Pretium or *Simulans*?

Mapping of the capital indicators and their relationship towards value within the Integrated Report Framework.

Author.
G.F.M. Akse

Faculty of Management and Governance
Business Administration
MSc Thesis
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Examination committee
Ir. H. (Henk) Kroon
Drs. G.C. (Ger) Vergeer

UNIVERSITY OF TWENTE.

Preface

Gido Akse
Gemeenteweg 2-b
7693 PM Sibculo
Overijssel, The Netherlands

Acknowledgements

The end of an era. That is what this master thesis means to me. After years of lectures, articles, paper writing and exams it is time to find a job and leave my beloved college life behind me. A lot has happened during these six years of college, both good and bad.

During these six years there has been the infinite support of my parents, both academically and generally. I want to thank my dad for all the times he drove me (and therefore allowed me to sleep) to the University. Besides my dad, I want to thank my mum for all the coffee she prepared. Looking back, I think we could fill the Atlantic ocean with it.

During these six years I met my girlfriend Liset. She has been one of the main motivations for me to work relentlessly on this thesis. I want to thank her for her unending support during this period. This thesis, but also life in general became far more interesting once she entered my life! Reality is finally better than my dreams!

I also want to thank my supervisor H. (Henk) Kroon. Besides being supervisor, Henk was one of the few teachers who could intrigue his students during classes. He made us realize why we love studying Business Administration and supported us throughout our academic career. He spent a significant amount of time in criticizing, discussing and supporting my thesis and for that I am grateful. I want to thank Ger Vergeer for being my second supervisor.

Because I do not wish to forget anyone, I want to thank everyone who supported me during these 6 years, especially my family and friends.

Now that my final chapter closes all that remains to be said is: *Acta fabula est.*

The end! Time to find a new challenge!

Yours sincerly,

Gido Akse, Enschede, 26th of January 2015

Abstract

Value creation is a key concept within Integrated Reporting (IR). Within the IR Framework six possible capital indicators have been given without any in-dept mapping and/or operationalization. This master thesis will propose several mapping models in the area of financial capital, manufactured capital, intellectual capital, human capital, social/relational capital and nature capital. What is shown in this paper is that the inter-connectivity of the variables plays a pivotal role due to the fact that non-financial information can severely influence financial information. The operationalization should therefore allow this mutualistic relationship.

The lack of mapping and/or operationalization leads to implementation difficulties within the practitioners field and could explain why IR faces adoption problems. This paper aims to clarify the value indicators within the IR framework in order to enhance implementation and possibly remove any barriers that hinder the acceptance of IR as the main financial reporting standard. In an age of technological innovation, intangible assets are becoming very important. IR makes the capturing of the value created by these intangible assets possible as long as we have a clear and coherent mapping and operationalization of the indicators described in the IR Framework.

This paper intends to propose several mapping models and is to be considered explorative. It is a peak in the black box of causation. Further empirical research should determine whether these models are correct and all-embracing. Once this has been done, the actual operationalization of the capital indicators can start. It is only then that we can truly discover whether the value indicators given are a *pretium* or a *simulans*.

Through a literature study I have discovered that there is a difference between the integrated reporting framework and academic research considering the relationships between the capital indicators and their overall relationship towards value. The framework describes that all indicators are somehow related. Current academic research, on which this research is build, describes the opposite. Not all capital indicators have relationships. In addition, the case study within this thesis shows that current practitioners (Philips) use different operationalizations.

The actual relationships that are described within this thesis are shown below. Figure 1 shows the final result of my research. This figure describes the overall relationships between the capital indicators and their relationship towards value. These relationships are both direct and indirect.

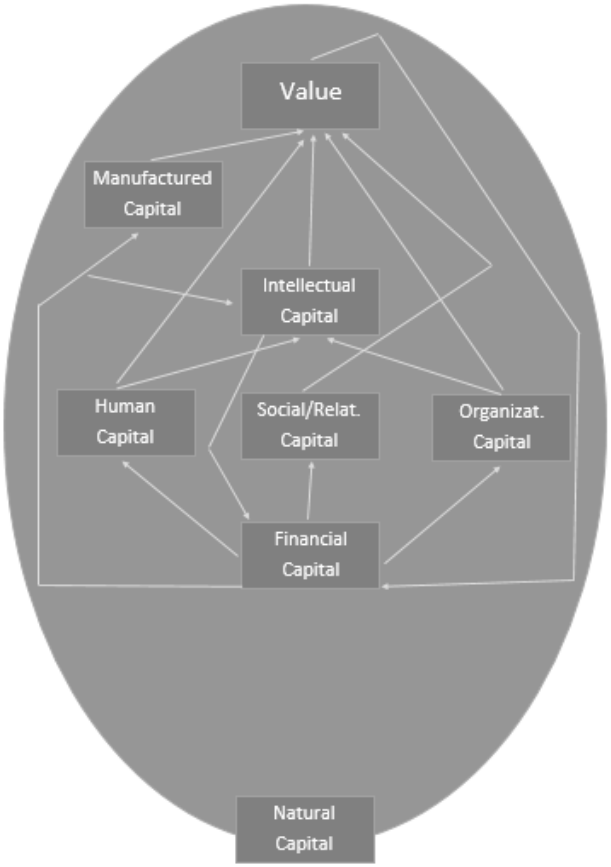

Figure 1. Mapping of capital indicators and their relationship towards value.

This thesis shows that either the framework that has been described in the Integrated Reporting Framework is too broad or that current academic research has not discovered enough relationships in order to fully describe the interdependency of the capital indicators. Face validity lies in the latter explanation. This is supported by the case study done in this thesis.It is a necessity that, from this point forward, further empirical research should continue with the operationalization of the capital indicators. In addition, more research should be done concerning the relationships in order to fully understand the interdependence between financial and non-financial information and their strength. This research is just the very beginning.

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List of Abbreviations

IR	Integrated Reporting
IIRC	International Integrated Reporting Council
IFRS	International Financial Reporting Standards
IAS	International Accounting Standards
GRI	Global Reporting Initiative
SASB	Sustainability Accounting Standards Board
IAS	International Accounting Standards
R&D	Research and Development
KPMG	Klynveld, Peat, Marwick, Goerdeler

Chapter I. Introduction

1.1 INTRODUCTION

This research focuses on the operationalization of IR. According to the IIRC IR holds the following purpose:

The primary purpose of an integrated report is to explain to providers of financial capital how an organization creates value over time. An integrated report benefits all stakeholders interested in an organization's ability to create value over time, including employees, customers, suppliers, business partners, local communities, legislators, regulators and policy-makers.[1]

One of the most important factors in IR is how an organization creates value over time. IR includes the creation of value through non-financial parameters. The main difference between traditional financial reporting and IR is the inclusion of this non-financial information. Besides basic financial and material information, IR shows human, intellectual, social and natural aspects of a company that either add or diminish value.[2]

Longitudinal studies have shown that companies are presenting more information. However, data is published separately and therefore often difficult to interpret.[3]

The result of this separate publishing is that current reporting falls short in delivering the information needed. In addition, this type of reporting is exactly the opposite of what IR is trying to deliver. A real IR is a concise communication about how an organization's strategy, governance, performance and prospects in the context of its external environment, leads to the creation of value over the short, medium and long term.[4]

[1] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013.
[2] García-Sánchez, I. M., Rodríguez-Ariza, L., & Frías-Aceituno, J. V. (2013). The cultural system and integrated reporting. *International Business Review*, *22*(5), 828-838.
[3] Frias-Aceituno, J. V., Rodriguez-Ariza, L., & Garcia-Sanchez, I. M. (2013). The role of the board in the dissemination of integrated corporate social reporting.*Corporate social responsibility and environmental management*, *20*(4), 219-233.
[4] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013.

The current reporting is still heavily relying on old company structures. The problem is that the current business models are no longer investing in so called brick and mortar structures. Intangible assets are becoming more important leading to a decrease in reliability of current financial reporting standards.[5] This leads to a lower market efficiency when one assumes that the market both overreacts and underreacts on information.[6]

Besides the mere theoretical arguments we see a development within institutions that promote IR. Organizations such as the GRI, the SASB and the European Commission are already more focused on materiality as one of their fundamental aspects. Stock exchanges around the world have developed socially responsible investment indexes.

All these reasons leads to the conclusions that IR is going to be the next big "thing". Recent developments show that there will be a stronger focus on non-financial issues in the future.

However, people in the actual working field still find it hard to grasp the idea of IR. The reason why IR is still difficult to implement is because not enough research has been done concerning the conceptualization of value. The current academic field is too much focused on specific IR subjects while the actual operationalization has not even been finished yet. What I aim to achieve in this paper is defining operationalization's of the value indicators. Whereas financial parameters and indicators in current financial reporting are easy to reproduce, IR is not. The reason why I think this is the case has to do with the intangible and other non-financial parameters within this type of reporting being influenced by social, governmental and legal requirements which differ in every country (even every company) and make it therefore hard to "template". A company that has mastered IR is capable of combining both qualitative and quantitative value indicators that show the overall value creation within a company. These indicators would show that while the actual value is contained within the company, the value creation and/or acquisition can be done outside firm-boundaries.

[5] Tomo, O. (2010). Ocean Tomo's Intangible Asset Market Value Study. *Ocean Tomo Announces Result of Annual Study of Intangible Asset Market Value*.
[6] Fama, E. F. (1998). Market efficiency, long-term returns, and behavioral finance. *Journal of financial economics*, *49*(3), 283-306.

What I aim to achieve is to develop a model showing the relationships between the capital indicators and the overall value described in the IR framework. Besides the development of a model I will try to create a better conceptualization of these variables. I will also identify possible “knowledge gaps” that might explain why accountants and controllers have not yet accepted IR as their main financial reporting standard through the use of a case study. We will discuss the operationalization of Philips, a frontrunner considering Integrated Reporting. From this point forward academic research can continue to develop and check the operationalization’s which control for these operationalization and further investigate these “knowledge gaps”.

This paper will start with the development of IR. We will explain the transition from sustainability reporting towards integrated reporting. The next chapter will explain the relationship between the value indicators described in the IR Framework. This is important because IR tries to show the dependence of financial information on non-financial information. Once this has been done, I will start with the mapping of the capital indicators and show the relationship between the capital indicators and how they add value. When this is finished, I will discuss whether there is a difference between the current practice in the working field compared to the relations discovered within this study through investigating the annual IR of Philips. Conclusions will then be drawn.

1.2 RESEARCH AIM AND SCIENTIFIC RELEVANCE

IR has become the next big thing in the area of financial reporting standards. For reasons unknown, companies are not willing to accept it as their financial reporting standard. One reason could be the fact that companies find it difficult to operationalize their value creation. Often, these difficulties are not seen in the valuation itself, but the possible dependent relationships between different value creating indicators. This research will thoroughly investigate the relationships of the capital indicators in the IR framework while taking into account the interdependency between the capital indicators.

A positive component of IR is that companies are becoming more aware about the influence they have on society as a whole. Stakeholders are starting to realize that companies do not only effect their employees or building grounds. They can have either or both negative and/or positive spillovers. However, current reporting standards have not incorporated these societal effects. It is in my opinion that the creation of a higher level of social awareness is something that we should try to achieve. IR might be the a possibility to accomplish this higher level of awareness.

Goals
Improve the quality of financial information.
Enable a more efficient and productive allocation of capital.
A more cohesive and efficient approach to corporate reporting.
Enhance accountability.
Enhance stewardship.
Promote the understanding of all the capital indicators and their interdependencies.
Support integrated thinking considering the value creation over the short, medium and long term.

Table 1. Goals Integrated Reporting

Current financial reporting systems are purely based on economic users. IAS 1 describes that the main objective of general financial statements is to provide information about the financial performance, cash flows and the overall financial positions that is useful to a wide range of users in making economic decisions.[7] Integrated Reporting has far more objectives. These goals can be seen in Table 1.[8]

The goals described in the IR framework are very complex. While the concepts of the different capital indicators are rather clear it does raise questions considering the boundaries between these indicators. That remains rather fuzzy.[9] In addition, the IR framework forces companies to show the capitals that influence the firm but not how the firm influences specific capitals. This means that both the enhancement of stewardship and accountability are endangered because of the fact that the company might have a higher stewardship and accountability than only their inputs during the productive process.[10]

Another difficulty lies in the fact that the completeness, comparability and the correctness of information is hard to measure. The IR framework leaves a lot of discretion to the firm's management. This will lead to wrong information considering the performance of companies related to sustainability and their impact on stakeholders, society and the environment.[11] This impacts the quality of financial information and the overall understanding of the capital indicators and their interdependencies which in terms influences the determination of value created in the short, medium and long term.

All these points show us that IR and its framework are still in its infancy. If we want to make sure that companies adopt IR as their reporting standard, we have to make sure that all these barriers are removed. It is the task of the academic world to investigate which barriers are still standing and how they can be removed. I seriously hope that mapping the capital indicators described within the IR framework will be the first step towards a larger understanding of IR as a whole.

[7] International Accounting Standard 1
[8] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013, 3.
[9] Flower, J. (2014). The international integrated reporting council: a story of failure. *Critical Perspectives on Accounting*, 4.
[10] Flower, J. (2014). The international integrated reporting council: a story of failure. *Critical Perspectives on Accounting*, 5.
[11] Flower, J. (2014). The international integrated reporting council: a story of failure. *Critical Perspectives on Accounting*, 6.

1.3 RESEARCH QUESTION AND SUB-QUESTIONS

This paper hopes to create a coherent framework that helps to create a clear and cohesive picture regarding the interdependencies between the capital indicators and their overall relationship towards value. This paper does not primarily serve the academic world. The working field could seriously benefit from this work because of the fact that the overall dependencies will finally be described. In order to be able to serve both the academic and the practitioner I will propose the following research (sub)questions:

- How can value creating indicators described in the IR framework be mapped?
    - From sustainability reporting to IR: How did IR develop into its current practice?
    - What are the key capital indicators influencing value according to the IR Framework?
    - Current practices: Are there other Indicators influencing value described in current academic research?
    - How could we map the value creating indicators defined in the Integrated reporting Framework according to current academic research?
    - How do these mapped relationship look separately?
    - Is there a difference between the relationships found within this study and current working-field practice?

These questions will help us to finally model the capital indicators and the relationship that they contain towards the overall value of a company.

1.4 RESEARCH DESIGN, CASE SELECTION, DATA COLLECTION

The intention of this research is to create a map considering the interdependencies between the different capital indicators and their relationships towards value. In order to create this map a literature review will be done considering the conceptualization of value within other areas of business administration. This literature review will serve as the fundament for this thesis.

The literature selection will be done by looking at the most important academic websites. I do not wish to select on references or citations. To be as comprehensive as possible all papers and other academic material should be read.

