last but not least, I'd like to thank everyone who always been there for me. I might not remember their names, but I remember their deeds. And they are the administration staff, photocopiers, the librarians, and also the cleaning service and the security staff. You have been a great help.

There are also people that I can not mention one by one. Thank you for all your support and care. No words can express my happiness to have all of you as parts of my life. I hope one day I can be helpful to all of you, just as you all are to me. And I would also like apologize to everyone if in any case I have done anything wrong to you all incidentally.

I realize that this thesis is still far from perfect because of the limitation on my knowledge, ability, and experience. Therefore, I would be glad to accept advice and critics to this thesis. Last, I hope this thesis can be useful for someone who related to this research.

Yogyakarta, September 12<sup>th</sup> 2011

With Much appreciation,

Christia Putri Antika

**I dedicated this thesis to my PARENTS and my  
BIG BROTHER for their support, love, and  
encouragement.**

**Our dream. . . has become TRUE ^^**

**#Nothing happens without a reason.**

**.LORD, YOU ARE THE  
REASON WHY I NEVER GIVE  
UP IN THIS LIFE.**



Some said,

Finish what you start and you will impress people considering you for an advanced position. The challenges you take on now will make you realize what you are worth and how far you can go.

Adapt or die. As many times as we've heard it, the lesson doesn't get easier. The problem is we're human. We want more than just to survive. We want love. We want success. We want to be the best that we can be. So, we fight like hell to get those things. Anything else feels like death.

And,

**deep in my heart, I do believe, we shall overcome someday!!! ^^**

With Love,

**C. PUTRI. A**

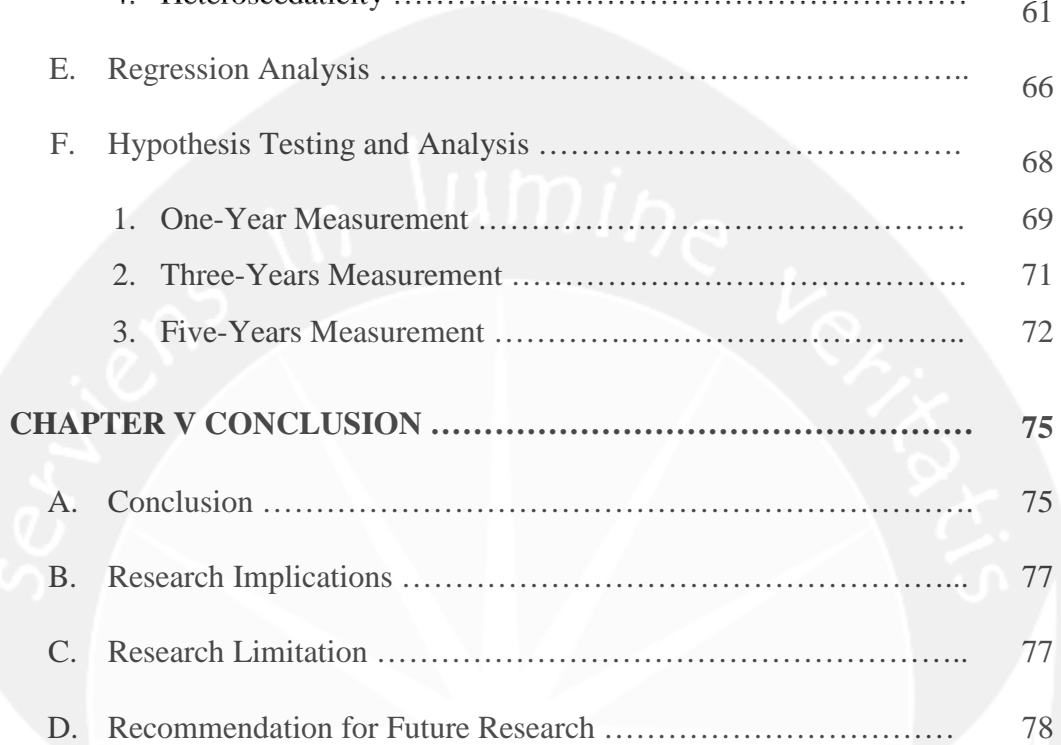
^^

## TABLE OF CONTENTS

<b>TITLE PAGE</b> .....	<b>i</b>
<b>APPROVAL PAGE</b> .....	<b>ii</b>
<b>AUTHENTICITY ACKNOWLEDGEMENT</b> .....	<b>iii</b>
<b>ACKNOWLEDGEMENT</b> .....	<b>iv</b>
<b>DEDICATION PAGE</b> .....	<b>vi</b>
<b>TABLE OF CONTENT</b> .....	<b>viii</b>
<b>LIST OF TABLES</b> .....	<b>xii</b>
<b>LIST OF APPENDICES</b> .....	<b>xiv</b>
<b>ABSTRACT</b> .....	<b>xv</b>
<b>CHAPTER I INTRODUCTION</b> .....	<b>1</b>
A. Background of the Research Study .....	1
1. Problem Formulation of the Research Study .....	3
2. Scope of the Research Study .....	4
3. Originality of the Research Study .....	4
B. Objective and Benefits of the Research Study .....	5
1. Objective of the Research Study .....	5
2. Benefits of the Research Study .....	5

