

Finnish Passive House Entrepreneurs' Motivators to Start Sustainable Enterprises

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Abstract

The objective of the study was to research the motivators of passive house entrepreneurs to start sustainable enterprises. In addition the aim was to find whether their motivators had changed during the entrepreneurship process and do they even see themselves as sustainable entrepreneurs. Finally the objective was to find out if passive house entrepreneurs follow a particular entrepreneurship process proposed by Belz and Binder (2013).

The methodology used was a multiple case study design. The questions were semi-structured and open-ended. The analysis consisted of unique case analysis and cross-case pattern analysis.

The results were manifold. All the entrepreneurs found three motivators to be important throughout the process. Those were desire for independence, need for achievement and drive. Identifying gap in the market and passion increased during the process in two cases. These findings were in line with previous literature. Green values, on the other hand, were not seen as a main motivator in any one of the cases, throughout the whole process. This finding contradicts previous literature.

Related to the topic is the question focusing on triple bottom line i.e. how they divide the goals of their enterprises? All of them saw economic, ecological and social goals in their businesses. The most dominant goals were either the economic or the ecological ones, which is understandable bearing in mind the product at hand. Given the high level of technical innovations in the products, it would be reasonable to add a fourth element, technological goals, into the analysis.

The research part focusing on the process itself didn't support the earlier findings of Belz and Binder (2013). Firstly there seems to be different kinds of triggers to start sustainable enterprises. In these cases the triggers haven't been socio-ecological problems but rather socio-ecological interests. Secondly, recognising entrepreneurial opportunities and aligning the socio-ecological problems with the entrepreneurial opportunities were not clear steps in either case, opposite to what Belz and Binder (2013) have suggested. And thirdly, funding and forming the enterprise has occurred mainly in much earlier phase compared to Belz and Binder's (2013) process model.

Overall the findings lead to questioning whether earlier research defining sustainable entrepreneurship is insufficient. If the company and the product are sustainable, but the entrepreneur is not motivated by green values, does the entrepreneur fulfil the criteria of a sustainable entrepreneur? Is sustainable entrepreneurship defined through the entrepreneur or the enterprise?

Keywords sustainable, entrepreneurship, motivation, passive house, process

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1 INTRODUCTION

Over the last century the economic growth has been extensive and the quality of life has increased. These improvements are results of industrialisation. On the other side there are concerns of substantial negative effects on the natural environment. Some of the recent scientific discoveries have revealed global scale effects such as ozone depletion, climate change, and the worldwide destruction of ocean fisheries (Dean and McMullen, 2007).

There isn't hardly any research that tries to explain how entrepreneurs influence on the sustainability of the environment (Dean and McMullen, 2007). Only lately entrepreneurship has been seen in a major role in solving some of the environmental challenges. For example Dean and McMullen (2007) have outlined some means by which entrepreneurial action can resolve environmental challenges. They argue that many individuals have growing desire for stopping the environmentally degrading activities and that they are willing to pay for that. Thus there are opportunities for entrepreneurial action that can lead to the improvement of ecological sustainability.

One important segment where entrepreneurs can improve sustainability is construction industry. Buildings consume around 40% of all the energy used and cause roughly 40% of all the waste and carbon dioxide (Ympäristöministeriö, 2013; Museum of Finnish Architecture, 2014). The decisions made during the construction phase impact long time in the future through energy and water consumption, for example. Ecological solutions can dramatically reduce the amount of greenhouse gases over the lifetime of the building (Ympäristö.fi, 2014).

Ecological houses consume as little energy as possible and are made of renewable and recyclable raw materials. In the best case the structure is simple and easily maintained. The better the insulation in the house the less it consumes energy. Such ecological

houses are typically defined as low energy houses or in even better case passive houses (Museum of Finnish Architecture, 2014).

This research project is carried out under a larger research project that belongs to a European level project called End User Integration, Innovation and Entrepreneurship (EU-InnovatE). The key idea in the project is to *investigate the creative, innovate and entrepreneurial roles of users in developing sustainable novel products, services and systems*. In this case the research focuses on three entrepreneurs developing sustainable novel products. The products are passive houses and they are all built with novel structures in the market.

Passive houses are defined by Passive House Institute in Germany as “*a building standard that is truly energy efficient, comfortable and affordable at the same time*” (Passive House Institute, 2012). So it is reasonable to argue that passive houses meet the triple bottom line requirements of sustainable products. They are energy efficient (ecological), comfortable for the inhabitants (social) and affordable (economic).

A special spice to the project is the motivation of the entrepreneurs to establish sustainable businesses, and especially the change in motivation over the opportunity process. This is a novel approach as well. As Shane et al. (2003) state: “*Relatively little of the motivation research on entrepreneurship has considered the effects of motivation on specific steps in the entrepreneurial process.*” Also Patzelt and Shepherd (2011) have more recently called for research that takes into account potential interactions between knowledge and motivation variables when studying the recognition of sustainable development opportunities.

To clarify the study, the main research question is

“What motivates Finnish passive house entrepreneurs to start sustainable enterprises?”

And the sub questions, to define the question further, are:

- Have their motivators changed during the entrepreneurship processes?
- Do they follow the sustainable entrepreneurship process as proposed by Belz and Binder (2013)?
- Do passive house constructors consider themselves as sustainable entrepreneurs?

This research project began with a visit to the Technische Universität München (TUM) and their chair of corporate sustainability with Prof. Dr. Frank-Martin Belz. We were fortunate to learn recent information about their current research projects where they are studying sustainable entrepreneurs. As many case companies there were involved in the food or automotive industry, I thought that construction industry would bring diversity to the research project.

I wanted to find companies that produce only single-family passive houses and nothing else. I thought that a cross case comparison would be clearer, if the industry would be narrowed down as much as possible. I finally found three companies from Finland that fulfilled the criteria, and luckily they all agreed to participate.

This research project is done with multiple case study design (Eisenhardt, 1989; Yin, 2009). It has an early identification of the research question and possible constructs (Eisenhardt, 1989).

The structure of the thesis is straightforward. First previous literature is presented and then the research methodology is looked through. After that all the cases are first explained in detail and then they are all analysed together. Finally the results are discussed and then the whole research project is concluded.

The next chapter presents past research in the fields of motivation, opportunity process and sustainable entrepreneurship.

2 LITERATURE REVIEW

The research in the field of entrepreneurship has mainly focused on the characteristics of the entrepreneurs, the opportunities in which they respond, their strategies, their resource acquisition or their organising processes (Shane, 2003). So far there has been inadequate empirical work on understanding the role of human motivation in the entrepreneurial process. However, The lack of previous studies does not deny the importance of it (Shane, 2003). And as it is an under researched topic in the general entrepreneurial literature, there is also a need for further research among sustainably oriented entrepreneurs (Hall et al., 2010).

Most studies on motivation and entrepreneurship are trying to determine if firm founders are different from each other, managers, or the general population. This approach is however problematic in two ways. Firstly, it assumes that a certain motivation influences all steps in the entrepreneurial process equally. And secondly, it assumes that, when the founders are compared to others, they actually represent the whole population of people who engage in entrepreneurial activity (Shane et al., 2003).

This study aims to bring together the individual aspect of entrepreneurs and their motivation, the external factors through a sustainability point of view and the processes that occur when new ventures are formed.

Figure 1 presents the building blocks of the theory. Entrepreneur, sustainable entrepreneurship and entrepreneurial opportunities/opportunity processes form the basis where the core of the research is built upon. In centre are then the theories around entrepreneurial motivation and sustainable entrepreneurship process.

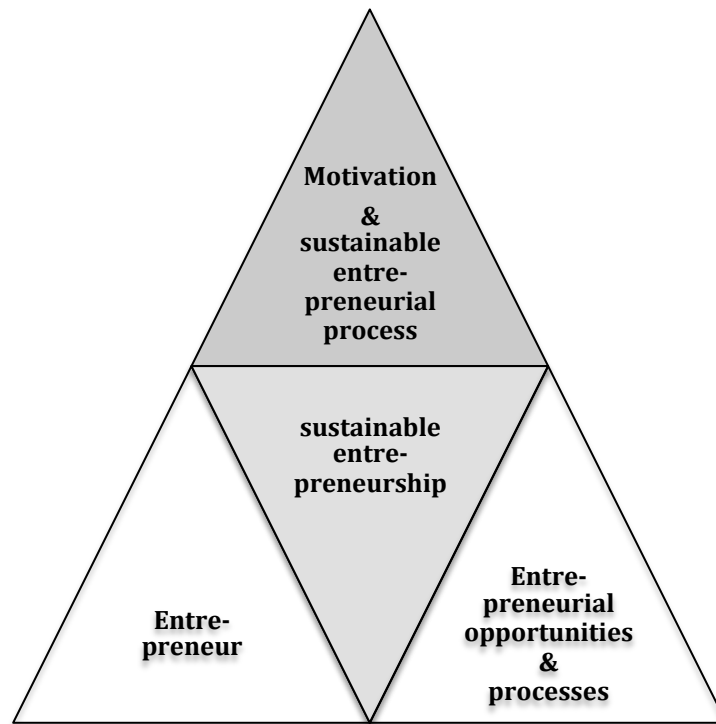


Figure 1: Building blocks of the theory

Literature review begins with the definition of entrepreneur. Then it presents the concept of sustainable entrepreneurship, as it forms a generic framework for the whole study. The next chapter focuses on entrepreneurial opportunities. And as the research focuses on entrepreneur's motivation and processes to exploit opportunities, the next step is to review the entrepreneurial processes and the sustainable entrepreneurship process in particular. And finally the focus will turn to the motivation of entrepreneurs in different stages of the entrepreneurial processes.

2.1 Entrepreneur

Bruyat and Julien (2000, p. 3) summarise early definitions of an entrepreneur:

- *Cantillon: The entrepreneur is someone who assumes the risk and may legitimately appropriate any profits.*

- *Turgot and Say: The entrepreneur is different from the capitalist, who assumes the risk or uncertainly —the entrepreneur obtains and organizes production factors to create value.*
- *Schumpeter: The entrepreneur performs the function of innovation that enables the liberal system to persist by going beyond its contradictions.*

Today, the researchers seem to follow two main trends. The first one has its background in the work of Turgot and Say. It considers the entrepreneur to be a person who creates and develops new business of any kind. The second one follows the view of Cantillon and Schumpeter. There the entrepreneur is an innovator, and therefore a relatively exceptional person who changes the economy in some way or another (Bruyat and Julien, 2000; Moroz and Hindle, 2012).

This dichotomy is evident in the research papers that are referred to in this study. For example Bruyat and Julien (2000, p. 5) conclude that for them “*entrepreneur is the individual responsible for the process of creating new value (an innovation and/or a new organization)—in other words, the individual without whom the new value would not be created.*” This view is similar to Cantillon and Shumpeter. The other view can be found for example in the work of Kirkwood and Walton (2010, p. 205) to whom an entrepreneur is “*someone who is the founder of a new for-profit business*” or in the study by Kirkwood (2009) where the definition is “*a person (or a group of people) who creates a new business (for profit) and employs at least one other paid employee*”. These views are both closer to Turgot and Say.

Shane (2003) sees the entrepreneur as an individual having a crucial role in the process of opportunity. The main reason is that the discovery of an entrepreneurial opportunity requires the formulation of new means-ends framework, which is cognitive work and thus cannot be a collective act. Therefore individuals, not groups or firms, discover entrepreneurial opportunities. McMullen and Shepherd (2006) define further that entrepreneurs create value through their entrepreneurial actions i.e. they make judgemental decisions under uncertainty about possible opportunities. Both of these

definitions follow process-oriented approach to entrepreneurship, which seem to be the prevailing approach among the scholars of the field.

There are differences between people in the way they discover opportunities. The main reasons for this are that some people have better access to information about the existence of an opportunity and some people are better than others to recognise opportunities due to their cognitive capabilities (Shane, 2003).

This topic is relevant when considering the background of the entrepreneurs that are interviewed for the research. Shane (2003) lists three main elements for better access to information: life experience, social networks and search process. Life experience is further divided to job function and variation in experience.

In the same way Shane (2003) has two main reasons for better opportunity recognition. They are absorptive capacity and cognitive properties. Absorptive capacity is closely related to prior information, especially on knowledge about markets and knowledge how to serve them. Cognitive properties have four sub categories: intelligence, perceptive ability, creativity and not seeing risks.

Individual differences do not only matter in the discovery of opportunities, but also in the decision to exploit them. According to Shane (2003), there are both psychological and demographic differences affecting on opportunity exploitation. Psychological factors are motivation, core self-evaluation and cognition where as demographic differences are for example education, career experience, age, social position and opportunity cost. For McMullen and Shepherd (2006) there are two main reasons why an entrepreneur decide to pursue an opportunity: the amount of uncertainty perceived and the willingness to bear it.

The non-psychological or demographic differences will be covered in the interviews when the entrepreneurs are asked about their backgrounds. The main focus of this research is however in the psychological factors of the entrepreneurs, and especially in their motivation. The motivational factors are discussed in detail later on.

2.2 Sustainable entrepreneurship

The term “sustainable development” was first created at the United Nations Conference on the Human Environment in 1972. The World Commission on Environment and Development defined it more in detail in a report that they wrote to United Nations 1987. The definition is:

“Sustainable development is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs”

In many cases sustainable development is used to place social and environmental objectives on equal footing with economic objectives (the so-called “triple bottom line”) (Hall et al., 2010; Belz and Binder, 2013).

Sustainable entrepreneurship, on the other hand, has been defined in various different ways. This inconsistency is typical for a nascent research stream. To get a more unified understanding of the topic, Belz and Binder (2014b) have conducted a systematic literature review to find different definitions of sustainable entrepreneurship. They find that some consensus has been achieved already. There is a common understanding of sustainability in terms of the triple bottom line. In addition all definitions emphasize opportunities as the central idea. And finally all definitions take a process view on sustainable entrepreneurship instead of focussing on the individual entrepreneur.

After conducting a systematic literature review, Belz and Binder (2014b, p.3) decide to use following description:

“We define sustainable entrepreneurship as the scholarly examination of how opportunities to bring into existence future goods and services are recognized, developed, and exploited by whom, and with what economic, social and ecological gains”

Where some people argue that substantial reduction of development is needed in order to achieve sustainability, many people believe in the possibility of large-scale economic and societal transformation through innovation. Some people are sceptical of existing businesses and believe that entrepreneurs will drive the change. This belief, that entrepreneurs will save the day, is called the Panacea Hypothesis (Hall et al., 2010).

Dean and McMullen (2007) have explained these entrepreneurial opportunities further. They claim that the unique features of many environmental resources reduce their adaptability to market allocation. Thus entrepreneurs create and improve markets for such resources through entrepreneurial action. This can be done through the development of property rights and economic institutions, the reduction of transaction costs, the dissemination of information, and the motivation of government action. Through the resulting development of markets, entrepreneurs can profit from the economic value created while reducing environmental degradation and enhancing ecological sustainability. Both increasing evidence of substantive environmental degradation and recent market developments in renewable energy, fuel cells, green building, natural foods, carbon emissions, and other sectors suggest an increasing importance of opportunities for environmental entrepreneurship.

2.2.1 Triple Bottom Line (TBL)

The sustainable development and the “triple bottom line” approach emphasize economic, environmental, and social gain as important development goals (Patzelt and Shepherd, 2011). J. Elkington first introduced this term in 1994. He found that the combination of economic, social and ecological benefits results in a win-win-win situation for business, the society and the environment (Belz and Binder, 2014b).

In the sustainable development opportunities the focus in the development of economic gains is for someone other than the entrepreneur. The gains for the entrepreneur are not excluded, but they are not a necessary condition. The environmental gains refer to the

improvement of conditions of the natural environment and the social gain to the well-being and security of people (Patzelt and Shepherd, 2011).

2.2.2 *Ecopreneurs, social entrepreneurs and sustainable entrepreneurs*

To be specific with the definitions a distinction must be made with the concepts of ecopreneur (environmental entrepreneur), social entrepreneur and sustainable entrepreneur.

Dean and McMullen (2007, p. 51) differentiate sustainable entrepreneurship from social entrepreneurship by defining that social entrepreneurship “*tend to address mission-driven, rather than profit-driven entrepreneurial endeavours*”. Similarly Choi and Grey (2008, p.560) define that “*social entrepreneurship deals with the initiation of non-profit organizations and government or community supported agencies to address the problems of social welfare*”.

Belz and Binder (2014b) decide to follow the definition of Dees (1998, p. 4) according to whom: “*Social entrepreneurs play the role of change agents in the social sector, by: Adopting a mission to create and sustain social value (not just private value); recognizing and relentlessly pursuing new opportunities to serve that mission; engaging in a process of continuous innovation, adaptation, and learning; acting boldly without being limited by resources currently in hand; and exhibiting heightened accountability to the constituencies served and for the outcomes created.*” Even though social entrepreneurs may gain economic profit that is not their main driver. Rather, social entrepreneurs reinvest the profit on their social mission (Bacq and Janssen, 2011, cited in Belz and Binder, 2014b, p.10).