Considering the case study, this study will look at the annual integrated reports of Philips to determine how this company operationalizes its capital indicators.

The purpose of this model is not to see whether the mapped relationships are actually already being used by the current working field. This is because current academic research has not yet formally operationalized and tested the mapped model that I will propose. As a result, the model that I will create might not be all-embracing meaning that other variables could be discovered during future research. Therefore, case studies are not yet important in this area of research. First other academic work should continue to focus on the mapping of the capital indicators. Once this work has been completed, if it ever will, different operationalizations should be discovered in order to measure the interdependencies reliably and completely. In addition, this research will only contain the proposed relationships. The strength of the relationships can't be given, since no literature about this specific topic is available at this point. The relationships described can be either positive, negative or both considering overall value creation. This research can only tell that the relationship is there, not whether it is positive or negative.

Further research should empirically test the relationships that will be described. Once that has been done further research should consider the actual operationalization. This operationalization should contain the actual strength of the relationships described.

Chapter II: Theoretical Framework

2.1 The role of information disclosure

Within this chapter we will explain the actual role of financial information disclosure in capital markets. In a perfect capital market there are no information differences and conflicting incentives been possible investors and companies. This optimal allocation of savings is a constant challenge for any economy.[12]

Current academic research has discovered two main reasons for corporate disclosure. First of all, entrepreneurs typically have better information about the value of their business investment and tend to overstate this value due to incentives. People that are willing to invest face an "information problem".[13] This information or "lemons" problem arises from differences and conflicting incentives between entrepreneurs and savers.

The example often described is the situation where half the business ideas are "good" and the other half are "bad". If investors cannot distinguish between the two types of information due to the lack of information, entrepreneurs with "bad" ideas will claim that their ideas are as good as the ideas that actually are good. Realizing this possibility, investors will value all the business ideas as average. Therefore, the capital market rationally undervalues some good ideas and overvalues some bad ideas.[14]

Several well-known solutions have been proposed to the "lemons" problem. *Kreps* (1990) proposed contracts between entrepreneurs and savers leading to optimal contracts that diminish or remove information asymmetry.[15] Another possible solution is the creation of regulation by governments that force companies to disclose both public and private information.[16]

[12] Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of accounting and economics*, *31*(1), 407.
[13] *Ibid.*
[14] Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of accounting and economics*, *31*(1), 408.
[15] Kreps, D. M. (1990). *A course in microeconomic theory* . New York: Harvester Wheatsheaf, 630.
[16] Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of accounting and economics*, *31*(1), 408.

Because of this information asymmetry there is a demand for information intermediaries that discover private information production in order to uncover managers' information.[17]

Fig. 2 has been added in order to show the relationship of household savings, financial/information mediators and the entrepreneurs in a capital market economy.

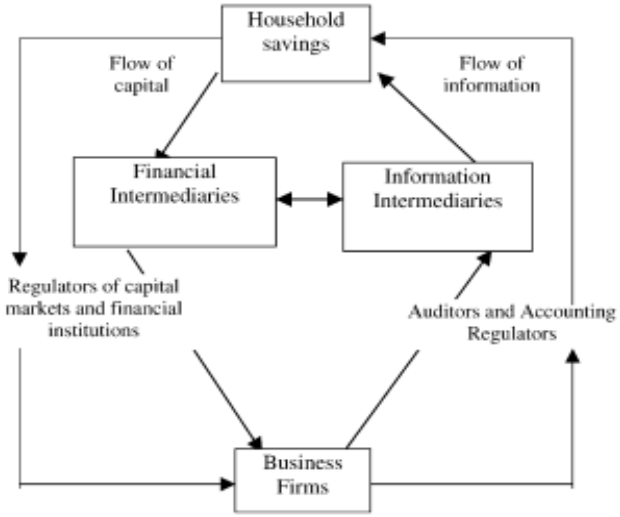

Figure 2. Financial and information flows.[18]

Scholars who theorize about the management of information have also argued about the "agent" theory. The definition of an agency relationship is *a contract under which one more persons engage another person to perform some service on their behalf which involves delegating some decision making authority to the agent*.[19] This situation arises because investors normally do not intend to play an active role in the management of the company they invest in.[20] However, the person allowing this agent to make decisions, the "principle", has to monitor the expenditures done by the agent and faces a residual loss. This is because the "agent" is not fully rational and

[17] Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of accounting and economics*, *31*(1), 408.
[18] *Ibid.*
[19] Jensen, M. C., & Meckling, W. H. (1979). *Theory of the firm: Managerial behavior, agency costs, and ownership structure* Springer Netherlands, 5
[20] Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of accounting and economics*, *31*(1), 409.

does not behave as if he were maximizing the welfare of the "principle".[21] The sum of these cost are defined as "agency costs".

Therefore, both the principle and the agent might have different incentives. This can lead to conflicts of interest, information asymmetries and concealment by management.[22] Information asymmetries arise because managers' daily involvement gives them privileged access to information. Conflict of interest occur when incentives of managers and investors differ. Managers might decide to conceal negative organizational information because of the possible adjustment of their incentive contracts or the decision of the directors to replace them.[23]

The last theory suggests that disclosure is motivated by the corporate in order to legitimize activities.[24] This "legitimacy" theory proposes that companies respond to community expectations through the disclosure of information.[25] Given a growth in community (either local, regional or global) awareness and concern, companies will reinforce the community's perception of specific subjects.

[21] Jensen, M. C., & Meckling, W. H. (1979). *Theory of the firm: Managerial behavior, agency costs, and ownership structure* Springer Netherlands, 6.
[22] Abrahamson, E., & Park, C. (1994). Concealment of negative organizational outcomes: An agency theory perspective. *Academy of management journal*,*37*(5), 1304.
[23] *Ibid.*
[24] Hogner, R. H. (1982). Corporate social reporting: eight decades of development at US Steel. *Research in Corporate Performance and Policy*, *4*(1), 245.
[25] Tilt, C. A. (1994). The influence of external pressure groups on corporate social disclosure: some empirical evidence. *Accounting, Auditing & Accountability Journal*, *7*(4), 62.

2.2 A close relative: development of (corporate) sustainability reporting

The number of companies that started to publish separate information reports containing environmental, social or sustainability policies and/or impacts has been rising since the first separate environmental report in 1989.[26] Whereas a large number of banks and insurance companies that publish a sustainability report is increasing, traditionally, the more 'polluting' sectors have been most active in this regard. Purely based on face validity, the mere "legitimacy" theory described in the previous chapter seems like a plausible reason why "polluting" companies adopt sustainability reporting more active than other sectors in this regard.

Besides these factors, many reasons can be found why companies produce a separate sustainability report. Table 1 lists various reasons and motivations. These reasons can sometimes be company-specific, however, are not always internal. Other societal aspects such as reputation and credibility play an important role.

Reasons for reporting
• enhanced ability to track progress against specific targets
• facilitating the implementation of the environmental strategy
• greater awareness of broad environmental issues throughout the organisation
• ability to clearly convey the corporate message internally and externally
• improved all-round credibility from greater transparency
• ability to communicate efforts and standards
• licence to operate and campaign
• reputational benefits, cost savings identification, increased efficiency, enhanced business development opportunities and enhanced staff morale
Reasons for not reporting
• doubts about the advantages it would bring to the organisation
• competitors are neither publishing reports
• customers (and the general public) are not interested in it, it will not increase sales
• the company already has a good reputation for its environmental performance
• there are many other ways of communicating about environmental issues
• it is too expensive
• it is difficult to gather consistent data from all operations and to select correct indicators
• it could damage the reputation of the company, have legal implications or wake up 'sleeping dogs' (such as environmental organisations)

Table 1. Motivations for producing separate sustainability reports.[27]

[26] Kolk, A. (2004). A decade of sustainability reporting: developments and significance. *International Journal of Environment and Sustainable Development*, *3*(1), 51.
[27] Compiled from Sustainability/UNEP (1998) The Non-reporting Report, London.

Regarding the content, a clear tendency can be observed that environmental reporting is starting to include societal issues. This development started since 1999. In 2002, the number of environmental reports that did not report any societal activities dropped from 98% compared to 71% in 1999.[28] While this predecessor of integrated reporting kept developing, the overwhelming majority of companies that adopted sustainability reporting remained focused on the mere "traditional" reporting topics.[29]

Once (corporate) sustainability became an accepted corporate disclosure method, companies started to include more performance measures in their sustainability reports. There was a need to asses companies' results rather than their policies.[30] However, with the deliverance of more corporate information towards stakeholders, especially non-financial information, a judgement of performance indicators as such without any context and/or comparison proved to be difficult.[31] Therefore, companies created forms of benchmarking for items such as societal issues and health, safety and environment.[32]

There is still a lot of discussion about the significance of sustainability reporting. Due to the whole quest for good standardised performance indicators and the need for external verification by the academic world of these indicators, it is hard for investors to see whether companies have really implemented the issues they add in their sustainability report.[33] One factor that might positively influence the adoption of corporate sustainability reporting is the external verification of sustainability reports. More and more big accountancy are willing and capable to verify corporate sustainability reports.[34]

[28] Kolk, A. (2004). A decade of sustainability reporting: developments and significance. *International Journal of Environment and Sustainable Development*, *3*(1), 51.
[29] Kolk, A. (2003). Trends in sustainability reporting by the Fortune Global 250.*Business strategy and the environment*, *12*(5), 284.
[30] Kolk, A., & Mauser, A. (2002). The evolution of environmental management: from stage models to performance evaluation. *Business strategy and the environment*, *11*(1), 17.
[31] Kolk, A. (2004). A decade of sustainability reporting: developments and significance. *International Journal of Environment and Sustainable Development*, *3*(1), 58.
[32] *Ibid.*
[33] *Ibid.*
[34] KPMG/UvA (2002) KPMG International Survey of Corporate Sustainability Reporting 2002, De Meern, 21.

However, the more business world has adopted (corporate) responsibility reporting, the more it has been blamed for the failures of society. Due to recent history, legitimacy of businesses has fallen to dramatically low levels.[35]

According to academics, this problem lies within the companies themselves due to the fact that they remain active in outdated value creation approaches that still differentiate between the financial information and non-financial information shown in current financial disclosure frameworks.

As a consequence, companies must create a situation through which they bring business and society back together. While there is still a lack of an overall framework, academics argue that the solution lies in the principle of shared value. This means that companies create value for both the company and for society as a whole. This means that new value indicators would have to be created and the company should be seen as an actor active in a economic and societal community.[36] Because (corporate) sustainability reporting was not capable to show the intertwined relationship between financial and non-financial information another corporate disclosure method deemed necessary. Integrated reporing was born.

[35] Porter, M. E., & Kramer, M. R. (2011). Creating shared value. *Harvard business review*, *89*(1/2), 63.
[36] Porter, M. E., & Kramer, M. R. (2011). Creating shared value. *Harvard business review*, *89*(1/2), 64.

2.3 Integrated reporting: an introduction.

The conceptualization of IR has initially been done by two separate bodies, the King Report on Governance for South Africa, and the International Integrated Reporting Council (Henceforth: IIRC) in the United Kingdom. For companies and organizations that are listed on the Johannesburg Stock Exchange the preparation of an integrated report became mandatory. Elsewhere in the world, several organizations are trying to implement an integrated report. Denmark, Norway and Sweden demand sustainability reporting to varying degrees. In France, legislation called the *Grenelle II* legislation requires "all major French listed and non-listed large companies to disclose how they take the enviromental and social impact of their activities into account.[37] Although the process is evolving and frameworks are being created, no unified description of this concept has yet been created.[38]

The King Report on Governance for South Africa describes integrated reporting as "*a holistic and integrated representation of the company's performance in terms of both its finance and its sustainability*".[39]

The International Integrated Reporting Council (IIRC) states that integrated reporting "*brings together the material information about an organization's strategy, governance, performance and prospects, reflects the commercial, social and environmental context within which it operates. It provides a clear and concise representation of how an organization demonstrates stewardship and how it creates value, now and in the future*".[40]

Both organizations show that a clink between the reported non-financial information and the financial information in a manner allowing an assessment is the future for corporate disclosure.[41]

The aim of an integrated report is therefore to allow a better communication of a company's short, medium and long term value creation proposition through providing

[37] Eccles, R. G., & Saltzman, D. (2011). Achieving sustainability through integrated reporting. *Stanf Soc Innov Rev Summer*, 56-61.
[38] Abeysekera, I. (2013). A template for integrated reporting. *Journal of Intellectual Capital*, *14*(2), 238.
[39] IRCSA (Integrated Reporting Council of South Africa) (2011), "Integrated reporting and the integrated report. Discussion paper", 2.
[40] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013, 3.
[41] Cheng, M., Green, W., Conradie, P., Konishi, N., & Romi, A. (2014). The international integrated reporting framework: key issues and future research opportunities. *Journal of International Financial Management & Accounting*,*25*(1), 95.

"*a concise communication about how a company's strategy, governance, performance and propects, in the context of its external environment, lead to the creation of value*".[42]

At the heart of the IR conceptual framework lies the notion that the companies should expand their reporting not only to financial information, but include all the resources that they use as inputs to their business activities.[43] These various resources are called capitals and the IR Framework identifies six of these capitals namely*: financial; manufactured; intellectual; human; social/relational and natural.*[44]

Financial capital is described as a pool of funds that can be obtained through debt and equity financing for the use in the production of goods or the provision of services.

Manufactured capital describes physical objects that can be used by an organization for the use of production of goods of the provision of services. Examples of manufactured capital could be either buildings or equipment.[45]

Intellectual property such as patents, copyrights, software and other typoes of rights and licences are defined as intellectual capital. Besides these mere "obvious" organizational knowlegde-based intangibles, organizational capital, such as tactic knowlegdge about systems, procedures and protocols, can also be seen as intellectual capital and is therefore added.[46]

People's competencies, capabilities and experience and their motivations to innovate can be described as human capital.

Social and relationship captial is described as the relationships within and between communities, groups of stakeholders and other networks, and the ability to share information within this network, in order to enhance individual and collective well-being. Social and relationship capital includes shared normes and common values, key stakeholder relationships and intangibles associated with brand and reputation.

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[42] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013, 8.
[43] Cheng, M., Green, W., Conradie, P., Konishi, N., & Romi, A. (2014). The international integrated reporting framework: key issues and future research opportunities. *Journal of International Financial Management & Accounting*,*25*(1), 95.
[44] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013, 6.
[45] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013, 11.
[46] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013, 12.

The last capital is natural capital. Natural capital describes all renewable and non-renewable environmental resources and processes that provide goods and/or services. It includes air, water, minerals and forests. In addition, biodiversity and eco-system health is added as well.

