

# **Entrepreneurship Post Displacement: Exploring Knowledge Spillovers and Idea Generation as a Result of Business Closure**

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**KTH Industrial Engineering  
and Management**

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## Abstract

Empirical findings on knowledge transfers associated with business closures are limited (Hoetker and Agarwal, 2007), and very few studies examine the search process of individuals and their search for new solutions and ideas (Maggitti et al., 2013). The purpose of this paper is to fill the knowledge gap of knowledge spillovers and idea generation taking place while displaced employees transition to entrepreneurship after business closure. This paper will examine AstraZeneca's displaced employees that started their own businesses after AstraZeneca's research and development facilities closed down in Lund (2010) and Södertälje (2012) in Sweden. The research questions investigated were: What are the different factors and idea processes that made the displaced employees start their own businesses? To what extent are the entrepreneurs utilizing their knowledge and experience gained at AstraZeneca in their current businesses, and are they using contacts gained while working for AstraZeneca? To answer these questions both qualitative and quantitative research method were used in the form of surveys and interviews. The results of this study showed that a knowledge spillover took place between the new firms and the closing firm, while previous experience and expertise gained from AstraZeneca greatly influenced the idea generation that took place amongst the displaced employees while transitioning into entrepreneurship. Moreover, about 20% of the entrepreneurship was necessity based, whereas 70% were opportunity based. In regards to the timing of the idea generation process, half of the participants came up with the business idea after learning about the closure, while the rest disagreed. Therefore, the idea generation process amongst the participants did not necessary start after the announcement of the displacement.

**Key words:** Entrepreneurship, firm closure, firm exit, entrepreneurship after displacement, displacement, knowledge spillover, idea generation, ideas, AstraZeneca, spinouts, R&D-Spinouts.

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## 1. Introduction

As the economy develops, new entrepreneurial ventures form while other firms are forced for closure, which creates opportunities for entrepreneurial activities. According to a comparative study of entrepreneurial dynamics in China, Europe and the U.S., the growth of entrepreneurial activity in most countries has remained unchanged or slightly moved between the years 2013 and 2014 (Braunerhjelm et al., 2015). However, according to the Global Entrepreneurship Monitor (GEM, 2015) Sweden experienced an unprecedented fall in their entrepreneurship activity between 2013 and 2014, which was a decline of nearly two percentage points. No other countries experienced such intense movements either downward or upward. This event shows a pause in the upward trend for Sweden that has been observed ever since 2006, which during this time period Sweden more than doubled its entrepreneurial activities. However, it is argued that entrepreneurship will become increasingly more important in knowledge-based economies by delivering one of the main channels where new economic knowledge can be commercialized (Acs et al., 2004).

Contrary, while some firms opens up others closes down, which creates job displacement for people who lost their jobs. Millions of people each year faces displacement, thereof involuntary job loss because of economical fluctuations or structural changes. According to OECD (2013), job displacements affects 2-7% of employees every year. The fierce market competition makes it crucial for competitive business models, innovative solutions and new entrepreneurial ventures to form in order for our economy to continually flourish. Some examples of previous business closures that received a lot of policy attention in Sweden are the closure of AstraZeneca's research and development facilities in Lund (2010) and Södertälje (2012), which operates within the pharmaceutical industry. Other significant closures in Sweden were when SAAB in Trollhättan (2011), and the Ericsson plant in Norrköping (1999) closed down. Business closure could involve bankruptcies or closures due to low profitability (Gimeno et. al., 1997; DeTienne et.al., 2008). However, it's important to notice that not all business closures should be seen as a failure. Examples of business closures are closures due to low profitability and bankruptcies. The possible reasons for why owners choose to close down their businesses varies, and some reasons might be to peruse other opportunities, or possibly merely just wanting to change careers from entrepreneurs to employment (see e.g. Gimeno et. al. 1997; DeTienne et.al. 2008).

However, market competition also creates business opportunities, and to form new competitive firms there are many crucial parts that need to be in place, and two of them are competitive or perhaps innovative ideas and the generated knowledge within that new firm. New ideas create new business models (Stampfl, 2015), and new businesses are the appearance of the intersection of entrepreneurial action and knowledge spillovers (Agarwal, Audretsch and Sarkar, 2007). Therefore, new ideas and knowledge spillovers are key assets for startups.

To the best of my knowledge, there has been little previous research on entrepreneurship after business closure, and more specifically there has been no previous research in regards to idea

generation and knowledge spillover taken place while displaced entrepreneurs transition to entrepreneurship after facing company closure.

Hence, empirical findings on knowledge transfers associated with business closures are limited (Hoetker and Agarwal, 2007). Furthermore, the literature of search processes focuses in general on the organizational search processes, and very few studies examines the search process of individuals and their search for new solutions and ideas (Maggitti et al., 2013). Previous research has mainly focused on knowledge spillovers and idea generation in general, and is not particularly linked to displaced employees transitioning into entrepreneurship after business closure. Hence, this thesis is a contribution to the economics of innovation and entrepreneurship literature, and intends to fill the knowledge gap of knowledge spillover and idea generation related to business closure in the empirical literature.