C. Organization of the Writing .....	7
<b>CHAPTER II THEORETICAL REVIEWS .....</b>	<b>9</b>
A. Literature Review .....	9
1. Research and Development .....	9
2. Accounting for R&D .....	12
3. Accounting for Extractive Industry .....	14
4. R&D Intensity.....	20
5. R&D and Company Performance .....	21
5.1. Company performance and Profitability .....	21
5.1.1. Measuring Profitability .....	23
5.1.2. Operating Profit Margin .....	24
5.2. Relation between R&D Activity and Company Performance .....	25
5.2.1 Previous Research .....	25
4.2.2.Linkage Between R&D and Company Performance	29
B. Hypothesis Development .....	32
<b>CHAPTER III RESEARCH METHODOLOGY .....</b>	<b>35</b>
A. The scope of Research Data .....	35
1. Observation Period .....	35
2. Sample selection .....	35
B. Research Data and Data Gathering .....	37
1. Research Data .....	37
2. Data Gathering .....	38
3. Data Source .....	38

C. Variables and Measurement of Variables .....	39
1. Dependent Variable .....	39
Operating Profit Margin .....	39
2. Independent Variable .....	40
R&D Intensity .....	40
3. Independent Variables .....	41
Debt Ratio .....	42
Firm Size .....	42
D. Method of Analysis and Hypothesis Testing .....	43
1. Method of Analysis .....	43
1.1. Descriptive Statistics .....	43
1.2. Correlation Test .....	44
1.3. Classical Test Assumption .....	44
1.3.1. Normality .....	45
1.3.2. Multicollinearity .....	46
1.3.3. Autocorrelation .....	46
1.3.4. Heterocedasticity .....	47
2. Hypothesis Testing .....	48
2.1. Multiple Regression Analysis .....	48
<b>CHAPTER IV RESEARCH FINDINGS and ANALYSIS .....</b>	<b>52</b>
A. The Research Data .....	52
B. Descriptive Statistic .....	52
C. Correlation Analysis .....	55
D. Classical Test Assumptions Results .....	56
1. Normality .....	57



2. Multicollinearity .....	59
3. Autocorrelation .....	61
4. Heteroscedaticity .....	61
E. Regression Analysis .....	66
F. Hypothesis Testing and Analysis .....	68
1. One-Year Measurement .....	69
2. Three-Years Measurement .....	71
3. Five-Years Measurement .....	72
<b>CHAPTER V CONCLUSION .....</b>	<b>75</b>
A. Conclusion .....	75
B. Research Implications .....	77
C. Research Limitation .....	77
D. Recommendation for Future Research .....	78

## **REFERENCES**

## **APPENDICES**



## LIST OF TABLES

Table 1	: Research and Development Activities on Mining Sector Company .....	11
Table 2	: Accounting Treatment for Research and Development Expenditure on Mining Sector Company .....	17
Table 3	: Previous Research Findings .....	28
Table 4	: Distribution Samples .....	36
Table 5	: List of The Companies that Included in The Initial Samples .....	37
Table 6	: Descriptive Statistic of The Variables .....	54
Table 7	: Pearson Correlations Results .....	56
Table 8.a:	Normality Test Results in One-year .....	57
Table 8.b:	Normality Test Results in Three-years .....	58
Table 8.c:	Normality Test Results in Five-years .....	59
Table 9.a:	Multicollinearity Test Results in One-years .....	60
Table 9.b:	Multicollinearity Test Results in Three-years .....	60
Table 9.c:	Multicollinearity Test Results in Five-years .....	61
Table 10.a:	Autocorrelation Test Results in One-years .....	62
Table 10.b:	Autocorrelation Test Results in Three-years .....	62
Table 10.c:	Autocorrelation Test Results in Five-years .....	63
Table 11.a:	Heteroscedasticity Test Results in One-years .....	64

Table 11.b: Heteroscedasticity Test Results in Three-years .....	64
Table 11.c: Heteroscedasticity Test Results in Five-years .....	65
Table 12 : Results of the Multiple Regressions: Dependent Variable Operating Profit Margin .....	66