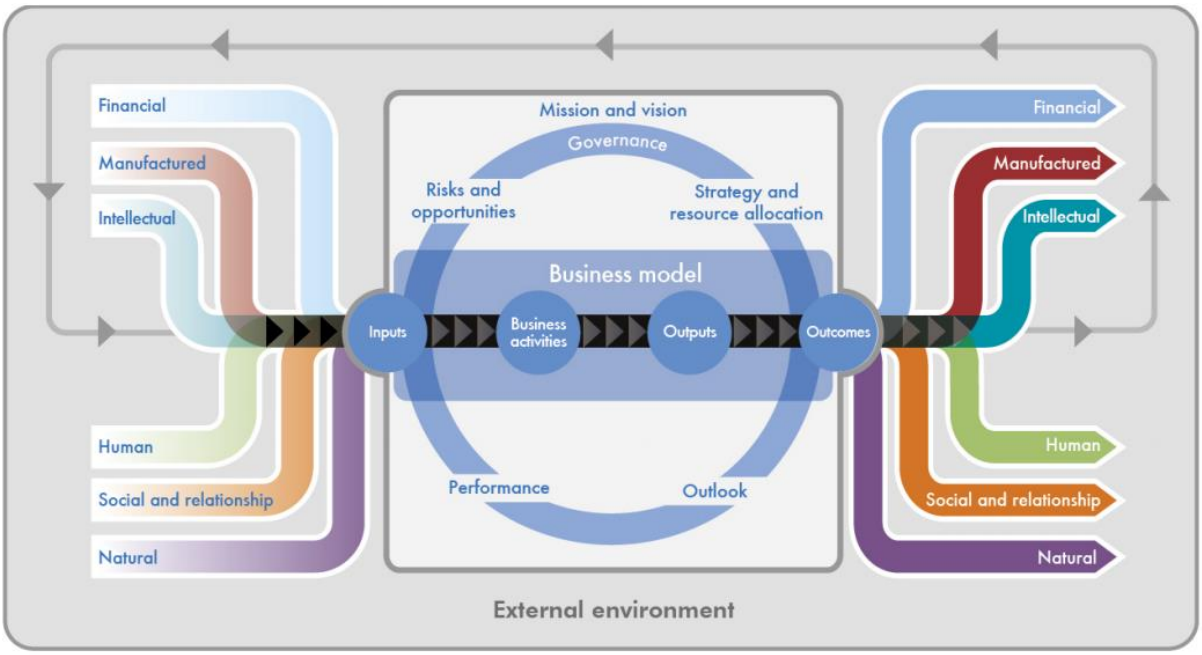

Figure 3. The value creation process.[47]

What can be seen is that all these values are conceptualized, but not operationalized. This leaves a lot of freedom to the companies that adopt IR. Freedom that can be abused if IR does not provide the neccesary indicators and operationalizations to create comparative benchmarks that can be used to asses company performance. This will lead to a decrease in both reliability and comparability.

The problem is that each capital dimension can interact with eachother in various permutations. While this allows companies to create value through the interactions of these capitals, it might be difficult for companies to link their core business activities to the six captials and measure it adequately.[48]

In addition, questions like what form should the integrated report take to present the interconnectedness between financial and non-financial information and which performance metrics stakeholders value remain.

[47] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013, 13.
[48]Abeysekera, I. (2013). A template for integrated reporting. *Journal of Intellectual Capital*, *14*(2), 228.

Therefore, achieving truly integrated reporting is far more difficult than is often admitted. It is a constant challenge to combine two fundamentally traditions of corporate disclosure, financial and sustainability reporting. The complexity of financial reporting is increasing due to different sources of value, financial instruments and intangible assets while the difficulty of sustainability reporting lies in the measurement of the latter. Meshing the these two types of corporate disclosure is difficult, but neccesary.[49]

The IIRC has given guiding principles and content elements in their framework in order to enhance the interconnectedness of financial and non-financial information. According to the guiding principles an integrated report should explain the *connectivity of information*. It should show the interrelatedness between the value indicators that determine the overall value creation of companies. An integrated report should show *key relationships with value holding stakeholders*. The integrated report should also contain a high level of materiality, meaning that the report should contain information that explains the value creation over the short, medium and long term. Besides these mere "new" guiding principles, older principels such as reliabilty, completeness, conciseness, comparability and consistency are given aswell.[50]

Besides these guiding principles the IIRC created content elements that should be taken into account. These content elements describe that organizations that adopt IR as their main disclosure standard should look at their performance, outlook, business model, governance and their organizational overview and external environment. The framework once again stresses the importante of the interconnectedness by describing that these elements are linked and should not be described as mutual exclusive elements of a company.[51]

Academic research has shown that there are several reasons why companies adopt IR. Table 2 summarizes these company determinants of IR.

[49] White, A. (2010). The five capitals of integrated reporting: Toward a holistic architecture for corporate disclosure. *Eccles, R. et al.(2010).'The Landscape of Integrated Reporting', Massachusetts*, 49.
[50] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013, 16-23.
[51] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013, 24-32.

Author	Determinant
Jensen & Berg (2012)	Higher investor protection.
Jensen & Berg (2012)	Higher market coordination.
Jensen & Berg (2012)	Higher union density
Aceituno et all. (2014)	Monopolistic position
Aceituno et all. (2014)	Company size
Aceituno et all. (2014)	Profitability
Aceituno et all. (2013)	National legal system
Sanchez et all. (201 3)	Cultural system

Table 2. Determinants of Integrated Reporting

These determinants are different from the factors influencing the choice for mere traditional sustainability reporting meaning that the institutional character of companies that adopt IR is different compared to companies that adopt traditional sustainability reporting.[52] Academic research has proven that IR companies are more likely to originate from countries with higher investor protection, higher market coordination and a higher level of union density. The mere political conditions of a country are not influencing the choice for IR.[53]

Other determinants have been proven statistically relevant as well. Companies that have a monopolistic position within a market are less likely to publish additional information through an integrated report. The reason is that these companies are scared for losing their abnormal profits.[54] Besides the market position of a company, company size and profitability are important determinants aswell. If a company

[52] Jensen, J. C., & Berg, N. (2012). Determinants of traditional sustainability reporting versus integrated reporting. An institutionalist approach. *Business Strategy and the Environment*, *21*(5), 312.
[53] *Ibid.*
[54] Frias-Aceituno, J. V., Rodríguez-Ariza, L., & Garcia-Sánchez, I. M. (2014). Explanatory factors of integrated sustainability and financial reporting.*Business Strategy and the Environment*, *23*(1), 68.

increases her profitability through the disclosure of an integrated report incentives will rise. In addition, bigger companies are more likely to publish an integrated report than smaller companies.[55]

The national legal system of a company is another determinant for IR. A company which has national regulation that focuses towards the protection of stakeholders, a civil law system, is more likely to create an integrated report. Civil law system promote managerial responsibility and encourages companies to act within the law and promote transparency.[56] Cultural norms influence the possible adoption of IR. Firms located in country's that have collectivitist or feminist values are more likely to adopt IR as their main reporting standard.[57]

Although integrated reporting is still in its childhood, three classes of possible benefits have already been described. The first class describes *internal benefits* that include better inernal resource allocation decisions, greater engagement with shareholders and other stakeholders and the possibility to lower reputational risk.

The second class of beneftis are *external benefits.* Through integrated reporting a company is capable of improving managing the needs of mainstream investors. The company will also appear on sustainability indices. The last group describes the possiblity of better management of *regulatory risks.* Companies that adopted IR are prepared for the likely wave of global regulation responding to the introduction of IR.[58] No real academic research has yet been done in possible benefits arising from IR and the reasons mentioned above remain speculative. In order to stimulate the adoption of IR more research should be done in this specific area.

[55] *Ibid.*
[56] Frías-Aceituno, J. V., Rodríguez-Ariza, L., & García-Sánchez, I. M. (2013). Is integrated reporting determined by a country's legal system? An exploratory study. *Journal of cleaner production*, *44*, 45-55.
[57] García-Sánchez, I. M., Rodríguez-Ariza, L., & Frías-Aceituno, J. V. (2013). The cultural system and integrated reporting. *International Business Review*, *22*(5), 828-838.
[58] Eccles, R. G., & Saltzman, D. (2011). Achieving sustainability through integrated reporting. *Stanf Soc Innov Rev Summer*, 59.

Chapter III: The creation of the research model

3.1 Proposition of the model

The main aim of this research is to operationalize the six capital indicators described within the IIRC framework. Before we can actually start with this operationalization, we need to make sure that we know the relationships between these capital indicators. One of the basic assumptions underlying the model is that there are interactions, activities and relationships between these capitals. If the capitals are material for the organization they should be added within the integrated report. The integrated report takes a picture of a company that reflects the dynamic and systematic interactions of the organization's activities as a whole. These interactions include activities, relationships and interactions. This includes the interdependencies and trade-offs between the capitals.[59]

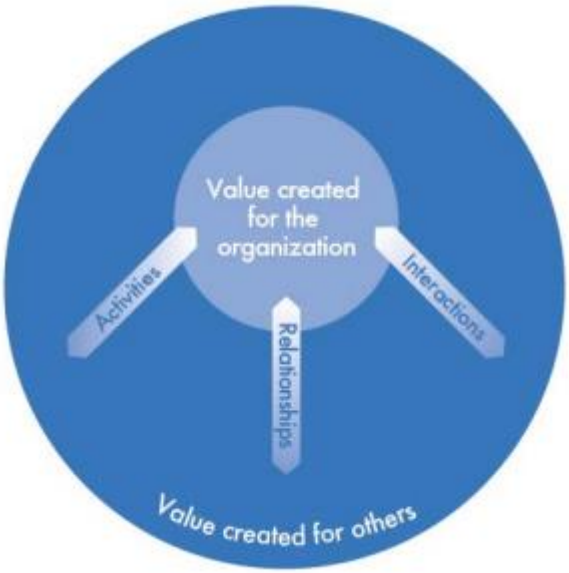

Figure 4. Value creation according to the IR Framework.[60]

It is from the utmost importance to first conceptualize these six indicators. While the specific conceptualization of the six value indicators has already been done in the framework, the actual relationship between these capital indicators and value creation has not. Previous academic research will help us to discoverer these relationships. Once we have distinguished whether and what kind of relationships

[59] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013, 17-18.
[60] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013, 24.

excist between these six capital indicators and how they create value this paper will continue with the operationalization of the latter. The specific conceptualizations of the six capital indicators are summarized within Table 3. The underlying assumption within our research model is the fact that financial information is being influenced by non-financial information.

Indicators	Conceptualization
Financial capital	Available to an organization for the use in the production of goods or the provision of services and obtained through debt or equity financing or generated through operations or investments.
Manufactured capital	Physical objects that are available to an organization for the use in the production of goods or the provision of services.
Intellectual capital	Organizational knowledge-based intangibles including IP and organizational capital.
Human capital	People's competencies, capabilities and experience and their motivations to innovate
Social/Relational capital	The institutions and the relationships within and between communities, stakeholders and other networks and the ability to share information to enhance individual collective well-being.
Natural capital	All renewable and non-renewable environmental sources and that processes that provide goods or services that support the past, current of future prosperity of an organization.

Table 3. ***The six value indicators according to the IR framework.***[61]

[61] The International Integrated Reporting Council. *The International <IR> Framework.* December 2013, 11-12.

3.2 Relationship between the six capital indicators and the creation of value.

Before I start with the operationalization of the six capital indicators one first needs to know the relationship between the six capital indicators and the possible value that they can either add or remove. The basic underlying model that has been described in the IR framework is shown in Figure 5. As can be seen, all the capital indicators influence the value creation of a company. As an example one could say that relational capital influences the level of innovation due to an increased amount of open innovation projects, which could possibly lead to a competetive advantage in comparison with other companies In the same industry thereby increasing value. Figure 5 also shows us the interconnectedness of the capital indicators. Not only do the 6 indicators influence the overall value creation of companies, they are also intertwined and influence eachother. As an example we could say that the expenditure in innovation project could positively influence intellectual capital while decreasing financial capital. The IR framework describes no specific relationships. If figure 5 serves as an example, one should draw all hypothetical relationhips that are possible. This research attempts to describe these relationships. While the IR framework describes a situation in which all relationships are possible, academic research tells us the opposite. I will model the capital indicators and their relationship towards value. All these relations will be explained as once I start with the overal modelling of the capital indicators and their relationship towards value.

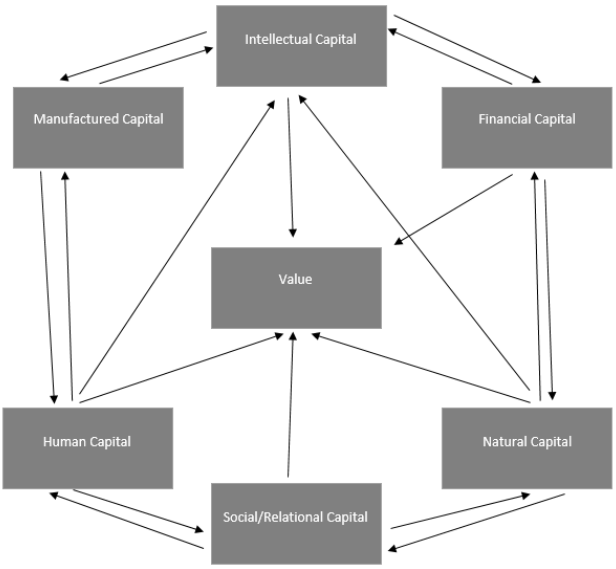

Figure 5. The relationship between the capital indicators and value.

Because the most important objective of IR is a clear and coherent picture of value creation within companies a clear understanding of the six capital indicators is needed. Therefore, not only the relationship between the six indicators and value creation should be understood. The interrelatedness of these six capital indicators should also be mapped. Through a literature review, I will try to be as cohesive as possible in order to understand the relationships between these indicators and their relationship towards value creation.

3.2 Financial capital

A company's financial capital consist of its debt and equity position. The debt of a company is composed of long and/or short term loans acquired from third parties such as banks, venture capitalists and business angels.[62] A company's equity composition depends on the phase a company is in. In the mere entrepreneural phase, a company's equity composition often entails the "three F"; Friends, Family and Fools. Once a company gains maturity, equity is obtained from financial markets. Acquiring financial capital through shareholders and loans is often not without financial consequences. In order to obtain financial capital of third parties, companies have to pay rent that compensates the risk. Both debt and equity are combined, transformed and leveraged to produce outputs and outcomes, resulting in either value creation or destruction through an organization's business model. The business model is defined by the IIRC as "the chosen system of inputs, business activities, outputs and outcomes that aims to create value over the short, medium and long term". [63] Financial capital has been described as cash being needed by an organization in order to invest into other capital indicators. In addition, cash is a necesssary input as well as an output of operations in form of a cash flow.[64]

Financial capital is used in order to invest in other resources needed in order to create value over the short, medium and long term.[65] However, this relationship is

[62] These type of lenders can also demand a equity position within the company. I will not further elaborate on this due to the fact that this does not fit the purpose of this thesis.