## 1.2 Background and Purpose

This paper will investigate AstraZeneca's displaced employees that started their own businesses after AstraZeneca's firm closure in Lund (2010) and Södertälje (2012) in Sweden. About 900 employees lost their jobs in Lund, whereas 1400 people lost their jobs in Södertälje. According to Life Science Sweden (2013), after AstraZeneca's closure former employees created 69 new firms in Sweden. This event shows that while a company closed down, new firms are created. There is much to learn from this event; how entrepreneurship and knowledge flows take place while many highly skilled educated people lost their jobs. It is key for the Swedish economy as a whole to keep the knowledge that was accumulated within AstraZeneca, and create a knowledge flow to other companies so knowledge and expertise is not lost. Additionally, it's fundamental to learn from these situations when a company closes down how the ideas for the new firms was generated; was it created before or after learning about the closure? Are the founders of the new firms using their knowledge obtained from AstraZeneca? Was their contact network from Astra crucial for their success in the startup face? Would these companies been created anyway even if AstraZeneca did not close down? If yes, then AstraZeneca's closure was not the factor of the new startups. Moreover, if the founders of the new companies used their knowledge gained at AstraZeneca, and used their contact network gained from that industry, then that would indicate that knowledge spillover from previous employment took place.

Investigating components such as idea generation and knowledge spillover is key for our further understanding of how entrepreneurship evolves. Moreover, there is much information to learn in regards to knowledge spillover and idea generation from the entrepreneurs starting new firms after facing a company closure. Therefore, the purpose of this paper is to fill the knowledge gap of knowledge spillovers and idea generation taken place while displaced employees transition to entrepreneurship after business closure. This paper is an exploratory research utilizing qualitative and quantitative methods. Research is done to anticipate answers to the following questions:

1. *To what extent are the entrepreneurs utilizing their knowledge and experience gained at AstraZeneca in their current businesses, and are they using contacts gained while working for AstraZeneca?*

2. *What are the different factors and idea processes that made the displaced employees start their own businesses?*

The paper is organized in the following way; section 2 discusses the theoretical arguments and previous empirical research concerning firm closure and job loss, knowledge spillover, and idea generation; section 3 explains the case of AstraZeneca; section 4 includes methodology; in section 5 empirical results are listed and discussed; and lastly, conclusions and suggestions for future research are provided in section 6.



## 2. Theoretical Framework and Literature Review

### 2.1 Job loss/unemployment and entrepreneurial behavior

The famous expression *innovation and creative destruction* originates from Josef Schumpeter, and he argues that entrepreneurship involves innovation (1934, 1939). The innovative entrepreneur is accountable for doing new things that has already been done but in a new way, and involves creating: new products and methods of productions, new markets and capturing new resources of supply or a new organization of industry (Schumpeter, 1947). Therefore, the entrepreneur is an exploiter instead of an inventor of new knowledge. A Schumpeterian standpoint is to believe that entrepreneurship involves the introduction of new paradigm-shifting innovations instead of viewing it as a particular occupation. However, it is hard to define entrepreneurship today, since there is no general agreement of the meaning. For the purpose of this thesis, an entrepreneur is defined as someone who recognizes an opportunity, and starts a business to pursue it (Bygrave and Hofer, 1991), which implies that new business creation is the essence of entrepreneurship.

Currently, there is a broad literature on the relationship between entrepreneurship and unemployment (Parker, 2009). The reason for this is because of the policy interest in promoting entrepreneurship, which is a method of reducing unemployment. However, this will not be the focus of this paper, though it's noteworthy to mention. Moreover, research in economics of entrepreneurship over the last ten years has mainly shifted away from the unemployment issue towards other topics, which reflects the end of high unemployment rates in several developed countries (Parker, 2009). Though it also may mirror the growing recognition amongst entrepreneurship scholars that there is not much more to say about this issue, which is either original or exciting. However, a study conducted by OECD (2013) shows that that the re-employment rate of displaced workers differs considerably across countries. In Sweden and Finland, roughly 80 percent of displaced workers have a new job within one year. Whereas the corresponding figures for Portugal and France is only 30 percent.

Moreover, concerning the transition from unemployment to entrepreneurship, research shows that unemployed individuals tend to become self-employed in a much higher rate compared to employed individuals (Carrasco, 1999). Additionally, longer durations of unemployment are related to a high possibility for transitioning into entrepreneurship (Andersson and Wadensjö, 2007). A more recent study by Røed and Skogstrøm (2014), however, is noteworthy to mention. Their study was conducted by examining the impact of job loss on entrepreneurship behavior. Their report counted on Norwegian register data of mass layoffs made by bankruptcies as indicators of exogenous displacement. Røed and Skogstrøm found that while working in a company, which is soon to close down because of bankruptcy, increases the entrepreneurial tendency by 180% for women and 155% for men, in comparison to working in a stable firm. This shows that displaced employees increases the likelihood drastically to start their own businesses in comparison with employees not being displaced. However, in previous reports in the literature, estimates that were conducted had a much less entrepreneurial tendency. Another study, however, finds that within one year after displacement, about two percent of employees become entrepreneurs (Magnergård, 2013). Another exception is

the study by von Greiff (2009), who finds that there is a 50 percent higher chance to become self-employed after displacement.

