

***OPEN INNOVATION AND
INTELLECTUAL PROPERTY
MANAGEMENT***

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ABSTRACT

The image many have of OI that makes one think that OI means taking ideas from others is for free since they have decided to share these ideas. As compared to closed innovation CI whereby ideas are kept in the company's black box. But, OI does not mean getting external ideas for free even though those who own the ideas may have decided to share. This is where IP and the proper management thereof comes in. IP is very paramount in an OI process which if not well managed the entire OI process will be a fiasco. For as stated by the European IPR Helpdesk (2014);

“Making or breaking an OI program largely depends on IP”.

So, it is very important to know and understand this before engaging in an OI process. So far, very little is written on the reasons why companies need to protect their IP in OI. Moreover, little has also been written on the different management methods that can be used to protect one's IP in OI. This work thus comes in this field of research as a torch pointer to the reasons why companies need to protect IP in OI and the methods they can use to protect their IP when collaborating with others in an OI project.

This research which is aimed at identifying reasons for IP protection in OI and also identifying IP management methods in OI, went further to determine the efficiency and effectiveness of the management methods used by companies so far. It also determined OI influence on the companies that were interviewed. And so far it has been very positive.

This work has five major chapters which are also partitioned in sub parts. Chapter one opens with background knowledge on OI and IP. It also contains the definition of terms used in the research. This chapter further states the problem statement, research questions and the research objectives. Chapter two is the literature review which reviews previous studies on the topic OI and IP management in line with the objective of this thesis. Chapter three explores the methodology. Here, the research method, approach and the data collection method for this project are discussed. Chapter four will examine the empirical findings and data analysis. Finally, chapter five is the conclusive chapter where discussions, recommendations and the limitations of the study are mentioned.

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PREFACE

This research is purely academic, aimed at fulfilling the requirement for the award of a Masters degree in Management precisely in International Marketing Strategy. Hearing of OI for the very first time made me think all was gotten for free on this forum. But that was not the case. So I contemplated on how ideas can be shared but then still need to be protected, or how one can decide to share some thing and yet still wants to protect it? This research gave me answers to such funny questions I usually asked when I first learnt of OI. This thesis was aimed at identifying reasons for protecting IP in OI and also to identify methods of managing IP in OI. The work on this topic so far has been very challenging, but it worth the trouble since I have been able to learn a lot while working on the topic and also worth it since this work could be used for further research on this topic and OI in general.

LIST OF ABBREVIATIONS

CA: CONSORTIUM AGREEMENT

CI: CLOSED INNOVATION

IP: INTELLECTUAL PROPERTY

IPR: INTELLECTUAL PROPERTY RIGHTS

N/A: NOT APPLICABLE

NDAS: NON-DISCLOSURE AGREEMENTS

OI: OPEN INNOVATION

R&D: RESEARCH AND DEVELOPMENT

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CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

John Seely Brown in the forward of Henry Chesbrough's book "Open Innovation: the new imperative for creating and profiting from technology" (2003), he says Open innovation (OI) is "*Innovating Innovation.*" Since it involves making changes in the field of innovation. Innovation to the best of my knowledge is an introduction of something new. It could be an idea, process or method. Innovation is a very important factor for growth and sustainability for every company, and companies that do not innovate fail (Chesbrough, 2003). Other industries are benefiting from the creativity of the innovation industry, but it is the worst of times for the innovation companies since leading companies in this industry are facing challenges sustaining their internal research and development (R&D) investments, thus making internal research less effective.

The advent of OI saw the notion that, for there to be a successful innovation, a company had to create an idea, develop, build and market the end product or service of this idea by themselves. This is what is termed by Chesbrough as "closed innovation" (CI). The CI paradigm was a clear demonstration of complete self-reliance, in other words "*internal focused logic*". Based on this, CI worked out so well for many companies who made good use of the rules of the CI paradigm which are as follows;

- Hire the best and brightest people
- Discover and develop by ourselves
- Get it to market first and win
- Be the leaders in R&D by discovering the best ideas to help us lead the market
- Control Intellectual property (IP) so competitors don't benefit.

But because of some basic factors like the growing mobility of experienced and skilled workers, increased educated persons leading to knowledge spillover, knowledgeable customers and faster

time to market new products, C I could no longer bear the expected fruits. That is, it wasn't sustainable any longer. So, OI took the relay.

OI which is an antithesis of the CI paradigm is now gaining grounds in both the business and scholarly world (Chesbrough, 2005). The switch from CI to OI has greatly increased among companies. With the goal of reinforcing innovation, and bring in a company external resources that are not available internally. With the increasing high cost on research and development (R&D), OI has attracted considerable attention in recent years. These high cost for internal R&D and innovation has caused R&D actors to come together and benefit from each other through OI. These benefits include:

- Shorter time to innovate
- Risk shearing among R&D and innovation actors
- Cost reduction
- Better access to market

Such a multi-invention process by several actors warrants having a technological cover by different intellectual property rights (IPR) that belongs to the different actors at the different stages of the invention process. This will put aside the monopoly power that a single company has over a given technological field (European IPR helpdesk, 2014). Moreover, the fact that OI makes use of both internal and external ideas and internal and external paths to market, several IP will be involved. This means that open innovation depends so much on IP. Therefore, IP can either make or mar an OI process (Hossain, 2012; and Resnick, 2012).

For one to be able to OI and IP management, it is crucial that one gets a full knowledge of the terms innovation, OI and IP or intellectual property right (IPR).

I.II DEFINITIONS

I.II.I Innovation

Innovation to the best of my knowledge is an introduction of something new. It could be an idea, process or method. Innovation is a very important factor for growth and sustainability for every

company, and companies that do not innovate die (Chesbrough, 2003). Zahra and Covin, (1994). (Baregheh et al, 2009) stated that;

“Innovation is widely considered as the life blood of corporate survival and growth”

This goes to say that innovation is very vital in value creation and for the maintenance of the competitive advantage of any business or organization. Innovation stands as a vital technique for positive change in any business or organization (Baregheh et al, 2009).

I.II.II. Open Innovation

The OI paradigm as originally defined by the American professor of business administration Henry Chesbrough in (Chesbrough, 2003) is;

“OI is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. OI combines internal and external ideas into architectures and systems whose requirements are defined by a business model.” Some years later after the introduction of this paradigm, Chesbrough came up with the following definition; “OI is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. [This paradigm] assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology.” (Chesbrough, 2006)

No matter which of the definitions used, OI which is an antithesis of the closed CI paradigm entails that firms should use both internal and external ideas and both internal and external paths to market to advance their technology. This entails leveraging and enhancing a company’s internal capabilities by working with both the company’s resources and resources gotten externally either from customers or other companies to enable effectiveness in cost, time, risk, access to market since these are all shared in an O I atmosphere. O I developed innovative solutions through the use of both internal and external sources, while collaborating with different research and development actors (European IPR Helpdesk, 2014). There are two main types of O I, that is the **inside out**, and **the outside in**. Inside out O I is that type of O I that makes available unused innovation obtainable

by external users. Outside in O I it is that type of O I that leverage external ideas and technology to help bring down cost and reduce time for research (Chesbrough, 2003).

I.II.III. Intellectual Property (IP)

The world intellectual property organization (WIPO) as accessed from their website; http://www.wipo.int/edocs/pubdocs/en/intproperty/450/wipo_pub_450.pdf, on the 08/02/2016 defines IP as, the “creations of the mind: inventions; literary and artistic works; and symbols, names and images used in commerce.” Intellectual property rights (IPRs) were established or put in place to prevent other firms from making use of another firm’s idea. Intellectual Property assets were only considered in the past as an impediment against competitors. But today, this notion of IP as a defense mechanism is gradually changing. The introduction of O I has made it possible for IP to be considered as a revenue generating asset to companies, since they are free to permit other companies to have access to their ideas and vice versa through openness (Chesbrough, 2006; European IPR Helpdesk, 2014; Yoffie, 2005; and Hossain 2012). Moreover, under the OI, IP which was at first considered a byproduct of innovation is now a very vital element of innovation since it can now flow in and out of a firm, thus facilitating knowledge exchange among firms (Chesbrough, 2006).

I.II.IV. Intellectual property management

Intellectual property management as defined by Prof. Bert Leten in a discussion on the subject matter on the 22nd of December 2016 is “*making decisions on what to be done on intellectual property in a collaborative setting. That is, making arrangements on intellectual property in open innovation.*”

I.III. THE PROBLEM DEFINITION

With an idea of what OI and IPRs are all about, the one million dollar question is, should companies because of OI or openness, put at each other’s disposal acquired knowledge through R&D for free? According to the (European IPR Helpdesk, 2014), the answer to this question is “no” because

“OI does not mean freely putting at the R&D partners’ disposal the acquired knowledge, but sharing it with them to come up with a better competitive solution.”

Therefore, is there a need to protect and manage this shared knowledge or IP in an OI ecosystem or environment?

This research is thus aimed at determining the need to protect Knowledge or IP in an OI ecosystem or environment, and to identify ways through which IP can be managed in order to avoid theft to opportunistic partners in an OI ecosystem or atmosphere. Schoolers have found out that there is a need to protect IP, since OI can turn to be too open, and this can lead to the allotment of innovative efforts (Hagedoorn and Ridder, 2012). Again, since openness comes with the risk of losing control, there is a need for protection (Hossain, 2012).

I.IV. RESEARCH QUESTIONS

The research is aimed at answering the following research questions;

- ❖ Why the pressing need for IP protection in OI?
- ❖ How can IP be properly managed in an OI environment?

I.V. OBJECTIVE OF THE STUDY

This study has as objective to;

- ❖ Determine the need for IP protection in OI.
- ❖ Identify ways to manage IP in OI.
- ❖ Make recommendations on how to better manage IP in OI.
- ❖ Serve as reference for further research on OI and IP management.

I.VI. ORGANIZATION OF THIS STUDY

This research project is composed of five (5) chapters which are presented as follows:

Chapter one is the introduction, which contains the study background, the problem statement and research questions.

Chapter two is the literature review that reviewed previous studies on the topic OI and IP management in line with the objective of this thesis.

Chapter three is the methodology. Here, the research method, approach and the data collection method of this project are discussed.

Chapter four is the empirical findings, how the collected data was analyzed and interpreted.

Chapter five focuses on the discussions, recommendations and the limitations of the study.

CHAPTER TWO: LITERATURE REVIEW

II.I. TRENDS ON OPEN INNOVATION AND INTELLECTUAL PROPERTY MANAGEMENT

As the paradigm of OI becomes more and more common, and user friendly, it is evident that firms ought to review their manner of strategic management of their IPRs in order to come up with the right tools that will help them properly manage openness. It is worth noting that the topic of OI has produced numerous works in the fields of business administration and organizational studies. But studies on OI and IP are rear. Scholars have written on OI and IP being an asset (Chesbrough, 2016, and Hossain, 2012). Lee, Nysten-haarla and Huhtilainen, (2010) wrote on tools needed to manage openness. Looking at the trend on OI common literature has been based on business studies, (Von Hippel, 1988; Von Hippe, 2005 and Chesbrough, 2003). A lot has also been written on OI in the economics and organizational studies, (Dahlander and Gann, 2002). There is also a lot on OI and small and medium size enterprises, (Lichtenthaler, 2008) and Ketching and Blackbur, 2003). Moreover, there has been literature on the aspect of OI and IP protection, for instance, Bing-Sheng, (2007) and Williams and Bukowitzi, (2001). Regarding the aspect of OI and IPRs management very little is done and much still needs to be done. This is confirmed in the words of Lee, Nystén-Haarala, & Huhtilainen, (2010). Krattiger et al, (2007) also confirm this view that

“The creativity in these chapters reflects the fact that IP management is an emerging discipline, one best described not as science but as art”.

Focus on IP has been much more on the IP protection instead of IP management. IP protection though very important, it is just one manner of IP management in collaboration (Kaltenheuser, 1999; Teng, 2007).

II. II. BRIEF HISTORY ON OPEN INNOVATION AND INTELLECTUAL PROPERTY

II. II.I. OPEN INNOVATION

Open innovation (OI) is the result of a strategic change from closed innovation; it is a network / collaborative level strategy. From its original definition as presented by Henry Chesbrough in (2003), it is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. Years later, Chesbrough came up with another definition of OI in (Chesbrogh, 2006). Here, he defines OI as “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. This paradigm assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology.” But then, no matter which of the definitions used, OI entails making use of both internal and external resources to advance firm’s technology. Many years later after Chesbrough’s definition of the paradigm of OI, some other writers came up with other definitions, for instance David Simoes-Brown, (2011) as read from <http://www.100open.com/open-innovation-defined/>. Accessed the 12/07/2016. He defined OI “as innovating in partnership with those outside a company by sharing the risks of the process and rewards of the outcome”. From the above definition it is possible to come up with the following model in relation to the OI paradigm.