[63]

[64] Itami, H., & Roehl, T. W. (1991). *Mobilizing invisible assets*. Harvard University Press.

[65]

merely based on logic rather then on causation. It is not possible (on academic research level) to create a causal relationship between financial capital and the other capital indicators described in the IIRC framework while we do know that there is an actual relationship. Academic research does not tell what the specific relationship is in terms of value creation, but it does know that if there would be no financial capital, no investment would be possible in the other five capital indicators, making them non-excistent. [66] Therefore, financial capital is a necessary, but not a sufficient variable in the relationship with the other five indicators and value creation. In addition, financial capital can both be an input and an output within the business model of a company.

3.3 Relational/Social Capital

The concept of social capital has become increasingly popular in a wide range of academic disciplines. Social capital is not only used in an economic perspective, but it has also been used in political and social studies. The relational/social capital conceptualization within the IR framework focuses on the capability of companies to create and maintain relationships and to be active in a network. This will be the focal point considering the mapping.

Within the economic perspective several authors have conceptualized social capital with all of them holding a piece of the (social capital conceptualization) puzzle.

Baker (1990) has conceptualized social capital as "*a resource that actors derive from specific social structures and then use to pursue their interest; it is created by changes in the relationship among actors.*[67]

Bourdieu (1985) stated that social capital is *"the aggregate of the actual or potential resources which are linked to a possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition".*[68]

Portes & Sensenbrenner (1993) see social capital as *"those expectations for action within a collectivity that effect the economic goalsand goal-seeking behavior of its*

[66] *Ibid.*
[67] Baker, W. E. (1990). Market networks and corporate behavior. *American journal of sociology*, 619.
[68] Bourdieu, P., & Wacquant, L. J. (1992). *An invitation to reflexive sociology*. University of Chicago Press, 248.

members, even if these expectations are not oriented towards the economic sphere".[69]

Putnam (1995) puts an emphasis on value creation stating that social capital shows *"features of social organization such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit".*[70]

Pennar (1997) sees social capital as *"the web of social relationships that influences individual behavior and there affects economic growth".*[71]

In all the conceptualizations social capital is seen as a resource active in a social structure of networks that influences the possible creation or acquisition of value. Social capital is divided in five different dimensions: *civic engagement, asscioational membership, high trust, reliability and reciprocity*. [72] *Nahapiet and Ghoshal* (1996) distinguish three challenging dimensions for an organization when trying to create value through social capital.[73] These three dimensions are highly interrelated.[74]

- *Structural dimensions*
- *Relational dimensions*
- *Cognitive dimensions*

The structural dimension explains the overall position an organization maintains in a network and whether the people active in an organization perceive themselve as part of a specific network.[75]

Relational obligations occur once an organization enters a network. This development is described in the relational dimension. A sense of mutual obligations developes once a company enters a network.[76]

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[69] Portes, A., & Sensenbrenner, J. (1993). Embeddedness and immigration: Notes on the social determinants of economic action. *American journal of sociology*, 1323.
[70] Putnam, R. D. (2001). *Bowling alone: The collapse and revival of American community*. Simon and Schuster, 67.
[71] Pennar, K., & Mueller, T. (1997). The ties that lead to prosperity. *Business Week*, *15*, 154.
[72] Cooke, P., & Wills, D. (1999). Small firms, social capital and the enhancement of business performance through innovation programmes. *Small Business Economics*, *13*(3), 223.
[73] Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of management review*, *23*(2), 248.
[74] Nahapiet, J., & Ghoshal, S. (1997, August). SOCIAL CAPITAL, INTELLECTUAL CAPITAL AND THE CREATION OF VALUE IN FIRMS. In*Academy of Management Proceedings* Academy of Management, 37.
[75] Bueno, E., Paz Salmador, M., & Rodríguez, Ó. (2004). The role of social capital in today's economy: Empirical evidence and proposal of a new model of intellectual capital. *Journal of Intellectual Capital*, *5*(4), 557.
[76] *Ibid.*

The last dimension describes the cognitive dimension. Due to the fact that actors in the same network share the same interest, they start sharing knowlegde.[77]

The value creation within the social capital is done through the interaction between actors active within the same network or between different networks. This "networking" leads to increased learning processes.[78] Social capital has an eminent role in the creation of capacity for the sharing of knowlegde that could possibly lead to a competative advantage through the possible increase of product and/or process innovation.[7980]

In addition, regional social interaction helps product innovation through localized connectivity.[81] Several academic articles have already shown that localized learning is an catalyst for innovation, meaning that companies active in regional innovation systems have a higher level of absorptive capacity, a pre-condition for innovation.[82] Besides being a pre-condition, social capital helps as a mere framework for companies to make decisions when dealing with radical innovations.[83]

The interaction between actors can also lead to long lasting relationships between buyer and supplier and manufacturer and customer. This can lead to a competative advange increasing the overall value creation of a company.[84]

To conclude, social capital does create value both directly and indirectly. It does so indirectly by the possible increase of innovation through for instance localized learning mechanisms. In addition, social capital leads to a higher amount of product and process innovations, possibly influencing manufactured capital that leads to a more efficient production process or a better product. The overall mapping of social capital should therefore show this indirect relationship.[85] Social capital facilitates the development of intellectual capital by affecting the requirements necessary for the

[77] *Ibid.*
[78] *Ibid*
[79] Landry, R., Amara, N., & Lamari, M. (2002). Does social capital determine innovation? To what extent?. *Technological forecasting and social change*,*69*(7), 684.
[80] Tsai, W., & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. *Academy of management Journal*, *41*(4), 473.
[81] Laursen, K., Masciarelli, F., & Prencipe, A. (2012). Regions matter: how localized social capital affects innovation and external knowledge acquisition.*Organization Science*, *23*(1), 182.
[82] Diez, J. R., & Kramer, J. P. Regions as Catalysts of Open Innovation? The Case of SAP in the Regional Innovation System of Baden-Württemberg.
[83] Landry, R., Amara, N., & Lamari, M. (2002). Does social capital determine innovation? To what extent?. *Technological forecasting and social change*,*69*(7), 683.
[84] Snehota, I., & Hakansson, H. (Eds.). (1995). *Developing relationships in business networks*. Routledge.
[85] Eurostat, 2000.

exchange of knowlegde. Through network ties, shared codes and languages and other social capital indicators social capital allows for an increase in intellectual capital.[86] Besides the increase in intellectual capital, social capital allows for long lasting relationships that could lead to possible competative advantages through for instance *preferred customer treatment*.[87]

3.4 Intellectual capital

Since the rise of the "new economy", one that is driven by information and knowlegde, intellectual capital became instrumental in the determination of enterprise value and economic performance.[88] The information age and the increasing importance of intellectual capital can be seen in the difference between book value and market value which during mid-1980s widens noticeably for many companies and shows that the value created depends far less on their physical assets and more on their intangible ones.[8990]

Currently there is no world wide accepted definition of intellectual capital. However, current academic research al include the idea that intellectual capital essentialy centers around "knowlegde that can be converted into value".[91] Besides this basic conceptualization three elements are commonly used, namely (i) intangiblity; (ii) knowlegde that creates value; (iii) effect of collective practice. This current conceptulization means that the intellectual value that is irrelevant for the determination of the short, medium and long term value creation of a company is not taken into account.[92] This underlying idea is coherent to the current IR framework and is for this reason adopted in this master thesis.

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[86] Nahapiet, J., & Ghoshal, S. (1997, August). SOCIAL CAPITAL, INTELLECTUAL CAPITAL AND THE CREATION OF VALUE IN FIRMS. In*Academy of Management Proceedings*, 39.
[87] Schiele, H., Veldman, J., & Hüttinger, L. (2011). Supplier innovativeness and supplier pricing: The role of preferred customer status. *International Journal of Innovation Management*, *15*(01), 3.
[88] Petty, R., & Guthrie, J. (2000). Intellectual capital literature review: measurement, reporting and management. *Journal of intellectual capital*, *1*(2), 155.
[89] Petty, R., & Guthrie, J. (2000). Intellectual capital literature review: measurement, reporting and management. *Journal of intellectual capital*, *1*(2), 161.
[90] do Rosário Cabrita, M., & Vaz, J. L. (2005). Intellectual Capital and Value Creation: Evidence from the Portuguese Banking Industry. *Electronic Journal of Knowledge Management*, *4*(1), 12.
[91] Edvinsson, L., & Sullivan, P. (1996). Developing a model for managing intellectual capital. *European management journal*, *14*(4), 361.
[92] do Rosário Cabrita, M., & Vaz, J. L. (2005). Intellectual Capital and Value Creation: Evidence from the Portuguese Banking Industry. *Electronic Journal of Knowledge Management*, *4*(1), 13.

But does intellectual capital create value, and if so, how? Academic research has shown that investors place higher value on firms with better intellectual capital efficiency.[93]Therefore, companies that invest in intellectual capital are appreciated by possible investors, thereby positively influencing the financial capital of a company through either debt or equity financing even while current accounting standards are still very restrictive in terms of intellectual property being recognised in financial statements.[94] Academic research results also underline the importance of intellectual property in enhancing profitablity and revenue growth showing a direct relationship between intellectual property and value creation.[95] It is important to once again show in our model that there is a direct relationship between intellectual capital and value creation.

However, besides this mere direct relationship, our model will also have to show that a higher level of investment within intellectual capital could possible lead to a higher willingness of possible investors to invest into financial capital, which can be used to invest in all the capital indicators possibly leading to a higher overall value. As stated in the previous chapter, financial capital is a necessary but not sufficient condition considering value creation. This indirect relationship will also be described in our model.

Other relationships have been described as well. Where the IR framework shows a differentiation between intellectual capital, human capital and social/relational capital, academic research does not. This means that both human capital and social capital are conceptually seperated, but does accumulate and distribute knowlegde leading to a higher level of intellectual capital.[96] While I have already shown that social capital influences intellectual capital in the previous chapter, human capital possesses a same kind of relationship with intellectual capital. This will be discussed in other chapters.

In addition, a third conceptually seperated variable that influences intellectual capital is the so called “organizational” dimension. This part of intellectual capital has not been defined and conceptualized in the IR framework which is rather surpriing.

[93] Chen, M. C., Cheng, S. J., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of intellectual capital*, *6*(2), 174.
[94] *Ibid.*
[95] *Ibid.*
[96] Subramaniam, M., & Youndt, M. A. (2005). The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal*,*48*(3), 450-463

Organizaitonal capital is the institutional knowlegde and codified experience residing within and utilized through databases, manuals, structures, systems and processes.[97]

A new area within the field of innovation and research is “responsible research and innovation”. Current academic research is only very primal, but there seems to be the idea that innovations have been democratized in its use and privatized in its production. Technology development can and should be discussed in terms of benefits and risks for all citizens.[98] The idea of responsible research and innovation is the organization of collective responsibility meaning that technological forecasting should lead to a discussion between all stakeholders whether or whether not to further invest into specific technology.[99] Concerning my thesis, it is important to determine whether specific product or proces research and innovation could have influence on for instance societal and/or natural capital. If this influence is negative, the overall company value could diminish in the long term. While no emperical evidence is yet present, it seems like a valid assumptions that technological innovation does influence quite more than only the company that is producing this form of intellectual capital.

[97] *Ibid.*
[98] Von Schomberg, R. (2013). A vision of responsible research and innovation.*Responsible innovation: managing the responsible emergence of science and innovation in society*, 54.
[99] Ibid.

3.5 Human capital.

Innovation is fundamentally about the identification and assimlation of opportunities to create new products, services or work practices.[100] Several studies have shown that new products embody organizational knowlegde.[101] A critical part of this knowlegde and skills required by innovation resides within the individuals that are actively participating as an employee within companies. However, while the invention or the conceptualizaiton of innovative ideas might be done by individual activity the actual innovation is done through a collective achievement.[102]

Intellectual capital, of which human capital is part, but also conceptually seperated, is utilized through different approaches in an organization. Academic research considers intellectual capital to *be "the sum of all knowlegde firms utlize for competitive advange*".[103] Scholars offer different aspects of intellectual capital to show this difference. Previous research has identified three promiment aspects of intellectual capital of which human capital is one. Human capital is defined and conceptualized as "*the knowlegde, skills and abilities residing with and utlized by individuals*.[104] On the individual level human capital is defined as a combination of genetic inheritance, education, experience and attitues about life and business.[105]

But does human capital provide value to companies? Based on academic research there seems to be two ways through which human capital provides or diminishes value.

First of all, a critical part of the knowlegde and skills that is required for innovation can be found within individuals that are actively participating within companies. From this perspective, human capital is part of intellectual capital meaning that the knowlegde skills and abilities residing within individual can be utilized to create a higher level of innovation. The organizational perspective sees human capital as *"the*

[100] Van de Ven, A. H. (1986). Central problems in the management of innovation.*Management science*, *32*(5), 593.
[101] Stewart, T., & Ruckdeschel, C. (1998). Intellectual capital: The new wealth of organizations.
[102] Van de Ven, A. H. (1986). Central problems in the management of innovation.*Management science*, *32*(5), 591.
[103] Youndt, M. A., Subramaniam, M., & Snell, S. A. (2004). Intellectual Capital Profiles: An Examination of Investments and Returns*. *Journal of Management studies*, *41*(2), 342.
[104] Schultz, T. W. (1961). Investment in human capital. *The American economic review*, 8.
[105] Hudson, W. J. (1993). *Intellectual capital: How to build it, enhance it, use it*. Wiley

source of innovation and strategic renewal".[106] These conceptualizations lead us to believe that human capital is indeed a part of intellectual capital. Being the source of innovation, succesfull human capital will lead to a higher level of intellectual capital. Succesfull innovation is often mapped through an increase in intellectual property and previous academic research has shown that including intellectual property in models linking intellectual capital to firm performance enhances the statistical validity of these models.[107]

Intellectual capital has been identified as a source that drives organizational performance and value creation.[108] Human capital, being the source of innovation, could influence value creation by having a negative or positive impact on intellectual property, which in turn enhances the statistic validity linking intellectual capital and company performance and therefore proves to be a valid part of intellectual capital. This confirms the statement of *Kaplan & Norton* (2004) that intangible assets seldom affect performance directly. They often, but not always, work indirectly through relationships of cause and effect.[109]

Another academic approach favours a mere direct relationship between human capital and value creation. This academic research uses the resource based view of *Barney* (1991) as its framework.[110] This view emphasizes the links between internal resources of the firm, its strategy and the overall performance of the company.[111] Human capital is being seen as a resource which is capable of providing a company with a (sustainable) competative advange because it is valuable, rare, difficult to imitate and non-substitutable. [112] However, because human resources are characterized by causal ambiguity, social complexity and unique circumstances not all firms can succesfully create circumstances that foster human resources as a

[106] Bontis, N. (1998). Intellectual capital: an exploratory study that develops measures and models. *Management decision*, *36*(2), 68.
[107] Bollen, L., Vergauwen, P., & Schnieders, S. (2005). Linking intellectual capital and intellectual property to company performance. *Management Decision*,*43*(9), 1161.
[108] Roos, G., & Roos, J. (1997). Measuring your company's intellectual performance. *Long range planning*, *30*(3), 414.
[109] Kaplan, R. S., & Norton, D. P. (2004). Measuring the strategic readiness of intangible assets. *Harvard business review*, *82*(2), 54.
[110] Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management*, *17*(1), 99-120.
[111] Wright, P. M., McMahan, G. C., & McWilliams, A. (1994). Human resources and sustained competitive advantage: a resource-based perspective.*International journal of human resource management*, *5*(2), 301.
[112] Wright, P. M., McMahan, G. C., & McWilliams, A. (1994). Human resources and sustained competitive advantage: a resource-based perspective.*International journal of human resource management*, *5*(2), 319.

sustained competitive advantage. However, this reasoning does show us a direct relationship between human capital and increased value creation.

