ANALYSIS OF VALUE RELEVANCE OF INTELLECTUAL CAPITAL DISCLOSURE (An Empirical Study on Bank Listed in Banking Indonesia Year 2012-2016)

(UNDERGRADUATE THESIS)

By :

Dhissa Miranthis Arnis

ECONOMIC AND BUSINESS FACULTY LAMPUUNG UNIVERSITY BANDAR LAMPUUNG 2018
This research aims to examine whether the disclosure of IC information conducted by the company in the annual report has value relevance. The research dependent variable is PRICE. The independent variables in this research are intellectual capital disclosure index (ICDI) obtained using Li's approach. et. al. (2012) which consists of 61 items of IC information, net income (NI), and book value of equity (BVE). The research sample is a banking sector company listed on the Indonesia Stock Exchange (BEI) of the year 2012 through 2016 using annual report.

The result of hypothesis testing with regression analysis using SPSS 23 application shows that ICDI coefficient is not have positive influence to stock price. But if it is divided into 3 components it can be seen that Human Capital Disclosure Index (HCDI) has a positive effect on stock price although Structural Capital Disclosure Index (SCDI) and Customer Capital Disclosure Index (CCDI) have no effect on stock price. This shows that not all information about intellectual capital has value relevance. This study has several limitations, this research is only done on the banking sector that has been recognized by several studies have an intensive IC. This study does not examine the other companies' sectors whether they have IC intensive or not. Subsequent research is suggested to test the value relevance of corporate IC information in the sector of IC intensive as well as on sector which IC is not intensive, so the result will be more comprehensive.

Key Words: Intellectual Capital, IC information, Value Relevance.
ANALYSIS OF VALUE RELEVANCE OF INTELLECTUAL CAPITAL DISCLOSURE (An Empirical Study on Bank Listed in Banking Indonesia Year 2012-2016)

By :

Dhissa Miranthi Arnis

Undergraduate Thesis

As One of Requirements to Achieve
BACHELOR OF ECONOMICS

In

Accounting Department
Faculty of Economics and Business University of Lampung

FACULTY OF ECONOMICS AND BUSINESS UNIVERSITY OF LAMPUNG BANDAR LAMPUNG 2018
Thesis Title: ANALYSIS OF VALUE RELEVANCE OF INTELLECTUAL CAPITAL DISCLOSURE (An Empirical Study on Bank Listed in Banking Indonesia Year 2012-2016)

Student Name: Dhissa Miranthi Arnis

Student ID: 1411031032

Study Program: Accounting

Faculty: Economics and Business

APPROVING
1. Advisor Committee

Prof. Dr. Lindrianasari, S.E., M.Si., Akt
NIP. 197008171997032002

Yuztitya Asmaranti, S.E., M.Si., Akt.
NIP 198010172005122002

2. Chief of Accounting Major

Dr. Farichah, S.E., M.Si., Akt.
NIP. 196206121990102001
VALIDATING

1. Examiner Team
   Chief Advisor : Prof. Dr. Lindriasari, S.E., M.Si., Akt
   Secretary : Yuzitnya Asmaanari, S.E., M.Si., Akt.
   Main Examiner : Dr. Agrianti Komalasari, S.E., M.Si., Akt.

2. Dean Faculty of Economics and Business
   Prof. Dr. H. Satria Bangawan, S.E., M.Si.
   NIP 196109041987031011

Thesis Examination Passing Date: April 16th, 2018
STUDENT THESIS STATEMENT

Who signed below:

Name: Dhiisa Miranthi Arnis
Student ID: 1411031032

With this stated that my thesis entitled "Analysis of Value Relevance of Intellectual Capital Disclosure (An Empirical Study on Bank Listed in Banking Indonesia Year 2012-2016)" is true of my own work. In this thesis there is no whole or partial of the writings of others by copying or forging in the form of a series of sentences or symbols that show ideas or arguments or thoughts of other authors, which I acknowledge as my own writing, other than that or I take it from someone else's writing without giving the original author's acknowledgment. If in the future proved that my statement is not true, then I am ready to accept sanctions in accordance with applicable regulations.

Bandar Lampung, 17 April 2018

Dhiisa Miranthi Arnis
BIOGRAPHY

The author was born in Bandar Lampung on December 2, 1996 with the full name Dhissa Miranthi Arnis as the second child of couple Mr. Arnis Bahar and Mrs. Novira. The author completed elementary school (SD) education at Elementary School 2 Sawah Brebes in 2002-2008. The author completes her education of junior high school at Junior High School 4 Bandar Lampung in 2011, and then completes the education of Senior High School (SMA) in Senior High School (SMA) 2 Bandar Lampung in 2014.

In 2014, the writer was accepted as a student of Accounting Department of Faculty of Economics and Business of University of Lampung through SNMPTN (Seleksi Nasional Masuk Perguruan Tinggi Negeri). During the lectures session, the author is active as a member of HIMAKTA (Himpunan Mahasiswa Akuntansi), the author is also listed as AIESEC's finance and talent management staff and became an OC (organizing committee) at ENTREVOLUTION Summer Project in 2014/2015, the author is also listed as AIESEC's manager in talent management at AIESEC in the period 2015/2016.

In addition, in 2016 the author was selected as Liaison Officer in the Simposium Nasional Akuntansi (SNA) which is an annual event held by the Ikatan Akuntansi Indonesia (IAI). In 2017, the writer was selected as Liaison Officer in AFEBI
(Asosiasi Fakultas Ekonomi dan Bisnis Indonesia) and the writer was also selected as Liaison Officer in ISEI (Ikatan Sarjana Ekonomi Indonesia) activity as a manifestation of concern for nation and state development. The author was also selected to participate in the training of Tax Brevet A and B held by Tax Center FEB Unila in cooperation with Ikatan Konsultan Pajak Indonesia.
DEDICATION

Alhamdulillahi robbilalamin

Praise be to Allah SWT for all the grace, blessings and grace so great to the author.

_I dedicate this thesis to:_

My dear parents, Arnis Bahar and Novira. Incomparable thanks to mom and dad who always give endless prayer, useful advice, strength in all conditions, and always give support for my ideals. May Allah SWT always provide protection in the world and in the Hereafter for mother and father.

my dear sister, Muthia Prima Nirmala. Thank you for all the joy, laughter, love, understanding and support for this.