The remaining part of the theoretical framework and literature review will be focusing on knowledge spillover and idea generation. However, as stated it's noteworthy to mention, since job loss and unemployment relates to displacement, and in this study I will examine displaced employees from transitioning into entrepreneurship.

## 2.2 Knowledge Spillovers

What are the external knowledge spillovers and where do they originate (Parker, 2009)? At a universal level, for a long time it has been known that ideas and knowledge are public goods (at least since Arrow, 1962), and those who benefits are not only captured by the creator. Instead, knowledge creation tends to spinout to further knowledge creation, which may not be recognizable to the creator but can be recognized and developed by others. This positive externality is commonly denoted as knowledge spillovers. Knowledge spillovers may help other agents' innovation efforts either unintentionally, for example when inventions are imitated, or intentionally when for instance scientists reveal the results of their research (Breschi and Lissoni, 2001).

Economists understand the role of entrepreneurs in stimulating and exploiting knowledge spillovers (Parker, 2009). From an early contribution, Schmitz (1989) argues that entrepreneurship is a potential source of positive externalities at the level of the economy. Generally there will not be enough entrepreneurship in relation to the social optimum, and therefore, policy-makers needs to keenly promote technology based entrepreneurship to stimulate the economy. Two important sources of knowledge spillovers are universities and private research and development laboratories, which create codified knowledge, which is easily documented, reproducible and transferable (Krugman, 1991). Secondly, tacit knowledge is on the other hand hard to document and is frequently context specific and is therefore best transferred via face-to-face interactions and frequently repeated contacts (von Hippel, 1994). Moreover, the cost of transferring the tacit knowledge increase with distance, and therefore, it tends to be locally concentrated.

*Information spillovers and social ties* are essential for entrepreneurs to develop information spillovers by indicating information about recourse requirement and opportunities to other latent entrepreneurs via social networks (Stuart and Sorenson, 2003a; Rocha and Sternberg, 2005). This information can help to: reduce uncertainties when forming new firms, promote role models which is key to increase awareness of benefits of entrepreneurship, and so on (Gianneti and Simonov, 2004). Moreover, knowledge spillovers incline to be spatially consecrated and entrepreneurs exploit knowledge spillovers locally (Klepper, 2006). Moreover, Hoetker and Agarwal (2007) claimed that for an effective knowledge diffusion to happen, it's crucial for an entrepreneur to utilize the existing firm as a template to observe and maybe interact with their routines and rules to completely benefit from knowledge spillovers. Therefore, previous employment experience in the same industry may have a positive effect on the overall performance of the entrepreneurial firm formed after displacement.

Some criticism of knowledge spillover concepts has been done by Breschi and Lissoni (2001). Their literature survey led them to contend that what seems to be unintended knowledge spillovers could truly be well regulated knowledge flows between firms and universities, or between groups and firms, which then have more to do with accelerating the development phases of new products and processes than unintentionally providing new innovative opportunities. Aligned with this critique, Zucker et al. (1998) recognized that intellectual capital of high performing scientists are the key factor for affecting the location and timing of firms within biotechnology rather than knowledge spillovers.

### **2.3 Knowledge Spillover Theory of Entrepreneurship**

Current theories of entrepreneurship focus mainly on recognizing opportunities and the choice to exploit them. Entrepreneurship literature treats opportunities as exogenous, though the main theory of economic growth proposes that they are endogenous. Acs, Braunerhjelm, Audretsch and Carlsson (2008) advanced the microeconomic foundations of endogenous growth theory when they developed the knowledge spillover theory of entrepreneurship. This theory argues that knowledge, which is endogenously created, results in knowledge spillovers, and thereof permits entrepreneurs to identify and exploit opportunities (Acs et al., 2008). In other words, when incumbent firms don't commercialize the knowledge that they have invested in, opportunities are then created for entrants. If incumbent firms took all the rents of R&D created, then there would not be any intra-temporal knowledge spillovers.

Lastly, the authors of the Knowledge Spillover Theory of Entrepreneurship argue that the real challenge in endogenous growth theory is not primarily that firms will under-invest in new knowledge, instead the challenge will be how to balance the rising returns with competitions (Acs et al., 2008). Moreover, the knowledge spillover theory of entrepreneurship helps us to understand the vital role of the entrepreneur in the economy.