Figure 2.1: OI characteristics model as adapted from Simoes-Brown’s definition from <http://www.100open.com/open-innovation-defined/>. Accessed the 12/07/2016.

From the above model, we get to understand that open innovation is about partnering with other external bodies. That is customers and even competitors in order to realize a new product or service. We also see that open innovation is about risk sharing with innovative partners in a process

of coming out with new products or services. The risk of an innovation process is worth sharing since innovation has become very expensive and the risk of success is very high. Therefore, most companies prefer to share this risk. Moreover, we also see from the model that open innovation is about reward sharing. It is but obvious that once there is shared risk the rewards of such risk ought to be shared too. Based on the fact that reward is an indirect way to say work harder, rewards ought to be shared in order to encourage partners to bring up more quality ideas and even attract experienced contributors.

Open innovation entails leveraging and enhancing a company's internal capabilities by working with both the company's resources and resources gotten externally either from customers or other companies to enable effectiveness in cost, time, risk and access to market since these are all shared in an open atmosphere. OI developed innovative solutions through the use of both internal and external sources, while collaborating with different research and development actors (European IPR Helpdesk, 2014). There are two main types of OI processes, that is the *inside out*, and the *outside in* also described as 'technology acquisition' and 'technology exploitation' (Lichtenthaler, 2008). Inside out OI is that type of OI that makes available unused innovation obtainable by external users. Outside in OI it is that type of OI that leverage external ideas and technology to help bring down cost and reduce time for research (Chesbrough, 2003). Žemaitis, (2014) and Enkel et al. (2009) mentioned a third process which they termed *coupled process*. The coupled process he said refers to co-creation with complementary partners through alliances, cooperation and joint ventures whereby give and takes are very crucial to achieve success. It is worth noting here that, even though OI is all about knowledge sharing, there exist factors that will either influence or mar the sharing of knowledge in the OI domain. Some of these factors include:

- Nature of knowledge
- Motivation to share
- Opportunities to share (Žemaitis, 2014).

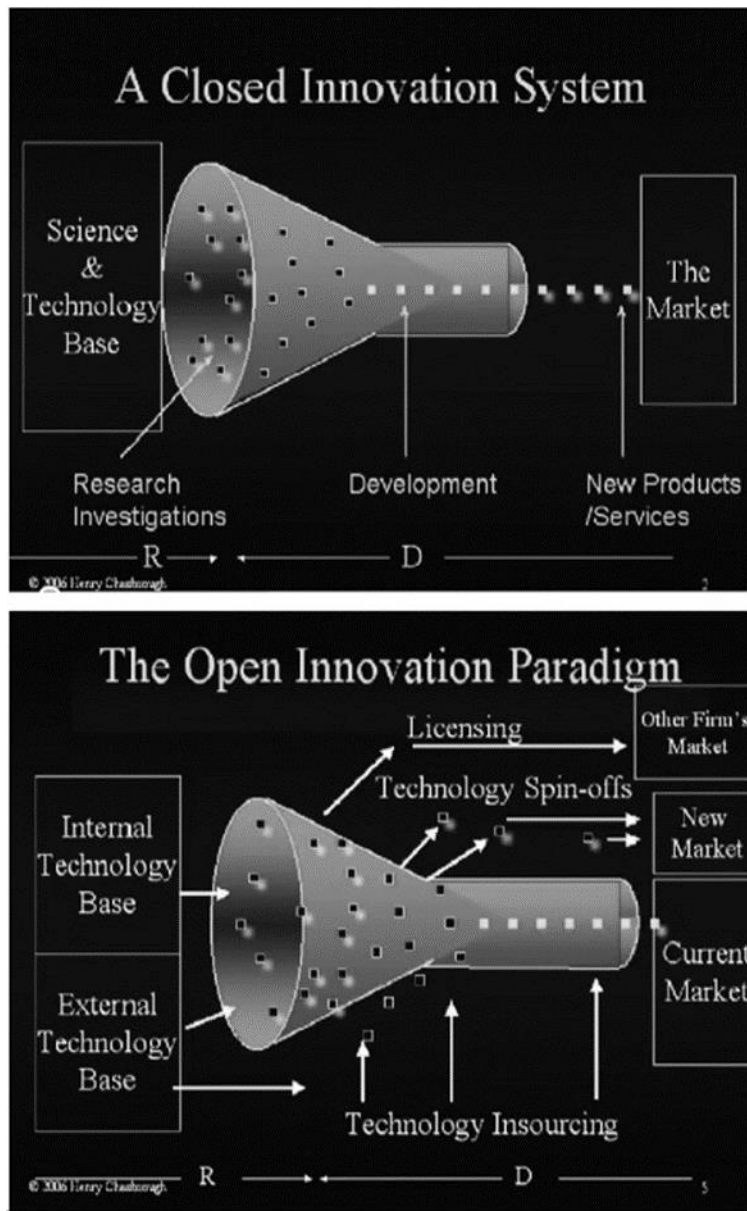


Figure 2.2: CI and OI models. Source: Henry Chesbrough 2005

Figure 2.2 is a diagram that illustrates two models, that is the CI model at the top and the OI model at the bottom. The first diagram above demonstrates the CI paradigm or system whereby, companies only depended on their internal ideas and paths to market. The funnel opens up from the point of science and technology, at which point there is research investigations from the company that are then developed within the funnel and brought out of the other end as new

products or services. These new products or services are then marketed by the same company that had the idea, did their R&D on their own and came out with the final product or service into the market all by them self. Meanwhile, the second part of the diagram below demonstrates the OI paradigm or system whereby companies make use of both internal and external idea indicated on the diagram as both internal and external technology base which both goes into the funnel as technology insourcing at the lower part of the funnel. These are then used by the company to produce products or services that go to the current market. At the upper part of the funnel, resources leave the funnel through technology spin-off and licensing which then go into new markets and other firm's market respectively.

II. II.II. INTELLECTUAL PROPERTY

Intellectual property rights (IPR) is a reward for creativity that gained its roots from the advent of a knowledge economy and the private appropriation of information (Ramello, 2005). Intellectual property (IP) is defined by the West's encyclopedia of American law edition 2. (2008) as;

“Intangible rights protecting the products of human intelligence and creation, such as copyright able works, patented inventions, trademarks, and trade secrets”.

Also, the world intellectual property organization (WIPO) http://www.wipo.int/edocs/pubdocs/en/intproperty/450/wipo_pub_450.pdf, accessed the 16/07/2016 defines IP as follows;

“Creations of the mind: inventions; literary and artistic works; and symbols, names and images used in commerce.”

Intellectual property rights (IPRs) were established or put in place to prevent other firms from making use of another firm's ideas. This means a kind of barrier to competitors. IP assets were only considered in the past as an impediment against competitors. But today, the notion of IP as a defense mechanism is gradually changing. IP rights are considered to be a primary locus of value for several companies. This is made clear as three-quarters of fortune 100's total market capitalization in the 1990s was represented by intangible assets. IPR has become 'Capital-intensive long-term activity', and decisions in relation to IPR are generally irreversible at low cost. For this

reason, IP management need not just be left in the hands of technology managers and legal staffs. Reason why Markus Reitzig stated that

“IP now makes up a large proportion of many companies’ market value, and IP management can no longer be left to technology or legal departments alone” (Reitzig, 2004).

There are four main types of intellectual properties; these are **patents, copyright, trademarks and trade secrets** each of them being different and so specific in its own way (Yoffie, 2005 and Ramello, 2005).

Patents: it provides protection for processes, machines, manufactured articles, composition of matter and new varieties of plants for twenty years from the date of its application. It protects an invention from being commercialized, used or distributed without the author’s prior consent.

Copyright: it protects literary and musical works, dramatic works. It also protects an invention from being commercialized, used or distributed without the author’s prior consent.

Trademark: It is also known as service mark. It protects company brand name, image, logo, slogans, product design and packaging.

Trade secrets: it is defined by WIPO as “any confidential business information which provides an enterprise a competitive edge”. It includes manufacturing or industrial secrets and commercial secrets. Any unpermitted usage of such information by whoever other than the holder (owner) of the secret is considered a trespass, thus violating the trade secret. The protection of trade secrets is aimed protecting very confidential information and it’s a part of the concept of protecting against unfair competition. The trade secret law was used to protect inventions not covered by patents or that are not patentable. It was commonly used by inventors whose patents are still in process. It is worth noting that trade secrets have no expiring date (Yoffie, 2005). An example of trade secret litigation is seen in the case of “British phonemaker Sendo and Microsoft” where Microsoft is alleged to have extracted vital information about the company and passed it on to Asian manufacturers (Teng, 2007 and Buckman, 2002).

According to Ramello, (2005), “The term IPR denotes a cluster of legal doctrines – mainly patent, copyright, trademark and trade secret that differ in their structure, scope and spheres of application,

but nevertheless have in common the feature of granting the owner rights over the economic exploitation of an idea or its “reification” (that is its expression in any tangible medium, as in the case of copyright-author’s right)”. The main and most important characteristics of IP are that IP is an intangible and exclusive asset. Intangibility of IP according to the business dictionary <http://www.businessdictionary.com/definition/intangible-asset.html> viewed on the 16/07/2016, is a long term resource of an entity with no physical existence. And the exclusivity of IP entails having a legal monopoly on an idea (Ramello, 2005).

II. II.III. OPEN INNOVATION AND INTELLECTUAL PROPERTY

The fact that IPRs are designed to exempt firms from making use of others’ ideas and OI entails permitting firms to make use of others’ ideas makes these two concepts incompatible (Hall, 2010). Looking at the original purpose or reason for IP protection, one is tempted to think that the open innovation paradigm is contradictory to the concept of IP protection, since the introduction of open innovation makes it possible for firm’s IP to be at others disposal. But this is not true at all since OI is not hollowness. Openness does not entail making use of others ideas without their prior consent rather, it entails getting permission through one legal means or another (Hall, 2010). For as clearly stated by the European IPR Helpdesk, (2014),

“Open innovation does not mean freely putting at the R&D partners’ disposal the acquired knowledge, but sharing it with them to come up with a better competitive solution.”

For some researchers clearly stated that

“Making or breaking an OI program largely depends on IP”.

This just goes to say that IP is a very pivotal player in OI. And that OI requires a very good functional IP system and a well-placed or structured IP strategy (Resnick, 2012; Hossain, 2012). The introduction of OI has made it possible for IP to be considered as a revenue generating asset to companies, since they are free to permit other companies to have access to their ideas and vice versa through openness (Chesbrough, 2006; European IPR Helpdesk, 2014; Yoffie, 2005; and Hossain 2012). Moreover, under the OI environment, IP which was at first considered a byproduct of innovation is now a very vital element of innovation since it can now flow in and out of a firm,

thus facilitating knowledge exchange among firms (Chesbrough, 2006). IPR in an OI context can enable firms to create and sustain competitive advantages in several ways.

- ❖ Firstly, it can enable a firm to have a temporary technological lead that none can copy even if they decide to collaborate with others. That is incumbency.
- ❖ It protects brand name and forms an industry standard (Reitzig, 2004).

Intellectual property rights were established or put in place to prevent other firms from making use of another firm's idea. IP assets were only considered in the past as an impediment against competitors. But today, this notion of IP as a defense mechanism is gradually changing (European IPR Helpdesk, 2014; Yoffie, 2005; and Hossain 2012). Krattiger et al, (2007) says that, even though IP rights are at times regarded as creating barriers to access to innovations, it is not IP, perse, that creates these barriers but rather the manner with which IP is used and managed especially in the public sector.

It will be erroneous for one to talk of IP in OI without mentioning the following four concepts as presented by Bogers et al (2012) and as read from the following website <http://ipkitten.blogspot.be/2010/06/background-foreground-and-sideground-ip.html>. Accessed on the 25/11/2016. These four concepts are, **background IP, foreground IP, side ground IP and post ground IP** which need to be considered in the management of IP in an OI platform.

Background IP: These are already existing IPR belonging to the different parties before the OI collaboration agreements are drafted.

Foreground IP: These are IPR created as a result of the OI collaboration in line with the framework of the parties' agreement.