My whole family, friends and friends who always give encouragement, prayer, and endless support.

My dear Almamater, University of Lampung.
MOTTO

“Dreams never hurt anybody if he keeps working right behind the dream to make as much of it come real as he can.”

(F.W. Woolworth)

“Work Hard. Do your best. Keep your word. Never get too big for your britches. Trust in God. Have no fear; and Never forget a friend.”

(Harry S. Truman)

“Do it for your country, do it for your name. Cause there’s gonna be a day, when you’re standing in the Hall of Fame”

(Hall of Fame – The Script)

“Never give up on things that make you smile in your life”

(Dhissa Miranthi Arnis)
ACKNOWLEDGEMENT

Alhamdulillah, praise the presence of Allah SWT who has bestowed his grace and guidance so that the writer can complete the thesis with the title "Analysis of Value Relevance of Intellectual Capital Disclosure (An Empirical Study on Bank Listed in Banking Indonesia Year 2012-2016" as one of the conditions to obtain a Bachelor of Economics degree at the Accounting Department Faculty of Economics and Business University of Lampung.

On this occasion the authors would like to thank all those who have provided guidance, support, and assistance during the process of preparation and completion of this thesis. In particular, the authors would like to thank:

1. Prof. Mr. Dr. H. Satria Bangsawan, S.E., M.Si. as the Dean of Faculty of Economics and Business University of Lampung.

2. Mrs. Dr. Farichah, S.E., M.Si., Akt. as Chairman of Accounting Department Faculty of Economics and Business University of Lampung.

3. Mrs. Yuztitya Asmaranti, S.E., M.Si., Akt. as the Secretary of Accounting Department Faculty of Economics and Business University of Lampung.

4. Mrs. Prof. Dr. Lindrianasari, S.E., M.Si., Akt. as Chief Advisor who always have time to provide suggestions and advices, motivates the reseaercher to finish the undergraduate thesis.
5. Mrs. Yuztitya Asmaranti, S.E., M.Si., Akt. As Co-Advisor for the willingness to give time, guidance, direction, input with patience during the process of completion of this thesis.

6. Mrs. Dr. Agrianti Komalasari, S.E., M.Si., Akt. as the Main Examiner who has provided constructive suggestions about the knowledge to refinement this thesis.

7. Mrs. Dr. Ratna Septiyanti, S.E., M.Si., Akt. as an Academic Advisor who has provided advice and advice as long as the author becomes a student.

8. Mrs. Dr. Ratna Septiyanti, S.E., M.Si., Akt., Mr. Basuki Wibowo, S.E., M.Si., Mrs. Chara P.T. Tubarat, S.E., M.Acc., Akt. which has provided a lot of help, direction and advice in the process the author goes through in the Pendadaran exam.

9. Mr. Usep Syaifuddin, S.E., M.Si., Akt., As external counselor for his willingness to give time, guidance, knowledge, advice.

10. All Mr / Mrs Lecturers and employees in the Accounting Department for science, learning, support and services and assistance has been provided.

11. Both my beloved parents, Arnis Bahar and Novira who have given the most sincere love, endless prayer, support and advice in the achievement of my ideals. Thank you for all the never ending faiths.

12. My dear sister, Muthia Prima Nirmala. Thank you for all the love, understanding, prayer, and laughter all this time.

13. All big families, presumably completion of this thesis can be a pride for Mami, Pakwo Cap, Makwo Ema, Pakwo Dat, Makwo Ati, Paetek Ujang, Tante Dewi, Mak Ed, Tante Rina, Mak Nok, Tante Dolly, and all the big
families that can not be mentioned one by one. Thanks for the prayer, support, motivation, and advice that has been given.


15. My dearest Friends Ntah. Arini Mega Puspita, Mutiara Khairunnissa, Fanisya Alya Puteri, Sekar Arum Probowati Rambe, Elfrisa Maulitia, Nasa Dwi Anggraini, M. Tegar Yozeta. Thank you for your willingness to pray, accompany, encourage, entertain, and help the process of completion of this thesis. Thanks for every joke, happy, tears, and emotion. I really love you guys, may our friendship continue until death before.

16. My Lovely Kuhombutsu, Zakia Agustri Atikah, Adinda Salsabila, Fanisya Alya Puteri, Amirul Mu’minin, Alin Hafiza Amanda. Thank you for the thousands of laughter, support, motivation, and prayer that you give. Hope not to break up anytime. Let us carry out our plan to travel all over the world.

17. My dearest Manis Manja, Puteri Sekar Wulandari, Aliva Aprilia Putri Yulizar, Safira Hanifah Ferhat, Eka Putri Namita, Arini Mega Puspita, Elfrisa Maulitia, Fanisya Alya Puteri, dan Nasa Dwi Anggraini. Thank you for all the times and moments that have been passed. Thanks for all the laughter and support for all this time.


20. AIESEC UNILA 2014-2016. Anika, Amirul, Ayu Budi, Kak Dirga, Farhan, Kak Chyntia, Sarah, Vandea, Witri, Kak Azel, Kak Dita, Kak Laeina, Farid, Kak nina, Kak Saka, Kak Ajeng, Kak Betty, Kak Yezzie, Feriska, Kak Jupe, Futra, Kak Priska, Atun, Nasya, Nindy, kak Rina, and other friends who can not be mentioned one by one. Thanks for being together, and a moment that will not be forgotten. May we be great because of the great soul.

21. For friends, Akuntansi Unila 2014. Ajeng, Amalia Pratiwi, Anggit, Anisa Syafiq, Atika, Bipa, Chatia, Dani Aulia, Gilda, Dhana, Dicky, Dilla Ayu, Elsa Puteri, Ilham Arif, Indra, Intan Cruisita, Iqbal Saputra, Iroh, Ijen, Nabila, Nadhiya, Niken, Ocha, Reggy, Reka, Restu Bella, Chaki, Riska, Soni, Saha, Umi, Winda, Yandi, Yuda, Zelda and all the friends who can not be mentioned one by one. Thank you for all the support, prayer, passion, motivation, and cheerfulness during the lecture.
22. For Billigual Class 2014. Adinda, Alin, Amirul, Gilda, Fani, Indra, Intan, Lupita, Probo, Ratih, Rambe, Tia, Zakia and all the friends who can not be mentioned one by one. Thank you for all the support, prayer, passion, motivation, and cheerfulness during the lecture.