### **2.4 The process of knowledge spillover and entrepreneurship**

New businesses that are formed are the appearance of the intersection of entrepreneurial action and knowledge spillovers (Agarwal, Audretsch and Sarkar, 2007). The literature that connects knowledge spillovers to entrepreneurship underlines that incumbent organizations, the largest player in a given industry, are an essential source of new entrants, specifically when the incubator underutilize the knowledge they create (Agarwal *et al.*, 2004; Klepper, 2007; Klepper and Sleeper, 2005; Shane and Stuart, 2002). As previously discussed, if incumbent firms don't utilize the knowledge they create, startups may then use their knowledge, which creates a knowledge flow between firms leading to knowledge spillover.

Investments in knowledge are a virtuous cycle of growth at various levels (Agarwal, Audretsch and Sarkar, 2007). When knowledge spillovers across incumbents and entrants take place, growth of both incumbents and entrants are most likely to happen creating a cycle of value creation for both, whereas value destruction and displacement is less likely to happen. Whilst entrants build on

networks and knowledge established by the incumbent firms to create new business models, reverse knowledge flows from entrants to incumbents can take place and create growth. This scenario generates a win-win process where knowledge spillovers are emphasized in the process of value creation.

## **2.5 Knowledge spillovers while transition to entrepreneurship after displacement**

To the best of my knowledge, limited or no research has been done on knowledge spillovers while transition to entrepreneurship after displacement due to business closure. Likewise, Hoetker and Agarwal (2007) state that our comprehension continues to be under-researched of how the knowledge created by closing firms can be capitalized and transferred by displaced employees.

However, some studies exist which examine the knowledge spillovers from exiting firms. As previously discussed, extensive research has been done looking at how knowledge spillovers takes place between incumbent firm and the entry firm (Agarwal, Audretsch and Sarkar, 2007). Though one study by Knott and Posen (2005) discovers that positive externalities are produced by the closing firm, such as knowledge spillovers, which is beneficial to other firms in the industry. Additionally, Hoetker and Agarwal's study (2007) showed that firm exit does not kill the knowledge diffusion, however, it does reduce it considerably.

There is a scarcity of systematic knowledge concerning knowledge diffusion and the skills conveyed by employees following displacement after business closures (Nyström, 2016). The research that has been done on the labor mobility of displaced workers tends to be case based (see Nyström and Viklund Ros (2014) for a survey of the literature). Nevertheless, as the previously mentioned cross-country comparison by the OECD (2013), and studies by Nyström (2016), Nyström and Viklund Ros (2014), and Magnergård (2013), all investigate the transition patterns of all displaced workers in Sweden, which contributes to our existing knowledge about transition patterns. Though, these studies focus on transition to employment, whereas studies particularly on transitions to entrepreneurship after displacement are rare (Nyström, 2016). A recent study, however, by Nyström (2016) examined entrepreneurship after displacement. Though this study focused on the transition and performance of entrepreneurial ventures created after displacement. However, this study does not examine the knowledge spillovers that took place after the displaced employees started their own businesses.

One recent study, however, that is noteworthy to mention is a study by Lougui and Broström (2016), which investigates the relationship between mergers and acquisitions (M&A) and employee entrepreneurship in human capital-intense service sector. This study shows that M&A on average reduces the opportunity cost of entrepreneurship for employees, which accounts partially for the observed linkage between M&A and spinout activity. Additionally, it was shown that M&A generate new entrepreneurial opportunities. Similarly to when employees face M&A, this paper's participants have changed their work environment as well by being displaced, and thereafter chose to transition into entrepreneurship. These two studies show similar results due to the changing environments for the employees. As we know, the participants of this study chose to start their own business since they lost their jobs thereof had a lower opportunity cost and now had a business

opportunity due to the business closure and job loss.

## **2.6 Idea Generation: The Circulation of Ideas and Entrepreneurship**

According to Hellman and Periotti (2011), firms have imperfect capacity to elaborate ideas internally, and may then let employees to leave to try out developing and incomplete ideas in new firms. The model they created in their research “describes a natural symbiosis between the ability of firms to sustain idea generation and the comparative advantage of market in elaborating ideas” (p.34). This method justifies the process of idea incubation and spawning, which occurs to define the open exchange of ideas across firms and markets distinctive of successful innovative environments such as Silicon Valley.

Gompers, Lerner, and Scharfstein (2005) provide wide evidence on the role that large firms play in entrepreneurial spawning, and they find that more open firms spawn more ventures. Contrary, firms with leaky boundaries raises the mutual local flow of ideas (Aoki, 2001; Saxenian (1994), whereas secretive corporate culture, for example hierarchical approach to R&D, suffocates the circulation and elaboration of internal ideas (Saxenian, 1994). Employee-generated ideas are in its context naturally realized internally. Companies such as Google pride themselves by frequently creating new ideas in house (The economist, 2009; Bartlett and Mohammed, 1995).