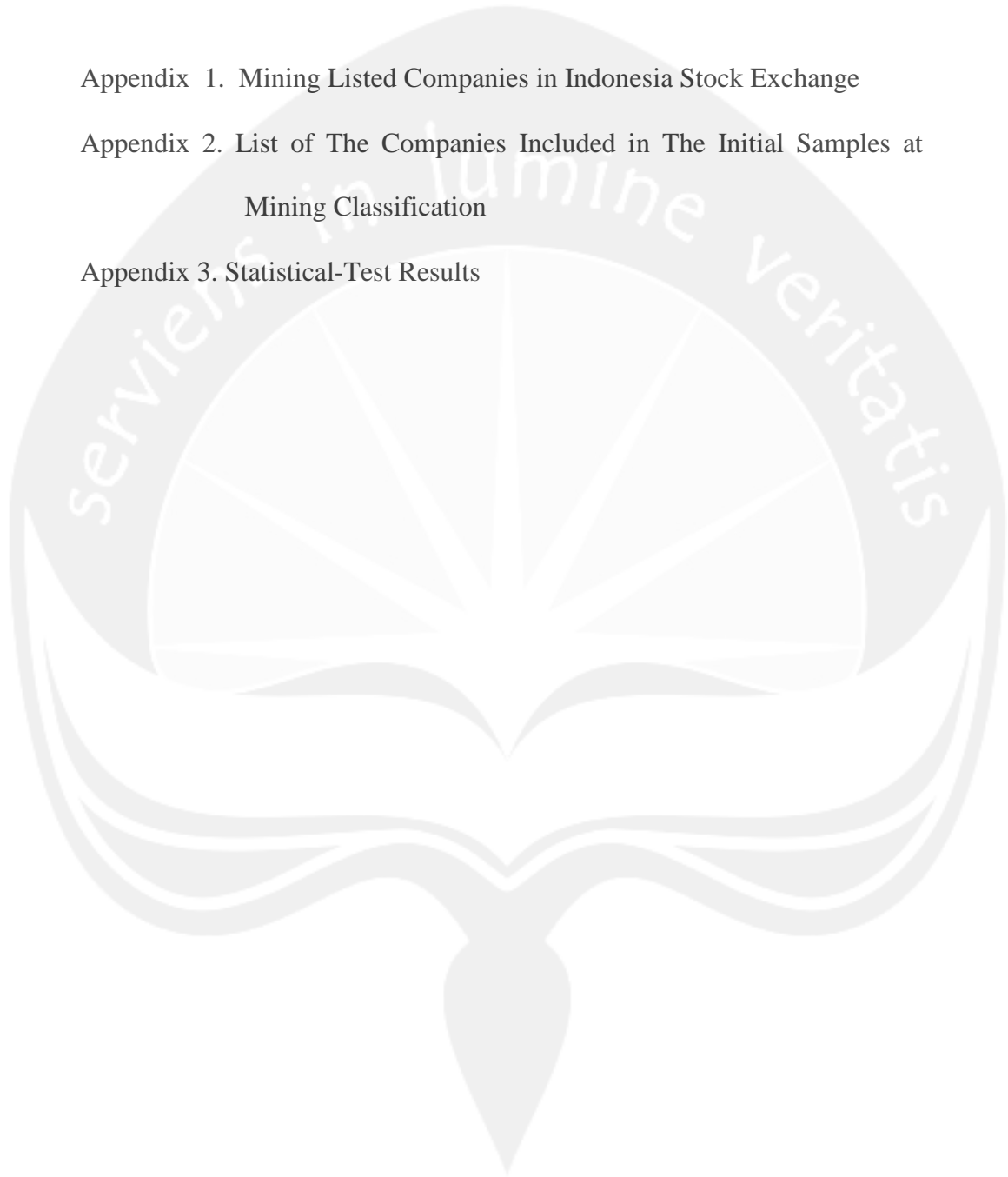


## **LIST OF APPENDICES**

Appendix 1. Mining Listed Companies in Indonesia Stock Exchange

Appendix 2. List of The Companies Included in The Initial Samples at  
Mining Classification

Appendix 3. Statistical-Test Results



**THE ANALYSIS OF RESEARCH AND  
DEVELOPMENT (R&D) ON COMPANIES' PERFORMANCE:  
(Empirical Study of Mining Company Listed on Indonesia Stock Exchange)**

Compiled by:  
Christia Putri Antika  
Student ID Number: 07 15 16634

**Advisor**

**A. Totok Budisantosa, SE., MBA., Akt.**

**ABSTRACT**

It is important for management to realize that Research and Development (R&D) is one of significant companies' activities that is expected to enhance companies' future value. The main objective of this study is to examine and discuss the influence of companies' R&D on companies' performance. The research sample is 12 mining listed companies in Indonesia Stock Exchange (IDX) that reported Research & Development (R&D) expenditure during period 2006-2010. A hypothesis was developed and tested use a multiple regression model. Research variables used are Operating Profit Margin (as the dependent variable), R&D intensities (as the independent variable), Debt Equity Ratio and Firm Size.

The hypothesis tested into deferent time measurements, which are examined with one-year, three-year, and five-year lags. The hypothesis testing results shows that there is relationship between R&D and companies' performance. The hypothesis testing with three-year lags shows that R&D affect the companies' profitability, measured by operating profit margin after three-year lags R&D expensed.

The findings from this research imply that R&D expenses affect on company's profitability. R&D expenses do not have immediate effect on profitability, there is a time lag after which the effects of R&D investment examined with longer time lags than one year. This study been suggested that the effects of R&D expenses on company profitability also examined with longer time lags than one or two years, in order to better the causalities. Therefore, the management has to monitor and evaluate current R&D and be able to design new R&D for the future.

**Keyword:** R&D, R&D intensity, Operating Profit Margin.