For help and support, the authors say thank you, may get a reply from Allah SWT. The author realizes there are still many shortcomings in the process of writing this thesis, the authors expect a criticism or suggestion that can help the author in improving this thesis.

Thus, hopefully this paper can provide benefits for those who read it.

Bandar Lampung,April 17th 2018

Author,

Dhissa Miranthi Arnis
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>TITLE PAGE</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLE</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF APPENDIX</td>
<td>v</td>
</tr>
</tbody>
</table>

## CHAPTER I INTRODUCTION

1.1 Background Research.....................................................1
1.2 Problem Formulation ...................................................4
1.3 Objectives and Benefits of Research .........................4
   1.3.1 Research Objective .............................................4
   1.3.2 Research Benefits .............................................5

## CHAPTER II LITERATURE REVIEW

2.1 Theoretical Basis .....................................................6
   2.1.1 Agency Theory .................................................6
   2.1.2 Legitimacy Theory .............................................8
   2.1.3 Signalling Theory .............................................10
   2.1.4 Definition of Intellectual Capital .........................11
   2.1.5 Intellectual Capital Disclosure ...........................13
   2.1.6 Value Relevance .............................................14
2.2 Previous Research ...................................................15
2.3 Framework .............................................................17
2.4 Development of Hypothesis ........................................17
   2.4.1 Effect of Intellectual Capital Disclosure Index on Stock Price .............................................17
   2.4.2 Effect of Net Income on Stock Price .........................19
   2.4.3 Effect of Book of Value Equity on Stock Price ............19

## CHAPTER III RESEARCH METHODOLOGY

3.1 Population and Research Samples .................................20
   3.1.1 Population Research ...........................................20
   3.1.2 Research Sample ..............................................20
3.2 Types and Data Sources .........................................................20
3.3 Operational Variables ..........................................................21
  3.3.1 Dependent Variables .......................................................21
  3.3.2 Independent Variables ....................................................21
3.4 Method of Collecting Data ....................................................22
3.5 Data Analysis Method ..........................................................22
  3.5.1 Multiple Linear Regression Test .........................................23
  3.5.2 Classic Assumption Test ...................................................23
    3.5.2.1 Normality Test .........................................................23
    3.5.2.2 Multicollinearity Test ...............................................24
    3.5.2.3 Heteroscedasticity Test .............................................24
    3.5.2.4 Autocorrelation Test ...............................................25
3.6 Hypothesis Testing .............................................................26
  3.6.1 Simultaneous Effect Test (F-Test) .....................................26
  3.6.2 Individual Parameter Significance Test (Statistical Test T) ....26
  3.6.3 Coefficient of Determination Test ....................................26

CHAPTER IV RESULT AND ANALYSIS

4.1 Sample Selection .................................................................28
4.2 Descriptive Statistics ..........................................................29
4.3 Classical Assumption Test .....................................................30
  4.3.1 Normality Test ............................................................31
  4.3.2 Multicollinearity Test ....................................................32
  4.3.3 Heteroscedasticity Test ..................................................33
  4.3.4 Autocorrelation Test ....................................................34
4.4 Coefficient of Determination test (R2) ....................................35
4.5 Hypothesis testing F ............................................................36
4.6 Hypothesis testing T ............................................................37
  4.6.1 Intellectual capital has a positive effect on stock prices .......37
  4.6.2 Net income has a positive effect on stock price .................39
  4.6.3 Book Value of Equity has a positive effect on stock price ....40

CHAPTER V CONCLUSIONS AND SUGGESTIONS

5.1 Conclusions .................................................................41
5.2 Limitations of Research .....................................................43
5.3 suggestions .................................................................44

BIBLIOGRAPHY

ATTACHMENT
LIST OF TABLE

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 2.1 Previous Research</td>
<td>15</td>
</tr>
<tr>
<td>Table 4.1 Sampling Process Research</td>
<td>28</td>
</tr>
<tr>
<td>Table 4.2 Result of Descriptive Statistics Regression Model</td>
<td>29</td>
</tr>
<tr>
<td>Table 4.3 Multicollinearity Regression Model Test Result</td>
<td>33</td>
</tr>
<tr>
<td>Table 4.4 Auto Correlation Test Result</td>
<td>35</td>
</tr>
<tr>
<td>Table 4.5 Coefficient Determination Test Result ($R^2$)</td>
<td>36</td>
</tr>
<tr>
<td>Table 4.6 Simultaneous Significance Test Result (Test Statistic F)</td>
<td>37</td>
</tr>
<tr>
<td>Table 4.7 Individual Parameter Significance Test Results (Test Statistic t)</td>
<td>38</td>
</tr>
<tr>
<td>Table 4.8 Individual Parameter Significance Test Results (Test Statistic t) for ICDI Components</td>
<td>38</td>
</tr>
</tbody>
</table>
# LIST OF FIGURE

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 2.1 Research Framework</td>
<td>17</td>
</tr>
<tr>
<td>Figure 4.1 Normality Regression Model Test Result - Histogram</td>
<td>32</td>
</tr>
<tr>
<td>Figure 4.2 Normality Regression Model Test Result – P-P Plot</td>
<td>32</td>
</tr>
<tr>
<td>Figure 4.3 Heteroskedasticity Test Results Regression Model</td>
<td>34</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION

1.1 Background Research

As time goes on, almost all investors would want to invest their money into the most appropriate company and have extensive and complete additional information. As we know that the financial statements are reports that contain financial information in a company. However, for investors only information from financial statements is not enough, because information outside of financial statements is also important. Indeed in the present day the science of accounting is no longer value relevance and requires many other factors important to decide the choice. For example, does this company have a good relationship to other companies, or does this company have a good image, and so on. Information like this is very important for investors to be able to invest into companies that have complete information. Such information is also needed by companies that can be named with intangible assets.