Moreover, many Silicon Valley firms have a long list of talented employees leaving large firms with novel ideas (Hellman, Periotti, 2011). For example, 71% of *Inc. 500* founders said that they had imitated or tailored an idea they had identified in previous employment, compared with only 4% who said that they created their idea through systematic reach (Bhide, 2000). Dunkelberg *et al.* (1987) observed that firms of founders that identified their ideas from previous employment generally experience higher average rates of growth of their firms. This shows that experience takes the form of valuable direct knowledge transfer. If entrepreneurs start business related ideas to their former employments, then overall work experience may promote entrepreneurship. Empirical evidence confirming this statement made by Hyytinen and Ilmakunnas (2007) shows that individuals with previous entrepreneurial experience and aspirations are more likely to become entrepreneurs in the future. In many cases, Bhide (2000) argues as well that entrepreneurs at their previous employment discover ideas behind entrepreneurial firms.

Overall, one can understand that many novel/innovative ideas are circulating within companies that are realized by employees by starting their own companies. Thus the company culture of these established firms play a key role if their employees take these ideas to form new competitive firms or not. However, another key factor for people to choose to actualize their ideas and create new firms are the lack of local fit, which is a crucial determinant of spinoff activity, even if the product is similar, or inline of business (Klepper and Sleeper, 2005). As discussed previously in the knowledge spillover section, new ideas and knowledge created by incumbent firm may be actualized by spinoffs.

## 2.7 Idea Generation: Idea Casting and Construction

Idea generation refers to the process of searching for new ideas for new business models (Stampfl, 2015). The literature of search processes emphasizes in general more on the organizational search processes, and simply few studies examines the search process of individuals and their search for new solutions and ideas (Maggitti et al., 2013). Unfortunately, how people search for their ideas, that they have realized, is not well understood.

However, impressions, thoughts and ideas don't follow a linear and chronological order. A case study for *seeds for business model ideas* revealed that crucial thoughts and key ideas comes into peoples' mind while doing something totally different (Stampfl, 2015). Therefore, the creation of ideas cannot be forced to take place in group meetings. Instead, the case study revealed how important it was for the group members to think about the general concept while they make their every day life, without forcing to create ideas in group settings (Stampfl, 2015). The study found it extremely hard to document the source of arguments and ideas for the business model development process that they tried to document.

Despite the spontaneous nature of ideas, it's possible to identify important catalysts for ideas (Stampfl, 2015), which are:

- Information gathering
- Definition of existing business model
- Prior experiences
- Analogies
- Face-to-face meetings

These catalysts for ideas were recognized after the case study mentioned earlier. Hence, idea generation start while information gathering takes place, and idea casting and information gathering are mostly simultaneous stages. The process of information gathering initiates the creation of new business model ideas. The case study reported that prior experience were the primary triggers for developing new ideas. For example, ideas can be based on prior knowledge about a company or industry, the environmental factors, the market, or other existing information. Therefore, the experience and knowledge is the basis of all ideas (Stampfl, 2015). The case study also revealed that it is helpful to analyze similar business models while in the process of developing your own business model. Analogies are a vital catalyst for emerging new business model ideas, and most new business models are a recombination of existing concepts, patterns and ideas.

Lastly, face-to-face meetings of the teams in the case study played a significant role in generating new ideas. Ideas comes generally to ones mind very spontaneously and on an individual level (Stampfl, 2015). Thus, it was observed that throughout the face-to-face team meetings many new ideas were created. Joint discussion and an evaluation of the ideas that were developed individually were often resulted in another different ideas during the team meetings. Therefore, one idea leads to another idea. A study by Girotra et al. (2010) showed that where groups organized in a hybrid structure, meaning that first individuals work independently and then afterward working together

creates more successful results. The study confirms that they were able to create more and better ideas, and to better distinguish the quality of the ideas that they had created (Girotra, 2010). Additionally, it was found that using the brainstorming technique of building on other's ideas is counterproductive, since it does not help to create more ideas, or the ideas that build on previous ideas are not better.

## 2.8 The Generation of New Business Ideas

Entrepreneurship scholars agree that the accumulated work experience that employees gain during their career is an important source for the generation of new business ideas (Shane, 2000; Politis, 2005; Shepherd and DeTienne, 2005). Because work experience exposes people to unique insights to customer problems and needs, viable markets, product accessibility and competitive resources that eventually influence their ability to spot an opportunity for a business idea (Gabrielsson and Politis, 2012). A study made by Gabrielsson and Politis showed that the strongest predictor of new business ideas is a learning mind-set that favors exploration (2012). They also found that people's breadth in functional work experience favor the generation of new business ideas, whereas deep industry work experience is negatively related to new business idea generation.

The generation of new business ideas is an important part of the entrepreneurial process, thus the entrepreneur based on his/her ability to identify unmet customer needs and thereof opportunities for profit can come up with new solutions in form of emerging ideas for new startups (Gabrielsson and Politis, 2012). Before reaching a developed business idea where its market niche, production system and organization is established (how the business model is supposed to work), the entrepreneurial process most likely starts with more diffuse ideas of how to meet customers needs (Klofsten, 2005; Davidsson, 2006). This idea or ideas develops and emerges into a basic understanding of what future business will offer. Therefore, the generation of new business ideas can be understood as a development process where the idea can be developed and refined during its developmental journey (Ardichvili *et al.*, 2003).