Academic research has also shown that the deployment of learning activities towards human capital fosters significant cost advantages. Human capital can be seen as influencing financial capital as well.[113] In addition, the cognitive abilities of human capital allows for productivity advantages through the development of acomplishing more efficient means of accomplishing task requirements.[114]

I conclude that based on academic research human capital influences the overall value creation of a company threefold. First of all, human capital is seen as the source of innovation. An increase of innovation, will lead to an increase in intellectual property. The latter is seen as a part of intellectual capital. Therefore, an increase of human capital will essentially lead to an increase in intellectual capital.

Secondly, a mere direct relationship is described through the framework of the resource-based view. Within this framework, human capital is seen as a resource that is capable of creating a situation through which companies gain a competitive advantage.

Thirdly, human capital can be created through learning activities. Once applied, the increase of human capital might lead to cost decreases and efficiency increases which effects the financial capital of a company.

3.6 Natural capital.

Natural capital refers to components of nature that can be linked directly or indirectly with human welfare. Besides the mere traditional natural resources such as timber, water, energy and mineral resources, it also includes biodiversity, endangered species and the ecosystems that perform essential ecological services.[115] Natural capital consist of three major compononts.

[113] Wright, P. M., McMahan, G. C., & McWilliams, A. (1994). Human resources and sustained competitive advantage: a resource-based perspective.*International journal of human resource management*, *5*(2), 308.
[114] *Ibid.*
[115] Prugh, T., Daly, H., Goodland, R., Cumberland, J. H., & Norgaard, R. B. (1999).*Natural capital and human economic survival*. CRC Press.

The first component consists of non-renewable resourches such as oil and minerals that are extraced from systems. The second components contains renewable resources such as fish, wood and drinking water. The last group describes environmental services such as the maintenance of the quality of the atmosphere, climate and the provision of food from the sea.[116]There are a lot of ways through which the roles of various kinds of natural capital can be categorized. However, regardless of what classification scheme is being used, the primary value of natural capital is *life support*.[117] The mere conventional economics see the world as an exhange of value between households and firms through the interaction on marks created by demand and supply. However, the economy, draws its materials from the ecosphere and return wastes to it. Many academic scientist have already shown their fear that the depletion of natural stock is approaching.[118] Keeping natural stock intact is one of the main imporant parameters in the next few decades. If the world continues like this, natural capital will become the limiting factor in human economic activity.[119]

However, while this information is very interesting and informative it does not tell us anything about how natural capital is creating value for companies and whether it possibly influences other capital indicators.

Current environmental financial reporting aims to show environmental matters that have direct financial impact on the reporting entity. If a company collects wood it does show raw materials on the balance sheet, yet it does not show the “costs” that the collection of wood might have on other ecological systems. In addition, current financial reporting ratio’s and indicators mainly relate to the present and sometimes the future (through long-term liabilities or provisions) and they only adress the core stakeholers.[120]

While environmental financial reporting is a good thing and should be stimulated, current methods do not support the value creation model of the IR framework that prefers to look at value creation in the short, medium and long term future.

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[116] Berkes, Fikret, and Carl Folke. "A systems perspective on the interrelations between natural, human-made and cultural capital." *Ecological economics* 5.1, 2.
[117] *Ibid.*
[118] Prugh, T., Daly, H., Goodland, R., Cumberland, J. H., & Norgaard, R. B. (1999).*Natural capital and human economic survival*. CRC Press.
[119] *Ibid.*
[120] *Ibid.*

I therefore propose that natural capital should be seen as the main catalyst of all human economic activity. The world has to be seen as materially closed, finite and as a non-growing ecosysten within which the human economy is an open subsystem that depends for its very excistence on the viability of this natural capital.[121]

For the mapping and the future operationalization of our value indicators this means that natural capital is a necessary input for all the other capital indicators and the latter is dependent upon the former. This requires quite a paradigm shift, meaning that the company is no longer the center of the value chain universe. Instead, natural capital will become the center of this value chain, meaning that investing in finite resources that cannot be restored will damage the overall natural capital which will ultimately lead to damaging the overall value of the company. Companies should invest in resources that can be replaced. While this might negatively influence the overall value of a company in the short term, it will positively influence the value of the company in the long term, due to the fact that finite resources are still (more) available and/or that possible investment in infinite resources are a better investment concerning long-term value creation.

3.7 Manufactured Capital.

Value networks are complex. They encompass much more than the flow of products and services. Only a portion of value exchange can be tracked or measured through service delivery or revenue generation due to the fact that more and more products and services depend on the exchange of knowlegde and information. Manufactured capital is often described as being a company's tangible assets or in IFRS terms property, plant and equipment. These assets are only recognized when it is probable that future economic benefits (or value) associated with the assets will flow to the entity and that the cost of the assets can be measured reliably.[122]

Manufactured capital creates value through the actual production of products, such as in mere industrual settings, or the support of delivered services. The use of the manufactured capital during these processes can be described as depreciation. Companies that provide taxi-services realize that it is probable that they cannot use

[121] *Ibid.*
[122] As described in IAS 16 – Property, plant and equipment.

the same car forever and that replacement will be a neccesity after a specific period of time. The overall value of the manufactured capital (a car in this case) will t drop during the time that it is used.[123]

Concerning the overall value creation of the company, manufactured capital provides value through supporting products and or services by offering physical capital. This leads to value creation. The level of this value creation can be increased through for instance intellectual capital that allows for better process and/or product innovation. This could lead to manufactured capital being used more (cost) efficient.

Manfuctured capital is not influencing any capital indicators but the overall value creation of the company itself. However, manufactured captial can be influenced by research & innovation, but also by specific social capital such as company culture.[124]

What has to be noted is that the conceptualization of manufactured capital remains fuzzy and complex. This is especially the case considering the interdependency between manufactured capital and other capital indicators. No academic energy has been spend in this area. The reason why could be explained by the fact that current financial reporting method are effectively describing manufactured capital through IFRS and IAS frameworks. Both financial and manufactured capital are capital indicators that fit the older neo-classical legacy that is shown in current financial reporting standards.[125] This is mainly the case because both financial and manufactured capital are easily described through financial indicators. In order to describe the interdependency, more research will have to be committed towards this specific subject.

[123] *Ibid.*
[124] A good example could be the Japanese "lean management" system of which its main objective is to increase efficiency through waste management.
[125] Prugh, T., Daly, H., Goodland, R., Cumberland, J. H., & Norgaard, R. B. (1999). *Natural capital and human economic survival*. CRC Press.

3.8 Organizational capital.

Youndt et all (2004) conceptualize intellectual capital as consisting of three distinct subcategories: human, social and organizational.[126] Organizational capital represents institutionalized knowlegde and codified experience that has been stored in databases, routines, patents, manuels and other institutionalized structures.[127]

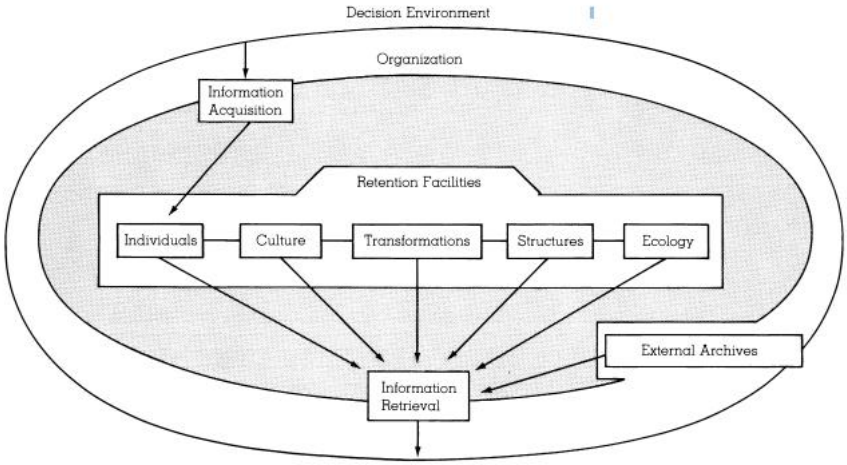


Figure 7. Organizational Memory.[128]

Walsh and Ungson (1991) describe organizational capital as organizational memory through which organisations are seen as containing a organizational memory that is capable of information acquisition. Individuals play a main role in the acquirement of information in problem-solving and decision-making activities. The focus on individual cognitive activities serves as the central element in the organization's acquisition of information which reflects an active memory.[129] Once the information has been acquired retetion facilities are being activated that are capable of saving the information if neccesary. This decision information is stored in various physical locations. This can be done by individuals, through organizational culture, transformations, structures and ecology. This retention phase describes the actual institutionalization of knowlegde.[130] Information that has gone through these two

[126] Youndt, M. A., Subramaniam, M., & Snell, S. A. (2004). Intellectual Capital Profiles: An Examination of Investments and Returns*. *Journal of Management studies*, *41*(2), 339.
[127] *Ibid.*
[128] Walsh, J. P., & Ungson, G. R. (1991). Organizational memory. *Academy of management review*, *16*(1), 72.
[129] Walsh, J. P., & Ungson, G. R. (1991). Organizational memory. *Academy of management review*, *16*(1), 61.
[130] *Ibid.*

stages can later on be retrieved. Information processes that are based upon the retrieval of information can vary along a continuum from automatic to controlled. Automatic retrieval covers cases whereby information about present decisions is drawn effortlessly and intuitively, partly as a function of the execution from previously stored and well-established secquences of action.[131] Sometimes it is very difficult to retrieve information from an organization. It is difficult because organizational members do not always realize that their specific organizational memory contains information needed within decision-making processes.[132]

Organizational capital, through this institutionalization of information, is capable to positively influence intellectual capital, which in turn creates value. Academic research has shown that investors place higher value on firms with better intellectual capital efficiency.[133]Therefore, companies that invest in intellectual capital are appreciated by possible investors, thereby positively influencing the financial capital of a company through either debt or equity financing even while current accounting standards are still very restrictive in terms of intellectual property being recognised in financial statements.[134] Academic research results also underline the importance of intellectual property in enhancing profitablity and revenue growth showing a direct relationship between intellectual property and value creation.

What has to be taken into account is that intellectual capital consist of human, social/relational capital and organizational capital. These capital indicators allow for knowlegde creation or institutionalization which in turn could influence possible value creation. While social/relational, human and organizational capital are conceptually seperated, it is important to take into account that they are all part of intellectual capital.

[131] Walsh, J. P., & Ungson, G. R. (1991). Organizational memory. *Academy of management review*, *16*(1), 69.
[132] Walsh, J. P., & Ungson, G. R. (1991). Organizational memory. *Academy of management review*, *16*(1), 70.
[133] Chen, M. C., Cheng, S. J., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of intellectual capital*, *6*(2), 174.
[134] *Ibid.*

Chapter IV: Mapping the value indicators

4.1 Mapping the value indicators.

Now that all the value indicators and their potential relationships have been described the actual mapping will start. Before I show the actual map I will first describe the relationships that have been assessed before. Once this has been done a graphical representation of the the possible relationships will be shown.

The relationship between financial capital, value and the other indicators is one that is difficult to describe. Is is generally accepted that through debt and equity companies can finance the actual product or services that a company delivers. Financial capital is a neccesary but not sufficient indicator concerning value creation. In addition, financial capital is a neccesity in order to stimulate the other financial capital. R&D is non-existent if there is no money to spend. However, if one is spending money on R&D it does not mean that actual value will be created. Financial capital is necessary but once again not sufficient in order to stimulate the other capital indicators. Part of the value that is generated through the creation of products or the offering of services flows back as financial capital. These relationships will have to be shown in our mapping.

Within the second indicator described, namely relational/social capital a direct and indirect relationship between value creation can be found. Social capital facilitates the development of intellectual capital by affecting the requirements necessary for the exchange of knowlegde. Through network ties, shared codes and languages and other social capital indicators social capital allows for an increase in intellectual capital.[135] The direct relationship that social/relational capital has on possible value creation is the fact that social/relational has the ability to create lasting relationships that could lead to possible competative advantages through for instance *preferred customer treatment*.[136]

[135] Nahapiet, J., & Ghoshal, S. (1997, August). SOCIAL CAPITAL, INTELLECTUAL CAPITAL AND THE CREATION OF VALUE IN FIRMS. In*Academy of Management Proceedings*, 39.
[136] Schiele, H., Veldman, J., & Hüttinger, L. (2011). Supplier innovativeness and supplier pricing: The role of preferred customer status. *International Journal of Innovation Management*, *15*(01), 3.

The third capital indicators is intellectual capital. Academic research has shown that investors place higher value on firms with better intellectual capital efficiency.[137]Therefore, companies that invest in intellectual capital are appreciated by possible investors, thereby positively influencing the financial capital of a company through either debt or equity financing even while current accounting standards are still very restrictive in terms of intellectual property being recognised in financial statements.[138]

Academic research results also underline the importance of intellectual property in enhancing profitablity and revenue growth showing a direct relationship between intellectual property and value creation.[139] It is important to once again show in our model that there is a direct relationship between intellectual capital and value creation.

Human capital is the fourth indicator. Based on academic research human capital influences the overall value creation of a company threefold. First of all, human capital is seen as the source of innovation. An increase of innovation, could lead to an increase in intellectual property. The latter is seen as a part of intellectual capital. To conclude, an increase of human capital will essentially lead to an increase in intellectual capital.