In the same way Dean and McMullen (2007) define, environmental entrepreneurship as being a subset of the broader concept of sustainable entrepreneurship. They more specifically define it as “*the process of discovering, evaluating, and exploiting economic opportunities that are present in environmentally relevant market failures*”. (Dean and McMullen, 2007, p. 58). Environmental entrepreneurs are driven by both, the

desire to save the environment and the desire to make a profit with their venture (Linnanen, 2002).

Belz and Binder (2014b) clarify the differences even further. Their figure (Figure 2) gives a good understanding on the differences and the overlapping of these concepts.

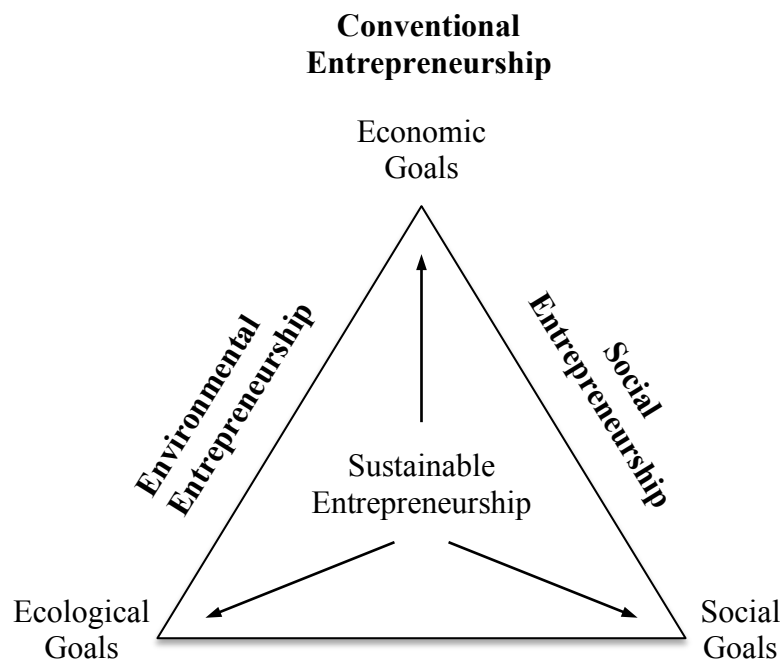


Figure 2: Sustainable entrepreneurship and related concepts (Belz and Binder, 2014b)

2.3 Entrepreneurial Opportunities

In their research on opportunity identification and development Ardichvili et al. (2003) found out from literature that there are several concepts that are often confused with each other. These concepts are related to the principal activities that take place before a business is formed. In various research the phase is called either opportunity development, opportunity recognition or opportunity evaluation.

Identifying and selecting right opportunities for new businesses are some of the most important abilities of a successful entrepreneur (Stevenson et al., 1985, cited in Ardichvili et al., 2003). Shane (2003) explains further that it is important to understand the opportunities as their characteristics might influence the entrepreneurial process and the opportunities can differ significantly in expected value. This is why entrepreneurship research has focused in many cases on explaining the discovery and development of opportunities (Ardichvili et al. (2003).

So far opportunities are defined in several different ways. For Shane (2003 p. 18), entrepreneurial opportunities are “*situations in which a person can create a new means-ends framework for recombining resources that the entrepreneur believes will yield a profit*”. Shane et al. (2003) have used the same definition as Shane and Venkataraman (2000, p.220) where entrepreneurial opportunities are “*situations in which new goods, services, raw materials, and organizing methods can be introduced and sold at greater than the cost of their production*”. And Ardichvili et al. (2003), follow Kirzner (1997) and call opportunities as “*imprecisely-defined market need, or un- or under-employed resources or capabilities*”.

Traditionally, the entrepreneurial research and literature recognises two major perspectives on the existence and sources of entrepreneurial opportunities. They are the Schumpeterian (1934) and Kirznerian (1973) perspectives. Main difference in these two approaches is the existence of information. For Kirzner the existence of opportunities requires only different access to existing information whereas for Schumpeter entrepreneurial opportunities arise from new information. Main sources of Schumpeterian opportunities are changes in technology, changes in politics and regulation and changes in social and demographic factors and the main forms of opportunity are new products or services, new geographical markets, new raw materials, new methods of production and new ways of organising (Shane, 2003).

In the context of sustainable innovations Schumpeterian point of view seems to be closer to reality. These sort of entrepreneurial opportunities have risen because of new

information in areas such as global warming. In addition to the new information, changes in technology have made it possible to create new products i.e. houses that consume less energy than their precedents. Belz and Binder (2014a, p. 2) have defined this kind of sustainable entrepreneurial opportunities, as “*opportunities that meet a market need through a creative combination of resources to deliver superior value and to enhance sustainable development*”.

When Belz and Binder (2013) investigated opportunities discovered by sustainable entrepreneurs they found out that recognition of socio-ecological problems is separate and distinct from the recognition of entrepreneurial opportunities. Later they concluded that specific ecological problems and specific social problems are two different kinds of sources for sustainable entrepreneurial opportunities (Belz and Binder, 2014a).

Patzelt and Shepherd (2011) suggest that entrepreneurs, who discover opportunities, that support both sustainability and development, likely focus on different aspects of their environment than those entrepreneurs, who recognize opportunities that deliver mainly economic gain to them. Prior knowledge of problems in the natural and communal environment plays an important role in the recognition of sustainable opportunities.

For Cohen and Winn (2007) a lot of entrepreneurial opportunities are raising because of the market imperfections such as externalities, inconsistent pricing mechanisms and information asymmetries – the exactly same aspects that contribute to environmental and social degradation. Dean and McMullen (2007) have made the same discovery based on environmental economics, which concludes that environmental degradation results from the failure of markets. Combining that with the entrepreneurship literature where opportunities are inherent in market failure, they conclude that environmentally relevant market failures represent opportunities for simultaneously achieving profitability while reducing environmentally degrading economic behaviours.

Shane (2000) presents that prior market knowledge increases the absorptive capacity of entrepreneurs to discover opportunities. Patzelt and Shepherd (2011) agrees and links the idea to sustainable entrepreneurship by proposing that people with prior market knowledge are more likely to discover opportunities for sustainable development and people without past entrepreneurial or market knowledge tend to find other ways to help. This viewpoint is not supported by Belz and Binder (2013) though. In their case study research most of the founders didn't have any kind of prior market knowledge.

Besides prior market knowledge another important determinant of opportunity recognition is motivation. Patzelt and Shepherd (2011) describes that people are more motivated to pay attention on sustaining the natural and communal environment if they feel that their physical and psychological well-being is threatened. However people differ in their motivation to pay attention to the development of economic, environmental, and social gains for others in the society.

Ardichvili et al. (2003) point out that entrepreneurs identify business opportunities to create and deliver value. They emphasise that opportunities are made, not found (even though some elements of opportunities may be "recognized"). The focus of research shouldn't be in "opportunity recognition" but rather in "opportunity development" as it involves entrepreneurs' creative work. Belz and Binder (2013) have adopted the same point of view. Their empirical results support this, as the development of sustainable opportunity seems to be a continuous, longstanding process.

The creation of successful businesses follows a successful opportunity development process. This includes recognition of an opportunity, its evaluation, and development per se. For Ardichvili et al (2003) the development process is cyclical and iterative: an entrepreneur is likely to conduct evaluations several times at different stages of development; evaluation could also lead to recognition of additional opportunities or adjustments to the initial vision.

Ardichvili et al., (2003) point out further that there exist different kinds of opportunities that have quite different opportunity development process. They divide the opportunity types in four categories based on known and unknown market need and value creation capability. They call these opportunity types as dreams, problem solving, technology transfer, and business formation. The development of sustainable housing solutions belongs to “Problem solving”. We know that future development in the construction industry must be more sustainable than before. Now the task is to develop new means to do it.

2.4 Entrepreneurial processes

The study of processes is a commonly used method for understanding development and change of a given phenomenon (Belz and Binder, 2013). Understanding the opportunity development process is a key concept in entrepreneurship research, because the creation of successful businesses is an outcome of a successful opportunity development process (Ardicvili et al., 2003).

There are different opinions among the scholars whether the process is linear or cyclical. For Ardichvili et al. (2003) the development process is cyclical and iterative where as for Shane (2003) it is directional and ordered, although he also accepts the possibility of feedback loops.

Kyrö et al. (2013) describe further that most studies are interested in opportunity discovery and evaluation, but not in exploitation. Because of that the knowledge about the opportunity process and the interrelations between the phases is still limited. Both theoretical constructs and empirical evidence that capture the whole opportunity process need still further research. Entrepreneurs’ experiences and actions throughout successful opportunity process need to be followed to study how all the phases of the process evolve and interweave.

One of the key objectives of this study is to follow the entrepreneurial opportunity process of three sustainable entrepreneurs to add knowledge to this research field. The

hypothesis is that all these sustainable entrepreneurs follow the sustainability entrepreneurship process created by Belz and Binder (2013). The model will be presented more in detail in section 2.4.2. However, to be able to thoroughly analyse whether this is the case, it is important to understand the basic concepts of opportunity/entrepreneurship process works presented by other scholars in the field. Thus, the next section focuses on some particular entrepreneurial opportunity processes.

2.4.1 Previous opportunity process works

In their recent study Moroz and Hindle (2012) found 32 scholarly works that focussed on entrepreneurial processes. Their objective was to find processes that are both generic and distinct. With generic they mean, “all the processes that are “entrepreneurial” do this” and with distinct “only entrepreneurial processes do this”. After analysing the 32 process works they concluded that only four of them are simultaneously generic and distinct about the process. These are process works by Gartner (1985), Bruyat and Julien (2000), Shane (2003) and Sarasvathy (2006).

To understand some of the key features of different process views, some of the earlier works are discussed shortly in following paragraphs. First of all those four processes presented by Moroz and Hindle (2012) will be discussed. In addition to them the work by Kyrö et al. (2013) will be presented. The aim of this summary is to help in analysing the processes of the entrepreneurs interviewed for this study.

2.4.1.1 Gartner (1985)

Gartner’s conceptual model aims to provide a general framework from which the variance and complexity associated with the new venture creation processes can be recognised. His aim is to move away from viewing entrepreneurs and their ventures as an unvarying and homogeneous population (Gartner, 1985; Moroz and Hindle, 2012).

For Gartner (1985) new venture creation means, “*the organising of new organisations*”. His framework for describing the creation of a new venture includes four dimensions as presented in Figure 3.

1. Individual(s): the person(s) involved in starting a new organization;
2. Organization: the kind of firm that is started;
3. Environment: the situation surrounding and influencing the new organization;
and
4. New venture process: the actions undertaken by the individual(s) to start the venture (Gartner, 1985).

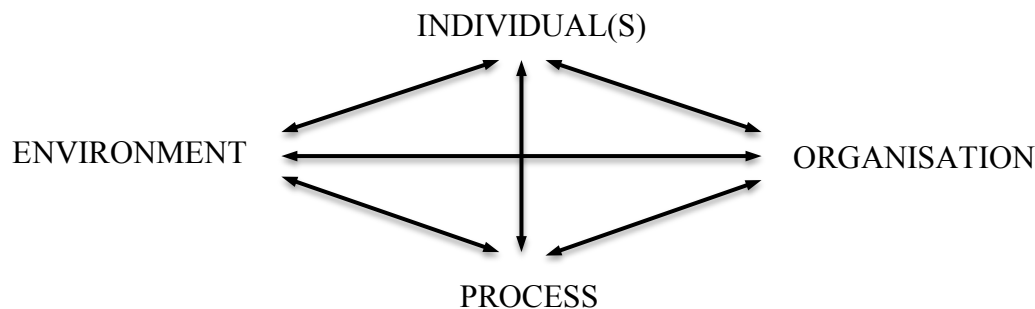


Figure 3: Gartner’s framework for describing new venture creation

2.4.1.2 Bruyat and Julien (2000)

In their framework Bruyat and Julien (2000) emphasise that that one needs to consider the individual (the entrepreneur), the project, the environment and the links between them to be able to understand the phenomena of entrepreneurship. For them the object that should be studied is the dialogic between the individual and new value creation.

Figure 4 shows how Bruyat and Julien (2000) illustrate in diagram the object studied in the field of entrepreneurship (the dialogic individual (I), new value creation (NVC)). The diagram shows the main aspects of the phenomenon: the individual, the object created (an organization and/ or an innovation), the environment and the process.

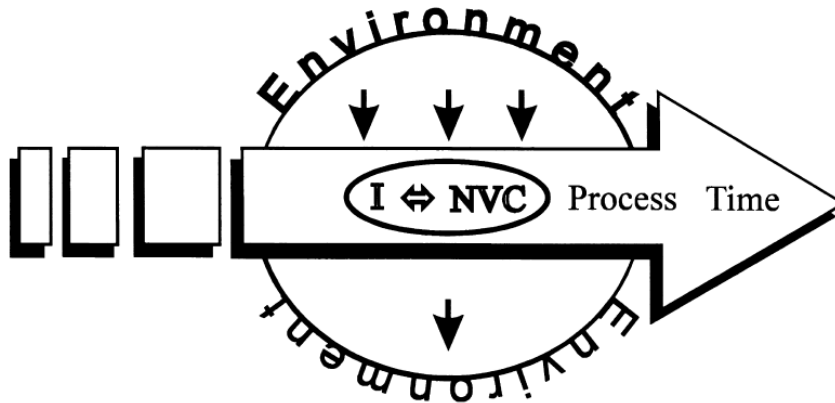


Figure 4: Bruyat and Julien's (2000) entrepreneurial process

The model involves two difficulties. The first one is to do with the entrepreneur per se. As in some cases the value creation comes from team rather than one individual. That is why individual in this context is defined as “*An organized, living body with its own existence that cannot be divided without being destroyed.*” (Bruyat and Julien, 2000, p. 6). The second difficulty relates to value creation (“what is value?”). Bruyat and Julien decide to follow neoclassical economists for whom “*value is expressed only through exchange, and therefore through the price established in a market*” (Bruyat and Julien, 2000, p. 6).

Although Moroz and Hindle (2012) acknowledge that Bruyat and Julien’s (2000) work does improve Gartner’s (1985) model, they consider the model to suffer from theoretical shortcoming in explaining the actual process itself. They also think that the model is over simplifying, it fails to capture the view of early economist that entrepreneurship is both creative and destructive, and there is no clear relationship between those who create and capture new value.

2.4.1.3 Sarasvathy (2006)

The third model that Moroz and Hindle (2012) presents is the dynamic model of effectuation by Sarasvathy. In effectual logic Sarasvathy (2006) assumes that market creation is a process that transforms present reality into new markets.

In effectuation the entrepreneur starts with his or hers current set of means: “Who I am”, “What I know” and “Whom I know”. In this sense the actions taken consist of things the entrepreneur can do and believes are worth doing. One of the first things to be done is to interact with other people. And so through interaction with each other, the participants joining the venture bring in new means and new goals. This sets in motion two simultaneous cycles, one expanding and the other converging, as presented in Figure 5 (Sarasvathy, 2006).

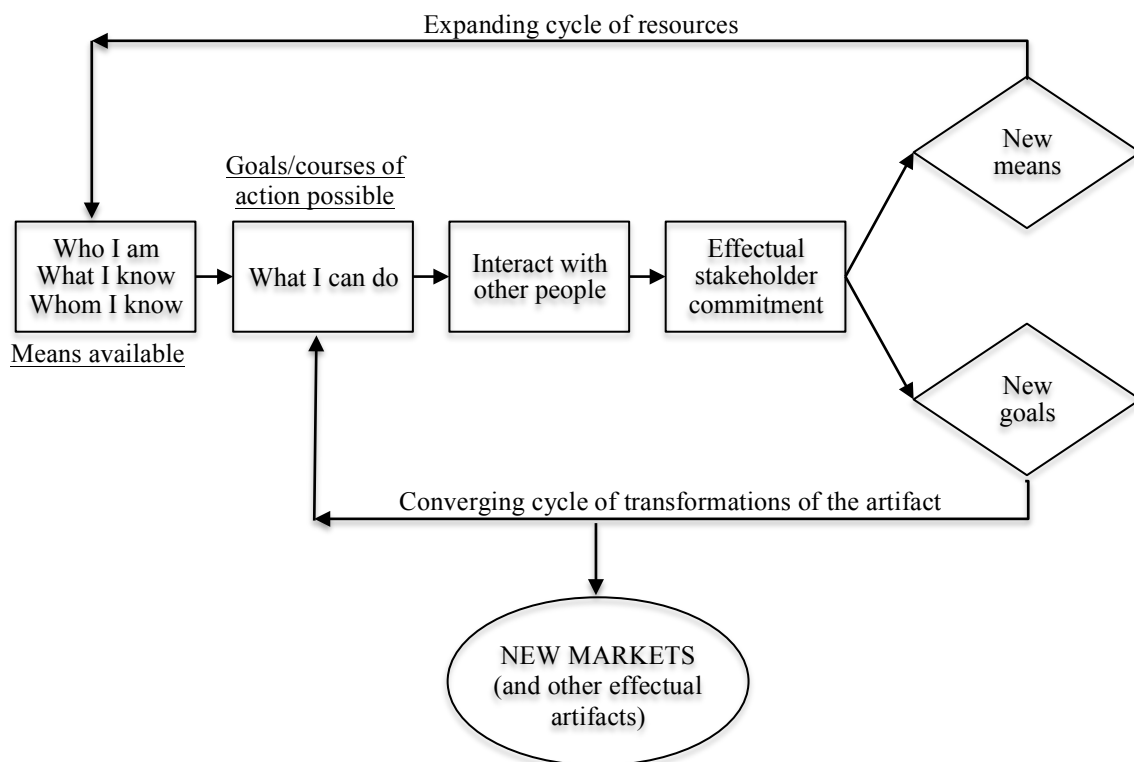


Figure 5: Sarasvathy's Dynamic model of Effectuation

Each new commitment in the chain can be modelled similarly to the first one except that each new stakeholder must negotiate with the whole venture as it is on the moment of negotiation. In addition each commitment is limited to what that party can afford to lose. Going forward the set of commitments that defines an effectual network involves only an agreement to participate in something, not an agreement to predicted future payoffs. It can be considered as strategic partnership that leads to a creation of a new market based on the combined solution the participants create. This effectual network is impacted by three factors: interactions with external environment that eventually will become additional commitments, those negotiations that don't become commitments and events that are completely external to the process, such as shock in macroeconomic/regulatory environment (Sarasvathy, 2006).