### 2.9.1 Idea Generation after job displacement

As previously discussed, the literature of search processes focuses in general on the organizational search processes, and unfortunately very few studies examine the search process of individuals and their search for new solutions and ideas (Maggitti *et al.*, 2013). Hence, idea generation taken place after displaced employees transition into entrepreneurship after business closure, to the best of my knowledge, is still not very well understood and has not been previously studied. Studies that have been made, however, are more related to performance assessments using the idea-generation process for coming up with new business ideas within already excising firms. A study by Lilien *et al.* (2002) took a close look at the lead user process, which takes a different approach in comparison to the more traditional idea generation techniques. The traditional idea generation techniques are based on customer input by usually gathering information on new product needs from either typical or random groups of customers. Contrary, the *lead user process* collects information on both needs and solutions from customers of the target market, and from users in other markets that counter similar problems in a more extreme form. The study revealed that using the *lead user process* while

generating ideas and product development improves; “innovation capabilities;” improves annual sales with more than eight times compared to the sales forecasts for projects using the more traditional idea generation techniques; and project the highest rates of major product line generation in the past 50 years (Lilien et al., 2002).

Idea generation and the search process to find new business models and to realize them should follow a different process when displaced employees transition into entrepreneurship in comparison to other situations where one did not lose the job. Being displaced means you lose your job and the urge to find an alternative becomes important: either you find another job, or you create one by becoming an entrepreneur. When a company closes down then there are different opportunities for ideas for the displaced employees: either you build your business model on the closed firm's business model or you create a completely new one. As discussed throughout this paper, the knowledge gap remains of knowledge spillovers and idea generation taken place while displaced employees transition into entrepreneurship after business closure. Hence, this paper will eliminate this gap and anticipate answering unanswered questions in regards to this matter.

### **2.9.2 Overview of Institutional Support Available to Displaced Employees Transitioning into Entrepreneurship**

As a last remark in the idea generation section, mentioning the institutional support available to displaced employees transitioning into entrepreneurship is key as it serves as an incentive to realize one's business idea and transition to entrepreneurship. The decision to realize one's business idea certainly depends on the alternative options for income that are available after displacement (Nyström, 2016). The unemployment insurance system and the support given by job security councils are two institutions available in Sweden. The Swedish unemployment insurance consists of basic coverage and an income related coverage that can be received for a maximum of 300 days for displaced employees. About 90 percent of employees in Sweden are members of an unemployment fund. Moreover, job security councils are a complement to the unemployment insurance, and the support that is being offered to the employees where the businesses have signed a collective agreement with a union (Walter, 2015). Other available supports are different investment supports and grants from the state, startup financial support from Arbetsförmedlingen (who is a governmental agency helping unemployed people receive jobs), trygghetsrådet (available through the job security councils, and supports people who lost their jobs), verksamt.se (who operates as advisors helping startups), and lastly Almi and Vinnova who are two separate state agencies who invest in promising innovative startups in Sweden.

Other external organizations and institutions that support innovation in Sweden available for entrepreneurs that is of particular relevance for the participants of this study are: Nyföretagarcentrum, Uppsala Innovation Center (UIC), Teknopol, KISP (Karolinska Institute of Science Park), Medicon Village (an incubator in Malmö). Additionally, the severance pay that the displaced employees from AstraZeneca received also played a major role while deciding on pursuing entrepreneurship. Overall, as the final remark on idea generation, if there is no money or



support no idea will be realized. Therefore, all the above-mentioned support available is key for being able to realize business ideas thereof promoting entrepreneurship after job displacement.

### 3. AstraZeneca

#### 3.1 Overview of AstraZeneca

AstraZeneca is one of the world's leading pharmaceutical companies, and is a large knowledge-intensive multinational company. The headquarters are located in London, and its research and development headquarters were in Södertälje, Sweden before its closure in 2012, which will be further discussed in this section. The company has sales in more than hundred countries worldwide, and was incorporated 1999 (Reference for Business).

AstraZeneca employed close to 12 000 people in Sweden (Anderson *et al.*, 2008), before the closure of the two major R&D facilities located in Sweden. The company had both R&D and production activities in Sweden, and was located in Södertälje (located in Stockholm region), Göteborg (Gothenburg) and Lund (located in Malmö region). AstraZeneca was responsible for around 80 percent of Sweden's total export of pharmaceuticals, and around five percent of the country's total export of manufactures (Anderson *et al.*, 2008). They also accounted for 0.4 percent of the total private employment in Sweden, which accounted for about 20 percent of the employment of PhDs in R&D. If considering AstraZeneca as a research unit, the company produces the same amount of research as the Karolinska Institute and more than the Royal Institute of Technology (Anderson *et al.*, 2008). As one can understand AstraZeneca had a huge impact on Sweden in terms of employment, R&D and economical growth, and hence the closure affected many individuals and units.