As already mentioned in accounting magazine (iaiglobal), that intangible asset is the biggest asset in a start up company, just as it does with banks in Indonesia that almost all of its capital comes from investors because it can also be mentioned that most of the assets owned by banks in Indonesia are non-physical assets in the form of credit / financing provided to customers, where the amount of credit
successfully channeled by the bank is strongly influenced by various factors related to intellectual capital component that is part of intangible assets. As described in PSAK 22 that a business must consist of inputs and processes applied to the input and capable of generating output. What needs to be emphasized here is that a business does not need to have current output to be defined as "business". If a business does not have an output, then investors should consider the following factors (PP10 in PSAK 22):

1. The company has started the main planned activities
2. Have employees, intellectual wealth and inputs and other processes that can be applied to inputs
3. Is running a plan to produce output
4. Will be able to gain access to customers who will buy the output

It is these factors that are strongly related to the intellectual capital component. Intellectual Capital consists of 3 components namely Human Capital, Structural Capital, and Relational Capital / Capital Employee. Human Capital discusses individual skills, education, experience, skills, and creativity in a company. Structural Capital discusses technology systems, enterprise operational systems, patents and trademarks. As well as, Relational Capital / Capital employee discusses physical and financial capital for the creation of added value, which also discusses good relationships between company partners and other companies.

New business and technological developments have raised problems with traditional financial reports in terms of timeliness, accuracy, and limitations in presenting data on prospects and risks facing the company (Garcia-Meca and Martinez, 2007). Business dynamics are increasingly determined and driven by
knowledge-based resources owned by companies. Many business executives, practitioners and businesspeople, policy makers and academics recognize that the role of conventional production factors (such as tangible assets and financial resources) will decrease in creating corporate value, while the role of resources or intellectual capital will increase (Singh and Zahn, 2008).

The financial statements are considered failing in describing the extent of intangible asset value, leading to increased information asymmetries between firms and users, and creating inefficiencies in resource allocation processes in the capital markets (Barth et al., 2001; Li et al., 2008). Accounting failures acknowledge fully the company's intangible resources confirms claims that traditional financial statements have lost their relevance as a decision-making instrument (Oliveira et al., 2008).

A growing issue in the value-relevance literature is that the value-relevance of accounting information has decreased as firms have an increase in the number of intangible assets. The argument for the issue is that, in a science-based new economy, many companies have developed and have intangible assets that are complex and difficult to calculate and are presented in the framework of financial statements thus making accounting figures in those financial statements less relevant for investors (Vafaei, Taylor, and Ahmed, 2011). Lev and Sougiannis (1996) further argue that financial reporting largely assessing the company's tangible assets has decreased value-relevance, especially in the knowledge-intensive and innovative industry-dominated industry sector.
1.2 Problem Formulation

The results of research Grunig, (2011) and Orens et. al., (2009) shows that IC disclosure negatively affects the cost of capital. This means that the higher the level of disclosure the company does the lower its capital cost. Meanwhile, some research (Vafaei et al., 2011; Orens et al., 2009; Abdolmohammadi, 2005; Gruning, 2011) successfully proved that IC disclosure positively correlates with market capitalization value of stock and company value. Based on the above background, the problems formulated in this research are:

1. Does Intellectual Capital Disclosure Index (ICDI) have effect in value relevance?
2. Does Net Income (NI) have effect in value relevance?
3. Does Book of Value Equity (BVE) have effect in value relevance?

1.3 Objectives and Benefits of Research

1.3.1 Research Objectives

This research aims to:

1. Testing Intellectual Capital Disclosure Index (ICDI) have effect in value relevance.
2. Testing Net Income (NI) have effect in value relevance.
3. Testing Book of Value Equity (BVE) have effect in value relevance.
1.3.2 Research Benefits

1. Theoretical benefits

The results of this study are expected to enrich the concept or theory that encourages the development of science in the field of accounting and investment, especially in terms of the influence of Intellectual Capital to the Profitability of the Company. In addition, this study is also expected to be used as a reference for similar research in the future.

2. Practical Benefits

For researchers, this research is useful to implement the knowledge that the author can during the lecture. In addition, this study also became one of the requirements of completing the undergraduate study at the University of Lampung. For the company, this study is expected to provide information to the company in understanding the utilization of Intellectual Capital in achieving the operational efficiency of the company so as to contribute in improving the company's financial performance. And for the next researcher can be used as additional material of consideration and thought or reference material in further research in fields related to Intellectual Capital and also Profitability Company.
2.1 Theoretical Basis

2.1.1 Agency Theory

In agency theory there is a separation between owners company called principal with the management of a company called agent. Agency relationship occurs when the principal or company owner recruits and delegates authority to the agent or manager to manage his company. The principal as the owner delegates the day-to-day decision-making process to managers. Furthermore, Jensen & Meckling (1976) defines agency relationships as contracts in which one or more persons acting as principals (ie shareholders) appoint others as agents (ie managers) to perform services for the principal's interests, including delegating power within decision making to the agent. The principal has limitations in overseeing the day-to-day activities of managers in managing the company. In carrying out the company's operating activities, managers can choose decisions that maximize their utility and conflict with the owner's expectations to maximize shareholder interests. This condition can cause agency problems (agency problem).

In practice, the agency problem that occurs between managers and shareholders is caused by motivated behavior managers to maximize their utility. In running the company's activities, managers know and have control over resources owned by
the company. These resources are used in the company's operations to earn revenue and profits. In this context, managers have the discretion to inform what and how much of a company's resources are owned or used in a company's operations. This is related to the performance target charged by the company owner to the manager.

These conditions lead to the existence of asymmetric information between managers and shareholders that ultimately lead to the emergence of agency problems. The owner or shareholder may limit the actions of managers by exercising appropriate controls to ensure their interests are met. Agency theory pays attention to contractual arrangements that contain agreements in agency terminology. When the contract is incomplete due to bounded rationality and information asymmetry, separation of ownership and control can cause problems when principal and agent interests are different, and when it is difficult for the principal to monitor agent behavior (Eisenhardt, 1989). This can lead to the principal-agent agency problem.

To minimize agency problems, the company owner can perform monitoring or supervision mechanisms (Jensen and Meckling, 1976). One possible monitoring mechanism is the implementation of corporate governance (CG). Agency theory provides a framework for linking voluntary disclosure behaviors with corporate governance, whereby control mechanisms are designed to reduce agency problems arising from the separation between owners and managers (Welker, 1995). This argument can be used in the context of intellectual capital disclosure, where management can determine disclosure levels and thereby reduce investor uncertainty related to the impact of intellectual capital on firm value. High disclosure of intellectual capital is expected to provide more intensive supervision
for a company in order to reduce the opportunistic behavior of managers and information asymmetry.