Side ground IP: These are IPR which are vital to the OI collaboration created in-house but not in line with the framework of the parties' agreement.

Post ground IP: These are IPR which are vital to the OI collaboration created in-house by a party after the collaboration has formally come to an end.

Therefore, the conditions of IP management need to be based on these fore aspects in order to avoid issues with partners in an OI process.

II. III REASONS FOR INTELLECTUAL PROPERTY OR KNOWLEDGE PROTECTION IN OPEN INNOVATION

For many organizations today, IP protects more than an idea or concept. It protects vital business assets that may be fundamental to the core services of the business and the overall long-term viability. Intellectual property may consist of different areas, including logos and corporate identity to products, services and processes that differentiate one's business offering. When these ideas are used without permission an organization suffers. Companies of all sizes are at risk of having their unique ideas, products or services infringed upon in an OI atmosphere. There are several reasons why IP needs to be protected in OI.

II. III.I. The open nature of open innovation

Firstly the open nature of open innovation requires that companies protect ideas that make up their core competences to minimize or avoid opportunistic learning from partners (Teng, 2007 and Norman, 2001). But then as already mentioned above, OI does not mean putting at partners' disposal your IP for free. Companies thus need to be very tactful in the way they deal with each other in order not to lose vital knowledge in the process.

II. III.II. Fear of theft of companies' core competences.

An open atmosphere can lead to the leakage of a company's core competences (European IPR Helpdesk, 2014). Since the core competency of a company's business stands out to enable them gain competitive advantage, theft of any such form of information may lead to the complete down fall of the company.

II. III.III. Avoidance of counterfeiting and piracy.

Due to the open nature of OI, providers of complementary products and services may want to use this as an opportunity to imitate another's technology (Pisano & Teece, 2007). Meanwhile, if there is an introduction of very strict and reliable IP norms within an OI environment, such opportunistic

attitudes will be avoided to an extent, if a non-competing agreement is made between the innovation partners (Teng, 2007).

II. III.IV. To enable companies reap (appropriate) the full benefits of their inventions.

If IPRs are not protected within the OI atmosphere, most originators of given technology will not be able to benefit from their original idea since other firms or companies will want to copy and also benefit from it even without necessarily getting the originator's express consent. It is thus vital to protect IP in order to appropriate what was invested in the knowledge creation process (Gallini, 2002 and Kultti et al 2006).

II. III.V. Encourages and fosters innovation.

If IPRs are not protected, firms will not have the incentive to be creative because they will just want to copy what has been done by another firm and this will be a hindrance towards the creation of new ideas, thus hampering innovation. Intellectual property protection will definitely lead to the creation of new ideas and knowledge, thus encouraging innovation (Lavin et al, 1981).

II. IV. HOW TO MANAGE INTELLECTUAL PROPERTY IN OPEN INNOVATION

Since the inbound and outbound transfer of technology is fast growing in the business world today through the OI paradigm, IP management in such forums has become very crucial. The very nature of collaborative innovation and the fact that openness may entail losing control, OI would always require proper management of IPRs. Since OI brings together several actors for an innovation project of a product or service. There is therefore a need for each actor to know and understand from the onset what they are to contribute and to what extent they are to make such contributions, and what they stand to gain by making the stated contribution. Even though management of IPR is the most challenging aspect of openness because it can either make or mar OI, when there be an effective and efficient management of IP contributions, OI will be very easy and successful. It is advisable for innovators to start managing IP at the very early stages of the innovation collaboration process. That is, to properly evaluate IP ownership and position of potential partners in the process. They also need to examine and draft out transfer agreement that will enable them

have an idea of how to share the rewards of the process since IP ownership is the last step in IP management (European IPR Helpdesk, 2014; Hossain, 2012; Teng, 2007; Chesbrough, 2003).

Teng, 2007, sets up a three-step framework for IP management in a R&D alliance. To the best of my understanding I think this framework can equally be applied to the management of IP in an OI environment since both an alliance and OI are ways through which firms collaborate to ease the burden and expensive nature of today's R&D. In this three step-step framework, Teng, raises three major aspects of IP management which are; **IP contribution, IP control and IP governance**. These three aspects of IP management and their sub parts are demonstrated in figure 2.3 below.

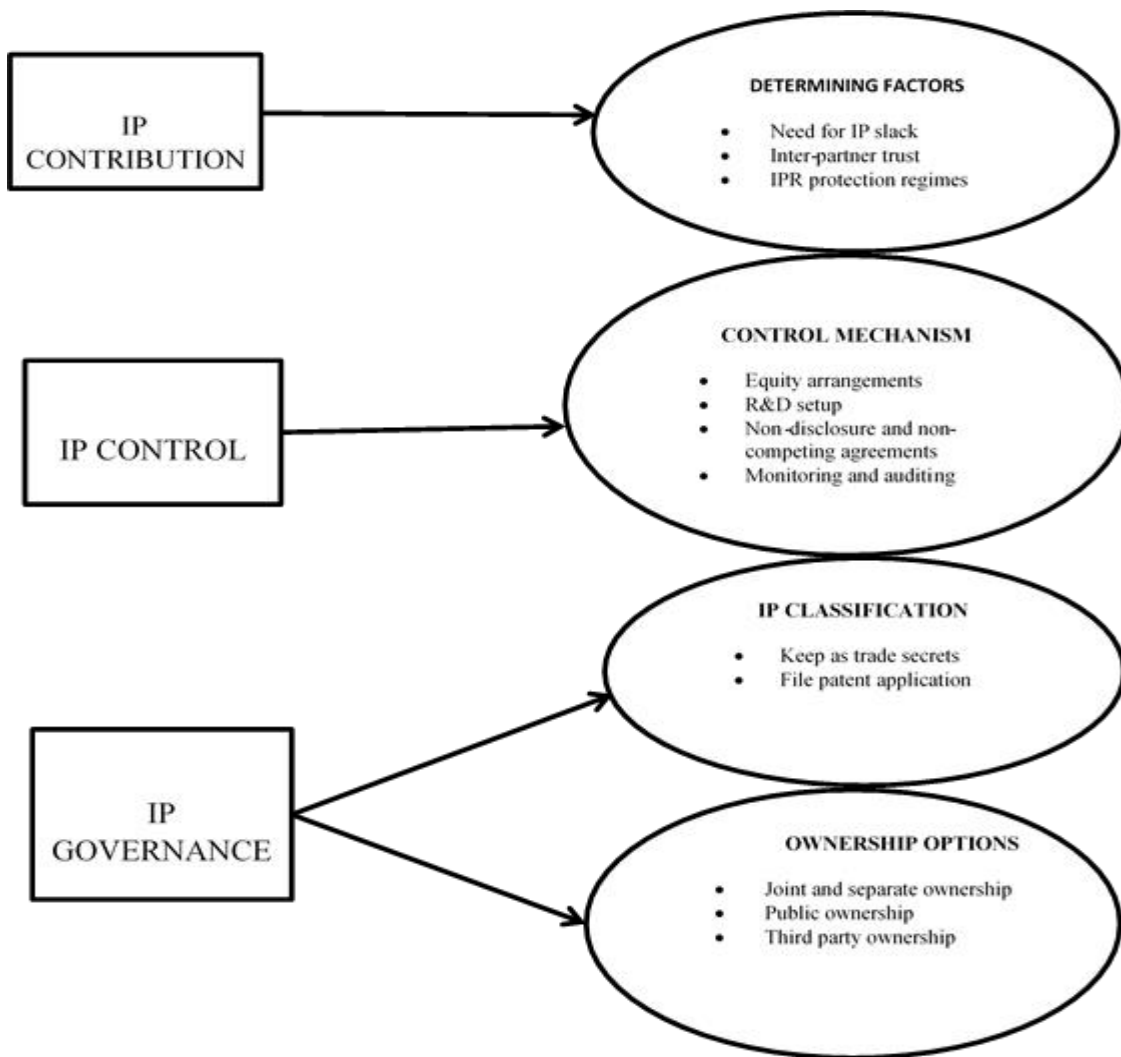


Figure 2.3: A three-step framework of IP management

Source (Teng, 2007).

From the above figure, he demonstrated three major aspect of IP management as follows.

IP contribution: In order to better manage IP, the partners ought to know what each other's contribution will be. That is they ought to know and agree on what to share in the creative partnership, and each contributor has to have a recode of their contributions in order to avoid all forms of disagreement. Determining factors for IP contributions according to Teng, 2007 are;

Need for IP slack. IP slack as defined by Nohria and Gulati 1996 is

“The pool of resources in an organization that is in excess of the minimum necessary to produce a given level of organizational output”.

This was the case in the alliance between IBM and SONY in 2002.

Inter partner trust. Trust is very vital for every form of collaboration be it in business, family or in R&D, since it is the essential ingredient that helps partners overcome fear over opportunistic behaviors.

IPR protection regimes. The IPR protection regime varies with different countries. So for partners to be able to understand what to share in an international OI platform and how to manage these, they ought to be abreast with the protection regime of the member state of all partners (Mansfield, 2000 and Teng, 2007).

IP control: This concerns mechanisms that can be used in cases where protection regimes and trust are unconvincing. IP control is an IP management instrument in OI that helps not only to protect IP, but also reduces the level of opportunistic learning in a R&D platform (Norman, 2001). Control mechanisms according to the framework above include;

- Equity arrangement
- R&D setup
- Non-disclosure and non-competing agreements
- Monitoring and auditing

IP governance: concerning IP governance, the author comes up with two aspects. Firstly he talked about IP classification which entails either to keep the IP as a trade secret or to go for a patent.

Secondly he talked about the IP ownership options in a collaborative innovation process. Here, he mentions joint or separate ownership, public ownership and third-party ownership.

Some authors put it that, there are two major ways to manage IP in OI. That is through private ordering or contractual means and through the public ordering or the use of IPR protection for instance patent or trademark (European IPR Helpdesk, 2014; Lee, Nystén-Haarala, & Huhtilainen, 2010). But after reviewing several articles, the researcher thought IP management is done both formally and informally. That is, openness in innovation needs to be managed formally through the use of mandatory laws and contracts or informally through the use of norms and trust. This means talking about the legal and psychological perspective respectively of managing I P in OI. And this will be explained in the following paragraphs.

II. IV.I. FORMAL INTELLECTUAL PROPERTY MANAGEMENT IN OPEN INNOVATION

II.IV.I.I Private ordering or contractual means.

This management method is said to be more superior by several authors to the public ordering or use of IPRs to manage knowledge in OI (O'Connor, 2010 and Van Overwalle, 2010). It has contracts as most formal and most commonly used means to control the innovation process and this contract also provides governance. The use of contractual relationship with innovative partners must clearly state the role and benefits of each partner including their obligations in a given project. The following are ways through which IP can be managed in OI with the use of contracts or agreements.

Consortium agreement (CA).

The CA is a private contract between participants in relation to their internal arrangements on work organization, IP management, liability and other matters of interest. This agreement should include all of the beneficiaries' rights and obligations in relation to the issues that are necessary for the accomplishment of the project. This kind of partnership helps firms to gain access to knowledge and business relationships. In this agreement, the following are mentioned; allocation of IP ownership generated from the project, identification of necessary IPs owned by parties before the

project, the access rights to execution or exploitation and the sharing of rewards (European IPR Helpdesk, 2014; European IPR Helpdesk, 2015).

Non-disclosure or confidentiality agreements.

Non-disclosure agreements (NDAs), otherwise called confidentiality agreements, are private contracts among innovation or R&D parties to keep valuable or shared IP safe without disclosing to any other third party (Teng, 2007; European IPR helpdesk, 2015). Since innovation partnership entails knowledge disclosure, this partnership proposal might come up at a time when firms have not yet protected their ideas with the use of formal IPRs law but are interested to collaborate, they can then come up with a confidentiality or non-disclosure agreement with partners. They may draft up conditions where in parties can disclose confidential information before they start up the innovation project. Non-disclosure agreements are either unilateral (one-way) or bilateral (two-way) and multilateral (more than two parties). Unilateral is the kind of agreement whereby just one party discloses confidential information and the other only receives. Bilateral is an agreement where both parties disclose and receive vital information. Obligation to keep information confidentially can be included in a memorandum of understanding in case the parties wish to define more aspects of their collaboration at the very onset (European IPR Helpdesk, 2014; European IPR Helpdesk, 2015).

Non-competing agreements

This means of managing IP in OI entails that before and after the collaboration process the partners will not compete in the same domain within a certain stated period so as to reduce the risk of IP mishandling (Teng, 2007).