#### 3.2 AstraZeneca's Closure

When AstraZeneca closed down their research facilities in Lund 2010, about 900 employees lost their jobs. On the 2<sup>nd</sup> of March 2010 AstraZeneca announced their plans to close down the R&D facilities in Lund (Henckel, 2013). AstraZeneca also closed down their R&D facilities in Södertälje 2012. The announcement came the 2<sup>nd</sup> of February 2012, and about 1400 people lost their jobs due to the closure (Jensen, 2015). The displaced employees were highly educated with many years of experience within the pharmaceutical industry. Employees who were so called generalists and not specialized in life science received jobs within other companies (Henckel, 2013). Small to medium sized life science-companies in Sweden, first and foremost within health technology, hired a handful of engineers. Moreover, according to Life Science Sweden (2013), after the closure of AstraZeneca's facilities in Lund and Södertälje, some former employees created 69 new firms in Sweden. There were 32 companies created by former employees from Södertälje, and 37 from Lund. Most of the companies operate within the service and/or consulting industry, and only two companies work with the development of pharmaceuticals. More detail about the founders and their processes will be discussed in the methodology and the result section of this paper. Furthermore, a list can be found in the Appendix section 8.3 of all the 69 companies that were created by the displaced employees from AstraZeneca.

Moreover, AstraZeneca followed a trend within the pharmaceutical industry when they closed down in both Lund and Södertälje (Henckel, 2013). The large R&D companies started to prioritize less of

their own research, and instead searches for promising researches among smaller life science-firms. However, they only catch a small amount of the jobs that disappears when the large pharmaceutical corporations closes down.

## 4. Methodology

### 4.1 Overview

This section will discuss the implications of the methodological approach of this thesis. Scientific research aims to produce new knowledge and is helping us to understand the reality in a systematic way. The choice of the scientific method influences the results of the research. Therefore, the chosen method in this study needs to be appropriate to the two research questions of this thesis, and that the method is applied with awareness of its implications, disadvantages and advantages. Qualitative and quantitative methods are the two major methodological approaches in social sciences (Holme & Solvang, 1996). Hence, combining both of them may allow the researcher minimize the methods' weaknesses. Qualitative methods help the researcher to understand the phenomenon but do not need to be able to generalize the results, though it may be influenced by the researcher's interpretations and ideas. Whereas, quantitative methods are more structured and formulated in comparison to qualitative methods (Holme and Solvang, 1996).

### 4.2 Procedures

The methodology used in this thesis is qualitative and quantitative, and the empirical analysis consists of two parts: surveys and telephone interviews. The combination of both surveys and interviews contribute to an in depth understanding of the research topic and gives rich informative information, which otherwise would not have been possible to obtain. The survey and interviews aim to gather standardized information to direct the focus of this study to a certain area of interest, and permits the numbers of variables to be limited. The questions for both surveys and interviews were the same for all participants. Using both interviews and surveys in this study is key as it gathers information about the participants' values, opinions and knowledge (Ejvegård, 2003).

The survey consisted of both closed and open-ended questions. The purpose of this survey was to investigate and identify knowledge spillovers and idea generation taken place while displaced employees from AstraZeneca started their own companies. A test pilot with four participants for the survey was conducted before the rest of the surveys were sent out. This was done to make sure that all the questions were well understood and that there were no misunderstandings. No changes were made in the survey after the test pilot, since the participants confirmed that they understood everything. The survey was sent out to the rest of the participants two days after the test pilot.

Additionally, phone interviews were conducted with nine different companies who were established after AstraZeneca's closure to particularly investigate in depth about the idea generation that took place to start a company after the announcement of AstraZeneca's closure. The phone interviews were semi-structured with nine open-ended questions. In the semi-structured phone interviews, a guide was used including questions and topics that should be covered, although the interviewer had the ability to ask additional questions to be able to receive adequate answers. The use of semi-structured interviews is to be able to further dig deeper and understand thoroughly the answers provided (Harrell and Bradley, 2009). Furthermore, structured questions are used to obtain measurable data to draw conclusions. The information collected from both surveys and phone

interviews will be analyzed, and the results will be compared to previous empirical research and literature. The aim of this study is to identify and learn about the knowledge spillovers and idea generation that took place while displaced employees from AstraZeneca started their own businesses.

#### **4.3 Participants and Data Collection**

The participants for the survey was identified from Life Science Sweden who published a list online (2013) of all the companies that was created by the displaced employees from AstraZeneca's research facilities in Lund and Södertälje. Unfortunately, we do not have knowledge on how this list was created. However, the sample size was limited to the founders of the companies that are currently active and is present online with a company webpage (39 companies in total out of 69 listed), to minimize the sample to only include participants from founders of companies who are currently up and running. The survey was conducted via Google's survey, and was sent out to participants' emails that were found on company webpage or elsewhere on the web.