Information about intellectual capital is important information for stakeholders in the decision-making process (Li et al., 2008). Companies use IC information disclosure as an effort to communicate resources and potential future corporate performance to investors. Various previous studies have shown that ICs have an effect on the company's performance (such as Chen et al., 2005; Tan et al., 2007; Kamath, 2008). Many corporate managers begin to try to disclose their company ICs in annual reports to reduce information asymmetry and improve transparency between management and various corporate stakeholders (Guthrie and Petty, 2000; Vergauwen et al., 2007). In the context of agency theory, an increased level of information disclosure will reduce the uncertainty faced by investors and will lower the cost of corporate capital (Jensen and Meckling, 1976). Therefore, managers will conduct intellectual capital disclosure in order to increase the value of the company through the provision of more comprehensive information for investors so as to reduce the volatility of stock prices (Li et al., 2008).

### 2.1.2 Legitimacy Theory

Legitimacy Theory states that the company is bound by contract with the social environment (community) where the company operates (Petty and Yongvanich, 2004). This theory states that the company will strive to ensure that its operations are still within the limits of the norms prevailing in society. The community provides various facilities to be owned or managed by the company (including natural resources and Intellectual resources). The Company will utilize these resources to produce goods and services and waste for the environment in general.
The company does not actually have the inherent right to profit from the outcome of the activity, and to maintain the existence of the company, people expect the benefits received will be greater than the cost to be borne. Social contracts represent a dynamic society expectation, where people want to know how a company operates. So in this context the company must voluntarily provide information to the public to legitimize and justify its existence in the midst of society (Guthrie and Parker, 1989).

According to legitimacy theory, the existence of a social contract between the company and the surrounding community requires the company to always respond to the existence of the environment and to pay attention by conducting operations in accordance with environmental values (Petty and Yongvanich, 2004). Therefore, if according to the company the legitimacy of its existence is questioned by society, then this phenomenon must be solved in several ways (Lindblom, 1994):

- the company tries to inform and educate people about the changes
- companies are trying to change people's perceptions
- the company is trying to distract people from the issues that the community is concerned about
- the company is still running and is not completely honest with the community about its activities.

Companies can apply the above strategies by voluntarily disclosing information to the public. When a company can not legitimize the ownership of intellectual capital in the form of tangible assets, the company will report to the public by disclosing the information in its annual report. In this context, legitimacy theory is
an important theory that should be considered in analyzing IC reporting in the company's annual report.

2.1.3 Signalling Theory

The concept of signaling was first studied in the context of labor and product markets by Akerlof and Arrow and developed into the theory of equilibrium signaling by Spence (1973). This theory says that a good company can differentiate itself from bad companies by sending credible and quality signals to the capital market. Signals will be credible only if a bad company can not replicate a good company by sending the same signal. If the cost of sending a signal to a bad company is higher than that of a good company type, a bad company type will not emulate because it is useless, so the signal can be trusted. Based on asymmetric information between management and investors, signals from the company are essential for obtaining financial resources (Zhao et al., 2008).

There are two types of signals in information (Wardhani, 2009): first, is the costly signaling equilibrium as discussed by Spence (1973), Leland and Pyle (1977), Ross (1977) and Talmor (2002). Second, is costless signaling equilibrium is A signal is said to be expensive (costly) if the signal production consumes the resource or if the signal is related to the welfare loss generated by the deviation from the allocation or distribution of claims in a perfect market (Zhao et al., 2008).

Every company has different qualities in various ways, such as quality of resources, business strategy, information, and also the quality of financial
reporting. To communicate these differences, the company must signal to investors. Based on signalling theory, managers have the option to communicate the quality of the company in various ways. Signalling theory classifies signals into two major groups of direct and indirect signals (Scott, 2009). Signals are directly reflected in the disclosures in the company's financial statements. While indirect signals are related to the amount of equity maintained, audit quality, capital structure, dividend policy, accounting policy selection, and corporate forecasting publication.

2.1.4 Definition of Intellectual Capital

At the beginning of Intellectual Capital's breakout described by Klein and Prusak (1994) that Intellectual Capital is a material that has been compiled, captured, and used to generate higher asset values. Stewart stated the definition of intellectual capital as packaged useful knowledge. While Brooking (1996) defines more comprehensively that Intellectual Capital is given for a combination of intangible assets that can enable the company to function. Edvinsson and Malone (1997) identified Intellectual Capital as the hidden value of business. According to Bontis states that Intellectual Capital includes all knowledge of employees, organizations and their ability to create added value and lead to sustainable competitive advantage.

Intellectual Capital has been identified as an intangible set of (resources, abilities, and competencies) that drive organizational performance and value creation. Intellectual Capital is defined as a knowledge resource in the form of employees, customers, processes or technologies that the company uses in the process of creating value for the company (Ulum, 2009: 20-30).
The added value of a company can be created through both physical and financial resources (Pulic, 1998). While Intellectual Capital is an intangible asset that is not easy to measure. Based on the above, a solution is needed to measure and report the company's Intellectual Capital and how Intellectual Capital adds value to the company. Therefore the Value Added Intellectual Coefficient (VAIC) concept emerged for the condition Intellectual Capital Components

The International Federation of Accountants (IFAC) classifies intellectual capital in three categories: Intellectual Capital, Structural Capital or Organization Capital and Relational Capital or Customer Capital detailed as follows (Sawarjuwono and Kadir, 2003):

a. Human Capital

Human capital is a lifeblood in intellectual capital. This is where the source of innovation and improvement, but is a component that is difficult to measure. Intellectual capital is also a source of very useful knowledge, skills and compensation in an organization or company. Human capital reflects the company's collective ability to produce the best solution based on the knowledge possessed by the people in the company. Human Capital will increase if the company is able to use the knowledge possessed by its employees. Provide some basic characteristics that can be measured in this capital, namely training programs, credential, experience, competence, recruitment, mentoring, learning programs, individual potential and personality.

b. Structural Capital or Organization Capital

Structural capital is the ability of the organization or company in fulfilling the company's routine process and its structure that supports the employee's efforts to
produce optimal intellectual performance and overall business performance, for example: company's operational system, manufacturing process, organizational culture, management philosophy and all forms of intellectual property owned company. An individual can have a high level of intellectuality, but if an organization has poor systems and procedures then intellectual capital can not achieve optimal performance and potency that is not maximally utilized.

c. Relational Capital or Customer Capital

This element is an intellectual capital component that gives real value. Rational capital is a harmonious relationship / association network owned by the company with its partners, whether coming from reliable suppliers and qualified, derived from the company's relationship with the government and with the surrounding community. Relation capital can arise from various parts outside the corporate environment that can add value to the company.