In her book Sarasvathy (2006, p.109) presents five characteristics of an effectual commitment:

1. *It focuses on aspects that are controllable about the future and about external environment.*
2. *Each effectuator commits only what he or she can afford to lose.*
3. *The goals of the network are determined by those who make actual commitment and what they negotiate.*
4. *As means available to the network increase, goals become more and more constrained.*
5. *The key to the process is not selection among alternatives, but the transformation of existing realities into new alternatives.*

Moroz and Hindle (2012) point out a few challenges in Sarasvathy's effectual logic. The first one is unsuccessful attempt to convey that effectual and causal logic are cognitive tools that exist within the entrepreneur simultaneously and the second one is that they find ontological confusion when it comes to the nature of effectual opportunities (they may be subjectively formed but objectively evaluated against current resources). In addition they point out that effectuation doesn't require enough

purposeful action i.e. setting and trying to achieve goals in an entrepreneurial process and it ignores communication between a person and the world around him.

2.4.1.4 Shane (2003)

Shane's (2003) framework examines the characteristics of opportunities, the individuals who discover and exploit them, the process of resource acquisition and organising, and the strategies used to exploit and protect the profits from those efforts.

Shane's (2003) entrepreneurial process model presented in figure 6 involves the identification and evaluation of opportunity; the decision whether or not to exploit it; the effort to obtain resources; the process for organising those resources into new combination; and the development of a strategy for new venture. The different activities are all influenced by individual-, industry- and institution level factors.

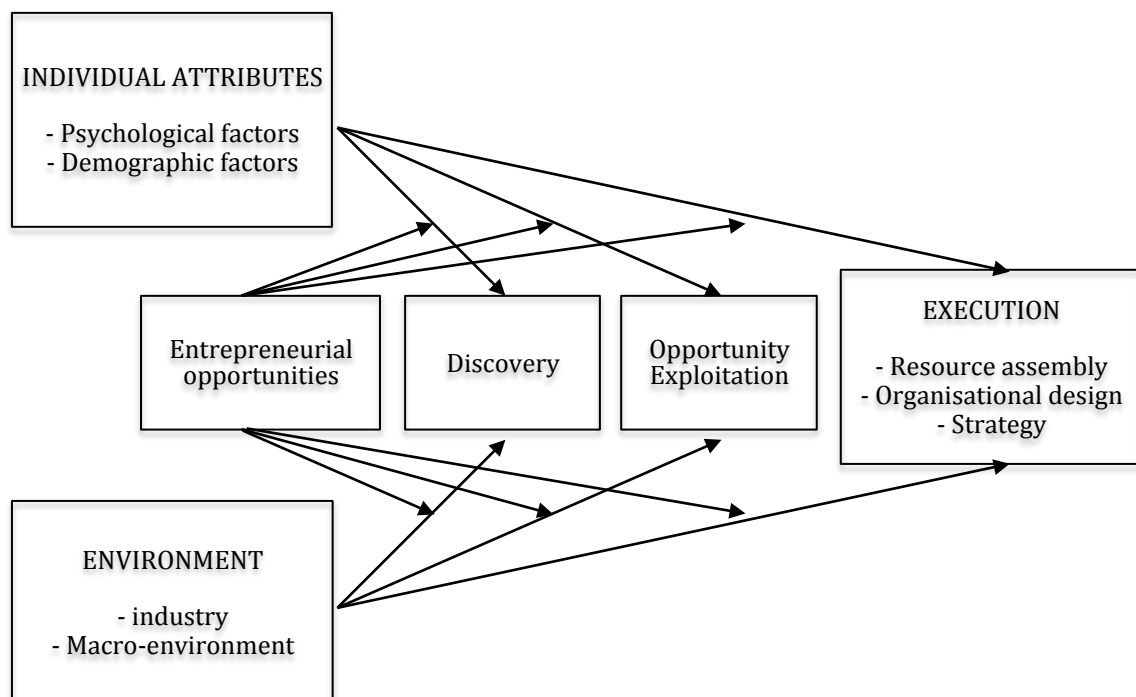


Figure 6: A model of the entrepreneurial process (Shane, 2003)

Shane (2003) sees entrepreneurial activity as directional and ordered, although he also accepts the possibility of feedback loops. The order is thus quite straight forward as presented in Figure 7.

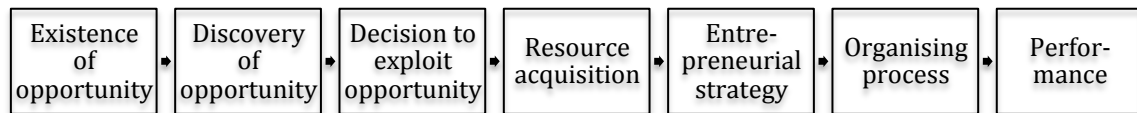


Figure 7: The direction of the entrepreneurial process (Shane, 2003)

As the figure shows, in the beginning there must exist an opportunity before it can be identified. After it has been identified, it can be evaluated and decisions can be made to exploit it. After one has decided to exploit an opportunity he/she can start acquiring resources, start building a strategy and finally organise everything into a new entity. This new entity is then responsible for the performance to occur (Shane, 2003).

Moroz and Hindle (2012) point out as the main weakness of Shane’s theory the fact that he devotes very little attention and argument to opportunity evaluation. His attention covers only existence, discovery, and exploitation.

2.4.1.5 Kyrö et al. (2013)

In addition to those four models presented by Moroz and Hindle (2012), the model of Kyrö et al. (2013) is discussed shortly as it gives a bit different view to this discussion. Based on the works of Sarasvathy et al. (2003) and Alvarez and Barney (2007) they conclude that both humans and ventures are different so there are different ways to understand opportunities and opportunity processes.

When creating their model Kyrö et al. (2013) refer back to the works of leading entrepreneurship economists: Cantillon, Von Mises, Kirzner and Shumpeter.

Based on Cantillon they have created a problem-oriented approach, which is characterised by a linear process with clear boundaries between the different

opportunity phases. The process starts from the phase when a problem is identified (opportunity identification). This phase is followed by the phase when solutions are found and developed (evaluating opportunity). And the last one is then the phase when opportunities are exploited. This view assumes that entrepreneur's past knowledge and experiences form the basis as process moderators (Kyrö et al., 2013).

The second approach is cognition-oriented approach and it has its basis on the views of Kirzner and Von Mises. In this, discovery is a process of connecting different ideas. Then in exploitation phase those ideas are applied to real-life situations. Accordingly, the opportunity process in this case is non-linear. The process moderators are past cognitive patterns (Kyrö et al., 2013).

And lastly the third approach is based on the view of Schumpeter (1934) to whom the entrepreneur's main characteristic is creativity. This approach is called behaviour-oriented approach and it is closely related to the view of Ardichvili et al. (2003) to whom opportunities are created rather than found. In this sense the opportunity process is a constant flow between internal processes and entrepreneurial actions. In this opportunity approach there are also close links to Sarasvathy's model of effectuation and the process is iterative and it involves different phases but the boundaries between the phases are fuzzy. In this case the moderators are embedded within past behavior patterns (Kyrö et al., 2013).

Kyrö et al. (2013) conclude that creativity and alertness are characterising entrepreneurs in all of the approaches, but the rationale of human action and its moderators makes the processes different.

2.4.2 Sustainable entrepreneurial process (SEP)

Belz and Binder (2013) have investigated the process of sustainable entrepreneurship. To start with the process view they have defined processes as a “*sequence of activities, incidents and stages that describes how things unfold over time*”, based on earlier research of Van de Ven (1992). In addition they argue that the sustainable

entrepreneurial process (SEP) is a non-recurrent sequence. It usually happens once in a lifetime. However, part of the process may repeat over time (e.g. prototyping).

Belz and Binder (2013) describe the main starting point of SEP to be the recognition of a specific socio-ecological problem. Later they have defined further that specific ecological problems and specific social problems are two different kinds of sources for sustainable entrepreneurial opportunities (Belz and Binder, 2014a).

Belz and Binder's (2014a) work about the front end of the SEP, when problems are recognized as entrepreneurial opportunities, involves four main phases. The phases are 1) recognition of a specific social or ecological problem; 2) recognition of social or ecological value opportunity; 3) alignment of social or ecological value with customer value; and 4) alignment of social, ecological and customer value.

In opportunity recognition Belz and Binder (2013) follow Ardichvili et al. (2003) in using the term "development" rather than "discovery". With this they want to emphasise that opportunities are made, not found. For them opportunity development is a cyclical and iterative process including the recognition of an opportunity, its evaluation, and development per se. The creation is really an iterative process, which includes extensive prototyping, testing and evaluation of ideas.

In the market entry phase the innovation is ready to be put on the market. If the product is something that hasn't existed before then new market has to be created. Otherwise the entrepreneur will enter the existing market with a new offering (Belz and Binder, 2013).

All in all the theoretical model of SEP consist of six activities and three phases as presented in Figure 8. The three phases are quite similar to those presented by Shane (2003) (see Figure 6) except that Belz and Binder (2013) follow Ardichvili et al. (2003) and use the term "development" instead of "discovery" to emphasise that opportunities are made rather than found. The differences to Shane's (2003) model are mainly those activities that are closely related to the socio-ecological issues.

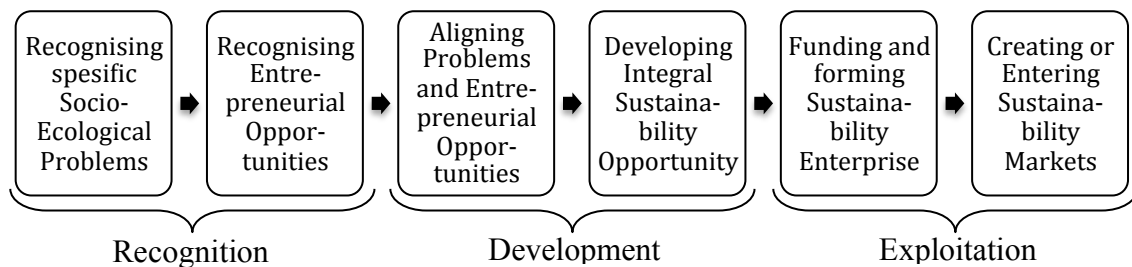


Figure 8: Model of the Sustainability Entrepreneurial Process (SEP) (Belz and Binder, 2013)

The first one of these is the recognition of a specific socio-ecological problem as an entrepreneurial opportunity. In conventional entrepreneurship process socio-ecological problems are mainly ignored. Following that, the alignment of socio-ecological problems and entrepreneurial opportunities is not a part of the Shane's (2003) process either. And thirdly the development of integral sustainability opportunity is unique to the SEP as well. By definition a sustainability entrepreneur tries to meet all the requirements of the triple bottom line, whereas a conventional entrepreneur can focus only on the economical value. In practise the boundaries of the phases are unclear and there are a number of iterations (Belz and Binder, 2013).

2.5 Motivation

As presented in section 2.1 the psychological factors that influence the decision to exploit an opportunity are aspects of personality and motives, core self-evaluation and cognitive properties. Now in this research the focus will be more on the aspects of personality and especially on motives. Shane (2003) has identified from previous research five aspects of personality and motives that affects the exploitation of entrepreneurial opportunity. Those aspects are extraversion, agreeableness, need for achievement, risk-taking and desire for independence. All the other traits tend to increase the likelihood of exploitation except for agreeableness. In contrast, agreeableness tends to reduce the likelihood that a person will exploit opportunities.

Shane et al. (2003) have identified several human motivations that influence entrepreneurial processes. They argue that human action is the result of both motivational and cognitive factors. Cognitive factors include ability, intelligence and skills. In addition to human action, external forces also play an important role. These factors can be divided into three categories: political factors, market forces and resources. Their model of entrepreneurial motivation and the entrepreneurship process is presented in Figure 9. This model is one of the key building blocks when forming the theory around motivation in the sustainable entrepreneurship process. As Shane et al. (2003) have built a link between the entrepreneurial process and motivation they also argue that motivational differences actually affect the process.

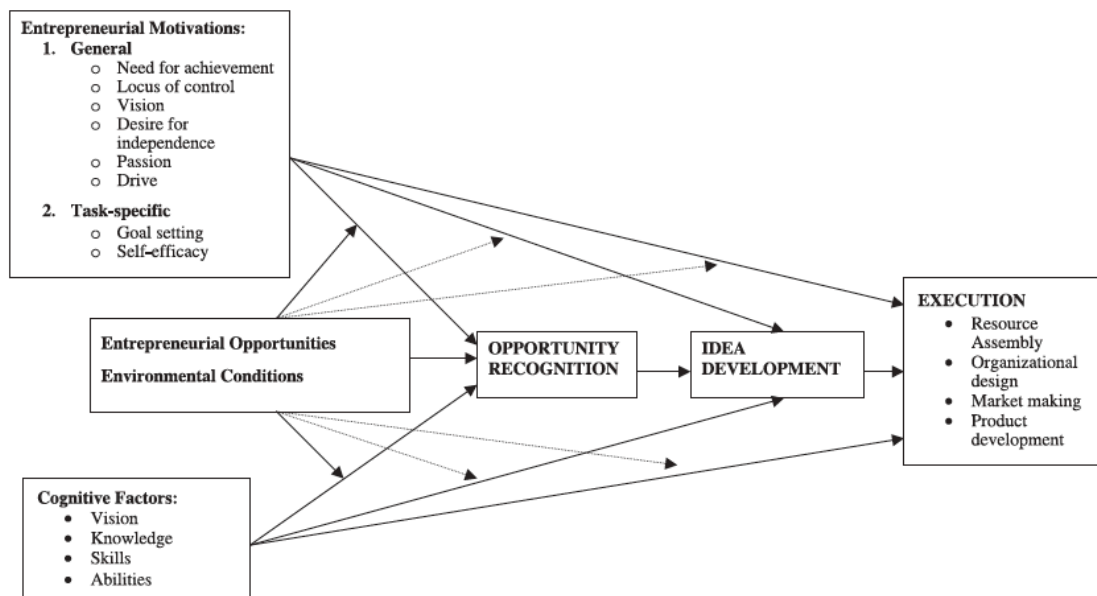


Figure 9: Model of entrepreneurial motivation and the entrepreneurship process (Shane et al., 2003)

Based on earlier quantitative studies Shane et al. (2003) have identified several motivations and their effects on entrepreneurship. One concept that has received a lot of attention is need for achievement. Based on earlier results it seems that need for achievement is higher for entrepreneurs than for other members of society.

Another motivational interest found from earlier research is risk-taking propensity. Shane et al. (2003) conclude however that the results are somewhat contradictory. Especially interesting is the result from Sarasvathy et al. (1998) according to which entrepreneurs saw opportunities in information that bankers thought to be risky.

Third important trait for entrepreneurs mentioned by Shane et al. (2003) is tolerance for ambiguity. With this they mean the tendency to view situations without clear outcomes as attractive rather than threatening. For this trait the previous research has also found contradictory results.

Another motivational trait that has received attention is locus of control. Individuals who have an external locus of control believe that the outcome of an event is out of their control, whereas individuals with an internal locus of control believe that their personal actions directly affect the outcome of an event. Again there are contradictory results in the previous research and in many cases there haven't been any difference in the locus of control between firm founders and managers, for example (Shane et al., 2003).

Shane et al. (2003) mention also that self-efficacy (= task specific self confidence) has been found to have strong positive relationship with realised growth and that quantitative goals the entrepreneurs had for each outcome were significantly related to their corresponding outcomes.