Secondly, a mere direct relationship is described through the framework of the resource-based view. Within this framework, human capital is seen as a resource that is capable of creating a situation through which companies gain a competitive advantage which ultimately leads to a higher level of valuation.

Thirdly, human capital can be created through learning activities. Once applied, the increase of human capital might lead to cost efficiencies which effects the financial capital of a company. In addition, the learning activities described, which are dependent upon cognitive abilities, might also lead to higher productivity levels due to

[137] Chen, M. C., Cheng, S. J., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of intellectual capital*, *6*(2), 174.
[138] *Ibid.*
[139] *Ibid.*

learning mechanisms that might lead to efficiency gains. Firms with higher cognitive ability, *ceteris paribus,* might demonstrate higher levels of cognitive ability.[140]

Concerning the value creation of the company when discussing manufactured capital one sees that manufactured capital provides value through supporting products and or services by offering physical capital. This leads to value creation. The level of this value creation can be increased through for instance intellectual capital that allows for better process and/or product innovation. This could lead to manufactured capital being used more (cost) efficient.

To conclude, manfuctured capital is not influencing any capital indicators but the overall value creation of the company itself. However, manufactured captial can be influenced by for instance research & innovation, but also by specific social capital such as company culture.

For the mapping and the future operationalization of our value indicator natural capital several factors have to be taken into account. Natural capital is a necessary input for all the other capital indicators and the latter is dependent upon the former. This requires quite a paradigm shift, meaning that the company is no longer the center of the value chain universe. Instead, natural capital will become the center of this value chain, meaning that investing in finite resources that cannot be restored will damage the overall natural capital which will ultimately lead to damaging the overall value of the company. This means that natural capital is no longer seen as a resource but as the source. Diminishing this source means the overal diminishment of a companies value.

Companies should start investing in resources that can be replaced. While this might negatively influence the overall value of a company in the short term, it will positively influence the value of the company in the long term, due to the fact that finite resources are still (more) available and/or that possible investment in infinite resources are a better investment concerning long-term value creation.

When dealing with natural capital one notices the difficulties between the objective of the IR framework to consider both short and long term value creation. While the use of finite resources could add value creation opportunities considering the short term,

[140] Wright, P. M., McMahan, G. C., & McWilliams, A. (1994). Human resources and sustained competitive advantage: a resource-based perspective.*International journal of human resource management*, *5*(2), 308.

the actual use of these resources might lead to value deduction when considering the long term.

This paradox could be resolved by the decision whether one should look at the short term or long term. When the latter is chosen, companies that are now using finite resources, would have to show what kind of effect this will have on the company's future. I choose for this last option, because the long term situation allows for more a more accurate description of the influence that capital indicators might have on the present value of a company.

The last indicator that is added is organizational capital. While organizational capital does not add value through a direct relationship, it does so indirectly through the institutionalization of knowlegde. Our mapping should show that organizational capital is part of intellectual capital.

The leads us to the following graphical representation. Figure 8 shows the overall mapping of the capital indicators and their relationship towards value.

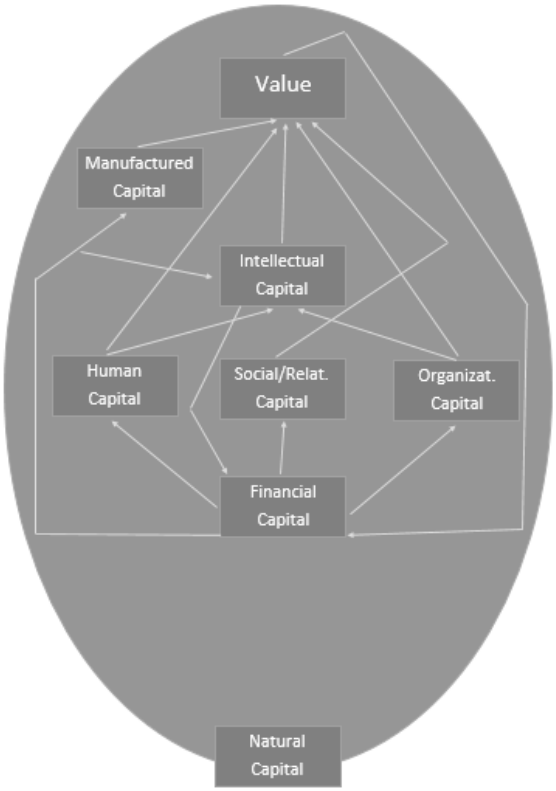


Figure 8. Mapping of capital indicators and their relationship towards value.

Figure 8 shows natural capital as the source of all the other capital indicators. The other indicators are shown within natural capital and describe the relationships that have already been described within this particular sub-chapter.

4.2 Separate graphical description of the capital indicators and their relationships.

Now that the relationships between the capital indicators and their relationships towards value have been shown I will continue with seperately describing and modelling them. Figure 8,9,10,11,12,13 and 14 will describe all the capital indicators seperately. The reason why I decided to show the capital indicators seperately is because it is important for future operationalizations. In order to operationalize the indicators one needs to understand the relationship towards the other indicators and value seperately.

Figure 9 shows the relationship between financial capital and value creation. While I realize that social/relational, human and organizational capital are all part of intellectual capital, I will keep them conceptually seperated for now in order to create a Mapping of financial capital. more complete image of the relationship between the capital indicators, financial capital and the overall value creation. This figure shows the overall relationship that financial capital has on the other capital indicators. Without financial capital, the other capital indicators can't be controlled. In addition, if the other capital indicators create value through the input of finiancial capital, part of this value is returned back in to financial capital.

Figure 9. Mapping of Financial Capital.

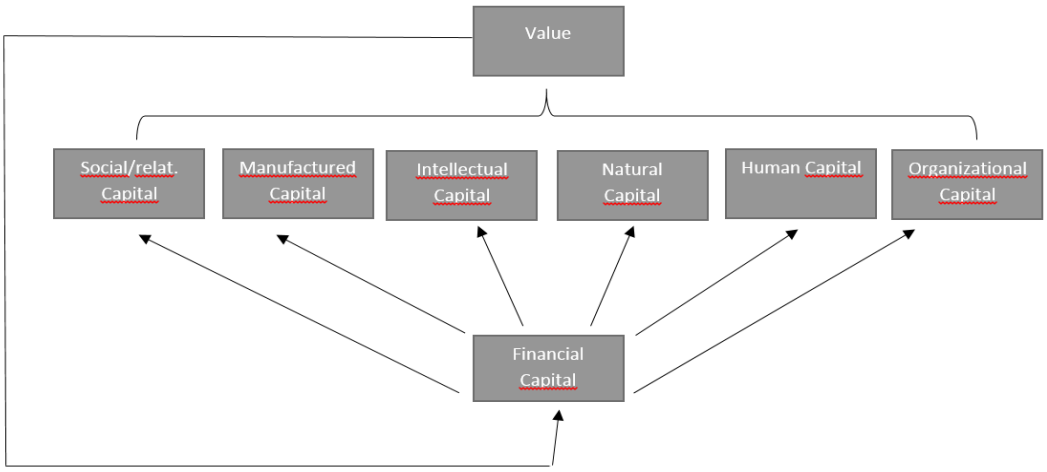


Figure 10 shows the value creation process by relational/social capital. This capital indicator creates direct value through the creation of preferred customer treatment. In addition, relational/social capital creates value indirect through intellectual capital which supports the exhange of knowlegde through for instance network ties. The knowlegde exhange is part of intellectual capital.

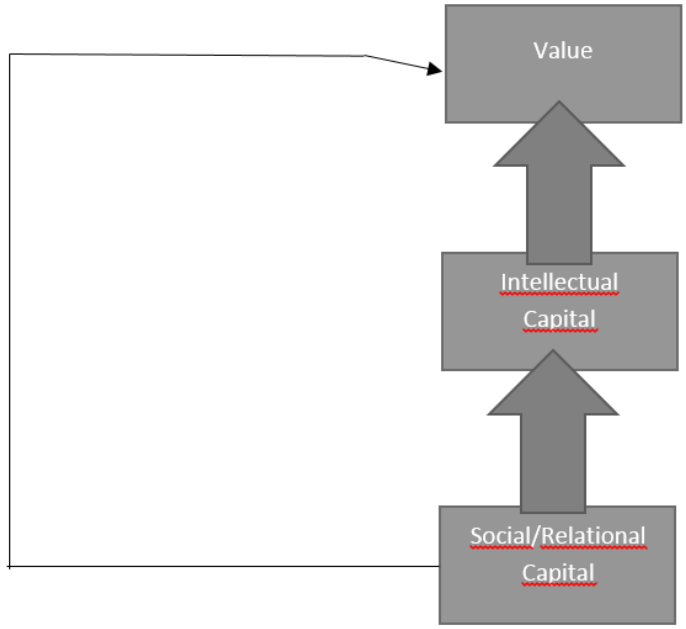


Figure 10. Mapping of Social/Relational Capital.

Intellectual capital is described in figure 11. Intellectual capital is appreciated by possible investors, which leads to a higher level of financial capital through either debt or equity financing. [141]

In addition, research also shows the importance of intellectual property in enhancing profitablity and revenue growth showing a direct relationship between intellectual property and value creation.[142] It is important to show in our model that there is a both a indirect and direct relationship between intellectual capital and value creation.

[141] Chen, M. C., Cheng, S. J., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of intellectual capital*, *6*(2), 174.
[142] *Ibid.*

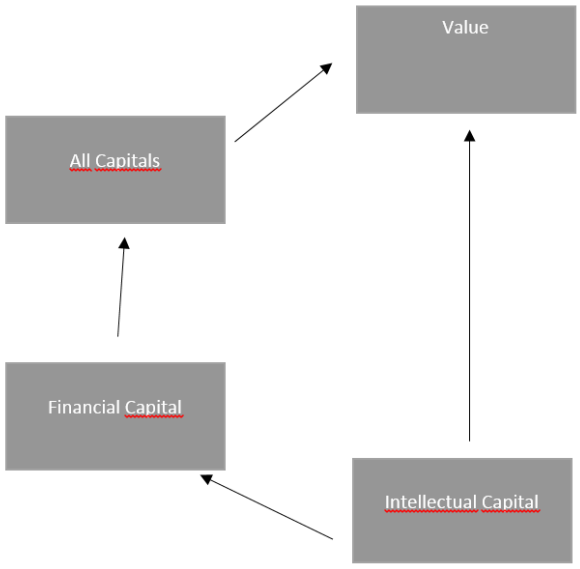


Figure 11. Mapping of Intellectual Capital.

These models once again shows that often capital indicators do not have a direct relationship with the overall value generation of a company. Instead, indirect relationships seem to lead the way.

The fourth capital indicator is human capital. This capital is both conceptually separated while being part of intellectual capital. Human capital is capable of influencing the overall value of a company both direct and indirect. These relationships are graphically described in figure 12.

Human capital is seen as the source of innovation directly influencing intellectual capital.[143] This is an indirect relationship which through intellectual capital increases the overall value of the company. A direct relationship exists as well. A higher level of cognitive ability in comparison with other companies could lead to higher production levels and cost efficiencies.[144] These relationships are described in Figure 11.

[143] Bontis, N. (1998). Intellectual capital: an exploratory study that develops measures and models. *Management decision*, *36*(2), 68.
[144] Wright, P. M., McMahan, G. C., & McWilliams, A. (1994). Human resources and sustained competitive advantage: a resource-based perspective.*International journal of human resource management*, *5*(2), 308.

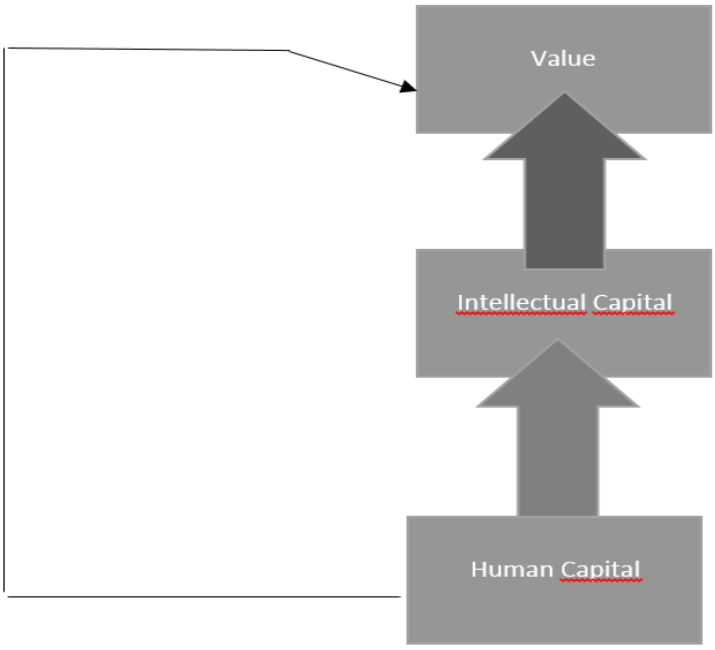


Figure 12. Mapping Human Capital.

Natural capital is a value indicator which is rather difficult to map. This has to do with the fact that integrated reporting requires a cohesive report that shows the value creation process in the short, medium and long term. While one could describe natural capital as a resource in the short-term offering considerable value creation (e.g. oil), it has to be considered that finite resources could pose serious threats when considering the long term value creation of a company. Non-renewable natural capital poses a great threat considering the fact that current business plans take these into account considering the short term. However, if one starts to take into account the depreciation of the environment, especially taking into account finite resources, evidence will show that companies using these resources are actually diminishing their future value. This is not shown due to the mere neo-classical legacy that is shown in current financial reporting standards.[145]

This leads to a situation in which the services that the ecosystem provides are not shown on the balance sheet.[146] This is rather strange since all companies are embedded in the environment.[147] Considering this thesis I propose the following proposal. Due to the fact that long term and the interconnectedness are very

[145] Prugh, T., Daly, H., Goodland, R., Cumberland, J. H., & Norgaard, R. B. (1999). *Natural capital and human economic survival*. CRC Press.
[146] Lovins, A. B., Lovins, L. H., & Hawken, P. (1999). A road map for natural capitalism.
[147] *Ibid.*

important dimensions of integrated reporting I will show natural capital considering the long term and describing its interconnectedness. This means that natural capital and its derived goods are a pre-condition or the basis for further economic development.[148] It is seen as the source instead of a resource. This result of this framework can be seen in Figure 13. Natural capital can be seen as all-surrounding the basis of all the other capitals.