2.1.5 Intellectual Capital Disclosure

The value of corporate IC is not presented in the company's financial statements and can not be measured in monetary units. Even there is no standard method to calculate the IC value of a company. Cañibano et al. (2000) argues that existing accounting standards can not accommodate a company to recognize its intellectual property as an asset. Accounting standards restrict the criteria of an enterprise in recognizing an asset, for example, to be measurable in monetary units, having certain future economic benefits, controlled or controlled by the enterprise, and arising from past transactions. Meanwhile, many resources are owned by the company and play an important role in creating the value of the company, but because it does not meet the criteria to be recognized as an asset, the company can
not recognize it as an asset. This condition makes companies with intensive
intellectual capital can not present the resources in the financial statements.
Although it can not be accommodated in the company's financial statements,
previous studies have shown that ICs have an effect on company performance (eg
Chen et al., 2005; Tan et al., 2007; Kamath, 2008).

This research will refer to the disclosure conducted by Li et al (2012) which aims
to examine the influence of Intellectual Capital with its components by separating
IC disclosure into 3 components namely Human Capital, Structural Capital,
Customer Capital based on 61 items of disclosure.

2.1.6 Value Relevance

A value relevance study is evaluation of the relationship between accounting
information and capital market values (market values). Beaver (2002) indicated
that the theoretical groundwork of value relevance studies adopting a
measurement approach is a combination of valuation theory plus contextual
accounting and financial reporting arguments (accounting theory) that allows the
researcher to predict how accounting variables and other information relating to
market value will behave. Holthausen and Watts,(2001) suggest that value
relevance studies use two different theories of accounting and standard setting to
draw inferences: (i) “direct valuation” theory and (ii) “inputs-to equity-valuation”
theory. Direct valuation theory proposes a link between accounting earnings and
stock market value. In direct valuation theory, accounting earnings is intended to
either measure or be combined with the equity market value changes or levels.
However, Zaleha et al. (2008) point out that the conclusion usefulness paradigm
proposes that accounting information is useful if utilized by users of financial statements for, or significantly associated with their decision making (Riahi Belkaoui, 2000) even though the information might not be stated at their best current value (Scott, 2000). Within this conception, the main users are those who make decisions having an impact on firms’ value, specifically decision-making by capital market participants (Beaver, 2002; Riahi Belkaoui, 2000). In discussing the concept of relevance with regard to accounting information, Riahi-Belkaoui (2000) believes that accounting information is relevant if the information can influence decisions made by decision makers (i.e., its value relevance concept).

2.2 Previous Research

<table>
<thead>
<tr>
<th>No.</th>
<th>Researchers and Years</th>
<th>Variable</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Astriningrum (2017)</td>
<td>Intellectual Capital, Cashflow, Value Relevance of Accounting Information,</td>
<td>intellectual capital is influential positive to value relevance of accounting information based on IFRS. While cash flow negatively affects the relevance of accounting information based on IFRS.</td>
</tr>
<tr>
<td>2.</td>
<td>Gamerschlag (2012)</td>
<td>Human Capital, Content analysis, Value relevance, Voluntary disclosure, Germany, Annual reports, Corporate governance</td>
<td>Show that the amount of human capital disclosure is increasing over time.</td>
</tr>
</tbody>
</table>
1. Capital, Structural Capital, Physical Capital, Moderate components have value relevant to market value. The presence of increased R & D spending market value. The interaction of human capital with structural capital gives the relevant value relates to the market value, but negatively.

4. Syaipudin et al. (2010) Stock price, book value of equity (BE), net income (NI), Intellectual Capital Disclosure Index (ICDI) ICDI coefficient is positive and significant indicated that information about Intellectual Capital has Value Relevance.

5. Ulum (2008) Intellectual Capital, banking sector, intangible asset, 2004 and 2006, in general performance Indonesian banking companies fall into the category of good performers with a VAIC score of 2.07. While in 2005, the performance went down to common performers (with VAIC score of 1.95).

6. Chayati (2015) Accounting information, intellectual capital information, market value accounting information have a significant positive effect against firm value as measured by stock price. Additional information from intellectual capital is measured by four aspects, namely Intellectual capital, customer capital, innovation capital, and process capital. Only human capital and innovation capital have an explanatory effect more towards company value. In addition there is additional testing to find out the
components intellectual capital that affects the value of the company.

2.3 Framework

This study aims to examine the effect of Intellectual Capital Disclosure Index on stock price, to examine the effect of net income on stock, to examine the effect of book value of equity.

![Figure 2.1 Research Framework](image)

2.4 Development of Hypotheses

2.4.1 Effect of Intellectual Capital Disclosure Index on Stock Price

Previous research conducted by Amir and Lev (1996), Lev and Zarowin (1999), Francis and Schipper (1999) proves that the value relevance of accounting and financial information has decreased. This is due to the increase in corporate investment in intangible assets that most can not be accommodated by the existing financial reporting system. Meanwhile Eccles et al. (2001), Eccles and Mavrinac (1995) in Bukh (2003) suggest that investors 'and analysts' demand for information indicates a substantial difference between the types of information available in the firm's financial statements and the type of information demanded
by the market. Bukh (2003) further states that investors and analysts generally require more reliable information in the company's annual reports such as quality, expertise, experience and managerial integrity, customer relations and personal competence, all of which are factors related to intellectual capital.

Canibano et al. (2000) reviews various studies that assess the value relevance of various IC components (such as research and development costs, promotional costs, patents, brand, customer satisfaction, and Intellectual resources) and find mixed results. While Lev and Sougiannis (1996) and Gu and Lev (2001) tested the value relevance of the IC specific indicators and found that the disclosure has value relevance. Vafaei et al. (2011) conducted a study on the value relevance of IC information of public companies in various countries, namely Britain, Australia, Hong Kong and Singapore. They found evidence that disclosure of IC information is positively related to share price (having value relevance) in two countries in non-traditional industries.