In addition to quantitative results Shane et al. (2003) have identified three motivational concepts from prior qualitative research. These are independence, drive and egoistic passion. They further differentiate four aspects of drive: ambition, goals, energy and stamina, and persistence. In addition they mention that rational egoist passionately loves the work. They love the process of building an organization and making it profitable. In fact passion has been found to have a direct significant effect on firm growth.

Where Shane et al. (2003) have focused on entrepreneurs in general, Kirkwood and Walton's (2010) focus has been on the motivation of ecopreneurs. They present that

ecopreneurs have different motivations to become an entrepreneur than entrepreneurs in general. Based on Belcourt (1987) and Hurley (1999) they argue that social environment affects entrepreneurs. This perspective differs from more general perspectives where researcher have taken either the psychological view and focused on personality traits such as need for achievement or more economic view where the focus has been at the firm level (Kirkwood and Walton, 2010). This study will focus on the entrepreneur and their motivation thus leaving out the economist point of view.

Kirkwood and Walton (2010) found out from earlier research that the general motivators for entrepreneurship are related to desire for independence, monetary motivations, factors related to family, and factors related work. However, in their own research on ecopreneurs in New Zealand they found out that ecopreneurs are mainly motivated by five factors: their green values; identifying a gap in the market; earning a living; being their own boss; and passion.

The green values were often closely related to the gap in the market. Especially in the way the entrepreneurs wouldn't exploit a gap unless they thought opportunity is sustainable. And even though the entrepreneurs in the research are all ecologically conscious they are also driven by monetary motivations. It seems however that monetary ambitions are not as high as they are for other entrepreneurs as in many cases the ecopreneurs were not aiming to make a large profit but rather to make living for their families. They also wanted to be their own boss as entrepreneurs in general. The last motivator, passion, was visible on two levels; the entrepreneurs were equally passionate about the environmental issues and their product or service.

Kirkwood (2009) has further researched the push and pull motivations with the special focus on motivational differences between the genders. Her findings suggest that women are more influenced by the desire for independence, even though this is an important motivator for men as well. Monetary motivations are important for both genders. She also found out that lifestyle is becoming an important pull motivator. This is something that she hasn't seen in previous research. From the push motivators,

women consider their children as motivators more so than men. On the other hand men are more influenced by job dissatisfaction. They were also motivated by changes occurring in their working places.

Overall Kirkwood (2009) identified 9 motivators that she divided between pull and push factors. The pull factors are: independence, money, challenge/achievement, opportunity and lifestyle and the push factors are: job dissatisfaction, changing world of work, helped by employer, children.

These findings are quite interesting, as studies by Kirkwood and Walton (2010) and Kirkwood (2009) are both conducted in New Zealand, and thus the entrepreneurial and cultural atmosphere is the same in both studies. However the motivation to become entrepreneur according to these two studies was completely different.

Table 1 summarises all the motivational factors found from the studies presented above.

Kirkwood and Walton (2010)	Kirkwood (2009)	Shane (2003)	Shane et al. (2003)
Desire for independence	Independence	Extraversion	Need for achievement
Monetary motivations	Money	Agreeableness	Risk taking
Factors related to family	Challenge/achievement	Need for achievement	Tolerance for ambiguity
Factors related work	Opportunity	Risk-taking	Locus of control
Green values	Lifestyle	Desire for independence	Self-efficacy
Identifying a gap in the market	Job dissatisfaction		Goal setting
Earning a living	Changing world of work		Independence
Being their own boss	Helped by employer		Drive
Passion	Children		Egoistic passion

Table 1: Summary of entrepreneurial motivation from previous research

Based on this summary a list of ten motivational aspects is created that will be included in the model and the interviews. These motivational aspects are:

- ✓ Desire for independence (including being their own boss and locus of control)
- ✓ Monetary motivations (including earning a living)
- ✓ Need for achievement
- ✓ Factors related to family and children
- ✓ Identifying gap in the market (including opportunity)
- ✓ Passion
- ✓ Lifestyle
- ✓ Green values
- ✓ Job related motivations (including job dissatisfaction, changing world of work and helped by employer)
- ✓ Drive

Goal setting and self-efficacy are left out, as they are more task-specific and thus don't focus on the motivators. Agreeableness is left out because it tends to reduce the likelihood that a person would exploit opportunities. Risk taking propensity, tolerance for ambiguity and extraversion are left out because they are more aspects of personality.

2.6 Theoretical model based on the literature review

Shane et al. (2003) have built a link between the entrepreneurial process and motivation. They have also argued that motivational differences affect the process. Based on this idea, the sustainable entrepreneurship process and the summary of motivators found from previous research are combined. The model created is presented in figure 10.

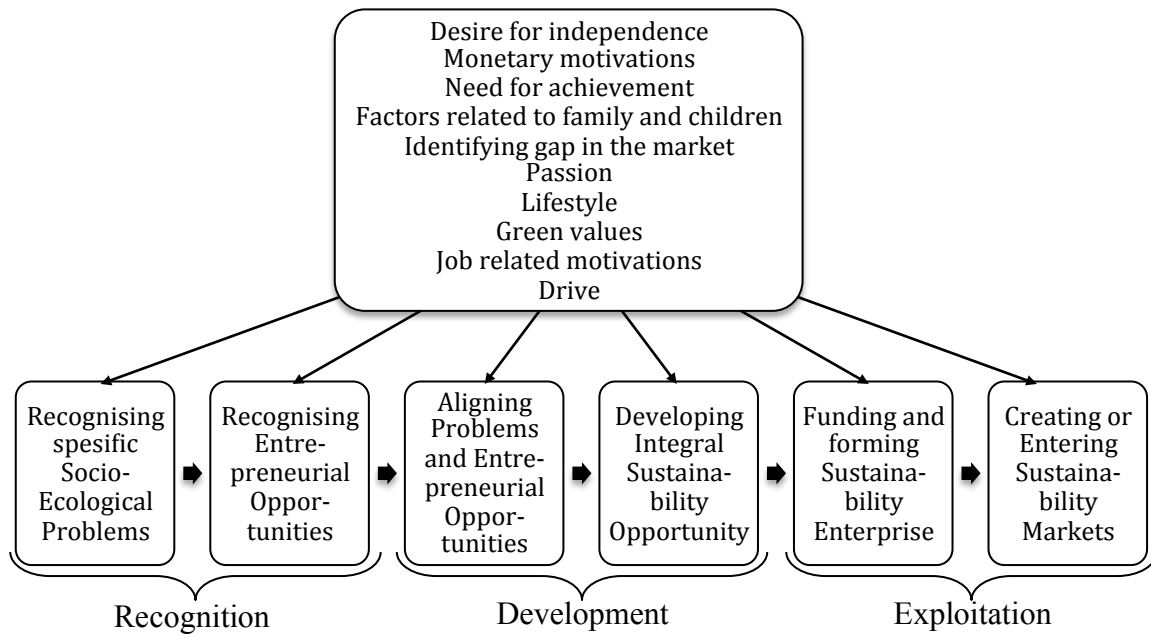


Figure 10: Model of entrepreneurial motivation and sustainable entrepreneurial process

3 RESEARCH METHODOLOGY

This research project is done with a multiple case study design (Eisenhardt, 1989; Yin, 2009) to find answers to following research question:

“What motivates Finnish passive house entrepreneurs to start sustainable enterprises?”

To be able to focus on the objectives of the study, existing literature has been used to develop more specific questions (Yin, 2009). Three sub questions are:

- Have their motivators changed during the entrepreneurship processes?
- Do they follow the sustainable entrepreneurship process as proposed by Belz and Binder (2013)?
- Do passive house constructors consider themselves as sustainable entrepreneurs?

Thus this research has an early identification of the research question and possible constructs (Eisenhardt, 1989).

Building a theory from case study research is most appropriate in early stages of research (Eisenhardt, 1989). It is preferred method when “how” and “why” questions are being asked, the researcher has no control over the events, and the focus is on current real-life phenomena (Yin, 2009). With a case study, it is possible to present complex business issues in an accessible way (Eriksson and Kovalainen, 2008).

In this case the research on sustainable entrepreneurship has been scarce so far (Hall et al., 2010), so research field is still quite novel. The aim is to find out **how** the sustainable entrepreneurship process evolves over time and **why** the entrepreneurs decide to choose that sort of occupation, i.e. their motivators. There hasn't been any involvement in the process and the context is to the most a real life event (Yin, 2009).

This chapter will first introduce the research philosophy applied in this research project. Then it will give the reader a deeper understanding of the processes followed during the

project. The process is explained in detail to prevent prejudice often linked to case study procedures (Yin, 2009).

3.1 Research Philosophy and approach

Leitch et al. (2010) describe entrepreneurship as “*multifaceted, complex social construct that is enacted in many different contexts by a variety of actors*”. Therefore they suggest that researchers need to adopt diverse ontological and epistemological positions to create rich, in-depth knowledge. They further call for the adoption of interpretivist methodologies in entrepreneurship because of both the nature of the objects of study and the types of questions to be asked. Kirkwood (2009) suggests that interpretive paradigm could be well suited for understanding the motives to become an entrepreneur because of the complexity of the phenomenon. In interpretivism it is important to understand the differences between humans as social actors. The aim is to understand the world from the point of view of the research subjects (Saunders et al., 2009).

This research project follows interpretive paradigm in trying to understand all the aspects that have lead for the entrepreneurs to start sustainable enterprises. It studies the processes the entrepreneurs have taken as well as the motives that have kept them going forward.

In interpretive paradigm the most often used data collection techniques are qualitative analysis, in-depth investigations and small samples (Saunders et al., 2009). This research project employs a multiple case study design (Eisenhardt, 1989; Yin, 2009). As Eisenhardt (1989) points out, building a theory from case study research is most appropriate in early stages of research.

The research has elements of both inductive and deductive reasoning, but the main approach is induction (Eriksson and Kovalainen, 2008). The theory is built bottom-up from specific observations towards general patterns (Patton, 2002; Saunders et al.,

2009). In the end of the research process, the built process models are compared with the existing theory of sustainable entrepreneurship process by Belz and Binder (2013). The part that compares motivational changes over time has more deductive elements as motivational factors studied are largely based on previous literature.

Patton (2002) brings to theory building one more element: the researcher. In his opinion “*the perspective that the researcher brings to a qualitative inquiry is part of the context for the findings*” (Patton, 2002 p. 64). Yin (2009) confirms the view and claims that researcher needs to be well-trained in order to take advantage of the interaction of data collection and the theory. For Eriksson and Kovalainen (2008) the researcher is an interpreter who both constructs the case and analyses it. Therefore next chapter describes carefully what I have done as a researcher to achieve the defined objectives.

Theoretical sampling: The cases are chosen with purposeful sampling and homogenous sampling in particular (Patton, 2002; Saunders et al., 2009). The cases are quite similar and the industry is narrowed down as much as possible. This helps in analysing the findings and studying the group in great depth (Eisenhardt, 1989; Saunders et. al., 2009).

Yin (2009) points out that the case study researcher must understand the topic well because analytic judgments are made already in the data collection phase. Since my past experience is from property industry, I decided to study passive house entrepreneurs in Finland. Their product is sustainable, I’m familiar with the industry and this sector hadn’t been studied in the research project before.

The following criteria is applied for the cases:

- 1) the business has to be founded less than ten years ago,
- 2) the business model has to include a new sustainable innovation for construction industry and especially in passive house sector
- 3) the company is only involved in the passive house business and builds single-family homes

4) the founder has to be available for the interview.

Based on a vast Internet research, a discussion with an expert from VTT and verified by one of the interviewees, it turned out that there are only three such companies in Finland. All the others building passive houses are building regular houses as well. Those cases were excluded, as the aim was to find truly sustainable entrepreneurs.

The unit of analysis are the critical incidents that have taken place during the sustainable entrepreneurship processes and the level of motivational factors of each entrepreneur in different phases of the process (Patton, 2002).

To find the critical incidents that have taken place during the entrepreneurial process, open-ended questions are used. The aim is to really understand the process from the entrepreneurs' point of view without any predetermination (Patton, 2002).

For the motivational part a small questionnaire is used. This is to help capture the changes in motivation rather than motivational aspects as such.

3.2 Research process

The research process follows Yin's (2009) case study process (Figure 11). The first step is to develop a theory, based on previous literature. This is different approach to that of Eisenhardt's (1989), which starts with data collection. All the steps taken to achieve the goals of the study are described briefly in the coming chapters.

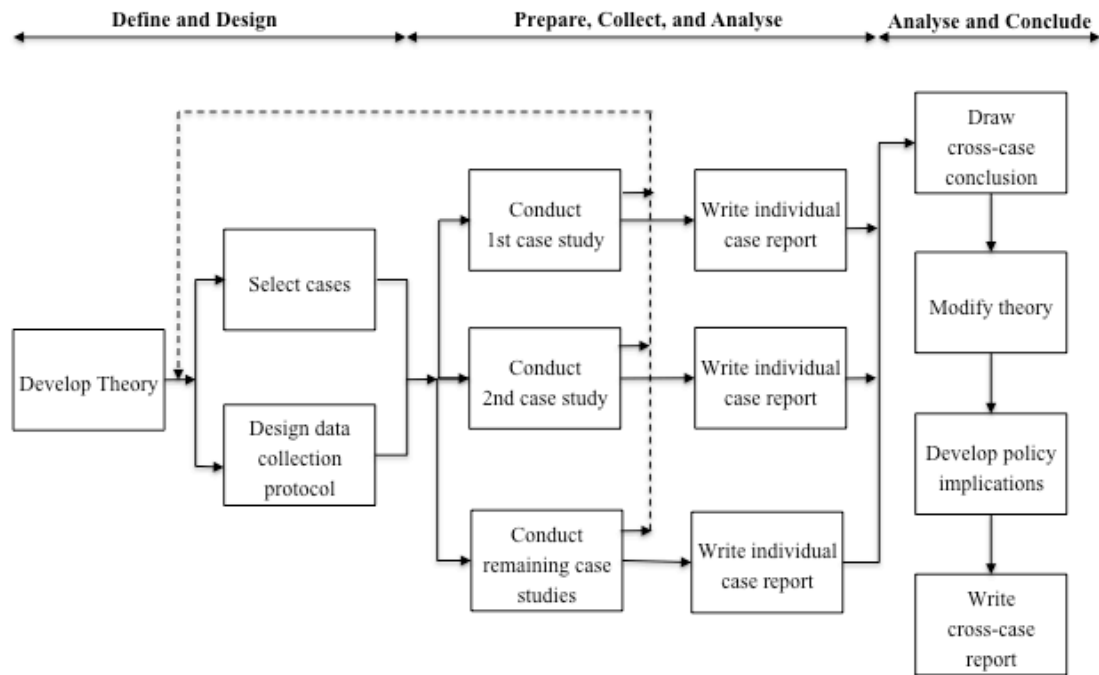


Figure 11: Case Study Method (Source: Cosmos Corporation, cited in Yin, 2009, p. 57)

3.2.1 Data collection

In a case study the data can be both qualitative and quantitative and it can be collected from various sources with various methods (Eisenhardt, 1989; Eriksson and Kovalainen, 2008; Patton, 2002; Yin, 2009). Here the main sources of data are the interviews. In addition the financial statements have been studied for triangulation.

Interviews with Founders

The interviews were conducted in October-November 2013. They were all done in Finnish, which is the native language of each of the interviewees. There were three of them and they lasted 56 minutes, 1 hour 16 minutes and 1 hour 19 minutes. All the interviews were recorded, transcribed and translated in English. The interviews followed mainly a general interview guide to make sure the same topics were covered with each of the entrepreneurs. In the end of each interview, when discussing the motivational factors, a more standardised format was used (Patton, 2002). Because of

geographical distances all the interviews were done either in Skype or over the phone. This can be met with contradictory feelings, but as Yin (2009) states “*You can do a valid and high-quality case study without leaving the telephone*”.

To make sure that their entrepreneurial processes were understood correctly, the key activities of the opportunity processes were drawn in process models. Those drawings were emailed back to the interviewees after the phone call. They all confirmed that the opportunity processes were understood correctly. As a result, there existed a graphical representation of the processes from the founders’ point of view.

Secondary data and triangulation

Secondary data used are the financial statements of the companies. Those are used to verify the company information, such as turnover and the amount of employees. In addition some newspaper articles about the companies are used.

For triangulation one additional interview was conducted with a specialist from VTT Expert Services (Mikko Saari, 2013). He is responsible for passive house certificate services within VTT. He knew all the three companies and had nothing negative to say about any one of them. He also confirmed that these are the only companies he knows in Finland that are focusing on single family passive houses only.

3.2.1.1 Interview Guide

The questions used were semi-structured, open-ended questions. The topics followed closely the literature review presented in paragraph 2. The topics were formulated before starting the fieldwork and they remained unchanged in all the three interviews. The questions were formulated over the course of the interview based on topics that were still uncovered according to the interview guide (Patton, 2002).