Intellectual property ownership agreement

IP ownership which is said to be the last part of IP management is a very crucial aspect since the end product of R&D is very uncertain thus leaving a question mark in terms of ownership. But then, the parties concerned with the OI process should already have in mind from the onset what type of ownership the OI output should be. IP ownership can be joint, individual, public and third party ownership. By joint ownership it means the partners all shares in the innovation output of the project at hand, or can both make use of it through licensing and cross licensing agreement.

This is one of the stages in IP management where in there is the assignment of shares, conditions of use, exploitation, IP protection and maintenance, IP monitoring and infringement and the governing laws. Individual ownership entails that the parties share the output of the project or all goes to one party in the case were the IP output is a core competence to the party depending on the agreement. Public ownership entails making the innovative knowledge public, and this makes the innovation impossible for patenting. The third-party ownership is a situation were by the innovation is sold to some other person who was not a party to the R&D partnership (Teng, 2007; Colson, 2001; European IPR Helpdesk, 2014).

Knowledge transfer.

This stage of IP management can be described as the essence of OI since OI entails the transfer of technology and know-how. Knowledge transfer can be either through licensing or selling. Licensing is the core for OI since it enables firms to benefit from their knowledge but then still permits them to share this knowledge with others. Licensing can take the form of licensing-in, that is accessing third party knowledge or licensing-out that is putting your knowledge at third party's disposal. Another form of knowledge transfer is to sell. This entails a complete transfer of ownership of an IPR. This takes place when an organization does no longer want to have the control of a given IP any more (European IPR Helpdesk, 2014; Teng, 2007).

II.IV.I.II. Public ordering or the use of IPR protection:

This management method helps firms to capture value from their innovation. It enables firms to have their intangible assets for themselves and so it cannot be imitated or appropriated by other firms. Here, firms need to do a registration of their rights taking into consideration internal measures. That is the rules and regulations governing IPRs within a particular country or region. (European IPR Helpdesk, 2014; Lee, Nystén-Haarala, & Huhtilainen, 2010). The above points explain the importance of Contract in OI or collaboration in general.

II. IV.II. INFORMAL INTELLECTUAL PROPERTY MANAGEMENT IN OPEN INNOVATION

II.IV.II.I. Norms

Norms according to business dictionary as seen from their website <http://www.businessdictionary.com/definition/norm.html> Accessed the 4/11/2016. is

“Informal guidelines about what is considered normal (what is correct or incorrect) social behavior in a particular group or social unit. Norms form collective expectations that members of a community have from each other, and play a key part in social control and social order by exerting a pressure on the individual to conform. In short, “The way we do things around here.”

From the above definition of norms, we get to understand that IP in OI is managed in a non-official way, suitable when dealing with friends, family or people you are much closed to. Expecting that each of them will act according to the standards of what is right. Norms are mostly used when partners in OI have been working with each other and they get to trust each other in the process to a point where they do not see any reasons for making things formal any longer.

II.IV.II.II. Trust

Trust is very vital for every form of collaboration be it in business, family or in R&D, since it is the essential ingredient that helps partners overcome fear over opportunistic behaviors. Barney and Hansen, 1994 define trust as stated by Teng, 2007 says *trust is; “One’s belief that the other party will not intentionally take advantage of the first party”*. Azzedin and Maheswaran, (2002) also define trust as follows;

“Trust is the firm belief in the competence of an entity to act as expected such that this firm belief is not a fixed value associated with the entity but rather it is subject to the entity’s behavior and applies only within a specific context at a given time”.

Both definitions go a long way to say that collaborating partners in OI must believe in the decency of each other, and that all parties would act as expected of them by the others in order to function and manage their contributions properly. It is believed that a high level of trust enhances faster,

committed and better management of IP in collaboration. Meanwhile on the other hand, lack of trust will incite the use of contractual or other means for protection of IP in OI.

Even though the above has been mentioned as the ways to manage IP in an OI atmosphere, it is worth noting here that trust is the most important factor in this game of OI and IP management. It only entails trust to be able to partner with others.

II.V. CONCEPTUAL MODEL

The basis of this research project can be clearly seen as illustrated in the conceptual model below.

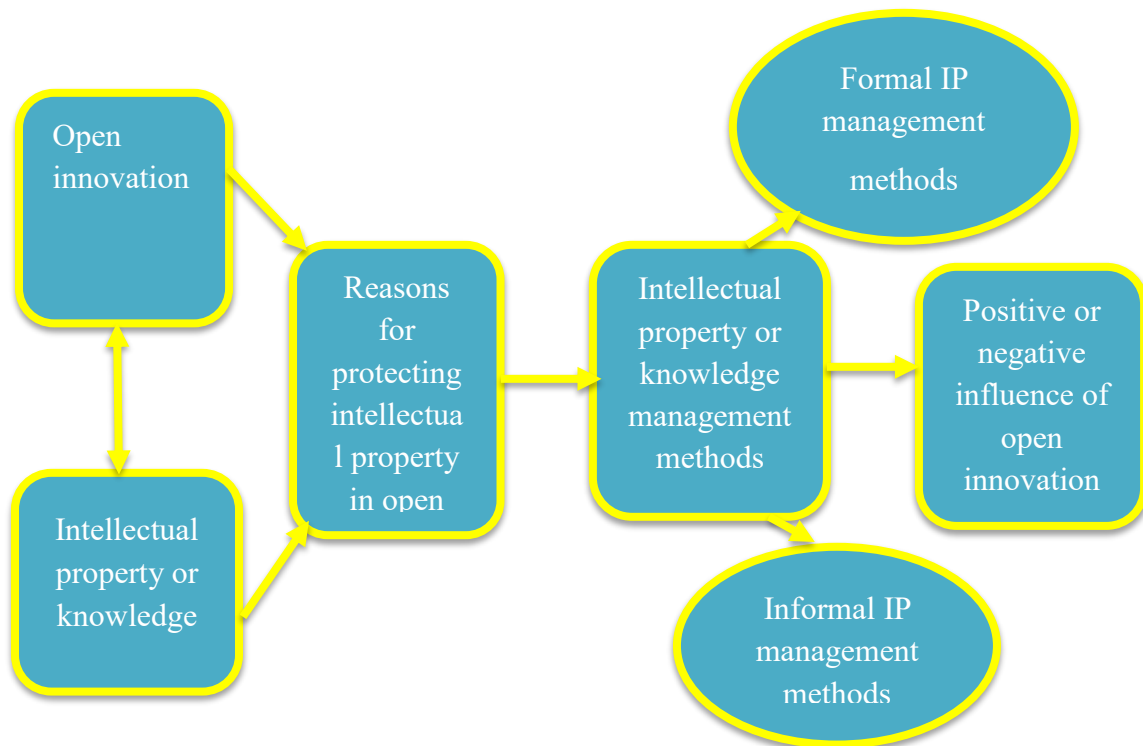


Figure 2.4: Conceptual Model

From the above conceptual model, one can see that there is a link between OI and IP or knowledge in general. This means that since OI is all about sharing knowledge, there cannot be OI with IP or knowledge availability. Thus there is an important link between OI and IP. This special link

between OI and IP brings about some reasons why IP needs to be protected in an OI process. And these reasons for protection call for very special management strategies or methods which can be formal or informal. If IP is properly managed in OI, it will of course reflect a positive influence on the firm. But if IP is not properly managed in OI it will have a negative influence or impact on the firm.

II. VI. SUCCESSFUL CASE OF IP MANAGEMENT

Several companies now our days have several success stories with the use of OI, but I will give just one success example which is Deloitte Biopharma Company. Deloitte has succeeded in IP management in OI in several domains and this has brought very positive results in their growth and development. A very glaring example is Deloitte with the growth in their biopharmaceutical (biopharma) company. From an article written by Ralph Marcello and three others accessed from their website, www.deloitte.com/us/openinnovation.

“Deloitte’s analysis of the current state of OI in biopharma reveals a higher success rate for OI pursuits than for closed-model product development.”

This demonstrates the fact that the use of OI in the Deloitte Biopharma Company has indeed been a success as compared to when they made used of the CI system and further insinuates that IP is properly managed among partners in the OI process. According to Deloitte analysis, drugs sourced through OI have a threefold probability of succeeding than those sourced by CI. The following framework illustrates very clearly the success of Deloitte’s biopharma company with the use of OI.

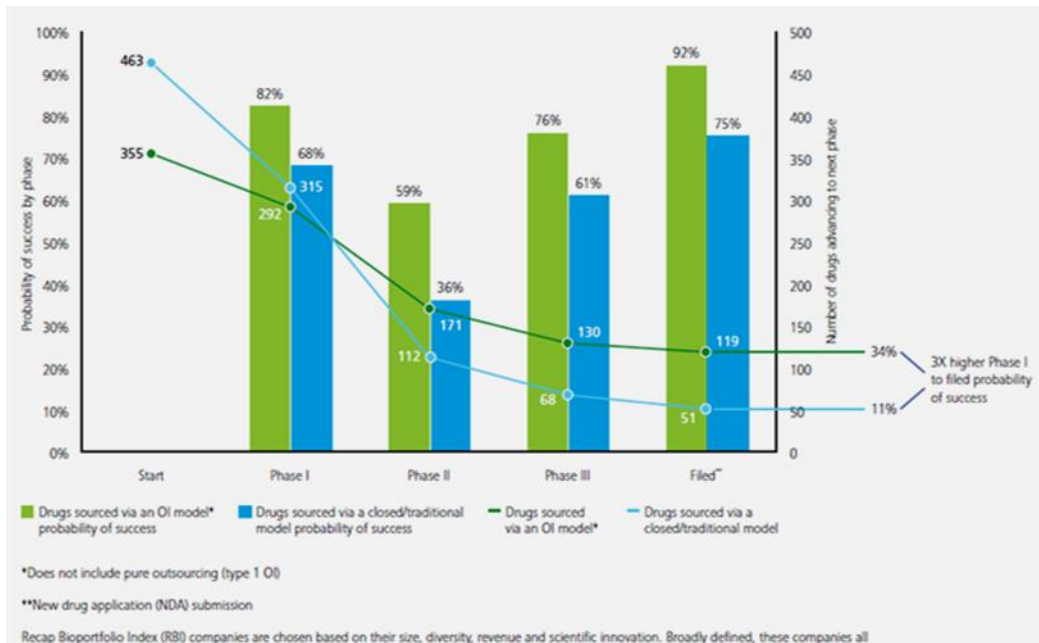


Figure 2.5: Success of Deloitte's biopharma company with the use of OI.

Source; Marcello et al 2015

II. VII. UNSUCCESSFUL CASE OF INTELLECTUAL PROPERTY MANAGEMENT

Although OI has several success stories, it also has an attachment with some failure stories like that of LEGO and their online game before their final success. But a very clear OI failure story is that of Sendo Holding PLC a British mobile phone manufacturing company and Microsoft Corp. Microsoft that was to be Sendo's path to market for their Z100 smartphone said to be launched in August 2001, but according to sources, Microsoft acted in bad faith by instead using the partnership to gain vital information and access to Sendo's mobile phone expertise. Sendo filed a 13 count suit against Microsoft including counts on fraud, negligence, misrepresentation, breach of contract and civil conspiracy. It's clear that Microsoft acted in bad faith although there were agreements like the Non-Disclosure Agreement (NDA), and a strategic and marketing Agreement between the parties. Open innovation is a very recent paradigm which enables technological partners to share innovative ideas in order to reduce risk and cost of creating new technology (Teng, 2007).

CHAPTER THREE: METHODOLOGY

III.I. RESEACH PURPOSE

This is a basic scientific research that will make a contribution to the scientific knowledge of business innovation strategy, IP management and management in general. This research is focused in Belgium. Saunders *et al.* (2009), describes a threefold research purpose which are; descriptive, explanatory and exploratory.

Descriptive research is an extension of a component of exploratory research, or more often, a part of explanatory research. It has as objective according to Saunders *et al* "*to portray an accurate profile of persons, events or situations*". Since the researcher ought to have a picture of what they are working on before collecting their data.

Explanatory research explains a causal relationship between two or more variables.

Exploratory research is based on both qualitative and quantitative research techniques like interviews, questionnaires and documents review (Silverman and Spirduso, 2010). Exploratory research which is a valuable method of getting a deeper insight and assess phenomena in a new way. It is mainly useful when the researcher wants to clarify the understanding to a problem of the study. According to Saunders *et al.* (2009), there exist three main ways to conduct an exploratory research which are;

- i. *Literature review*
- ii. *Interview of experts in the subject in question*
- iii. *Focus group interview*

The researcher made use of the first two ways mentioned above, that is literature review and expert interviews. Therefore, the purpose of this research is to investigate why IP needs to be protected in an OI process or environment, and also to investigate ways of managing the protection of these intellectual properties in OI.