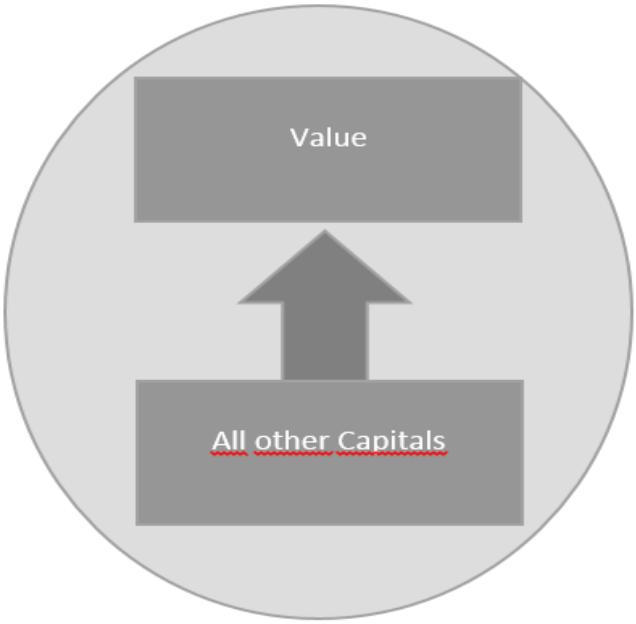


Figure 13. Mapping Natural Capital.

This requires quite a paradigm shift from the old neo-classical legacy that sees natural capital as a resource. However, considering the long term view of integrated reporting and the operationalization that follows from this mapping, it does show quite a realistic viewpoint. Since reliability is an important anchor considering financial reporting this method is chosen.[149]

The next capital indicator would be manufactural capital. The operationalization of this capital indicator should not be too hard since it one of the mere classical dimensions together with financial capital. Mnufactured capital provides value

[148] Berkes, F., & Folke, C. (1992). A systems perspective on the interrelations between natural, human-made and cultural capital. *Ecological economics*, *5*(1), 4.
[149] For more information I advise the readers to look at IAS 18.

through supporting products and or services by offering physical capital. This leads to value creation. This value creation can be seen in Figure 14.

Figure 14. Mapping of Manufactured capital.

Manufactured capital can be influenced by social/relational capital depending on the cognitive abilities of people active in the company. In addition, other capital indicators such as human capital, organizational capital can all lead to an increased level of value creation through innovation that supports efficiency gains through either productivity increases of cost decreases. [150]

The last capital indicator is one that has not been described in the actual framework yet. However, academic research tells us that there is a high level of consensus about the conceptually separated dimension of intellectual capital named organizational capital.[151]

The institutionalization of knowledge leads to a possible higher level of intellectual property which in turn allows for a higher level of value creation. Organizational capital has an indirect relationship when considering overall value creation. This can be seen in figure 15.

[150] Wright, P. M., McMahan, G. C., & McWilliams, A. (1994). Human resources and sustained competitive advantage: a resource-based perspective.*International journal of human resource management*, *5*(2), 308.
[151]

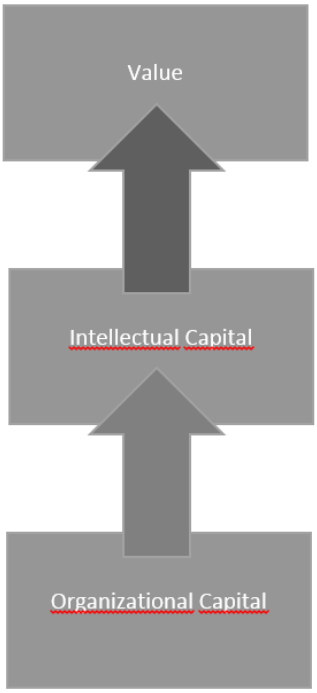


Figure 15. Mapping of Organizational Capital.

This sums up all the capital indicators. These separate relationships are being shown because it is important to understand the capital indicators separately in order to allow for further operationalization. In addition, describing the separate relationshis allows for a clear picture of the capital indicators and their overall position considering both other capital indicators and overall value creation.

4.3 The case study: Philips

Now that the relationships between the capital indicators have been described it is time to assess whether there is a difference between the 'academic world', meaning the relationships defined within previous chapters, and how current practioners in the working field are implementing IR. This chapter should be seen as an *appendice*, meaning that research question remains focused on the mapping of capital indicators. However, it is important to challenge theoretical models by inserting them into daily practice. I have therefore added this chapter. This chapter will investigate the annual integrated report of Philips.

Philips 2014 report is its seventh annual integrated financial, social and environmental report which as been prepared in line with the IIRC IR Framework. In 1999 Philips published its first environmental Annual Report. This was expanded in 2003, with the launch of their first sustainability Annual Report, which provided details of both social and economic performance in addition to environmental results. In 2008, Philips decided to publish an integrated financial, social and environmental report, reflecting the progress Philips has made embedding sustainability in their way of doing business. This embeddedness can be seen in cose business processes such as their innovation projects (Ecodesign), sourcing (supplier sustainability involvement program), manufacturing (green manufacturing 2014) and logistiscs (green logistics).

Philips has operationalized its six capital indicators. I will briefly summarize these operationalisations below.

Considering Human capital, Philips states that they '*employ diverse and talented people and give them the skills and training they need to ensure their effectiveness and their potential personal development and employability*'.[152]

Philips describes their intellectual capital as '*applying our innovation and design expertise to create new products and sollutions that meet local customer needs'*.

Financial capital is described as *' raising funds for businesses from capital providers. Philips prioritizes its investment opportunities, focusing on those areas offering the best prospects for growth and returns'*.[153]

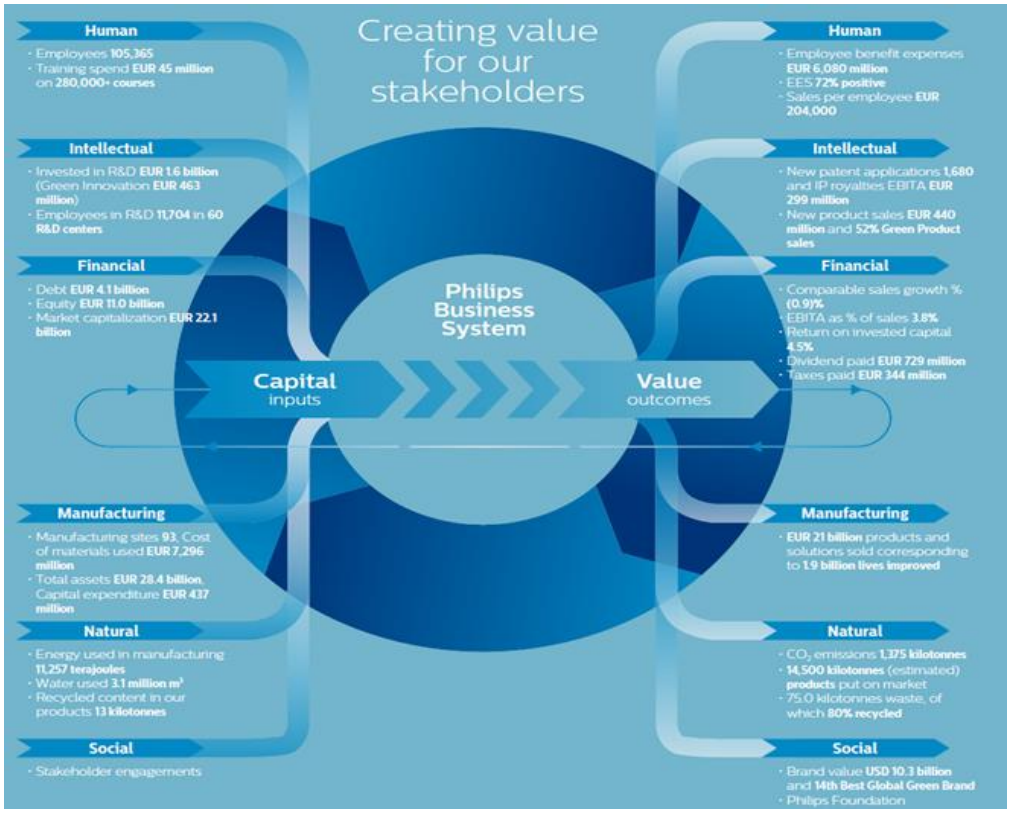
[152] These capital indicators are described at: http://www.2014.annualreport.philips.com/#!/home/tab=tab:3/

Reflecting on their manufacturing capital Philips states that ' *applying Lean techniques to manufacturing processess to produce high-quality products and managing Philips its supply chain'* seem to be the two focus points of Philips.[154]

When Philips considers social capital it means that they wish to '*engage with stakeholders and contribute to customers and society through our products and solutions, but also through our tax payments, the products and services we buy and our investments in local communities*'.[155]

Last but not least, Philips describes natural capital as *'aiming to minimize the environmental impact of our supply chain, our operations and our products and solutions*'.[156] This leads to this overall picture of capital indicators considering the financial year 2014 of Philips.[157]

Figure 15. Capital indicators Philips.[158][159]



[153] *Ibid.*
[154] *Ibid.*
[155] *Ibid.*
[156] *Ibid.*
[157] Philips (2014). Annual integrated report.
[158] *Ibid.*
[159] A larger picture can be found in the appendix.

The first thing that immediately catches the eye is the fact that there is no description considering the value creation process. Figure 15 shows us that all the capital indicator on the left are seen as input. They are inserted into the company creating the value outcomes, as described on the right side of figure 15. However, the actual value creation process is not described.[160]

When looking at the integrated report of Philips we notice that they have created indicators concerning their economic, social and environmental development in accordance with the Global Reporting Initiative (GRI). However, if we consider the indicators we notice that there remains a lack of operationalization of the underlying capital indicators and their relationship towards value.

First of all, considering the environmental statements of Philips one notices that their focus lies on creating a circular economy program and a reduction of their operational carbon footprint and energy efficiency. Philips states that their operational carbon footprint has reduced 36% in comparison with their 2007 baseline. However, there is no explanation how this reduction leads to any form of value creation within the company. In the context of climate change it is surely clear that it would be unacceptable not to publicly report material emissions. Global failure to reduce emissions to a point which will avoid a situation where the planet becomes uninhabitable to people, including providers of capital, would mean zero financial returns. This type of reasoning, or any reasoning explaining natural capital and its overall relationship with value creation at all, is not present at Philips integrated annual report.[161]

The same reasoning applies to their biodiversity programs, green operation programs and their energy use in manufacturing. Hence, all the activities that are to be considered as additional information when adopting the IR framework seem to lack a link between the non-financial parameters and their financial siblings. They all show that there is a positive change, but there remains a lack about how this change creates value for the company.

[160] At least, considering this rather simple picture. A more in-depth analysis will follow.
[161] Adams, C. A. (2014). The International Integrated Reporting Council: A call to action. *Critical Perspectives on Accounting*.

Another interesting fact is that KPMG, an international accounting company who audited Philips stated that *'the Sustainability performance of Philips is in accordance with the reporting criteria as mentioned above*'. KPMG basis for their opinion is the Dutch Standard 3810N '*Assurance engagements relating to sustainability reports'* which is specified under the International Standard on Assurance Engagement '*Assurance Engagement other than audits or Reviews of Historical Financial Information'*.[162]

Looking more in-depth at the Standard 3810N it states that it has the responsibility '*for reasonable assurance on the Sustainability Information'*.[163] The end result of a sustainability report that conducts their engagement in accordance with this reporting standard is a high level of materiality meaning that all information that with a possible omission or misstatement could influence the economic decision of users taken on the basis of financial information is correct. At least, based on conformity with the identified financial reporting framework.[164]

This investigation leaves a lot of questions unanswered. First of all, how is materiality operationalized. The Financial Accounting Standards Board (FASB) has refrained from giving materiality a quantitative guideline for determining materiality. While this is no problem the question remains within the IR Framework how one can decide whether information is material if we have no single operationalization considering the capital indicators described within the IR Framework itself and their overall relationship towards value. In addition, Philips Integrated Report focuses on sustainability. While this is not a bad thing, the question remains to which extent an Integrated Report should focus on this peculiar subject. It is part of the IR framework, but the first and foremost objective when adopting this framework is showing how *all* capital indicators create value.[165]

However, Not only Philips has adopted this increased focus on sustainability. Unilever, an IIRC pilot company, is another example that shows this increased focus. They state that '*the biggest challenge is the continuing threat to 'planetary boundaries'; resulting in extreme weather patterns and growing resource constraints.*

[162] ISAE 3000
[163] *Ibid.*
[164] Adams, C. A. (2014). The International Integrated Reporting Council: A call to action. *Critical Perspectives on Accounting*.
[165] *Ibid.*

These have increasing impact on our business'.[166]The question that could once again be asked is how this impact that Unilever describes can be measured when considering their relationship with their capital indicators.

Therefore, no similarities can be found between the model that has been created and the annual integrated report of Philips. This is because there simply is no description of how the value indicators create value. This acknowledgement will be further discussed in the next chapter where conclusions will be drawn.

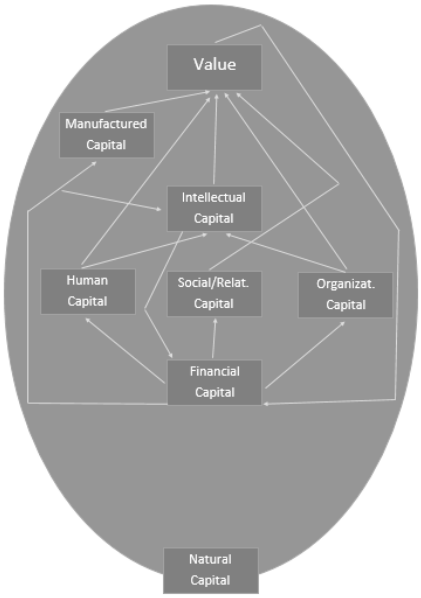
[166] *Ibid.*

Chapter V: Conclusions, limitations and future research

4.1 Conclusion.

Figure 16 shows the overall result of this research. A first step towards mapping the capital indicators and their relationship towards value. The main difference with the interpretation of the relationships between the different capital indicators and their overall relationship towards value within this research and the description within the current IR framework lies in the fact that the current IR framework created a picture that allows for every possible relationship to exist.[167] While the choice of the IIRC to show a very broad picture considering the capital indicators and their interdependencies is understandable, it is also wrong. Academic research has most probably not yet discovered every possible relationship between the capital indicators described within the current IR framework. This does not mean that the IR framework should remain as fuzzy and complex as it is right now. The overall description of the value of a company is still one of the most important goals of financial reporting. It makes sense that IR is not yet getting accepted in the current working field as long as the overall value creation of a company, through integrated reporting, can't be shown completely and therefore correctly.

Figure 16. Mapping of capital indicators and their relationship towards value.



[167] Adams, C. A. (2014). The International Integrated Reporting Council: A call to action. *Critical Perspectives on Accounting*.