The interview guide included the following topics:

Topic 1: Background information (following Belz and Binder (2013); Kirkwood and Walton (2010); Shane (2003)).

Personal background of the founder;

- Opportunity cost (income, unemployment)
- Married/working spouse
- Education
- Career experience (general business experience, functional experience, industry experience, start-up experience, vicarious learning (entrepreneurial parents))
- Age, gender
- Social position (social status, social ties)

Company (following Kirkwood and Walton, 2010; Belz and Binder, 2013):

- Name
- Product
- Employees
- Date founded
- Location
- Funding

Topic 2: Entrepreneurial process from the first idea to the market entry (following Belz and Binder, 2013).

Topic 3: Founder's motivation in different phases of the opportunity process (following the summary of earlier research presented in section 2.5)

- a) General motivation to become sustainable entrepreneur
- b) Specific motivators with the first idea and how they changed until the market entry

- Desire for independence (including being their own boss and locus of control)
- Monetary motivations (including earning a living)
- Need for achievement
- Factors related to family and children
- Identifying gap in the market (including opportunity)
- Passion
- Lifestyle
- Green values
- Job related motivations (including job dissatisfaction, changing world of work and helped by employer)
- Drive
- Other motivators

Topic 4: Weighting of economic, ecological and social goals

TRIPLE BOTTOM LINE

Economical goals (1) Ecological goals (2) Social goals (3)

100 points

Topic 5: Confirmation of the created process structure over email

3.2.1.2 Motivational questionnaire

In addition to the semi-structured open-ended questions each interviewee were emailed the following questionnaire about their motivation beforehand. All the aspects of the questionnaire were discussed separately during the interviews.

MOTIVATION

	FIRST IDEA			MARKET ENTRY		
	1	2	3	1	2	3
Desire for independence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monetary motivations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Need for achievement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Factors related to family and children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifying gap in the market	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Passion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lifestyle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Green values	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Job related motivations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Something else	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = minor motivator

2 = medium motivator

3 = high motivator

3.2.2 Analysis

The analysis consists of unique case analysis and cross-case pattern analysis (Eisenhardt, 1989; Eriksson and Kovalainen, 2008; Patton, 2002). Unique case analyses focuses on individual entrepreneurial processes and the entrepreneurial motivators in different phases of the proses. Graphical presentations are drawn of each individual process. In cross-case phase, the process models are compared. The theory building is done through careful comparison of the cases to find similarities and differences (Eisenhardt, 1989; Yin, 2009). The motivational aspects are compared using the same methods.

The results are then compared to existing literature and previous research. One key research paper to compare with is “A process view on sustainability entrepreneurship: towards a model” by Belz and Binder (2013) which originated this research. Interestingly, the results are conflicting with their paper, which helps them to deepen their research later on (Eisenhardt, 1989). In addition, the results are compared with motivational literature as well as with research on traditional entrepreneurial process models to find potential similarities and differences.

The process of building theory from case study research is linear, but iterative by nature (Eisenhardt, 1989; Yin, 2009). So has been this project. One additional interview was done in a solar panel company. This result was however excluded, because after reading more literature and analysing the cases it became clear that for the analysis purposes it is better to focus on one industry segment only. The process to develop solar panels compared to passive houses is very much different, even though they both aim to reduce the energy consumption in housing.

3.2.3 Discussion on potential methodological weaknesses of the study

As described earlier there are only three passive house companies in Finland that produce only single-family passive houses. It was important to exclude entrepreneurs that have wider product spectrum as the research is focusing on sustainable entrepreneurship. Eisenhardt (1989) considers that with less than 4 cases it might be difficult to create a theory. Patton (2002, p. 244) disagrees with this and states “*there are no rules for sample size in qualitative inquiry*”. It really depends on the purpose of the study and the research question (Eriksson and Kovalainen, 2008). Small number of people can be more valuable, if the cases are rich in information (Patton, 2002). Yin (2009, p. 54) calls this “*literal replication*” where 2-3 cases are selected so that they predict similar results.

One potential weakness is that the end result is quite narrow and without further research it cannot be generalised into other industries (Eisenhardt, 1989). Both Yin

(2009) and Eriksson and Kovalainen (2008) disagree with this point of view. For them the goal can be to extend theories, which is the purpose of this particular research. Patton (2002) explains this by comparing purposeful sampling to probability sampling where the number of cases does need to be large. He defines: *“The validity, meaningfulness, and insights generated from qualitative inquiry have more to do with the information richness of the cases selected and the observational/analytical capabilities of the researcher than with sample sizes”*. So the findings are generalized to the theoretical base according to the degree of support the findings provide to the original propositions (Eriksson and Kovalainen, 2008).

Another weakness of this kind of research process is the potential to end up having too complex theory because of the amount of data (Eisenhardt, 1989; Yin, 2009). This has been kept in mind and the results are tried to simplify as much as possible. One means to achieve this goal is homogenous sampling that is applied purposefully in this research project (Patton, 2002).

Further more Eisenhardt (1989) points out two other potential weaknesses for case study design. Firstly researcher should provide information on the sample, data collection procedures, and analysis. This has been kept in mind throughout the process and the procedures and analysis has been presented in this chapter carefully. Secondly, theory building research should result in new insights and not just replicate past theory. This is the case with this research project. As a matter of fact the end result is conflicting with the existing literature.

4 CASES

All the case companies are based and established in Finland. The only business they are involved in is passive / eco-friendly house construction. To give a better understanding of the context, the concept of passive houses is presented first.

Passive house is a voluntarily set objective for the energy efficiency of a building. In passive houses the energy demand for heating is as small as possible with reasonable construction costs. There are no predefined limitations for the structure of the building (Motiva, 2010; Passiivi.info 2009).

Passive house institute in Germany defines passive houses as *“a building standard that is truly energy efficient, comfortable and affordable at the same time”* (Passive House Institute, 2012). So one can argue that passive houses meet the triple bottom line requirements as such, since they are energy efficient (ecological), comfortable for the inhabitants (social) and affordable (economic).

Passive houses are optimised to save energy. Passivity means that energy savings are not achieved through technical appliances. They exploit simple energy saving methods such as reduced heat losses, efficient use of airtight structures and heat recovery. A well-insulated house can also collect solar energy through windows and heat from the internal heat resources such as appliances (Passive House Institute, 2012; Passiivi.info, 2009; VTT, 2006).

The aim in energy efficiency is comfortable and healthy indoor environment. Special windows and a building envelope provide airtightness, which in turn prevent unpleasant draught. Internal surface temperatures vary little from indoor air temperatures, even in the face of extreme outdoor temperatures. A ventilation system supplies constant fresh air. (Passive House Institute, 2012; VTT, 2006).

General criteria for passive houses has three main things to be considered:

- 1) *The Space Heating Energy Demand* cannot exceed 15 kWh per square meter of net living space (treated floor area) per year.
- 2) *The Primary Energy Demand*, the total energy to be used for all domestic applications (heating, hot water and domestic electricity) must not exceed 120 kWh per square meter of treated floor area per year.
- 3) In terms of Airtightness, a maximum of 0.6 air changes per hour at 50 Pascals pressure (ACH50), as verified onsite with a pressure test (Passive House Institute, 2012; Passiivi.info, 2009).

Because of the Nordic climate, the criteria set for the southern Europe would cause the building expenses to increase too much. That's why Finland, Sweden and Norway have created their own requirements that are suitable for the climate. The table below (Table 2) presents the international definitions as well as comparable Finnish versions. In Finland there are three different levels for different parts of the country.

	International definition	Definition in Finland		
		South	Mid	North
The Space Heating Energy Demand kWh/(m ² a)	≤ 15	≤ 20	≤ 25	≤ 30
The Primary Energy Demand kWh/(m ² a)	≤ 120	≤ 130	≤ 135	≤ 140
Airtightness 1/h	≤ 0.6	≤ 0.6	≤ 0.6	≤ 0.6
Floor area	Treated floor area	Gross area		
Calculation method	Passive House Planning Package (PHPP)	Freely decidable		

Table 2: Passive house definitions internationally and in Finland (Passive House Institute, 2012; Passiivi.info, 2009)

To give a better understanding of differences in energy consumption of heating a diagram is drawn. The picture below (Figure 12) presents energy consumption used for

heating in different kinds of buildings. This gives a good understanding how much more economic and ecological passive houses are compared to normal houses. And this is why EU has published a recast of the directive on the Energy Performance of Buildings (EPBD). The directive defines nearly zero energy buildings as constructions that have "a very high energy performance". New buildings will have to be nearly zero energy buildings by 31st December 2020 with public buildings having to fulfil this standard two years earlier. In addition there will be a requirement for minimum levels of use of renewable energy sources in buildings (EREC, 2012).

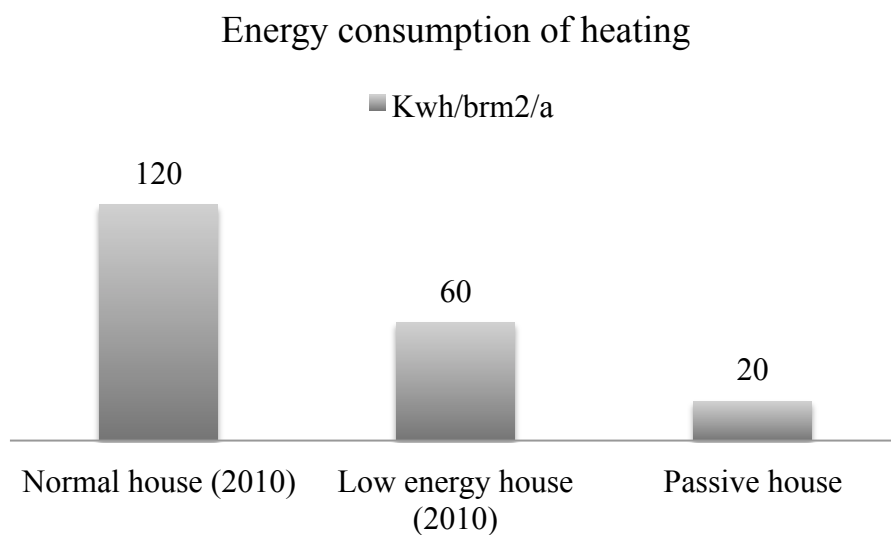


Figure 12: Comparison of energy consumption in different kinds of houses (Pohjolan Ekotalo, 2014)

The case companies, the entrepreneurs, their entrepreneurial processes and their motivators are presented next.

4.1 Dometalot Oy, Vesa Lehtola

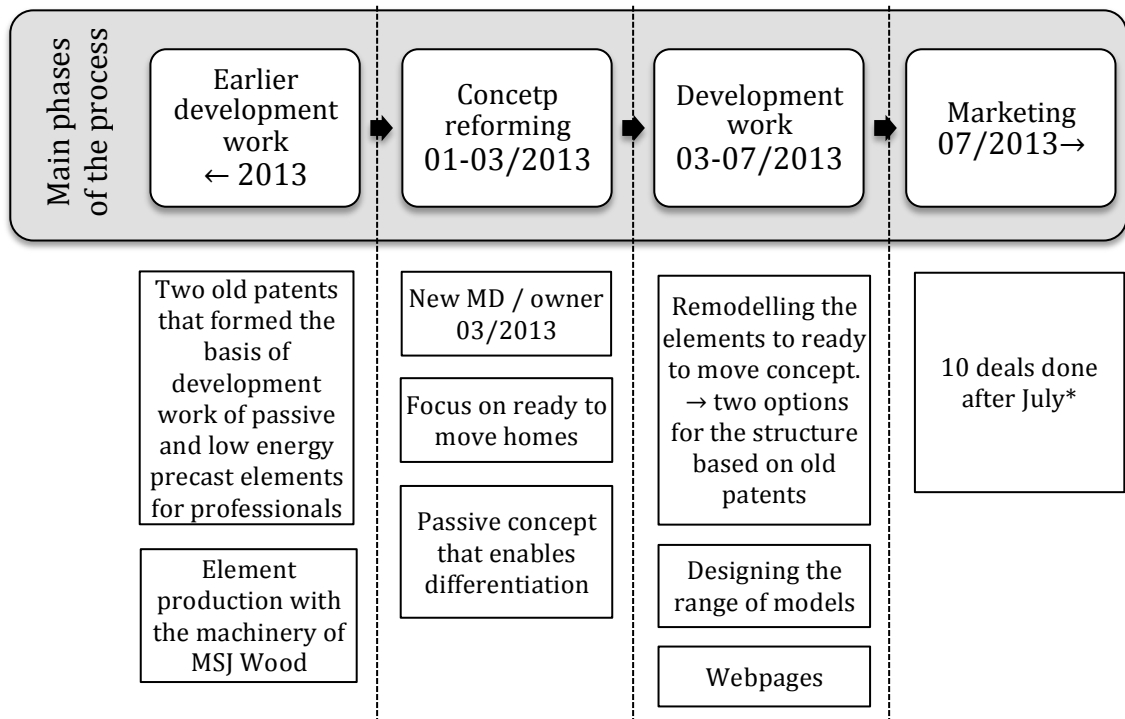
Originally two brothers, Mikko and Jukka Karhumaa, established the company Dometalot back in 2011 (Kohdistamiskone B2B, 2014; Rakennuslehti, 2012). Vesa Lehtola joined them in the beginning of 2013 to become the CEO and owner in the

company (with 10% ownership). Together they started to develop the ready to move passive house -concept. At the time the company had developed a passive wall structure already, but all the other development work was still undone.

The concept they decided to go for was really an important factor for Vesa Lehtola. It was clear to him, that prefabricated wall units weren't enough. It had to be something more. And it was as clear as well that he didn't want to start to develop another ready to move home company, there had to be something how to differentiate. Old patents that the company owned, and the development work before, gave a good basis for discussion. And finally they decided to "start producing ready to move passive houses, with green values, energy efficiency and inexpensive solutions" (Lehtola, 2013).

The development work began in March 2013 and already by July they had something to sell. They developed 25 models from which the customers could choose and a webpage presenting these models. They had earlier some patents regarding the wall structure, but they needed an engineer to develop it further to create a ready to move concept. Based on the development work they sell two solutions. The first one is a ready to move passive house with SPU urethane insulator. If the customer wants all the building materials to be ecological, they can produce a low energy house with wooden frame and wood fibre (Ekovilla) insulator. In addition Dometalot is the only prefabricated house producer that has solar panels and led-lightning as a standard in all the houses they sell.

The following picture presents the whole development work as a process model from Vesa Lehtola's point of view. The process period is less than a year. They started the development work in the beginning of the year and by July the concept was already nearly done.



* Interview was conducted in November 2013.

Figure 13: Entrepreneurial process of Dometalot/Vesa Lehtola.

Vesa Lehtola has a varying background. He has done sales work and project management and he has past entrepreneurial experience, from totally different field though. This subject is not unfamiliar for him either as he has worked for two companies who sell and produce prefabricated houses. At the moment he is 46 years old.

4.1.1 Motivation

Vesa Lehtola doesn't consider himself as a very ecological person. He finds himself more a salesman, so for him the most important thing is to sell the product. This viewpoint is close to one of the drivers that Linnanen (2002) presents. In his opinion *“environmentally friendly products have markets as their driver. The demand for these products is derived from the increasing environmental awareness of consumers.”*

And related to that Lehtola is interested in concept development and especially ready to move concept. He is motivated when he sees the result of his own work.

More detailed presentation of Vesa Lehtola's motivation is presented below. The left hand side presents his motivational level at the moment of the first idea and the right hand side the motivation at the moment of the market entry and later on. His motivational factors have remained quite stable over the process but identifying gap in the market and passion has increased on the way. He realised that there is strong demand for this kind of product and there are hardly any players in the market.

	FIRST IDEA			MARKET ENTRY		
	1	2	3	1	2	3
Desire for independence	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Monetary motivations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Need for achievement	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Factors related to family and children	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifying gap in the market	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Passion	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lifestyle	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Green values	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Job related motivations	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Drive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

1 = minor motivator
 2 = medium motivator
 3 = high motivator

4.1.2 Triple bottom line

Vesa Lehtola was asked to divide the company level goals in to three factors that form the basis of sustainable entrepreneurship. The division is presented below. About social goals he mentioned that he “wants everyone to be happy who work for us. We want this to be a good place to work”.



Figure 14: Triple bottom line of Dometalot

Dometalot has participated in a Resca initiative in Oulu (= Renewable Energy Solutions in City Areas). It is a common construction initiative of six big cities. The aim is to find new ways to increase the use of renewable energy solutions (Resca, 2014).

4.2 Passiivikivitalot, Esa Tommola

Esa Tommola’s story is very different from the previous one. He knew already in the university that he would become an entrepreneur. And he became a serial one. The development of this concept began right after he sold his past company back in 2004. He wasn’t allowed to compete for 5 years, which slowed down the development process a bit.