III.II. RESEARCH PROCESS

The research process of this project has taken into consideration four of the layers of the research onion of Saunders et al. (2009). That is the research philosophy, research approach, and research strategy and data collection.

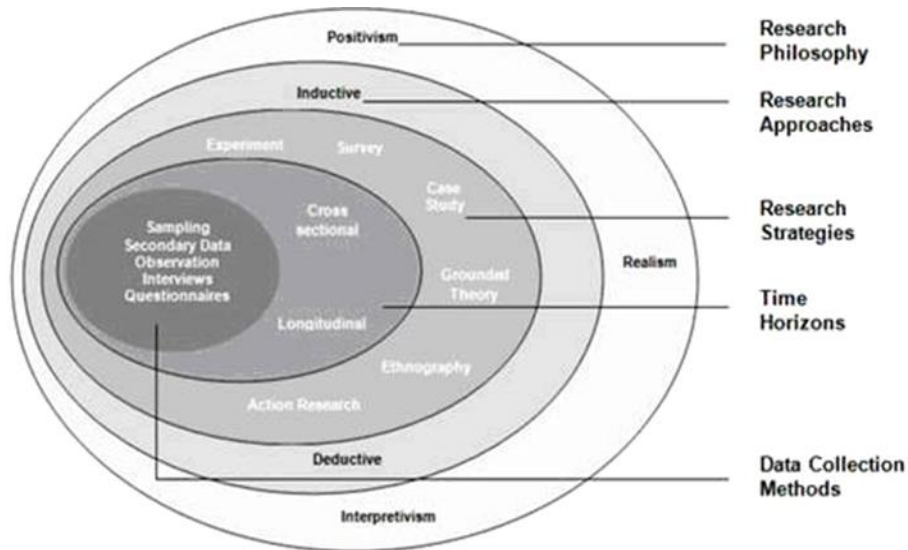


Figure 3.1: Research onion

Source: Adopted from *Research method for business students* by Saunders et al, 2009.

III.II.I. RESEARCH PHYLOSOPHY

Research philosophy as defined by Saunders et al, (2009) is “*the development of knowledge and the nature of that knowledge*”. It is a justifiable means through which the research will be carried out or undertaken. He goes ahead to say that, the research philosophy adopted by a research depends on how he/she views the world. He presents four major research philosophies in management research, which are; **positivism, realism, interpretivism and pragmatism.**

Positivism: This is a philosophical stand point where by something can be positive, truthful or none.

Realism: This philosophy indicates the fact that reality can be different from observers.

Interpretivism: This philosophy demonstrates the fact that as people interact with the world, they create their own subjective meaning from it.

Pragmatism: This philosophy is based on the link between the theory and practice of a phenomenon.

Therefore, the pragmatism philosophy is the adopted philosophy for this research project, since the researcher intends to understand the practical reasons why IP should be protected and how it can be managed in OI.

III.II.II. RESEARCH APPROACH

The second layer of the onion on the above diagram is the research approach. There are two main types of research approaches that is deductive and inductive approach.

Deductive approach: According to Saunders et al, (2009), this research approach is when theories and hypotheses are developed and a research strategy is designed to test these hypotheses.

Inductive approach: According to Saunders et al, (2009), this is a research approach were by data is collected and theories developed from the data analysis.

This research project is based on the inductive research approach since it is only after the data collection process and analysis of this data that the researcher might be able to come up with the necessary theories on the subject studied.

III.II.III. RESEARCH STRATEGY

Saunders et al, (2009) says that the choice of a research strategy is directed by the researcher's research questions and research objective with some other factors. There are several types of research strategies which include the following; case study, survey, experiment, grounded theory, action research, archival research and ethnography. But then, none of the strategy is better than the other as long as it can enable the researcher to answer their research question conveniently and achieving the research objective (Saunders et al 2009; Yin, 2009). Yin, (2009) illustrates three major ways to select a research strategy as he demonstrated in the following framework.

Strategy	Form of Research Question	Requires Control over Behavioral Events?	Focuses on Contemporary Events?
Experiment	How, Why	Yes	Yes
Survey	Who, What, Where, How many, How much	No	Yes
Archival Analysis	Who, What, Where, How many, How much	No	Yes/No
History	How, Why	No	No
Case Study	How, Why	No	Yes

Figure 3.2: Relevant situations for different research strategies.

Source: Adopted from Yin (2009, p8).

From the above figure, Yin presents three major conditions for choosing a relevant research strategy. These conditions are,

- Form of research question
- Required control over behavioral events?
- Focuses on contemporary event?

From the above explanation on the choice for a research strategy, it is clear that this research project is a case study since the project has as research questions;

- i. Why the pressing need for IP protection in OI?
- ii. How can IP be properly managed in an OI environment?

The use of “Why and How” and the researcher does not have any control over behavioral event for this project. And finally, the research is focused on a contemporary event which is OI. Yin, (2009) states two types of case study that is a single case study which entails that the researcher investigates a single entity, or a multiple case study which entails that the researcher investigates two or more entities. The author has decided to use the multiple case study (with six cases, that is six different companies in Belgium) in order to increase validity and allow for comparison and generalization (Yin, 2009).

With the choice of a case study, the research did follow the case study roadmap as presented by Eisenhardt, (1989 P. 533) and illustrated below.

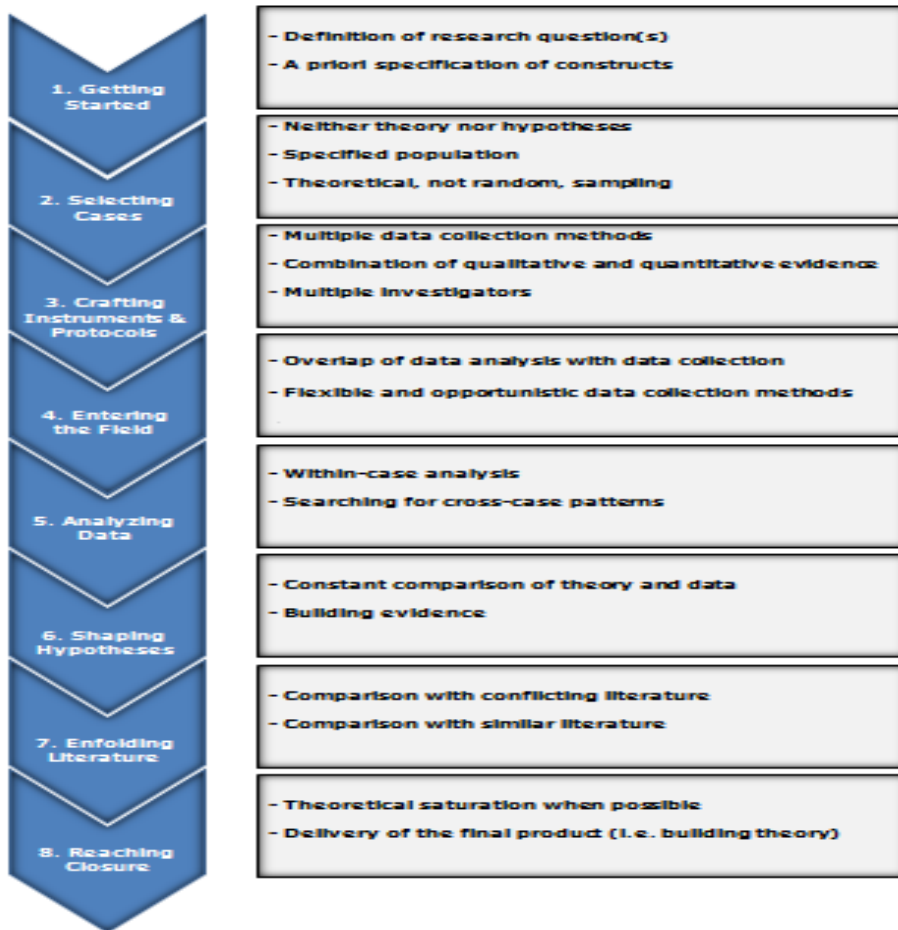


Figure 3.3: Roadmap for building theory on case study research.

Source: As adopted from *building theories from case study research* by (Eisenhardt, 1989, p. 533).

The above figure enumerates eight steps for building theories on case study research. These steps are as follows

Getting started: This is the very first and vital step in a case study research. It entails the definition of the research questions for the project.

Selecting cases: Second step is the selection of the cases for the project. According to Eisenhardt and Graebner, 2007, cases ought to be selected depending on their ability to give adequate answers to the research questions thus enabling the building of theory on the subject matter. The cases selected for this project are six companies all based in Belgium and all involved in OI.

Crafting instruments and protocols: During this third step, data collection methods are chosen. As already mentioned above, case study research can have several data collection methods. For this particular project both primary and secondary data were collected. The researcher made use of semi in depth interviews (three face to face and three skype) with the six cases.

Entering the field: This step permits the researcher to get to make necessary adjustments in the work process. For instance, the need to improve or add interview questions in the course of the research process due to one reason or another in the data collection process (Eisenhardt, 1989). For this project, some questions were added in the process. These questions included were:

- i) What in your opinion is OI?
- ii) What in your opinion is IP?
- iii) What in your opinion is IP management?

Analyzing data: This very challenging part of the process entails that one does a within-case analysis where in the individual characteristics of each case is analyzed. And this is exactly what is done in this project. Then the cross-case analysis which is only applicable for a multiple case study. For this research work, the cross-case analysis was done in order to identify similarities and differences among the different cases. The cross-case analysis is necessary in order to come up with more concrete and dependable theory (Eisenhardt, 1989).

Shaping hypotheses: This stage entails the researcher to “*compare systematically the emergent frame with the evidence from each case*” in order to determine how well or how badly it matches with the data.

Refolding literature: Here we need to compare and contrast the emerging theory with existing literature.

Research closure: Here the final research product is delivered on a well build theory.

III.II.IV. DATA COLLECTION

Two forms of data were collected for this research, that is Primary and secondary data.

Secondary data: This is data collected by someone else who is not the user. It includes but not necessarily limited to articles, journals and textbooks. This kind of data helps to familiarize the researcher on the concept under investigation.

Primary data: This data is collected through first-hand investigations and it's used for the empirical evidence to help answer the research questions. This empirical evidence will be based on the information gotten from the six cases that is the six companies interviewed. These research contacts (the six companies) are presented in table 3.1 below.

Table representing research contacts

<i>Company or case name</i>	<i>Year of creation</i>	<i>What they are into or do</i>	<i>Executive interviewed</i>
IMEC	1984	<i>R&D solutions for new technology</i>	<i>Director IP portfolio and litigation. European patent Attorney</i>
ATSEA-TECHNOLOGIES NV	2016	<i>Technical textile</i>	<i>Managing director</i>
DELLOITTE	1845	<i>Consulting and healthcare R&D for pharmaceuticals</i>	<i>Partner</i>
SIOEN INDUSTRIES	1960	<i>Textile manufacturing</i>	<i>R&D manager</i>
DEVAN CHEMICALS NV	1977	<i>Chemicals and processes for textile markets</i>	<i>Chief technology officer</i>
RECTICEL NV/SA	1978	<i>Flexible foams for beddings, insulation and automotive applications</i>	<i>R&D Manager</i>

Table 3.1: Table of research contacts.

III.III. DATA VALIDITY AND RELIABILITY

This deals with the credibility of the research findings. That is, if the evidence of one's research findings and their conclusion will be able to stand the test of time. In a research project, there are things that literally we might not be able to get the answers to, but then we might reduce the chances of not getting it completely wrong. And this is where *reliability and validity* come in as the research design to test the quality of the factual study.

Reliability: Reliability according to Saunders et al (2009) citing (Easterby-Smith *et al.* 2008, p.109), I quote;

“Refers to the extent to which your data collection techniques or analysis procedures will yield consistent findings”.

He further says reliability can be assessed by asking the following three questions;

- a. *“Will the measures yield the same results on other occasions?”*
- b. *Will similar observations be reached by other observers?*
- c. *Is there transparency in how sense was made from the raw data?”*

Validity: This is to determine if the findings are about what they really appear to be. That is if the measurement is accurate or not. Yin, (2009), talking of factual or empirical study quality test mentions three types of validity, that is; construct validity, internal validity and external validity.