In order to allow the further integration of integrated reporting, more deep and precise research will have to follow. As stated before, the overall value of a company and its path towards this value remain one of the most important objectives of financial reporting. If IR is not capable of creating a clear and cohesive picture, it will fail and companies will reject it. However, one should not judge too harsh. IR is still in its infancy, and while there is a lot of room for improvement good things are done as well. The academic world should not forget its own responsibility. If everyone wants IR to succeed, more research will have be done, especially in the area of value creation.

This mutualistic relationship should lead to the IR framework becoming less broad and fuzzy, allowing for a cohesive and all-embracing picture considering the overall value creation of a company.

This thesis has explained how the capital indicators can be mapped. Besides the initial six indicators described within the IR framework I have added one additional capital indicator. This capital indicator, organizational capital, remains conceptually separated but it has been academically proven that this capital indicator positively influences intellectual capital through the creation of institutionalized knowledge such as patents.

Besides the description of these capital indicators I have also shown that the step from sustainability towards Integrated reporting lies in the interdependency of value creation. Sustainability reporting can be seen as a first step towards integrated reporting. The overall difference lies in the fact that no clear relationship between financial and non-financial information is required when including a sustainability report. The latter is the case for integrated reporting in which interdependency is one of the most important pillars on which IR is build.

The case study tried to connect my research considering the overall relationship between capital indicators and value creation for companies and the current practice of the IR Framework. It seems that the limited disclosure requirements concerning movements of capitals in the Framework has disappointed when considering a greater understanding of value creation. The focus of integrated reporting is to determine how an organization creates value rather than on measuring sustainability impacts. Currently, accountants, sustainability practitioners and researchers have not given enough attention to how this might be done under a multiple capital model such as the IR Framework. How one can put value on capital indicators such as social, relational and natural capital remains a question. As such, integrated reporting should remain focused on this connectivity between various capitals and the strategic relevance of the capitals to value creation. Otherwise, the integrated report will slowly focus less on this connectivity and change in a mere advanced version of a sustainability report.

Our case study already shows that there is an increased focus on sustainability and simply zero attention has been vested towards the capital indicator and their relationship towards each other and towards value creation. Therefore, no similarities between relationships could be found between the value creation relationships described within this thesis and the IR annual report of Philips.
This latter statement is alarming. IR is still in its infancy and conceptual and operational problems should therefore not be seen as critical problems. However, as of right now it seems that both the academic world and practitioners have skipped the operationalization and maybe even the actual conceptualization influencing both the reliability and the materiality of financial reporting. This is strengthened if one considers that the overall *raison d'être* of the IR Framework was to fix the mismatch between what is being reported and other intangible assets that influence value. As of right now, IR seems to do neither.

Overall, I'd hope to conclude that this research can be seen as a first step in understanding value creation within the IR framework.

4.2 Limitations.

The overall result described in the previous sub-chapter knows its limitations as well. First of all, it is reasonable to assume that all the causal relationships between the capital indicators have not been fully described in current academic research. The overall result is therefore not full-embracing and further academic research should try to find additional variables or new capital indicators.

A second weakness is that is very hard to map the strength of the relationships found. It has been empirically proven that certain causal relationships exist. This does not mean that this research is capable of describing the strength of the actual relationships. There is academic proof that intellectual capital creates value over time and academic research is even capable of explaining how. However, there are too many intervening variables that are capable of influencing the strength of this causal relationships.

This leads us to the third weakness. Not all intervening variables have been recognized and described in the IR framework. Since my research starts from the current conceptualization of the IR framework, I do not take into account any intervening variables. In addition, these intervening variables have not even been recognized yet in current academic research.

All of these three weaknesses have one thing in common: it remains very difficult to operationalize the interdependencies due to the causal ambiguity that exists within the area of value creation. In addition, in order to operationalize the capital indicators further research should determine whether the relationships are positive and negative and how strong these relationships are. Within this operationalization one has to take into account that every company is *sui generis*, and that is something that makes it very difficult to “template” value creation within companies.

That does not mean that the academic world should not try. It is important for companies to realize that they could potentially influence society, nature and other stakeholders. Through this realization I hope that companies will act responsible. This means that they do not only respond to the shareholder’s needs, but take into account the interdependencies that not only exists between the capital indicators, but society as a whole itself. Integrated reporting is a way to stimulate this responsible behavior.

4.3 Future research and recommendations

The limitations described in the previous sub-chapter describe the necessity of more research that should be done in the area of value creation. Now that it seems like IR is becoming more influential it is important to start with investigating within this particular area.

Within this area specific topics are of great concern. First of all, more research should be done considering the overall interdependencies between value indicators and their overall relationship towards value. As stated before, this research is just the beginning.

Secondly, once more relationships have been discovered research should shift its focus towards the actual operationalization of the value indicators. This operationalization should include the possibility of measuring the strength of the relationship, meaning that possible intervening variables should be discovered and mapped as well.

Finally, if the operationalization of the capital indicators is done, case studies should show that the valuation is complete and correct. In addition, other related research fields should be assessed. Interesting research area's that considers for instance the relationship between information sharing and the cost of capital can be investigated.

All of this should finally lead to a greater understanding of financial reporting. Current financial reporting systems are no longer adequate and fall short considering the o valuation of companies. It is therefore of the utmost importance to start with investigating new ways of financial reporting. Sustainability reporting has not been adopted due to the fact that no clear link was created between financial and non-financial information. Let us not let history repeat itself.

Chapter V: APA-List and Appendix

5.1 APA-List.

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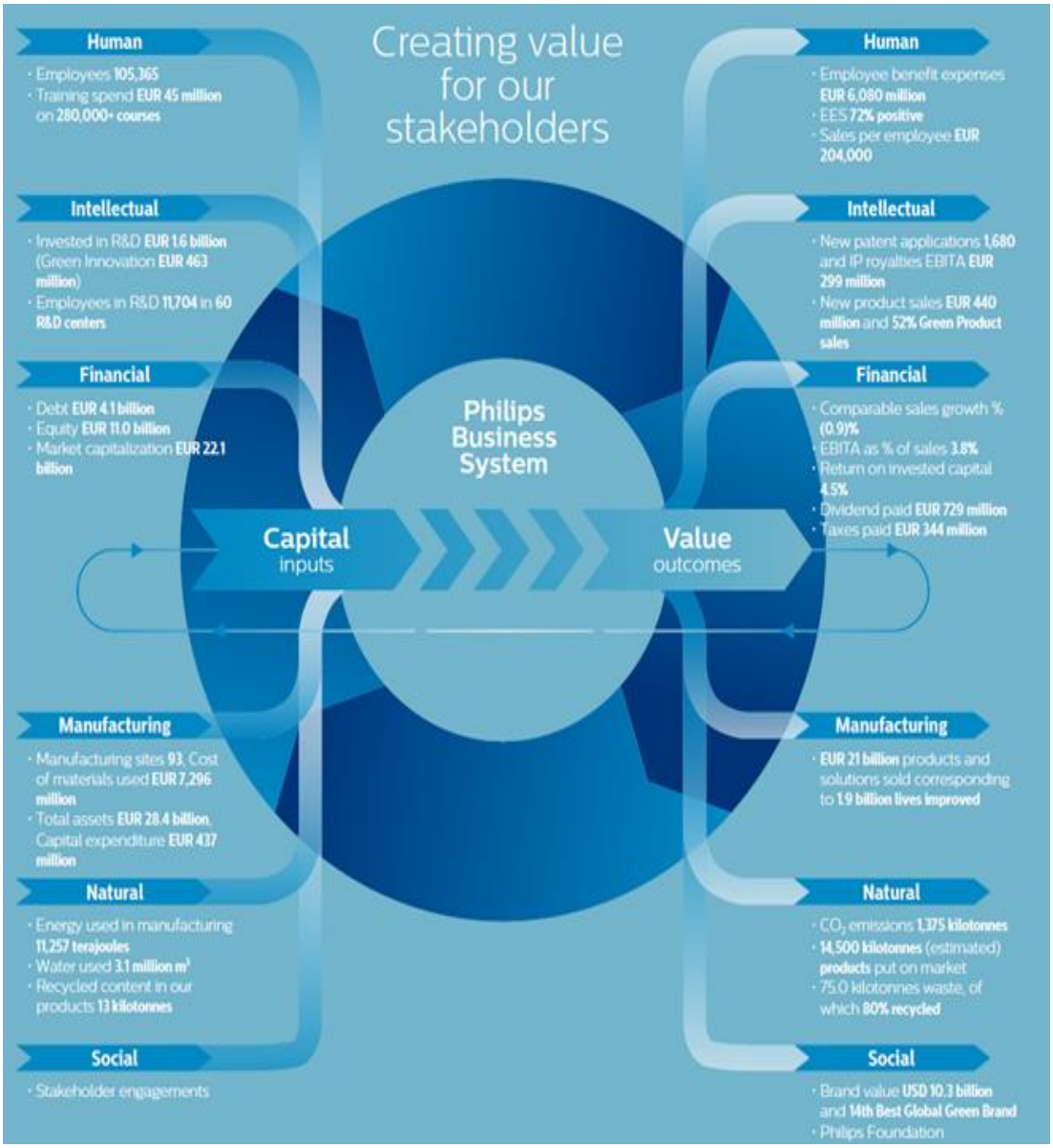
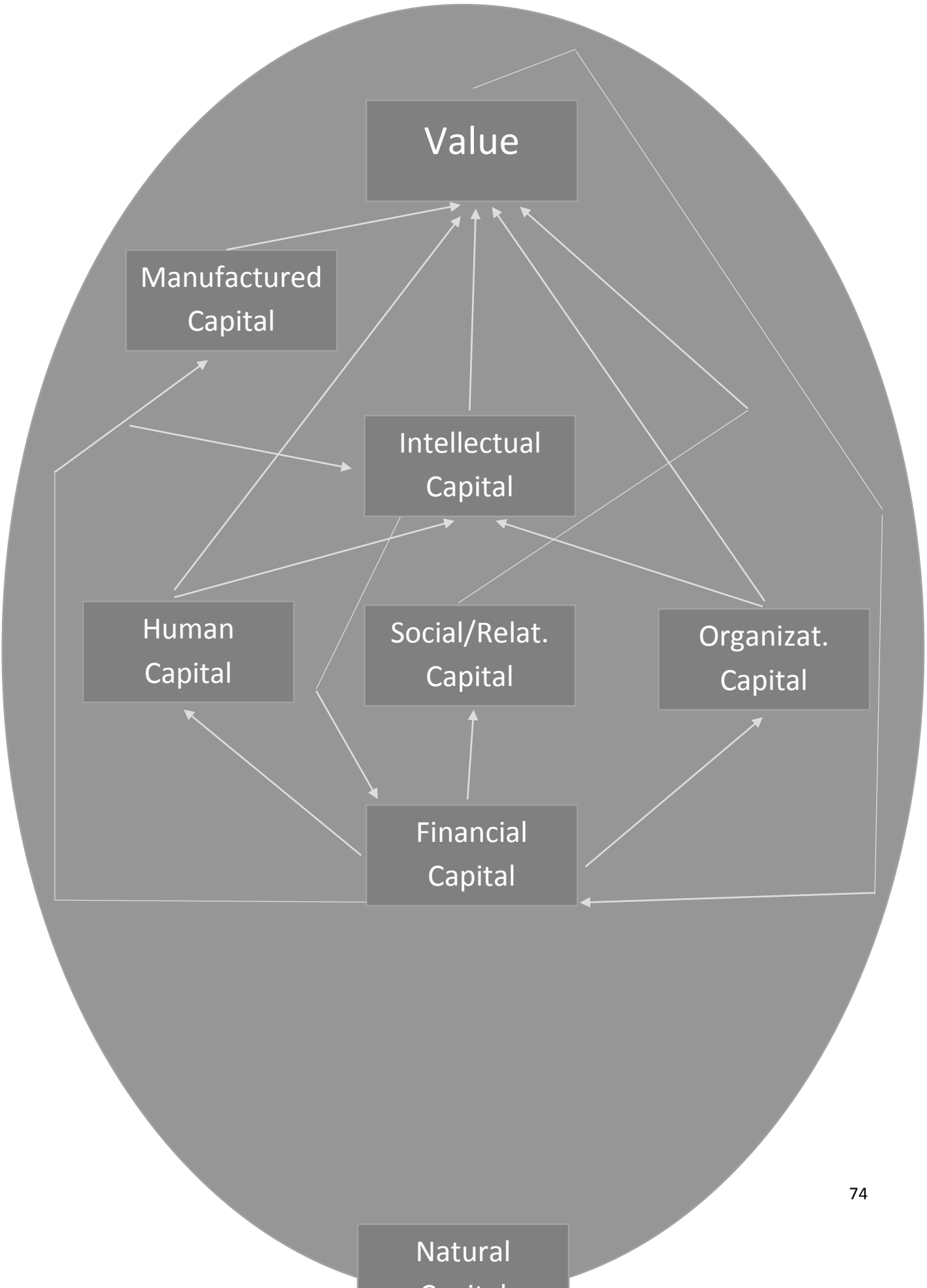
5.2


Creating value for our stakeholders
Human
· Employees 105,365
· Training spend EUR 45 million on 280,000+ courses
Intellectual
· Invested in R&D EUR 1.6 billion (Green Innovation EUR 463 million)
· Employees in R&D 11,704 in 60 R&D centers
Financial
· Debt EUR 4.1 billion
· Equity EUR 11.0 billion
· Market capitalization EUR 22.1 billion
Manufacturing
· Manufacturing sites 93, Cost of materials used EUR 7,296 million
· Total assets EUR 28.4 billion, Capital expenditure EUR 437 million
Natural
· Energy used in manufacturing 11,257 terajoules
· Water used 3.1 million m³
· Recycled content in our products 13 kilotonnes
Social
· Stakeholder engagements
Philips Business System
Capital inputs
Value outcomes
Human
· Employee benefit expenses EUR 6,080 million
· EES 72% positive
· Sales per employee EUR 204,000
Intellectual
· New patent applications 1,680 and IP royalties EBITA EUR 299 million
· New product sales EUR 440 million and 52% Green Product sales
Financial
· Comparable sales growth % (0.9)%
· EBITA as % of sales 3.8%
· Return on invested capital 4.5%
· Dividend paid EUR 729 million
· Taxes paid EUR 344 million
Manufacturing
· EUR 21 billion products and solutions sold corresponding to 1.9 billion lives improved
Natural
· CO_2 emissions 1,375 kilotonnes
· 14,500 kilotonnes (estimated) products put on market
· 75.0 kilotonnes waste, of which 80% recycled
Social
· Brand value USD 10.3 billion and 14th Best Global Green Brand
· Philips Foundation


Value
Manufactured Capital
Intellectual Capital
Human Capital
Social/Relat. Capital
Organizat. Capital
Financial Capital
Natural