Back in 2004 he had a related research project going on with Tekes. In relation to that he travelled around Europe for 8 weeks. And there he became familiar with the passive house concept. After long research and development period he finally made the first deal with a customer in the winter 2006/2007. Due to competition restriction the deal had to be done as a contractor deal so Esa Tommola was actually building on the site himself. This took away precious time from product development.

In 2007 they built a house with separate measuring instrument to measure the energy used for heating. The results were incredible. Second year after completion the house consumed only 100 euros for heating per year. And the amount got even lower.

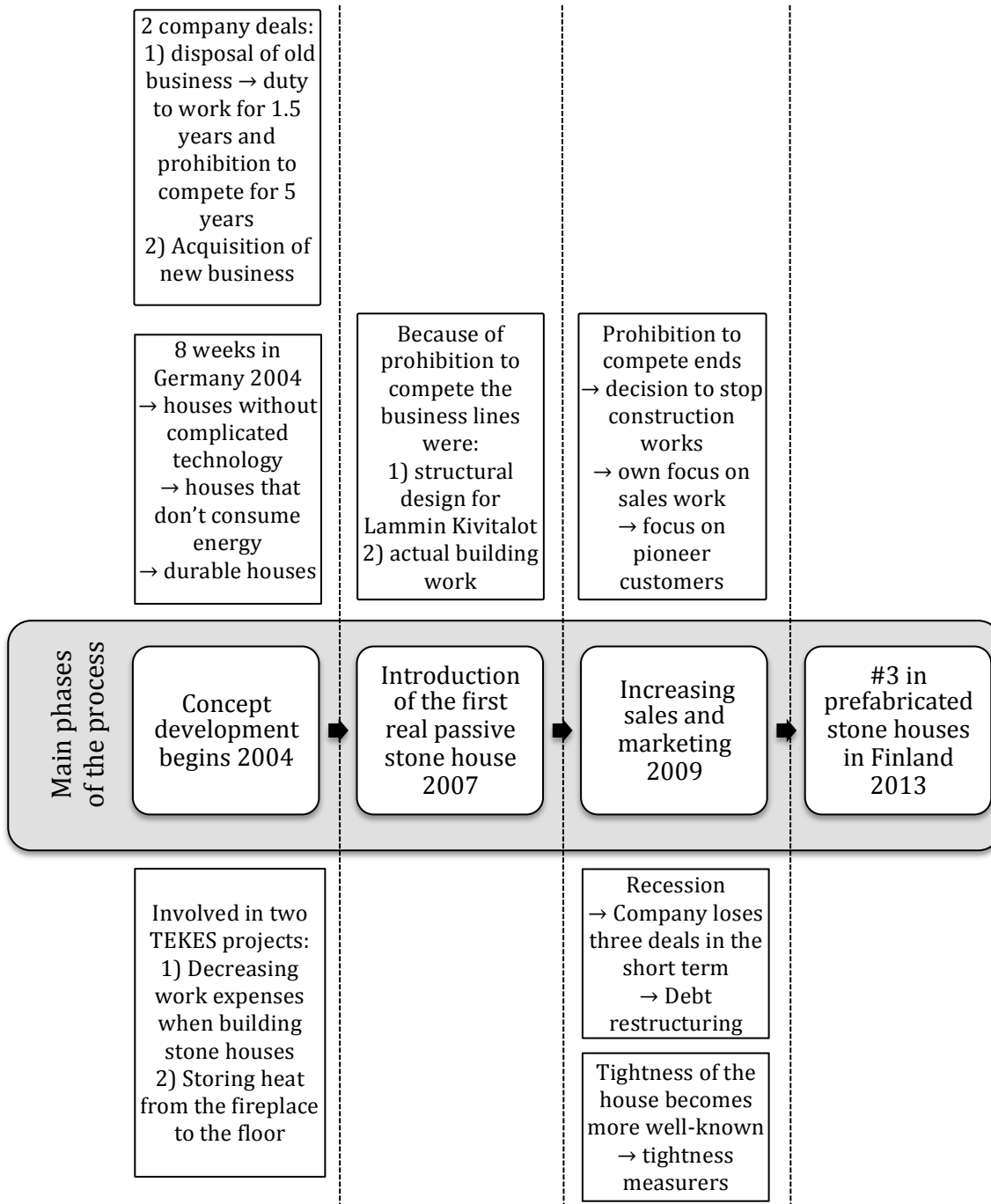
The times got harder back in 2009. The economy was in recession and it meant hard times for his business as well. Passiivikivitalot lost three deals in the short period of time. This was a lot as the budget for the whole year was ten deals. At the time Tommola decided to apply the company for debt restructuring. This happened at the same time when his competition restrictions ended from the company disposal before. He cut out all the construction works and decided to focus on selling the passive houses. He still had on the side (and still is) some structural engineering work that were a legacy of the company acquisition he made in 2004, just a few days before selling out his own company. So basically the company is established already back in 1986. Tommola bought it in 2004 and started the product development. Because of the history, the official name of the company is Rakennusinsinööri-toimisto Simo Kautonen Oy.

Tommola has made a very systematic work and it has paid-off. In 2013 Passiivikivitalot became the third most sold stone house package in Finland. And the results are even better when looking at the ratio of customers making purchasing decision after receiving an offer: Passiivikivitalot are in top among the 300 stone house companies in Finland (RTS research, 2013).

And there will be more innovations coming on in the future. They are planning to launch in the housing fair of Vantaa in 2015 the most humidity safe house in Finland. The walls will be built with the passive structure and the floors dried with the fireplace. Tulilattia (Eng.: fire floor) was developed to use the heat from the fireplace. The heat is stored in the floor of the whole house so one needs only one to two kilowatts to heat the whole house. Basically it means only 3-5 m³ of wood per year.

The whole development process of Passiivikivitalot is described in a process model on the next page (Figure 15).

Internal factors affecting the process



External factors affecting the process

Figure 15: Entrepreneurial process of Passiivikivitalot / Esa Tommola

Esa Tommola is 54 years old serial entrepreneur. He established his first company when he left university. He studied in the University of Tampere in the school of Management and economics, but never graduated. At first he was studying accounting. As there was no studies for entrepreneurship there was no point to finalise accounting. With few professors they made a tailor-made program for him where he managed to do multidisciplinary studies.

At the time there was another option for him as well. He wanted to go for entrepreneurship training centre in Kauhava, but his home values didn't allow that kind of choices. University was the only way to go. He also considered the air force, but found student life in University more appealing.

Esa Tommola is one of the pioneers on this segment in Finland. He and his engineer were the only ones presenting business side in the first passive house seminar by VTT.

4.2.1 Motivation

One big motivator for Esa Tommola has been the economic conditions in Europe. He wanted to make sure that EU doesn't need to import energy from far (whether it is electricity, oil etc.), but rather to reduce the energy consumption as much as possible and make the most out of our local energy supply. He wanted to do his part by building houses that don't consume energy.

The reason behind this kind of motivator lies in family history and links back to his prejudice towards Russia. In his opinion too large portion of European energy consumption has been paid to Russia and Middle East. In that sense he has a mission as well. He wants to stop and reduce those money flows.

Overall he prefers to consider the energy consumption through money flows. Even though he finds environmental issues important as well, he finds it difficult to measure them on personal level. Measuring the money flows on personal level is much easier.

Another motivator for him is to make it simple, meaning extremely simple heating systems and no complicated heating appliances. And still the heating expenses can be roughly 20 Euros per month. This was a big change in understanding that he experienced during the first trip to Germany. Normally he is totally technology oriented and likes to control everything through his mobile phone.

And finally he is motivated by the safety of the structure regarding humidity and mould. In addition the houses are extremely durable. So he finds the structure to be motivating and inspiring as well.

He was discussed the general motivators in the same way that in the previous case. The summary is presented below. Interestingly green values as a motivator has decreased from the first idea. In his opinion he doesn't consider them that much anymore. In Esa Tommola's case the first idea was around 2004 and the concept was ready around 2009.

	FIRST IDEA			MARKET ENTRY		
	1	2	3	1	2	3
Desire for independence	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Monetary motivations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Need for achievement	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Factors related to family and children	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifying gap in the market	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Passion	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lifestyle	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Green values	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Job related motivations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

1 = minor motivator
 2 = medium motivator
 3 = high motivator

4.2.2 Triple bottom line

Esa Tommola was asked to divide the company level goals into three factors in the same way as in the previous case. The division is presented below. He commented ecological issues, with his past experiences from Germany, where he has learnt the concept of durability, in the following way: *“We don’t want to build houses that decompose in 30 or 50 years. We want to build buildings that last for hundreds of years. In Finland we don’t have many such houses, but in Germany they do. And those houses are made of stone.”*

In addition the social aspects are fulfilled with good indoor air quality and safety with humidity. So the living environment for the family is safe. For ecological and economic aspects we can add that there is no need for expensive technology in the house.



Figure 16: Triple bottom line of Passiivikivitalot

4.3 Pohjolan Ekotalo Oy, Jussi Eilola

Jussi Eilola’s story is again different. He has worked on the construction site pretty much all his life. He has always been interested to see how low energy consumption is possible in housing. He built the first low energy house back in 2003 when he was still working in his father’s company. After that he started to think whether a house could be built with perfect insulation solution so that it would consume as little energy as possible. He developed the idea over the years on the side and finally 2005/2006, bought a site together with his wife. The house was ready in 2007 and they moved in. At the time it was a so-called minimum energy building and when couple of years later

VTT defined the passive house requirements for Finland, the house qualified the requirements.

In his case the initiator was a real interest towards energy saving. As a test he decided to use only electric heating and didn't have any additional radiant or fireplace or anything. This made it possible to test how much energy this kind of single-family house would consume without any additional heating systems. And it is easiest to measure the energy consumption for electricity, divided between heating and other electricity consumption.

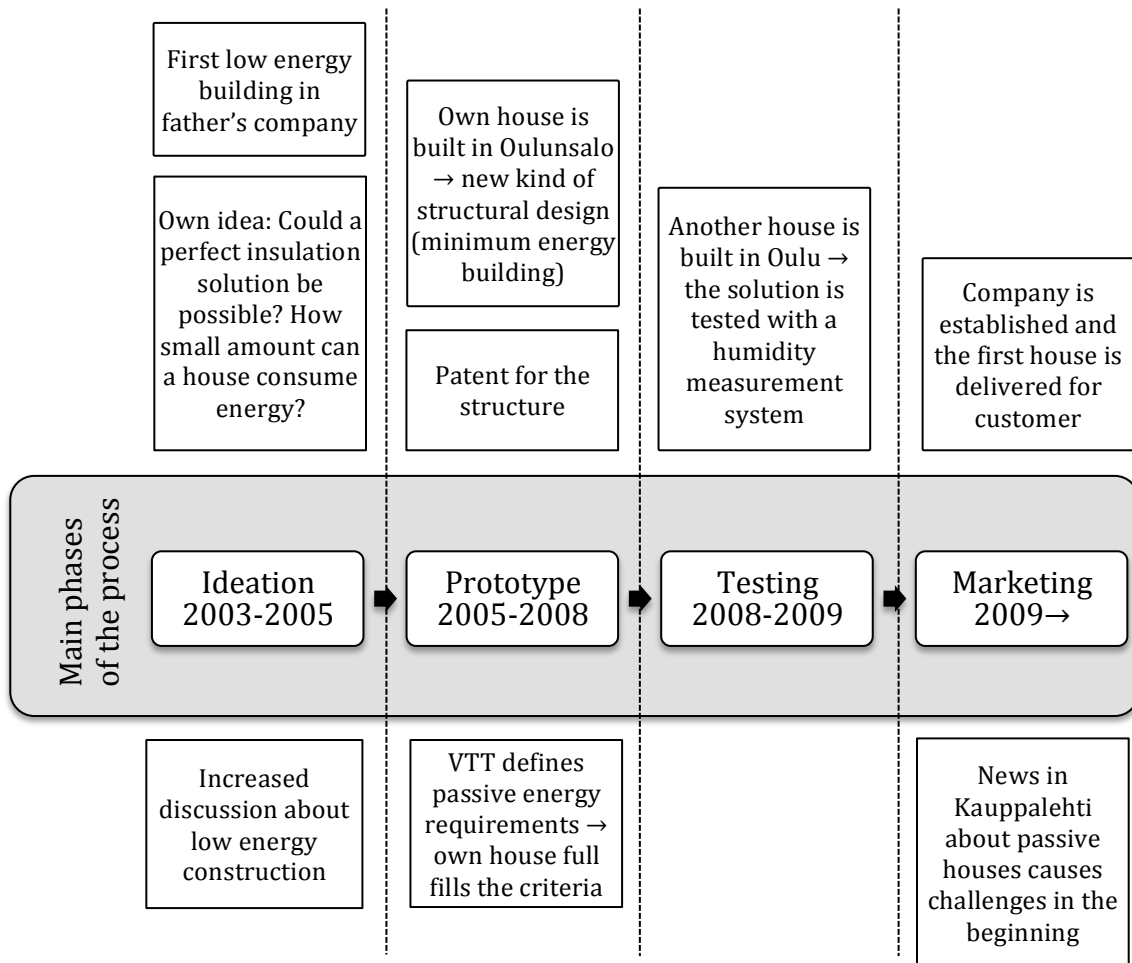
Based on this first house he applied a patent for the structure of the house. And couple of years later he built another house to confirm the structure. This second house was ready around 2009. At the same time people started to ask for same kind of houses for themselves so Jussi Eilola decided to establish the company. The year was 2009.

There was increased interest towards passive housing at the time, but then the business newspaper Kauppalehti had a news on the front page saying "Passive house equals mould house". This decreased the demand a lot.

Overall Jussi Eilola thinks that his customers are really ecologically aware. They want as ecological houses as possible. That's why he decided to move the marketing more towards ecological aspects and changed the name of the company from Pohjolan Passiivitalo Oy (Northern Passive House) to Pohjolan Ekotalo Oy (Northern Eco House).

The entrepreneurial process of Jussi Eilola is presented on the next page (Figure 17). As in the previous case the development process was fairly long and took around 6 years.

Internal factors affecting the process



External factors affecting the process

Figure 17 Entrepreneurial opportunity process of Pohjolan Ekotalo Oy / Jussi Eilola

Jussi Eilola is 39 years old. He wanted to become an entrepreneur since he was young. His education is from technical college where he got engineers degree. He has ended up in construction industry mainly through hands-on experience. He has worked for a while for the electronics industry but mainly all his life on the construction site. He has past entrepreneurial experience from his father's company. He is one of the pioneers in passive housing in Finland and thus has been invited to talk at seminars by Sitra, Tekes etc.

4.3.1 Motivation

Jussi Eilola's main motivator has been energy savings as an opportunity. He has a motto saying, "Unused kilowatt is the best kilowatt, because it hasn't been produced at all". So the more it is possible to reduce the energy consumption in housing the better. In addition he links the savings to the investments so that the payback periods are reasonable. He also admits that there might have been a bit of competitiveness on the background as well. There are lot of discussions especially in social media comparing how small is the energy consumption in one's building. So he wanted to see how low energy consumption is really possible.

The general motivators are presented below. Interestingly the green values have increased on the way. As the development period was quite long, the first idea was around 2003 and the market entry point in 2009.

	FIRST IDEA			MARKET ENTRY		
	1	2	3	1	2	3
Desire for independence	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Monetary motivations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Need for achievement	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Factors related to family and children	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifying gap in the market	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Passion	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lifestyle	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Green values	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Job related motivations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

1 = minor motivator
 2 = medium motivator
 3 = high motivator

4.3.2 Triple bottom line

Jussi Eilola divided the company level goals into three factors in the same way as in the previous case. The division is presented below.



Figure 18: Triple bottom line of Passiivikivitalot

In his case ecological aspects have the strongest weight. His houses are made of wood only. They have wooden structure and food fibre insulators. He has always preferred wood as a building material because of its recyclability. In addition it's domestic raw material, and from the environmental point of view renewable resource, as there are more wood growing in Finland than is consumed. Jussi Eilola wants to make houses that last for hundred years.

4.4 Summary of cases

Table on the next page (¹ The concept was created before the company was founded.

Table 3) summarises key elements of all the cases. The products and the companies are fairly similar, as one could assume. Dometalot and Pohjolan Ekotalo use wood as their main building material. Passiivikivitalot uses stone (concrete). The insulation in Dometalot is SPU, in Passiivikivitalot Neopor and in Pohjolan Ekotalo wood fibre. Dometalot can be done with wood fibre as well, but then it doesn't qualify passive house requirements. The degree of readiness varies as well. Dometalot is ready to move, Pohjolan Ekotalo ready for heating and Passiivikivitalo mainly house package, so including all the building materials required. From the turnover point of view Passiivikivitalot is the largest.

The entrepreneurs and their opportunity processes are somewhat different. The processes are analysed more in detail in the next chapter (chapter 5.2).