This study attempts to re-examine the various results regarding the value relevance of information about IC with banking industry industry settings in Indonesia and use Li, et.al. (2012) approaches in measuring the disclosure variables of IC information. Hypothesis proposed in this research are:

\[ H_{A1} \text{ : Intellectual capital has a positive effect on stock prices.} \]

### 2.4.2 Effect of Net Income on Stock Price
Net income is calculated by taking a company's revenues for a given period of time and subtracting the cost of goods sold. The cost of goods sold includes all the expenses involved in doing business, such as rent, payroll, equipment, advertising, and taxes.

If your business is organized as a corporation, then you've got stockholders, and you can assume those stockholders are paying close attention to your net income. After all, "net income" is just another way of saying profit, and profit is the stockholders' return on their investment. Even profit that gets reinvested in the company still belongs to the stockholders, and that's reflected in the stockholders' equity figures in the company's financial statements.

**Ha$_2$: Net income has a positive effect on stock prices.**

### 2.4.3 Effect of Book of Value Equity on Stock Price

Book value of equity per share (BVPS) is a ratio that divides common equity value by the number of common stock shares outstanding. The book value of equity per share is one factor that investors can use to determine whether a stock price is undervalued. If a business can increase its BVPS, investors may view the stock as more valuable, and the stock price increases.

**Ha$_3$: Book value of equity has a positive effect on stock prices.**
CHAPTER III
RESEARCH METHODOLOGY

3.1 Population and Research Samples

3.1.1 Population Research

The population in this study is all Banks in Indonesia Banking Exchange in 2012 until 2016, ie 43 company.

3.1.2 Research Sample

The samples used in this study are Banks registered in Indonesian Banking during the period 2012 to 2016. Sampling method by purposive sampling is used in sample selection in this study, using some specific criteria that must be met by the company to be sampled. These criteria include:

1. The Company is a Bank registered in IDX and Banking Indonesia consistently from 2012 to 2016.
2. Companies that do not publish annual reports in the year in the study period.
3. The stock price in a certain year does not exist.

3.2 Types and Data Sources

This study uses secondary data. Secondary data is a source of research data obtained by researchers indirectly through intermediary media. Secondary data in this study is annual report of Indonesian Banking listed on
Indonesia Stock Exchange (BEI) in 2012-2016. By its nature the data in this study includes quantitative data. Quantitative data is data in the form of certain numbers or magnitudes of a certain nature. Source of data obtained from the website of Indonesia Stock Exchange (BEI), by downloading through the official website of Indonesia Stock Exchange (www.idx.co.id).

3.3 Operational Variables

3.3.1 Dependent Variables

The dependent variable of this study is PRICE, the stock price will be calculated when Annual Report published.

3.3.2 Independent Variables

1. Intellectual Capital Disclosure Index (ICDI)

ICDI measurements will be performed by scoring refers to Li, et. Al (2012). Based on the disclosure of Li, et. al ICDI is divided into 61 items. The scoring for IC disclosure in this study adopted the measurement of scoring by making 2 categories of disclosure, ie disclosure given score 1 if expressing Intellectual Capital, score 0 if not reveal Intellectual Capital. ICDI values are accumulated as follows:

\[
ICDI = \frac{\text{Scores Existing}}{\text{maximum score}}
\]

2. Net Income (NI)

The NI variable used is the profit before tax of the current year. The BVE and NI variables are divided by number of share outstanding (per share).
3. Book Value of Equity (BVE)

BVE itself means that to compare the average value of the firm's book value of equity per share to its stock market value. The BVE variable used is the previous year's BVE value (t-1). The BVE value is obtained by subtracting the book value from the total assets minus the book value of total liabilities or debts. Or BVE can calculate with formula as follows:

\[
BVE = \frac{\text{total of outstanding stock} \times \text{closing stock price}}{\text{total equity}}
\]

3.4 Method of Collecting Data

Methods of data collection by library study method and documentation. Literature study is by examining literature such as books, journals, and other literature related to research. Documentation done using the archive data of financial statements contained on the website Indonesia Stock Exchange (IDX).

3.5 Data Analysis Method

Method of data analysis is done by statistical test using linear regression multiple. The functional relationship between one variable is tied to the independent variable can be done with multiple linear regression. Before using the model multiple linear regression in testing the hypothesis, then first done descriptive statistical analysis and classical assumption testing.
3.5.1 Multiple Linear Regression Test

From the results of the research collected then the next statistical techniques used in data analysis is multiple linear regression model with the following equation.

\[
\text{PRICE} = \alpha + \beta_1 \text{ICDI} + \beta_2 \text{NI} + \beta_3 \text{BVE} + \epsilon
\]

Information:

\begin{align*}
\text{PRICE} & = \text{Stock Price} \\
\alpha & = \text{Constants} \\
\text{ICDI} & = \text{Intellectual Capital Disclosure Index} \\
\text{NI} & = \text{profit before bank tax} \\
\text{BVE} & = \text{book value of equity bank} \\
\epsilon & = \text{Error term}
\end{align*}

3.5.2 Classic Assumption Test

The classical assumption test is used to determine whether the regression analysis results. The linear multiple used to analyze in this study is liberated from deviations of classical assumptions which include test of normality, multicollinearity, autocorrelation and heteroscedasticity.

3.5.2.1 Normality Test

Normality test aims to test whether in a regression model linear dependent variable and independent variable both have normal distribution or not. A good regression model is one that has a normal data distribution or close to normal (Ghozali, 2013). Test statistics that can be used for tested the residual normality is by non parametric statistical test Kolmogorov-Smirnov (K-S). Assessment criteria
for normality test with using non-parametric statistical test columnogrov-Smirnov K-S) is as follows:

a. If significant data calculation results (Sig)> 5%, then the data is distributed with normal.
b. If the significance of the calculated data (Sig) <5%, then the data is not normally distributed.

3.5.2.2 Multicollinearity Test

The multicollinearity test aims to test whether the regression model is found the correlation between independent variables (independent). If in the regression model there is a high or perfect correlation between independent variable signifies the regression model contains multicollineary symptoms. Good regression model there should be no correlation between independent variables.

How to detect the presence or absence of multicolinity in the regression model can be done by looking at the value of tolerance and variance inflation factor (VIF). Common values are used to indicate the presence of multicollinearity is a tolerance value <0.10 or equal to VIF value >10.