The data for this project was collected from very reliable and valid sources. For instance, the six companies interviewed are well experienced companies in the field of OI and in this process have been managing IP.

CHAPTER FOUR: IMPERICAL FINDINGS

IV.I. CASE DESCRIPTION OR INTER-CASE ANALYSIS

CASE 1; IMEC

Interuniversity Microelectronics Center (IMEC) is a research institute located in Leuven Belgium. It is the largest independent European research in microelectronic, nanotechnology design methods and technologies for ICT systems created in 1984. They offer R&D solutions to create new technologies and also innovation services applicable for both products and services. IMEC is very experienced in the field of OI and has achieved a lot through OI by working with several partners. OI has enabled them have a very high growth rate.

As per the interviewee's opinion of OI and IP, he stated that;

“Open innovation is not same as open source it is benefiting from internal and external sources. Looking for solutions outside your company does not exclude that you protect your IP”

The interviewee further stated that getting information from external does not mean you get it for free. Likewise, it is important to document your IP correctly and make clear borders from the very beginning of the OI process.

CASE 2; AT-SEA TECHNOLOGIES NV

AT-SEA TECHNOLOGIES NV which will be referred to in this work as “AT-SEA TECH” is a dynamic technological company that originated **“From an European project to a sound business”**. It was founded in 2016 by five active partner companies of the European project AT~SEA (*Advanced textiles for open sea biomass cultivation; 2012 – 2015*). They supply turnkey seaweed farms and the corresponding consumables according to the latest technologies. They are the exclusive distributors of AlgaeTex substrates, being advanced cultivation substrates for red, brown and/ or green seaweeds. For brown seaweeds ATSEA Technologies can also supply its

innovative direct seeding technology based on AlgaeBinder. This product “glues” the juveniles onto the cultivation substrate.

As for the interviewee’s opinion on OI and IP, he stated,

“It is a cluster of companies working together, but outside of this cluster there will still be competitors. So you will have to protect your IP from those out of this cluster. OI does not mean you should be naïve”.

He also brought out the notion of ***cross-fertilization*** which he said is,

“Using the competences of several companies working together to get a bigger market share”.

He admits that an OI cluster enables partners to grow. This shows a positive influence of OI to companies.

CASE 3; DELOITTE

Deloitte Touche Tohmatsu Limited also known as ***Deloitte*** is a multinational professional services firm with operational headquarters in New York City in the United States. Founded in 1845 and has gone through the test of time. This firm offers auditing and assurance, consulting, financial advisory risk and tax services. They are also into healthcare precisely on R&D for pharmaceutical. From the interviewee’s opinion on OI and IP, he stated,

“You valorize your knowledge or investment in OI collaborations. IP protection is important in OI because you give away a lot of your inside etc. in the CI context you do not show everybody what you have. But in OI context you put more on the table and hence, IP protection is more important”.

CASE 4; SIOEN INDUSTRIES

This is a Belgian based textile manufacturing company that was founded in 1960. The company practices OI and are presently closely collaborating with more than 100 partners including suppliers, customers, universities, think tanks, professionals associations to name just a few. This company believes that the stronger their involvement in OI, the greater the chance of coming up with innovative products often in new markets.

In the interviewee's opinion on open innovation, he stated that,

“We are involved in OI. But like most companies doing OI, we are not only doing OI, there is still closed innovation”

This goes to say that CI is still very sustainable because most companies that are into OI still do CI which is the case at SIOEN INDUSTRIES that kept a balance of 50% and 50% for both OI and CI respectively.

CASE 5; DEVAN CHEMICALS N.V

Devan chemicals NV commonly known and will be referred to in this work as Devan is a Belgian textile company which develops, manufactures and commercializes specialty chemicals and processes for the textile markets worldwide. This company was founded in 1977 and it is based in Belgium and operating as a subsidiary of Rolton NV. But my focus was on Devan. Devan is very much into OI. And talking about innovation in general, they are said to have conquered Europe with their innovative and sustainable technologies. They invest a lot on R&D and do a lot of patenting.

Talking on OI and IP, the interviewee explained that,

“OI is really about having a much more open mind and open aspect to where your ideas, innovation and the future project and products of a company comes from. It is not about working in a closed environment inside your own company, but outside with universities, research institutes and sometimes even competitors to develop new ideas, new direction for the company and not being afraid to share information and work, collaborate and co-develop new ideas”.

They partner with several other companies to come up with innovations.

CASE 6; RECTICEL NV/SA

RECTICEL NV/SA referred to in this work as RECTICEL is Belgian manufacturer and transformer of polyurethane foams for flexible foams, bedding, insulation and automotive applications. This company was founded in 1896 and has its headquarters in Belgium. It operates in other countries like France, Germany and other European countries.

According to the interviewee,

“OI enables you to put in other competences that you don’t have but can get from other companies who are even your competitors and from Universities. IP is extremely important because it protects you against your competitors in the market. So you can either choose to protect or put your chemistry in a black box. To be able to properly manage IP in OI you have to be aware of who is around the table”.

He further mentioned the importance of trust in OI and explained that,

“Trust is extremely important and its works best if both or all parties trust each other, having a portion of trust and not be paranoia. But then, trust on its own cannot protect your IP”

IV.II. CROSS-CASE ANALYSIS (five dimensions)

In this part of the work, the researcher is going to present the findings for the individual cases and then compares and contrast these finding with all available cases to formulate a theory. In all, the findings will be compared among five different dimensions. Which include the following;

- ❖ Reasons for protecting IP in OI
- ❖ How companies are affected in OI by the above mentioned reasons for protection
- ❖ IP management methods
- ❖ Efficiency and effectiveness of IP management methods
- ❖ Influence of OI on companies

The findings for each dimension are tabulated and explained for more details below. Under each table a detailed explanation of the dimension demonstrated in the table will be given.

IV.II.I. Cross-case analysis of why protect IP in OI

	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	CASE 6
	IMEC	ATSEA TECHNOLOGIES	DELOITTE	SIOEN INDUSTRIES	DEVAN CHEMICALS	RECTICEL
OPEN NATURE OF OI	OI does not mean taking ideas for free just because you are collaborating with other partners.	N/A	N/A	N/A	Protecting your investments is vital with the many people on the table	You must always try to know who is on the table of discussion in order to know what you put on the table
FEAR OF THEFT	Abuse of IP use by parties	Being careful from outside world	Protecting your interest and have freedom to operate. e.g. Someone else protects your IP is not good.	Fear of someone exploiting what you develop.	Competitors can't follow in the business	You have to be very aware of who is around the table.
AVOIDANCE OF COUNTERFEITING AND PIRACY	Avoid that people don't copy your product	Avoid copying	Giving away a lot of your insides makes IP protection important	Exclusivity	Competitors can't follow in the business	Copying problems so protect the most generic field
APPROPRIATION OF BENEFITS	Appropriation of your innovation	Working together to get a bigger market share	Valorize knowledge of your creation or investments	Develop new product and make something out of it.	To generate better revenues	You protect IP in order to appropriate your expenditures on R&D
FOSTERING INNOVATION	N/A	N/A	N/A	N/A	Recognition of your contribution in R&D which is very expensive	N/A
OTHERS	N/A	N/A	N/A	N/A	N/A	It is proof for potential takeover for your business so you need to keep in a black box

Table 4.1: Cross-case analysis of why protect IP in OI

Table 4.1 above contains a cross-case analysis of why companies should protect their IP in OI. From literature, the researcher identified five main reasons for IP protection in OI. These five reasons are, the open nature of OI, fear of theft, avoidance of counterfeiting and piracy, appropriation of benefits and the fostering of innovation. But during the findings, the fact that IP is a potential of takeover for any business was also identified as one of the reasons to protect IP in OI. Thus making the reasons for protecting IP in OI to be six all together.

Looking at all six reasons for IP protection, all six companies, IMEC, ATSEA TECHNOLOGIES, DELOITTE, SIOEN INDUSTRIES, DEVAN AND RECTICEL identify themselves with three of these reasons. That is fear of theft, avoidance of counterfeiting and piracy also known as copying and the appropriation of benefits each of which has a percentage score of 26%. As for the open nature of OI, three companies identified with this point that is IMEC, DEVAN and RECTICEL and this has a percentage score of 13%. For fostering innovation, one company, that is DEVAN identified with a of 5% score. And for others one company, that is RECTICEL which says IP ought to be protected in OI since it is a proof of potential takeover of a business and ought not to be disclosed. Other reasons scores a 4%. This percentage scores for the six reasons for IP protection in OI are illustrated in the pie chart below.

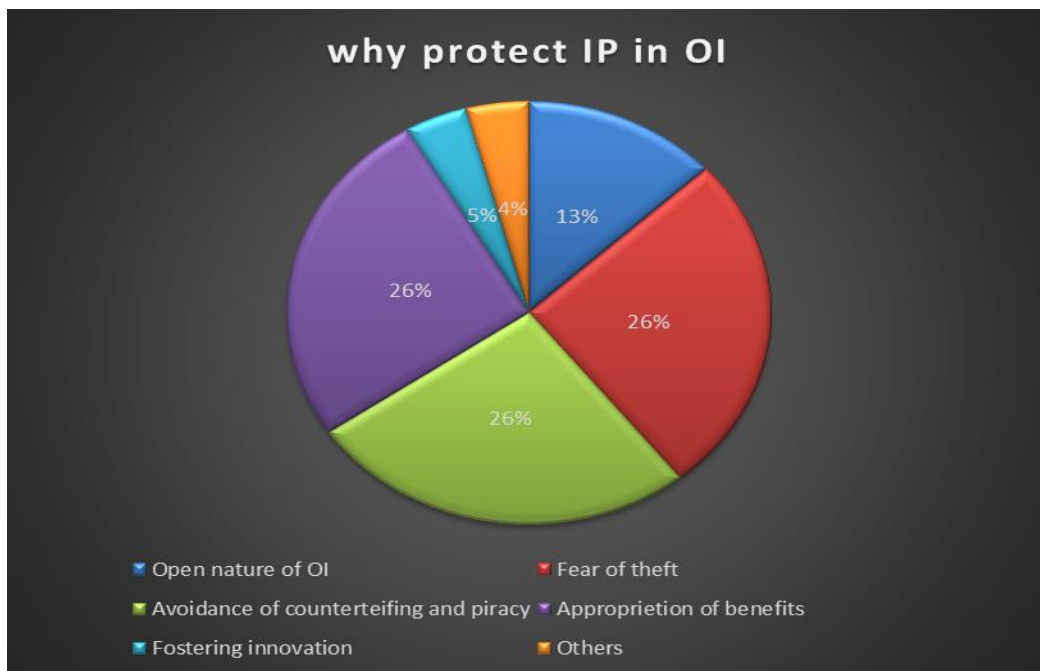


Figure 4.1: Percentage partitioning for reasons for protecting IP in OI

IV.II.II. Cross-case analysis of how companies are affected by the different reasons for protection

	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	CASE 6
	IMEC	ATSEA TECHNOLOGIES	DELOITTE	SIOEN INDUSTRIES	DEVAN CHEMICALS	RECTICEL
OPEN NATURE OF OPEN INNOVATION	Not yet. We Anticipate problems before hand	N/A	N/A	N/A	No	N/A
FEAR OF THEFT	Not yet. Invite companies to work on common problems	Not yet	Not yet but for some of our clients yes	No	No	We have never had issues
AVOIDANCE OF COUNTERFEITING AND PIRACY	N/A	Not yet	Not yet but for some of our clients yes	No	No	We have never had issues
APPROPRIATION OF BENEFITS	Yes we do benefit seeing our growth increase	Working together to get a bigger market share	Yes we do realize it	No	No	We have never had issues
FOSTERING INNOVATION	N/A	N/A	N/A	N/A	Recognition of your contribution in R&D which is very expensive	N/A
OTHERS	N/A	N/A	N/A	N/A	N/A	We have never had issues

Table 4. 2: Cross-case analysis of how companies are affected by the reasons for protection

The above table 4.2 illustrates the effect of the different reasons for protecting IP in OI for all six companies. From the table, we see that none of the companies interviewed has been directly affected negatively by the reasons for protecting IP in OI. But for Deloitte whose customers have been some time negatively affected by some of the reasons for protection. This goes to say that the open nature of OI has not been a negative experience to any of these companies so far. This also means that none of these companies has so far experienced theft, counterfeiting and or piracy of their IP. The fact that no company has been negatively affected is based on the different strategies put in place to properly execute their collaboration with other OI partners. Therefore, these companies have been affected positively by some of the reasons for protection. That is they have benefited from their investments and have so far fostered innovation.