	Dome- Talot / Vesa Lehtola	Passiivi- kivitalot / Esa Tommola	Pohjolan Ekotalo / Jussi Eilola
<u>PRODUCT</u>			
Main material	Wood	Stone	Wood
Insulator	SPU	Neopor	Ekovilla (wood fibre)
Optional insulator	Ekovilla (wood fibre)		
Degree of readiness	Ready to move	House package	Ready for heating
<u>COMPANY</u>			
Number of employees	7	12	3-5
Number of deals, 2013	10	n/a	3
Turnover, 2012	0 €	1 472 000 €	416 000 €
Financing	Owners, ELY centre	Owner, cash flow	Owner
Founding year of the company	2011	1986	2009
Founding year of the concept	2013	2009	2007 ¹
<u>ENTREPRENEUR</u>			
Past entrepreneurial experience	Yes	Yes	Yes
Entrepreneurial risk	No	Yes	Yes
Age	46	54	39
University degree	No	Never graduated	No

¹ The concept was created before the company was founded.

Table 3: Case summary (Eilola, 2013; Kohdistamiskone B2B, 2014; Lehtola, 2013; Määttä, 2010; Passiivikivitalot.fi, n.d.; Tommola, 2013;)

5 FINDINGS

Previous chapter presented each case thoroughly. In this chapter cross cases analysis is done to find answers for the research questions.

To begin the analysis the motivators are first compared. In the next section the entrepreneurial processes are compared to each other and to the sustainable entrepreneurship process of Belz and Binder (2013). And finally the answers to the triple bottom line are analysed.

5.1 Motivation

There were four motivators that all the entrepreneurs saw in the same way from the first idea to the market entry. They were desire for independence, need for achievement, factors related to family and children, and drive. The only motivator out of these four, that hasn't been important for them throughout the process, is family and children.

In addition to those four, there were three motivators that they saw similarly in the end of the process. Those were monetary motivators, identifying gap in the market and passion. Monetary motivators didn't receive highest ranking for anyone. Interestingly identifying gap in the market and passion increased during the process in two out of three cases. So at the market entry point they were high motivators for all of them.

The following table (Table 4) summarises the results in all the three cases. The labels are:

- = importance of the motivator has not changed from the first idea to the market entry
- ◀◀ = importance of the motivator in the beginning (first idea)
- ▶▶ = importance of the motivator in the end (market entry/now)

	Dome- Talot / Vesa Lehtola			Passiivi- Kivitalot / Esa Tommola			Pohjolan Ekotalo / Jussi Eilola		
Motivators / importance	1	2	3	1	2	3	1	2	3
Desire for independence			■			■			■
Monetary motivations		■		◀◀	▶▶			■	
Need for achievement			■			■			■
Factors related to family and children	■			■			■		
Identifying gap in the market	◀◀		▶▶	◀◀		▶▶			■
Passion		◀◀	▶▶		◀◀	▶▶			■
Lifestyle	■					■		■	
Green values	■				▶▶	◀◀		◀◀	▶▶
Job related motivations			■	■			■		
Drive			■			■			■

Table 4: Summary of motivational factors in each case

In the following paragraphs all the motivational factors are discussed separately.

Desire for independence:

All these entrepreneurs have a strong desire for independence. For all of them it has been on the highest level all the time. This result matches well with previous literature presented in chapter 2.5.

Monetary motivations:

Money hasn't been a big motivator for anyone of the entrepreneurs. For two of them it has been on the mid-level all the time and for one it has increased from the lowest level to the middle. Being serial entrepreneur Esa Tommola has made money before. So for

him this is more “an expensive hobby”, as he said. Jussi Eilola said that he might make as much money by working for someone else.

The findings are supported by the findings of Choi and Gray (2008) who discovered in their case study on sustainable entrepreneurs that very few of the entrepreneurs were focused on accumulating personal wealth.

These findings don't contradict with the triple bottom line analysis either, even though there monetary goals are often quite important. Triple bottom line focuses more on the goals of the business rather than individual motivators as such.

Need for achievement:

Again need for achievement is a high motivator for all the entrepreneurs and it has been a high motivator all the time. This resembles previous literature well.

Factors related to family and children:

All the entrepreneurs are married and at least two of them have children. However, none of the entrepreneurs found family or children to be a motivator for them. Jussi Eilola even mentioned that in the construction industry it is quite difficult to combine family and business as customers can be anywhere in Finland so one needs to travel quite a lot.

As all the entrepreneurs in this case are men, so this result is in line with previous literature. Kirkwood (2009) found that women consider their children as motivators more so than men.

Identifying gap in the market:

Interestingly identifying gap in the market has increased its importance for two of the entrepreneurs. When they started the process it was only on the lowest level for them. On the way, when establishing the business, they realised that there is actually a huge gap in the market.

Vesa Lehtola commented this by saying that “In the beginning I just thought that this is a great thing and around this concept is easy to build a product that customers are willing to buy. Now month by month I’ve realised it more and more that we are alone with this in the market.” For Esa Tommola this became more evident through EU legislation. At first he thought people would demand this because of the energy costs. But back then he didn’t realise that EU legislation will force this kind of development.

Jussi Eilola recognised the EU level development quite early on. He mentioned: “traditionally in Finland people are not ready to invest anything extra. We are waiting EU legislation that is coming in 2020/2021 when all the new houses must meet the passive or 0-energy criteria. So we saw the market potential and that’s why we started to develop the concept in the first place.”

Passion:

Closely linked to finding gap in the market, passion has been on the highest level for all the three entrepreneurs in the end of the entrepreneurial process. Again for two of them it was a bit lower, in the middle, when they started the process. Interestingly, Esa Tommola’s passion has increased after positive customer feedback.

In previous literature Kirwood and Walton (2010) found that entrepreneurs were equally passionate about the environmental issues and their product or service. In these three cases all of them are passionate about their product or service, not as much about the environmental issues. This becomes evident when they are asked about green values.

Lifestyle:

Lifestyle as a motivator has remained stable for all of the entrepreneurs. However its importance is different in each case. Vesa Lehtola considers himself more a managing director of a company rather than entrepreneur. He has had quite flexible working hours always so lifestyle hasn’t been any kind of motivator for him. Jussi Eilola doesn’t consider the lifestyle to be the best possible because of all the travelling. But for Esa

Tommola entrepreneurial lifestyle is a high motivator. He thinks that he wouldn't be able to work for someone else.

Green values:

Interestingly green values haven't been on the highest level throughout the entrepreneurial process for any one of the entrepreneurs. Vesa Lehtola doesn't consider himself as "green" at all. And in his opinion houses cannot be sold with green values only. There are many aspects that influence the decision-making. Based on his experience the trigger to change home can be for example unsafe school path for children. For Esa Tommola the green values were high in the beginning, but now he doesn't have time to think about them anymore. He mentioned, "It is something that is there. I haven't emphasised it." In Jussi Eilola's case green value have strengthened on the way. As a builder he is terrified about non-renewable materials.

I find this an interesting result. Even though all the products are highly sustainable none of the entrepreneurs have emphasised the green values throughout the whole entrepreneurship process. This also contradicts somewhat with the results of Kirkwood and Walton (2010) on their research on ecopreneurs.

Job related motivations:

Job related issues have been a motivator only for Vesa Lehtola. In his previous company the overall spirit was so bad that he wanted to leave. Esa Tommola and Jussi Eilola have both worked in entrepreneurial positions before, so anything related to past working experiences haven't pushed them towards this at all.

Drive:

Again common for all the three entrepreneurs is the level of drive all the time. Esa Tommola joked that his family members would probably say that his drive has exceeded the highest level already. Jussi Eilola mentioned that he has something going on all time

- if not for work, then for some sort of hobby. And for Vesa Lehtola this also means that routines are hard to handle.

Other motivators:

In each case there are some case specific motivators as well. Vesa Lehtola wanted to see the results of his own work.

Jussi Eilola wanted to see how much energy could be saved with this kind of building structures. So how low energy consumption can be achieved in housing. He admits that there was also a bit of competitiveness involved. There are discussions about energy consumption going on in social media. He wanted to bring his experiences on the table as well.

Esa Tommola's motivators were also related to energy consumption, but from a different angle. He wanted to make sure from his part that on the EU level it is not necessary to import energy. He wanted to reduce the energy consumption as much as possible and make the most out of the local energy supply. This viewpoint has a close link to the European union economic policy and the money flows in and out of Europe.

Overall the motivators were quite similar in all the three cases. And they resembled quite well the findings from previous literature. The only surprising factor was green values that were not as important as one could have assumed based on the businesses that they operate.

5.2 Opportunity process

Regarding opportunity process, the research problem set in the beginning of the study was: "Do passive house entrepreneurs follow the sustainable entrepreneurship process as defined by Belz and Binder (2013)?" To start the analysis, Figure 19 presents the sustainable entrepreneurship process as defined by Belz and Binder (2013) and Figure 20 summarises the main parts of the processes of each individual entrepreneur. All the

processes are presented in detail in chapter 4, so just the main parts of the processes are presented here to clarify the comparison.

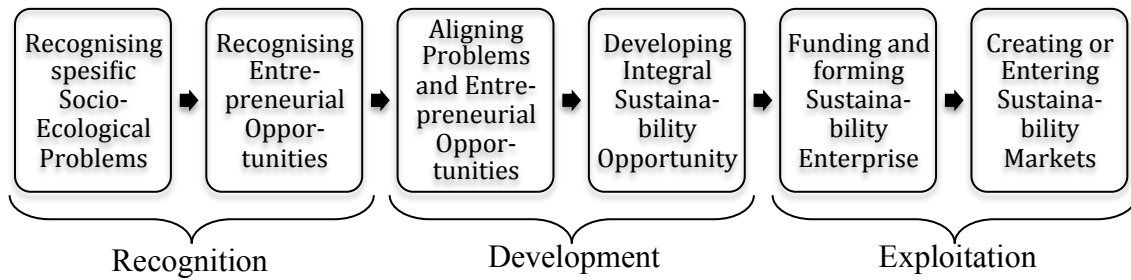


Figure 19: Linear Model of the SEP (Belz and Binder, 2013)

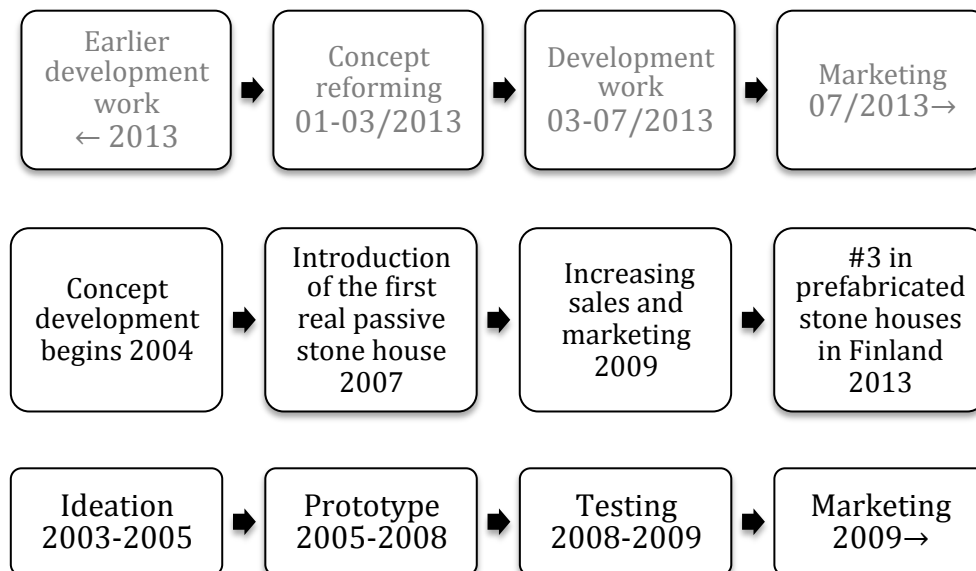


Figure 20: Entrepreneurial opportunity processes of the cases

The starting point of the process is “*recognising specific socio-ecological problems*”. For Vesa Lehtola of Dometalot the process has started differently. In his case there are other owners in the company as well and the passive structure of the wall was already developed when he joined the company. In his case the development has really focused only on concept development rather than finding sustainable solutions. This is why it is

not comparable to the cases in the process model of Belz and Binder (2013) and thus must be excluded from this comparison.

In the cases of Passiivikivitalot and Pohjolan Ekotalo one might argue that they both started by recognising special socio-ecological problems and as a result they both wanted to build houses that consume as little energy as possible. However this is not the case for either of them. As the other part of this research focused on motivators, it revealed that both of them were triggered by something else.

Esa Tommola was involved in a Tekes project that wanted to find a way to decrease the cost of building a stone house. During the project he visited Germany for eight weeks to learn about their construction methods. During the trip he learnt two important issues. Firstly he understood that houses could be built in a simple way. And secondly, he found out that over half of the money flows from energy consumption are going to Russia and Middle East. From the EU economic policy point of view it would be better to survive further with internal supply only. Thus he wanted to do his part toward this kind of development by building houses that doesn't consume energy.

Jussi Eilola's trigger was again different. At the time, back in 2003, there wasn't much discussion about carbon footprint, for example. He was mainly curious to see how low energy consumption would be possible in housing, He admits, that one trigger might have been competitiveness as well. At the time of the first idea, there was a lot of discussion going on in social media about energy consumption in housing. So he started to develop the idea, to see, how energy efficient structure could he create.

These findings don't support the work of Belz and Binder (2013). In their work they conclude: *"It is often a specific socio-ecological problem the sustainability entrepreneurs recognize against the background of their personal experiences in their professional or private life."* In neither of these cases the trigger was a socio-ecological problem. However, the motives were close to their personal experiences.

Belz and Binder (2014a) have later deepened the analysis of the recognition and realization of sustainable entrepreneurial opportunities. They highlight that general social or ecological problems are not the starting points but rather problems that the entrepreneurs encounter and experience in their personal lives. It is the personal affection and experience that makes them act upon it. In addition, they conclude that the specific ecological problems and specific social problems are two different kinds of sources for sustainable entrepreneurial opportunities. They also admit the limited amount of cases and thus call for more research to see whether sustainable entrepreneurial opportunities can be triggered by other sources as well.

To sum up the first step of the opportunity process, it seems that there are more triggers to start sustainable enterprises. It is clear from these cases as well, that the triggers have been close to their personal lives. But what is different is that they haven't been socio-ecological *problems*. However, if the word problem could be replaced with *viewpoint* or *interest*, then even these cases could fit into the model.

The next step in the process model is "*recognising entrepreneurial opportunities*". Esa Tommola from Passiivikivitalot is a serial entrepreneur. Back in 2004, when he got the idea, he had just sold his previous company and bought a new one, just to move some development ideas there. It was obvious that he was looking for new business opportunities. Because of competition restrictions he had to wait for 5 years, before he could launch anything new. So in his case the first steps of the process were not linear.

Jussi Eilola (Pohjolan Ekotalo) built first two houses for himself to test his ideas and to apply for patents. After good results with the second house, people started to ask for similar houses. So in 2009 he decided to establish the company.

Belz and Binder (2013) suggest that the recognition of a specific socio-ecological problem and the recognition of an entrepreneurial opportunity go hand in hand. Jussi Eilola established his company only after testing the idea twice for himself. It is a bit unclear though, whether he had the idea of the company in mind already in the

beginning. He had always wanted to become an entrepreneur though. In Esa Tommola's case, as a serial entrepreneur, he probably started to think about potential entrepreneurial opportunities right after his personal triggers.

After recognising entrepreneurial opportunities one must "*align the socio-ecological problems with the entrepreneurial opportunities*" (Belz and Binder, 2013). Neither Eilola nor Tommola commented this part specifically. It seems that it has been continuous, but subconscious process. They mentioned though some interesting key words for marketing during the interviews. These are for example, durable, energy efficient, simple to use etc.

The next step of the process, "*developing an integral sustainability opportunity*", has been an important step for both entrepreneurs. The analysis of Belz and Binder (2013) shows it is an iterative process, which includes extensive prototyping, testing, and the (re-) development and (re-) evaluation of ideas. This may result in the adjustment of the original idea or the recognition of other opportunities. The product development phase lasted in both of these cases around five years (2003/2004-2009/2010). Back in 2007 they both had built houses where it was possible to measure the real energy consumption. And in both cases the results were incredible.

Esa Tommola was finally ready with product development when his competition restrictions ended in 2009. Then he commercialised Passiivikivitalot. However, he is continuously developing the product and for example in 2013 he made still three trips to Germany. Jussi Eilola was ready at the same time and established the company in 2009. He as well is continuously developing the product further. He is for example offering a more natural structural solution, without any mechanical ventilation, because of customer demand. So it is easy to conclude that both entrepreneurs are developing an integral sustainability opportunity.

The final phase of the process is exploitation, which begins by "*funding and forming the sustainability enterprise*". Esa Tommola had acquired a company a few days prior to

his business disposal in 2004, just to move some development work there. So he had the company up and running. And because of the competition restrictions, he had done some construction work on the side, when developing this sustainable offering. Jussi Eilola followed more the process view and formed his company at this stage.