3.5.2.3 Heteroscedasticity Test

The heteroscedasticity test aims to test whether in the regression model there is a variance inequality of the residual of a observation to another observation. If the variance of the residual one observation to another observation is still called homoskedasticity and if different it is called heteroscedasticity. A good regression model is no heteroscedasticity. To detect heteroskedastisitas can see the
Scatterplot chart. The detection is to see whether there is a particular pattern on the graph where the X axis is predicted Y and the studentized Y-axis residual. The basis for decision making is as follows:

a. if there are certain patterns, such as there are dots that form a certain pattern that is regular (wavy, widened), then heteroscedasticity occurs, and

b. if there is no clear pattern, and the point spreads above and below the number 0 on the Y-axis, no heteroscedasticity occurs.

### 3.5.2.4 Autocorrelation Test

The autocorrelation test aims to determine whether in a model linear regression there is a correlation between the intruder in period t with the error in period t-1 (previous) (Ghozali, 2013). Analyzer used is a Durbin-Watson Statistic test with the Conshrane-Orcutt procedure, which is expressed by (rho). To know whether or not an autocorrelation occurs done by comparing the value of statistics calculated Durbin-Watson on regression calculation with Durbin Watson table statistics in the table. Results Calculation of Durbin-Watson (d) is compared with the value of d table at $\alpha = 0.05$. Table d has two values, namely the upper limit (dU) and the lower limit value (dL) for various values of n and k. The Durbin-Watson test (d) is done with the following conditions:

- $d < d_i$: there is a positive autocorrelation in the model
- $d_i < d < d_{4-d}$: falls in the region of doubt
- $d_{4-d} < d < d_{4}$: no positive or negative autocorrelation occurs
- $4 < d < d_{4}$: falls in the region of doubt
- $4 < d$: there is a negative autocorrelation in the model
3.6 **Hypothesis testing**

3.6.1 **Simultaneous Effect Test (F-test)**

The simultaneous influence test aims to show whether all variables independent or independent included in the model has influence collectively to the dependent or dependent variable (Ghozali, 2013). Testing is done by using significance level 0.05 (\(\alpha = 5\%\)).

3.6.2 **Individual Parameter Significance Test (Statistical Test T)**

Test the hypothesis by using the t-test basically to find out how far the influence of independent variables on the dependent variable partially. The t-statistic test is usually a hypothesis test:

H0 = The independent variable does not affect the dependent variable

Ha = The independent variable affects the dependent variable

Two-way test in significance level \(\alpha = 5\%\) and df = \(n - k\) (\(n = \) number observation, \(k = \) number of parameters), then test result will show:

1) If t arithmetic > t table and level of significance \(\leq 0.05\), then Ha accepted and H0 is rejected, it means that the independent variable affect the variable dependent.

2) If t arithmetic < t table and significance level > 0.05, Ha is rejected and H0 is accepted, meaning that the independent variable has no effect on the variable dependent.

3.6.3 **Coefficient of Determination Test (R2)**

The coefficient of determination test is performed to measure the level of model capability in explaining the variation of independent variables (Ghozali, 2013).
Coefficient value determination (R2) ranges from zero and one. The value of R2 is close to zero ability of independent variables in explaining variation of dependent variable very limited. While the value of R2 approaching one means variable independent provides almost all the information needed for predict the variation of the dependent variable (Ghozali, 2013).
CHAPTER V

CONCLUSIONS AND SUGGESTIONS

5.1 Conclusions

This study aims to find empirical evidence on the analysis of the value of relevance of intellectual capital disclosure. Which is the consideration of investors in making decisions that in fact consider IC information in decision making. This is actually reasonable because the banking sector is one industry that most of its assets are non physical assets. The main assets of the banking sector companies are credit or financing provided to customers, where the amount of loans managed by banks is strongly influenced by various factors related to the IC component.

This study uses a sample of banking companies listed on the Indonesia Stock Exchange (BEI) in 2012-2016. The authors obtained 43 banking companies that became 215 registered data during the observation year and only 38 companies became 148 data that met the specified criteria.

Based on hypothesis test result using regression model, obtained result that hypothesis supported and unsupported. Then and summed up as follows:

1. The result of the statistical test t which shows that the independent variable Intellectual Capital Disclosure Index (ICDI) has not effect on PRICE. It is
proved by the probability significance value (sig. T) for the independent variable is 0.293. However, if the result is divided into 3 components will be seen the difference between one component with other components of his. as follows:

a. There is a positive effect between Intellectual Capital and PRICE. With the significance value (0.023<0.05). This is because Intellectual Capital information is considered very important not only include things such as character, attitudes, and self-motivation, but intellectual capital also becomes information related to intangible assets.

b. There is no positive effect between Structural Capital and PRICE. With the significance value (0.428<0.05). Can be concluded that it turns out structural capital does not give effect in value relevance.

c. There is no positive effect between Customer Capital and PRICE. With the significance value (0.442<0.05). It can be concluded that after adding customer capital information, do not give effect in decision making for investor.

2. There is a positive effect between Net Income and PRICE. With the significance value (0.023<0.05). It can be said that Net Income became one of the considerations of investors in the banking sector in taking investment decisions.
3. There is a positive effect between Book of Value Equity and PRICE. With the significance value (0.000<0.05). The evidence proves that the Book of Value Equity in the banking company in Indonesia has value relevance.

5.2 Limitations of Research

Limitations in research include, namely:

1. This research is only done on the banking sector that has been recognized by some research has an intensive Intellectual Capital Disclosure Index (ICDI). This study does not examine the other companies' sectors whether they have IC intensive or not. Subsequent research is suggested to test the value relevance of corporate IC information in the sector of IC intensive as well as on sector which IC is not intensive, so the result will be more comprehensive.

2. This research uses only one approach in measuring disclosure variables IC information. Subsequent research is suggested to incorporate or compile the various approaches that exist in measuring the disclosure variables of IC information and separating mandatory disclosure with voluntary disclosure.
5.3 Suggestions

In future research there are several things to note, including:

1. This research can be developed by extending the previous research model.
2. Using methods and test equipment more complete and accurate to obtain a more valid conclusion.
3. Extend the research by extending the study period by adding years of research, as well as multiplying samples for future research.
BIBLIOGRAPHY