These companies even though have not been so far negatively affected by the reasons for protecting IP in OI, most of them think this should not make them sleep and stay contented with the present results. This just goes to say they think they might be negatively affected in the future and so they did make proposals of how they think they would handle such situation if ever it comes up. Some of the companies will deal with this very professionally by going for an amicable settlement by write a letter to the party infringing their rights informing them of the tort they are committing. And some will in this letter remind infringing parties of the awareness of their consortium agreement and contract between them. And if they fail to stop infringing their writes, they will then go for a lawsuit. Some of the companies will depend on trust for one another for instance one interviewee said,

“The power of cluster is togetherness. And no company is permitted to sell their share and their contribution. We have a joint sales force and one point for customers and trust between partners”.

Some of the companies on the other hand said they will make use of the European patent office to raise objections against the infringing party or parties.

IV.II.III. Cross-case analysis on IP management methods

METHOD	CASE 1 IMEC	CASE 2 ATSEA TECHNOLOGIES	CAES 3 DELOITTE	CASE 4 SIOEN INDUSTRIES	CASE 5 DEVAN	CASE 6 RECTICEL
CONSORTIUM AGREEMENTS	Sharing information using the main guideline	Consortium agreement	Contractual agreements of what belongs to who	Consortium agreement stating who has what	Consortium agreement at start of the project. And project nature determines type of consortium agreement	We sign contractual agreements on what to do together and in which there are many agreements
NON-DISCLOSURE OR CONFIDENTIAL AGREEMENTS	N/A	We made use of non-disclosure agreement at the beginning	All partners have obligation not to share source codes	We replaced non-disclosure agreements with consortium agreement	Consortium agreement at start of the project. And project nature determines type of consortium agreement	Confidentiality in the field on what we are going to do together
NON COMPETING AGREEMENTS	N/A	N/A	N/A	N/A	Consortium agreement at start of the project. And project nature determines type of consortium agreement	N/A
IP OWNERSHIP AGREEMENTS	Creation of knowledge while working together according to precise guidelines.	We do have some joint ventures	Clear about each other's value proposition and who gets what out of it.	Joint ventures	Consortium agreement at start of the project. And project nature determines type of consortium agreement	We talk on the foreground beforehand.
KNOWLEDGE TRANSFER	Have an ongoing sharing venture	N/A	N/A	N/A	Consortium agreement at start of the project. And project nature determines type of consortium agreement	N/A

NORMS	We make use of the European principle guidelines	N/A	N/A	N/A	N/A	If we have to get subsidies from government then we need to meet government standard requirements
TRUST	At the beginning we use agreements but the longer we get with a partner we turn to trust them	Trust develops with time	Trust is important in any collaborative venture	Trust is vital	N/A	Trust is extremely important, but trust on its own cannot protect your IP in OI.
OTHERS	IMEC's special program	Set up a board to talk about potential problems	Commercial contract agreement	N/A	N/A	We have a decision tree for potential innovation and Non analysis agreement

Table 4. 3: Cross-case analysis of IP management methods.

The above table 4.3 illustrates the different IP management methods in OI. The first five methods on the table are the formal IP management methods as mentioned in the literature, while the sixth and seventh are the informal IP management methods as mentioned in the literature. And the last method presented on the table as others is what was discovered for any company that was not gotten from literature review. From the above table, we can see that all six companies make use of the formal IP management method which in others words means the contractual or consortium agreement. But then as mentioned by most of the interviewees, “the use of which contractual or consortium agreement depends on the kind of project. That is the project engaged in will determine whether to use a non-disclosure agreement, knowledge transfer agreement, IP ownership agreement or any other agreement mentioned in the table. As concerns the informal IP management methods, two out of six companies make use of norms. That is IMEC and RECTICEL. Meanwhile five out of six companies agree on the fact that trust is very vital for IP protection in OI since you cannot entrust a very important aspect of your business to someone you can’t trust. And trust in an OI perspective most be reciprocal. But as stated by one of the interviewees, “trust on its own cannot protect your IP in an OI process”. The percentages of the different IP methods used in OI are demonstrated in the pie chart below.

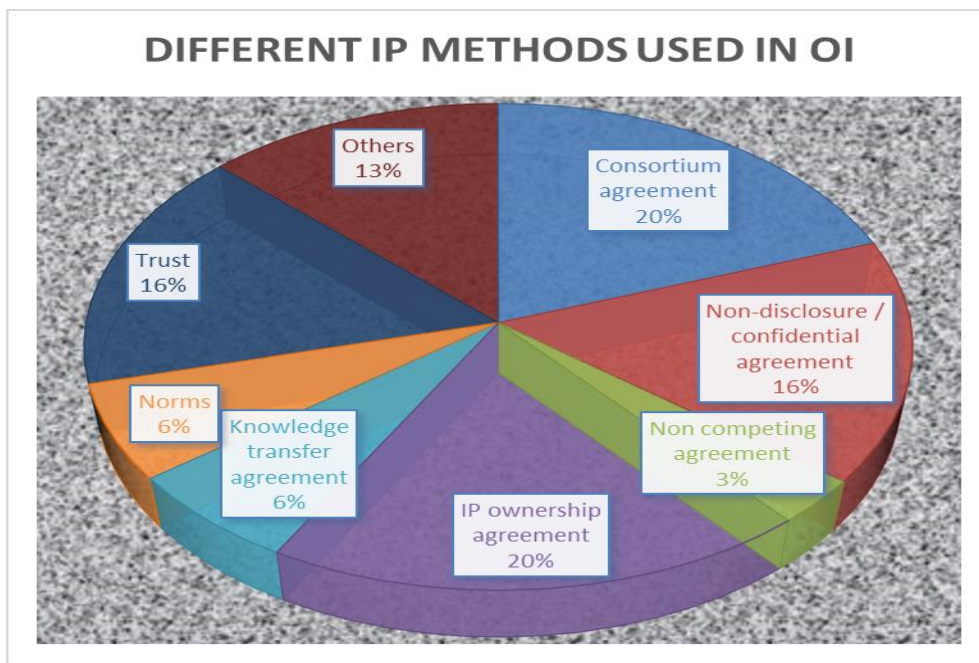


Figure 4.2: Percentage presentation of the use of different IP management methods.

From the above chart, we see that consortium or contractual agreements and IP ownership agreements are top with 20% each, while non-disclosure or confidential agreements and trust follow suit with 16% each. Then follows the different methods that are very specific to the different companies and not found in the literature. For instance, IMEC has the “IMEC special program, ATSEA TECHNOLOGIES sets up a committee, Deloitte has the commercial contract agreement and RECTICEL has the decision tree method. All of these fall other what the researcher teamed on the table “others”. And these methods have a 13% score. This is then followed by norms and knowledge transfer agreements with a 6% each. And lastly, comes the non-competing agreement with a 3% score.

IV.II.IV. Cross-case analysis of efficiency and effectiveness of IP management methods

METHOD	CASE 1 IMEC	CASE 2 ATSEA TECHNOLOGIES	CAES 3 DELOITTE	CASE 4 SIOEN INDUSTRIES	CASE 5 DEVAN	CASE 6 RECTICEL
CONSORTIUM AGREEMENTS	Efficient and effective	Efficient and effective	Not very efficient but very effective	Efficient because we've got no problems so far	Efficient and effective	Relatively efficient and effective
NON-DISCLOSURE OR CONFIDENTIAL AGREEMENTS	N/A	Efficient and effective	Not very efficient but very effective	Efficient because we've got no problems so far	Efficient and effective	Relatively efficient and effective
NON COMPETING AGREEMENTS	N/A	N/A	N/A	N/A	Efficient and effective	N/A
IP OWNERSHIP AGREEMENTS	Efficient and effective	Efficient and effective	Not very efficient but very effective	Efficient because we've got no problems so far	Efficient and effective	N/A
KNOWLEDGE TRANSFER	Efficient and effective	N/A	N/A	N/A	Efficient and effective	N/A
NORMS	Efficient and effective	N/A	N/A	N/A	N/A	Relatively efficient and effective
TRUST	Efficient and effective	Efficient and effective	Not very efficient but very effective	Efficient because we've got no problems so far	N/A	Relatively efficient and effective
OTHERS	Efficient and effective	Efficient and effective	Not very efficient but very effective	N/A	N/A	Relatively efficient and effective

Table 4.4: Cross-case analysis of the different IP Management method efficiency and effectiveness

As concerns the efficiency and effectiveness of the different IP management methods used. The researcher considered particularly the methods used by the different companies as illustrated from table 4.3 above and represented in table 4.4 above and on methods that companies don't use, a not applicable (N/A) is indicated. From table 4 above, five on six companies declared that their used methods were efficient and one on six said theirs were not very efficient. Again, six on six companies declared their methods were effective. Most companies said the efficiency and effectiveness are due to the different outcomes achieved. For instance, IMEC in the semi-conductor area has targeted every aspect. They have experienced increased turnover with a percentage growth increase of 5% to 10%. ATSEA TECHNOLOGIES on its part is proud to be a bi-product of a successful OI process with the success of the seaweed project. Sioen Industries on its part has been able to carry out ten to fifteen successful projects including the "SPEEDKITS project and ATSEA project". Devan on their part say it is efficient and effective due to the success of the "NANOBOND project". RECTICEL on their part demonstrate this with the success with the car dashboard production chemistry project with about fifteen partners at the beginning of the project. Efficiency and effectiveness of methods used is demonstrated on the pie chart below.

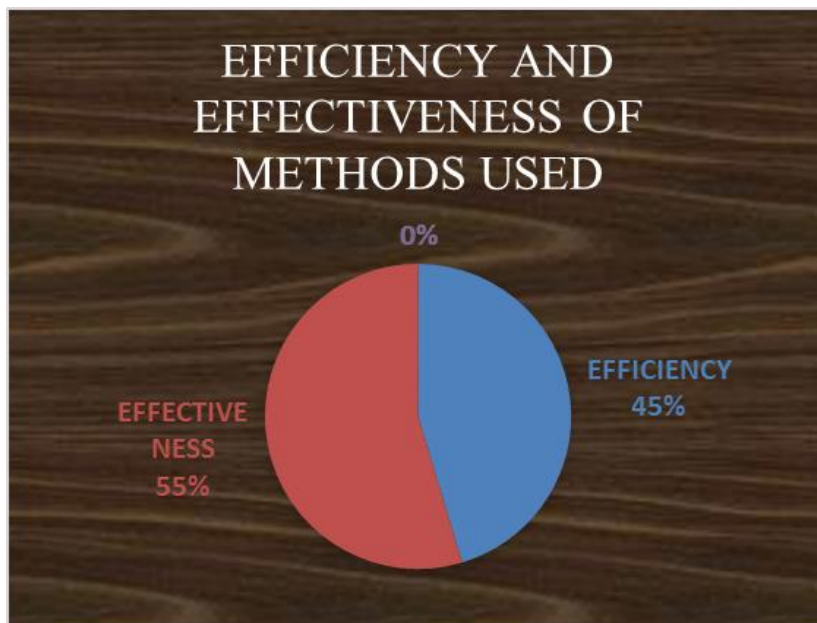


Figure 4.3: percentage presentation of IP management methods efficiency and effectiveness

The above chart shows that, the methods used have been of maximum productivity (efficient) with

a 45% and has made meaningful effects (effectiveness) with 55% to the different companies as mentioned in the examples above.

IV.II.V. Cross-case analysis of OI influence on companies

EFFECTS	CASE 1 IMEC	CASE 2 ATSEA TECHNOLOGIES	CAES 3 DELOITTE	CASE 4 SIOEN INDUSTRIES	CASE 5 DEVAN	CASE 6 RECTICEL
POSSITIVE	Very positive since it has enabled company to pay for projects with a 5 to 10 percent growth increase	Positive. Got an unbelievable strong team to work with and share ideas	A very positive influence because of the smart people in and out of the company	Very positive from 2006 that we are doing 50% OI and 50% CI	Very, very positive since it has moved us to markets that competitors can't go	Generally positive because it opens your minds' possibilities and capabilities in areas you will not get on your own
NAGATIVE	N/A	N/A	N/A	N/A	N/A	N/A

Table 4.5: Cross-case analysis of influence of OI on the companies

Table 4.5 above shows a cross-case analysis of OI influence on the different companies. On this dimension we have the positive and negative influence of OI on the different companies. All six companies said OI has been a very positive influence for them. Since it has brought lots of achievements for them as mentioned in the examples above. This dimension is demonstrated on the pie chart below.