However, what is different compared to Belz and Binder's (2013) process view is that they both required a lot of money for the development work. They both used their own savings, as in many other cases analysed by Belz and Binder (2013). However, it would be totally wrong, to lock the funding into this stage. In Tommola's case he had invested so much of his savings by year 2009 (before he had commercialised the product), that he couldn't add anything more and he had to apply the company for debt restructuring. In Eilola's case he had built two houses when developing the concept, so he as well had spent huge amount of money already.

The last step of Belz and Binder's (2013) process is "*creating or entering sustainability markets*". This holds true on both cases. VTT defined passive house requirements for Finland in 2007. Both companies started to market their products a few years later. The market segment was new in Finland. However the idea wasn't unique as in Germany, for example, passive houses existed already. The Finnish versions needed to be different by structure though, to meet the criteria in the colder weather.

All in all, the entrepreneurial opportunity processes of Eilola and Tommola have some similarities with the model of Belz and Binder (2013), but by no means is it possible to conclude that they follow it completely. Firstly, the trigger to start sustainable enterprise wasn't socio-ecological problem in either case. Secondly, recognising entrepreneurial opportunities and aligning the socio-ecological problems with the entrepreneurial opportunities were not clear steps in either case. And thirdly, funding and forming the enterprise has occurred mainly in much earlier phase. Apart from the process, they both had past personal experience in the field, and past entrepreneurial experience as well, opposite to the findings of Belz and Binder (2013).

5.3 Triple Bottom Line

The entrepreneurs were asked how they saw the triple bottom line of the company i.e. how the company goals are divided between economic, ecological and social goals. All of them answered without hesitation. For all of them the company has all of these three goals present.

For ecological goals all the interviewees mentioned low energy consumption, which is economic as well. Esa Tommola added that there is no need for expensive technology in the house. Social was more difficult for the interviewees. By description passive houses have good indoor air quality and safety with humidity. So the living environment for the family is safe. Vesa Lehtola added from the company point of view that they want everyone to be happy who work for Dometalot. They want it to be a good place to work. Figure 21 summarises all the goals of each of the case companies.

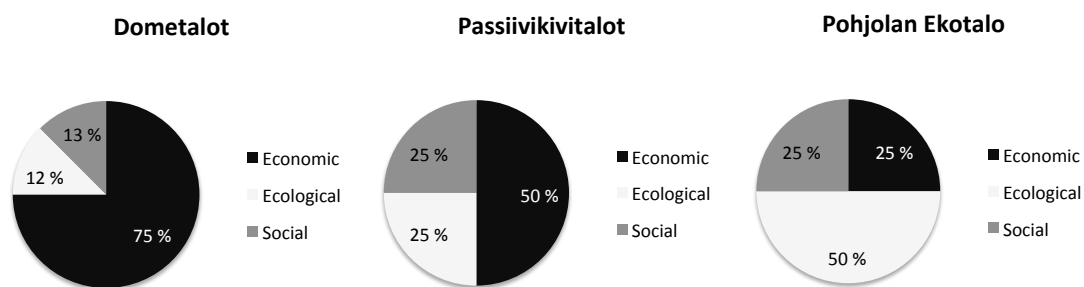


Figure 21: Triple bottom line of the case companies

These findings reflect the motivators of the entrepreneurs quite well. Even though none of them had green values as their main motivator throughout the process, they were still present at some level. For Jussi Eilola green values were on the highest level in the end of the process. Thus it is natural that in his business, Pohjolan Ekotalo, ecological goals are the highest out of these three case companies. On the other hand, Vesa Lehtola from Dometalot doesn't consider himself as a very ecological person. So for Dometalot ecological goals count only for 12.5% of the goals of the company.

The economic goals are highest for Dometalot. This is fairly natural result as well, since Vesa Lehtola considers himself more a managing director of a company rather than an entrepreneur. Thus the company goals do not reflect his personal believes or interests but are more neutral business goals.

The social goals are smallest in all the three cases. This result is understandable as well bearing in mind the product at hand.

6 DISCUSSION

This research project has given some new insights to the motivation of sustainable entrepreneurs and their opportunity processes. Yet a lot more needs to be studied. This chapter describes briefly some of the shortcomings of the results and gives ideas for further research. In addition it discusses alternative ways to analyse the data.

6.1 Motivation

Corsini Encyclopedia of Psychology's definition for motivation begins with words: "*Motivation leads to the instigation, persistence, energizing, and directing of behaviour.*" For Ryan and Deci (2000) to be motivated mean to be moved to do something. Thus, if we want to find entrepreneurs who save the world (panacea hypothesis), as Hall et al. (2010) describe, we need to know their motives, to establish sustainable enterprises. This research project found that all the sustainable entrepreneurs don't have green values as their main motivator to start sustainable businesses, but the motivators can be similar to more general motivators to start an enterprise.

Patzelt and Shepherd (2011) conclude that motivation provides an additional explanation beyond knowledge for why some people recognize entrepreneurial opportunities in their environment. In these three cases there were clear knowledge and past entrepreneurial experience. In addition they all had some sort of personal interest towards the topic, even though they were not necessarily motivated by green values as such. Thus they were able to see the opportunities that sustain the environment.

This research project revealed something, but as the sample was limited, a lot more needs to be done. What it showed clearly is that motives can change over time, which makes the research on the topic even more challenging. Notable finding was, that even green values might change over time, although the entrepreneurs run sustainable businesses.

6.2 Entrepreneurial opportunity processes

Even though, the paths the entrepreneurs have taken, when establishing the companies, can be drawn in a process model, it is still difficult to conclude that the processes have been linear. Some of the steps have taken place according to Belz and Binder's (2013) model, but not all. One reason might be that the construction industry requires special understanding and substantial amounts of capital. In these cases some of the more conventional process model might work better than the sustainable entrepreneurship process. A few process models were presented in chapter 2.4.1. After analysing the cases, and comparing them with the process models, some interesting findings can be drawn.

Sarasvathy's (2006) effectual logic seems to fit quite well to the case of Dometalot. When Vesa Lehtola joined the company, and became one of the owners, there was already some development done. The company had developed a few different wall structures for passive houses. When Vesa Lehtola joined the company, they started to build the ready to move –concept around these passive structures. As in effectual logic, through interaction with each other, there were new means available and new goals created when Lehtola joined the venture.

The other cases are not that clear. Both Tommola and Eilola are the sole owners of their ventures. They might have people around them in helping to develop the venture, but the impact of those people to the end result is not as clear as in the case of Dometalot.

Another interesting model is the one by Kyrö et al. (2013). Their research draws on the fact that both humans and ventures are different. Based on earlier research they conclude three different approaches to the opportunity process: problem oriented, cognition oriented and behaviour oriented approach. By change each one of the three cases in this research fall under different approach quite well. The paragraphs below summarises these findings.

Dometalot seem to follow problem-oriented approach. When Vesa Lehtola joined the company they produced prefabricated wall units. Lehtola considered the profit to be too low in that business and wanted to move the company towards ready to move –concept. The development process was straightforward. The wall structure needed some amendments, they needed to plan 25 models from which the customers could choose from, and they had to develop a proper webpage. All the development work was done during the spring and summer of 2013. The moderator in this case was really Lehtola's past experience in prefabricated house market and passion toward ready to move concept. The opportunity identification, evaluation and exploitation were separate and consecutive phases, in linear order. (Kyrö et al., 2013)

In the case of Passiivikivitalot, the approach has been cognition-oriented. Esa Tommola has been using his cognitive abilities to connect different ideas and evaluating and developing them. As a serial entrepreneur he is alert to new business ideas coming from different sources. The idea started to develop when he made a trip to Germany back in 2004. The main reason for the trip was to do research on how to reduce the working cost related to building a stone house. He came to understand that houses could be built in a simple way. He also learnt about EU level money flows related to energy consumption. In that sense he is finding solutions to match seemingly unrelated facts. There haven't been clear boundaries between the identification and evaluation phase, but the exploitation phase has been clearly separate (Kyrö et al., 2013).

And finally the case of Pohjolan Ekotalo seems to be behaviour-oriented. In this approach the entrepreneurs take actions based on constant experiences and trial-and-error practices. Opportunity exists as a consequence of their actions. Jussi Eilola developed the idea by building two houses for himself. He tested them and made sure the structure worked well before establishing the company. It was really his own curiosity that made him build the first passive house. And it was only when people started to ask for similar houses that he established his own business. In his case opportunity identification, evaluation and exploitation have all been intertwined and

cyclical. The whole opportunity process has been iterative. He has for example developed the product further and created a more natural solution without any mechanical ventilation (Kyrö et al., 2013).

In this sense it could be concluded that sustainable businesses are no different from any other business. The opportunity process can follow similar paths. In these cases the sustainable entrepreneurship model did not add any value to the analysis.

6.3 Entrepreneurs' background

What is different again to Belz and Binder's (2013) findings is that all the entrepreneurs studied here had past personal experience in the construction industry. Eilola had worked in leader position in his father's company, Tommola had just sold out a company selling stone house packages and Lehtola had worked for two different companies selling prefabricated houses. This opposite finding is supported by Patzelt and Shepherd (2010) who suggest that the likelihood of recognizing an opportunity for sustainable development is stronger if the person has past entrepreneurial knowledge. In Belz and Binder's (2013) research, 11 out of 12 (co-) founders did not have prior knowledge about markets, and how to serve them. Choi and Grey (2008) have similar findings in their case study on sustainable entrepreneurs. Most of the entrepreneurs they studied had little or no relevant business experience.

Another interesting finding is the financing of the businesses. All these companies were mainly financed by the entrepreneurs/owners themselves. Only Dometalot had received a small loan from the Ely-centre. Belz and Binder (2013) as well as Choi and Grey (2008) support this result.

6.4 Triple bottom line

The passive house as a product clearly meets the requirements of triple bottom line. As Passive House Institute in Germany defines; passive house is "*a building standard that is truly energy efficient, comfortable and affordable at the same time*" (Passive House

Institute, 2012). So it is ecological (energy efficient), social (comfortable for the inhabitants) and economic (affordable). But compared to some other sustainable products it is highly technical as well. In such a technical context, as the construction business, the triple bottom line could be combined with fourth element: technology. In all of the cases technological innovations took place simultaneously or even preceded opportunity discovery. So in this case, it would be reasonable to add the fourth aspect to the model as presented in Figure 22.

I also prefer the way Sir Martin Sorrell presents the triple bottom line with the words “People, planet and profit”. To add the fourth element there, I would use product in this case, as the product development has been crucial part for all the entrepreneurs here.

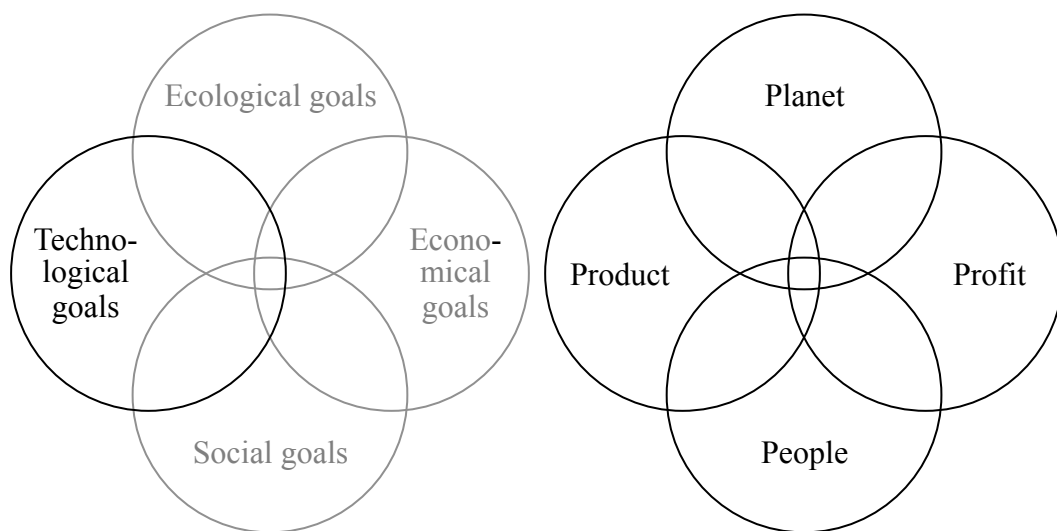


Figure 22: Adding fourth dimension to the triple bottom line.

6.5 End-user point of view / customer value

Finally one interesting topic that rose from the interviews is the customer viewpoint. Even though it seem that the context of passive houses in Finland is narrow, it is obvious from the interviews that there are different kinds of customers who buy this sort of products. In the one end there are the ecologically aware people, who want all the building materials to be as natural as possible. For them even a ventilation machine is

too much in the house. They are more interested in the carbon footprint than energy savings as such. In the other end of the spectrum are the technologically aware people, who are looking for superior technical solutions and extremely low energy consumption. For them it doesn't matter if building materials are not made of renewable natural resources, as long as the solution is durable and safe. After analysing the entrepreneurs of the companies a natural next step is to analyse their customers. I find this kind of end-user's motivation to be a very interesting topic for future research.

7 CONCLUSION

The objective of this study was to research the motivators of passive house entrepreneurs to start sustainable enterprises. In addition the aim was to find whether their motivators had changed during the entrepreneurship process and do they even see themselves as sustainable entrepreneurs. Finally the objective was to find out if passive house entrepreneurs follow a particular entrepreneurship process proposed by Belz and Binder (2013).

The methodology used was a multiple case study design. The questions were semi-structured, open-ended questions. In addition a questionnaire was emailed to the interviewees beforehand. The analysis consisted of unique case analysis and cross-case pattern analysis.

The research sample consisted of all the entrepreneurs in Finland building passive or low energy houses only. Other companies building passive houses build regular houses as well. Those cases were excluded as in those cases the entrepreneurs cannot be considered sustainable. Thus the research managed to capture one whole start-up segment in Finland.

The results were manifold. There were three motivators that all the entrepreneurs found to be important from the first idea to the market entry. Those were desire for independence, need for achievement and drive. Identifying gap in the market and passion increased during the process in two out of three cases. At the market entry point they were high motivators for all of them. These findings were in line with previous literature. Green values, on the other hand, were not seen as a main motivator in any one of the cases, throughout the whole process. One entrepreneur considered them to be high motivators in the beginning and one in the end of the process. This finding contradicts previous literature.

Closely related to these topics is the question focusing on triple bottom line i.e. how they divide the three goals of a sustainable entrepreneur? Or to be even more specific how they divide the goals of their enterprises? It was clear that all of them saw economic, ecological and social goals in their businesses. The most dominant goals were either the economic or the ecological ones, which is quite understandable bearing in mind the product at hand. Given the high level of technical innovations each one of the products has, it would be reasonable to add a fourth element, technological goals, into the analysis. And to be even more descriptive, I would use the terms people, planet, product and profit as four goals for a sustainable enterprise.

The research part focusing on the process itself didn't support the earlier findings of Belz and Binder (2013). One case had to be excluded from this analysis, as its origins were different. Even after excluding the one, the two others didn't follow their model either.

Firstly there seems to be different kinds of triggers to start sustainable enterprises. In these cases the triggers haven't been socio-ecological problems but rather socio-ecological viewpoints or interests. Secondly, recognising entrepreneurial opportunities and aligning the socio-ecological problems with the entrepreneurial opportunities were not clear steps in either case, opposite to what Belz and Binder (2013) have suggested. And thirdly, funding and forming the enterprise has occurred mainly in much earlier phase compared to Belz and Binder's (2013) process model.

Apart from the process, few other findings contradicted with the ones from Belz and Binder (2013) as well. Firstly both entrepreneurs had past personal experience in the construction field, and secondly they both had past entrepreneurial experience.

Based on these results it must be questioned whether there is a need to find an own opportunity process model for sustainable entrepreneurs only. These cases seem to fit into some more general models quite well. Of course, if the aim is to find the origins or

triggers to start sustainable businesses, it can give some insights. But on the other hand the results on motivators can give this information as well.

One model that fitted nicely with the results was from Kyrö et al. (2013). Their research is based on the fact that both humans and ventures are different. Linked to their findings Dometalot seem to follow problem-oriented approach. For Passiivikivitalot the approach has been closer to cognition-oriented and for Pohjolan Ekotalo behaviour-oriented.

Overall the findings lead to questioning whether earlier research defining sustainable entrepreneurship has considered all the aspects. If the company and the product are highly sustainable, but the entrepreneur is not truly motivated by green values, does the entrepreneur fulfil the criteria of a sustainable entrepreneur? So is sustainable entrepreneurship defined through the entrepreneur or the enterprise? In this topic there seems to be room for further research.

Going forward, the next steps for research regarding these findings could also be the motivation of customers. It would be interesting to see, what are the drivers of consumers to buy sustainable products and compare those motives to the ones of the entrepreneurs.

And finally an interesting topic for future research would be the motivation to sell the business. That would reveal a lot of the overall mind-set of the entrepreneur. As Choi and Grey (2008) found out, some of the sustainable entrepreneurs were not ready to sell their business, because they couldn't find a buyer, who would commit to the same set of values. Would this be the case here, where green values were not that dominant at all?

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