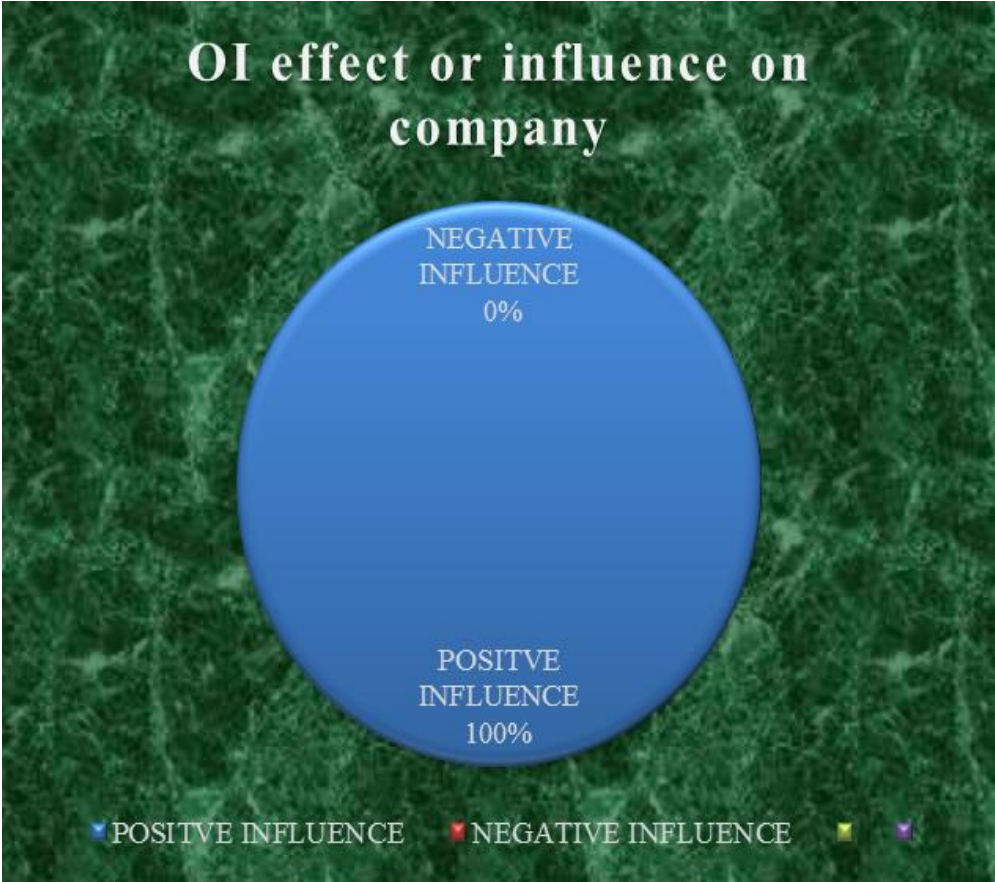


Figure 4.4: percentage presentation of OI influence on companies

From the above figure, it is clear that OI so far has a 100% influence on the companies interviewed.

CHAPTER FIVE: DISCUSSION AND CONCLUSION

This master's thesis project was performed in relation to the limited literature in line with OI specifically in the domain of IP management. As objective for this master thesis the researcher had to identify some reasons why IP ought to be protected in an OI process and also to identify ways of managing IP in OI. Thus, this section will accentuate both the theoretical and practical insides offered by this research project. And also discuss some recommendations for entrepreneurs, researchers and even the government. And then also identify the limitations concerning this work.

V.I. THEORETICAL IMPLICATIONS

Firstly, this project had as focus to identify reasons why firms ought to protect their IP in OI. So far, this project identified five major reasons why companies protect their IP in OI processes. These five reasons are, the open nature of OI, fear of theft, avoidance of counterfeiting and piracy, appropriation of benefits and fostering innovation. So far so good, the findings shows that the open nature of OI and the fostering of innovation were not very much celebrated by the cases in question. Meanwhile, fear of IP theft, avoidance of counterfeiting and piracy and appropriation of benefits from ones innovation were commonly identified with by all six cases. One new reason for IP protection in OI was identified, being the fact that IP is a proof of potential takeover of a business makes it necessary to be protected be it within or without OI. These different reasons for IP protection in OI have so far proven to be beneficial to the different firms that use them.

Secondly, this master thesis also has as objective to identify the IP management methods in OI. So far so good, literature identifies with two major methods as classified by the researcher. That is formal and informal IP management methods. And these two major methods are broken down into seven main IP management methods in OI being, consortium agreements, non-disclosure or confidential agreements, non-competing agreement, IP ownership agreement, knowledge transfer, norms and finally trust. Consortium agreements and IP ownership agreements were unanimously celebrated by all the cases under study with a 20%, followed by non-disclosure agreements and trust with a 16% and then comes norms and knowledge transfer with a 6% and finally non

competing agreements with a 3%. It was discovered during the research process that firms have some other methods they use in protecting their interest, IP or knowledge in OI that is not common to all but specific to the firms in question. For instance, IMEC special program that is very specific for IMEC, the decision tree method specific for RECTICEI and commercial contract agreement that was identified with Deloitte. These IP management methods in OI were classified as others and had it scored a 13%.

Thirdly, the researcher didn't yet identify from literature how efficient and effective the different IP protection methods used in OI have been. But then, the cases under study have clearly demonstrated that the different methods used they each make use of have been so far very efficient and effective due to results they achieve.

Again, literature preaches the positive effect of OI in a firm today. This was in line with the research so far since all cases did experience a positive influence in their companies after engaging in OI. But then, we think this was only possible because the OI process were well planned and proper manner of IP management were put in place. Because it is said that IP can either make or mare an OI innovation process.

V.II. PRACTICAL IMPLICATIONS

This section will be illustrating some guidelines on how entrepreneurs can be able to properly manage IP in OI in order to avoid any negative impacts, what researches ought to do in this area of research and finally what the government can do to help develop this aspect of OI and IP management. Even though these guidelines could be very specific for the country under observation, that is Belgium, we think they can be suitable for any European country and even other continents that are already undertaking OI.

Firstly, entrepreneurs have to understand that though OI have got its advantages, it can also be very dangerous to engage in the process if not very ready for it. Thus a proper evaluation of how ready and capable you as an entrepreneur is and also how ready and capable those who will work with you from your firm on the OI project are. Very vital, the entrepreneur also needs to evaluate its intended partners and know how ready they too are to collaborate in the OI process. This self and partner evaluation beforehand determines the entrepreneurs mindset when finally they engage in

OI collaboration process.

Secondly, entrepreneurs must understand that the reasons for IP protection in OI are very crucial and so they have to establish very strict rules and methods of managing the entire OI process and their IP in this forum. For instance, pre collaboration talks must be held to get to understand who is who you are collaborating with.

Thirdly, clear terms on what will take place during and even after the OI collaboration process should be stated in order to avoid unnecessary misunderstandings. Decisions should be reached before hand as to who contributes what, who controls what and who owns what at the end of the process must be reached before taking actions. This can be achieved easily through contractual or consortium agreements of different types. But then it should be noted that the kind of contractual or consortium agreement would be determined by the project at hand and the kind of partners present on the table.

Entrepreneurs must understand that IP is a very vital component of OI, for it can either make or mare the process. This goes to say that IP must be properly managed in the process to avoid issues among partners. Thus, proper management strategies of each party's IP must be put in place before hand. Parties must be able to identify what is put on the table by the other parties and what each party gets at the end of the OI collaboration.

Finally, entrepreneurs must understand that "*Trust*" is a very vital aspect in OI, and so they need to be willing and ready to trust not just the partners, but also the entire collaboration process in order not to lose focus half way. All parties must be ready to trust each other before they engage in the OI process. No party is allowed or permitted to be paranoia. This can work out very properly when there is a very good communication media between the partners are set up. For only truthful, valuable and reasonable communication can better buttress trust.

Moreover, Universities, research centers and researchers in general must embark on researching on OI and IP management since IP is a very vital component of OI collaboration. Understanding how to manage IP in OI will help produce better results. For so far very little has been done in this area of research.

The government on its part should re-enforce their already existing support towards OI ventures.

They should finance research in the area of OI and IP, organize seminars to create more awareness on the importance of IP in OI and how to manage it. They should create joint projects for several companies more and more to motivate others to give OI a thought. They should also create training opportunities to entrepreneurs of big, medium and even small size companies on the effects of proper or poor IP management in OI. The government should grant more and more financial support to companies that are willing to take part in OI ventures but do not have what it takes.

Finally, success of an OI process should not be limited to the end result of the project. Rather, the entire process should be evaluated from the beginning to the end to get better outcomes.

V.III. LIMITATIONS AND RECOMMENDATIONS

In the course of this research project, the researcher encountered some limitations. Firstly, the time frame for this research was so limiting based on the fact that it took really long to be able to get the research contacts meant for the project.

Secondly, since very little has been done on the subject matter of OI and IP management, it was really challenging getting appropriate secondary data for this project.

Moreover, the researcher realized that there could be the existence of other IP management methods in OI that she might not have had the opportunity to explore. And that there could also exist some more reasons for protecting IP in OI that she might not have exploited.

As recommendations for further research, the researcher thinks that further research should be carried out in the field of OI and IP in general and to also identify more reasons for IP protection in OI also to identify and even create better IP management methods in OI for a better future of OI.

Furthermore, the researcher strongly recommends that the aspect of “*trust*” in OI should be duly considered for further research since trust has proven to be a very vital aspect of IP management in OI.

We finally recommend that research should be carried out to determine the extent to which contractual or consortium agreements are a vital component for IP management in OI.

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APPENDIX

INTERVIEW QUESTIONS

Dear Sir/Madam,

A REQUEST TO HAVE AN INTERVIEW WITH SOME EMPLOYEES OF YOUR COMPANY FOR MY RESEARCH PROJECT

My name is *Mbonteh Faithfull Munka*. I am a Master of Management (International Marketing Strategy) student in the Hasselt University, in Belgium. I am presently carrying out a research on the topic: *“Open innovation and intellectual property management”* supervised by *Prof. Dr. Nadine Roijackers*. The purpose for this research is purely academic, meant to earn me (*Mbonteh Faithfull Munka*) a master degree in management precisely in International Marketing Strategy.

Dear Sir/Madam, this interview is meant for the Innovation Manager and the Intellectual Property (IP) Manager of your institution or any other executive in charge of innovation (open innovation) and Intellectual Property. This interview is going to take **about forty (40) to fifty (50) minutes** of each person’s time. And they will be answering the following questions and more as the need arises:

SECTION ONE: DEMOGRAPHIC ASPECTS

1) Gender

Male Female

2) What is your name?

3) What position do you hold in your company?

SECTION TWO: GENERAL KNOWLEDGE ON OPEN INNOVATION AND INTELLECTUAL PROPERTY AND INTELLECTUAL PROPERTY MANAGEMENT

1) What is your opinion on open innovation

2) What is your opinion on intellectual property

3) What do you understand by intellectual property management in open innovation?

SECTION THREE: REASONS FOR INTELLECTUAL PROPERTY PROTECTION IN OPEN INNOVATION.

1) What in your opinion are the reasons for intellectual property protection in open innovation?

2) a. Has your company been affected by any of the above mentioned reasons in an open innovation process?

b. If yes, how was the situation handled? Could you please demonstrate with an example?

c. If no, do you think you might be faced with such situations in the future, and how do you plan to handle it?

SECTION FOUR: HOW TO MANAGE INTELLECTUAL PROPERTY IN OPEN INNOVATION.

1) What are the ways or methods your company uses to manage their intellectual property in open innovation process?

2) a. How efficient and effective have the above mentioned methods been?

b. could please illustrate with some examples?

3) Which are the methods you use most and why?

4) a. Has open innovation been a positive or a negative influence on your company? And why?

b. Can you give some examples?

I will be grateful should my request be given a positive response. I assure you that the answers will remain confidential and will be purely for academic purpose only.

Thanks Yours faithfully

Mbonteh Faithfull Munka.

Auteursrechtelijke overeenkomst

Ik/wij verlenen het wereldwijde auteursrecht voor de ingediende eindverhandeling:
Open innovation and intellectual property management

Richting: **Master of Management-International Marketing Strategy**
Jaar: **2017**

in alle mogelijke mediaformaten, - bestaande en in de toekomst te ontwikkelen - , aan de Universiteit Hasselt.

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Voor akkoord,

Mbonteh, Faithfull Munka

Datum: **29/05/2017**