The survey had 33 responses out of 60 identified participants, a 55% response rate. The identified participants consisted of: 23 displaced employees who are the founders of 11 identified up and running companies from Södertälje, 37 displaced employees who are the founders of 28 identified up and running companies from Lund, and five participants from both Södertälje and Lund who participated in the test pilot. The participants who responded to the survey consisted of 67% male and 33% female. Age varied such as 31-40 years 9.1%, 41-50 years 39.4%, 51 and older 51.5%. The size of the companies that were started varied between one person employed (consisted of the founder), to 2, 3, 4, 6, 8, 12, 18, and at the most 28 employees.

Moreover, the participants for the phone interviews consisted of nine founders from nine different companies that were started by AstraZeneca's displaced employees from Södertälje and Lund (five founders were from Södertälje, and four were from Lund). The phone interview took place two weeks after the survey was closed for participants. The participants of the phone interviews were selected by asking at the end of the survey to provide an email address if they agreed to be contacted for a personal phone interview. The telephone interview was recorded in order to be able to transcribe the data in the best way. Both surveys and telephone interviews were anonymous due to sensitive information that was revealed.

#### **4.4 Reliability and Validity**

Reliability is key when conducting research, and is generally measured by repeatability. Although in qualitative research the reliability is measured by the repeatability of the analysis, which means that the researcher is required to follow the rules of classification and interpretation (Uusitalo, 1999). To make sure that this study can be replicated, questions for the telephone interviews and the survey were created beforehand and followed a structure.

The validity of research is the capacity of the indicator to correctly measure the target (Uusitalo, 1999). It is easier to achieve validity than reliability when conducting qualitative research. The

method of using both qualitative and quantitative closed and open-ended questionnaire, and the semi-structured phone interviews, makes it more likely to increase the validity of the research. The interviews make room for flexible and in depth information gathering, a complement to the surveys. The names of the interviewees and the businesses will not be disclosed and will be anonymous. The anonymity tends to increase the validity of the research due to the fact that interviewees are more likely to be more open and willing to disclose information (Yin, 2003).

#### **4.5 Limitations**

Issues that threaten the validity and reliability challenge the limitations of this study. Some limitations to consider in this research is linked to the sample size and selection of participants. First and foremost, this study is only investigating displaced employees transitioning into entrepreneurship from only one company closure. If the study had investigated additional cases and company closures to compare the results with, then this research would have had a higher reliability and validity. Only researching one-company closure limits the results to AstraZeneca's displaced employees who were operating within the high tech industry and were highly educated. Therefore, the ability to generalize the results to other business closures that were operating within a different field becomes lower.

Another limitation is the fact that the 60 identified participants were the founders of 39 different companies. Therefore, some companies have more than one participant in this survey since some of the startups have several founders who lost their jobs at AstraZeneca. This limitation means that some companies may have an overrepresentation in the survey compared to others, and may skew the results to a certain extent. However, most companies had one or two participants per survey, few companies had three responses and one company had max four participants. This limitation could have been limited by only allowing one answer per company. Additionally, participants who chose to answer the survey might possibly be biased since they all founded well-established companies, and the one's that it didn't go so well for were not represented in this study since they could not be identified with an email address and a webpage. Moreover, if considering the limitations of the phone interviews, one can mention the limitations to only interviewing founders from nine different companies out of 39 possible. If interviews were conducted with all the companies then the reliability and validity would have increased.

Reliability is key when conducting research, and to make sure that this study can be replicated, questions for the telephone interviews and the survey were created beforehand and followed a structure. However, one limitation of this study is the fact that the specific questions were created by the researcher and did not come from a scientific model or process in relation to the topic being investigated, which may reduce the reliability. The reason why is because of the limitations of previous research in both knowledge spillovers and idea generation taken place while displaced employees' transition to entrepreneurship. Currently there is no model of questions to follow, and therefore, the researcher has created a model of questions, which measures the intended research questions.

Another limitation of this study relates to the time and distance between the event of AstraZeneca's closure and this actual research. The event took place 2010 and 2012, which is six and four years ago, and the participants in this study might have forgotten some parts of the processes in regards to idea generation and knowledge spillover that took place. Therefore, the participants described the processes in a way that they remember it today.

#### **4.6 Environment and Sustainability Implications**

The knowledge spillovers and idea generation taken place while displaced employees transition to entrepreneurship after facing company closure can be analyzed from diverse perspectives, and one aspect is the effect it has economically and socially for the economy as a whole. When a company closes down it affect the overall economy of the country, and to what extent depends on how large of a role the business played in the society and how many people lost their jobs. Business closure and displaced employees transition into entrepreneurship also have a social affect of the society in terms of unemployment and/or self-employment. Moreover, the research in this thesis is not expected to have any particular implications for the environmental and the sustainability aspect of the society.

## 5. Results and Discussion

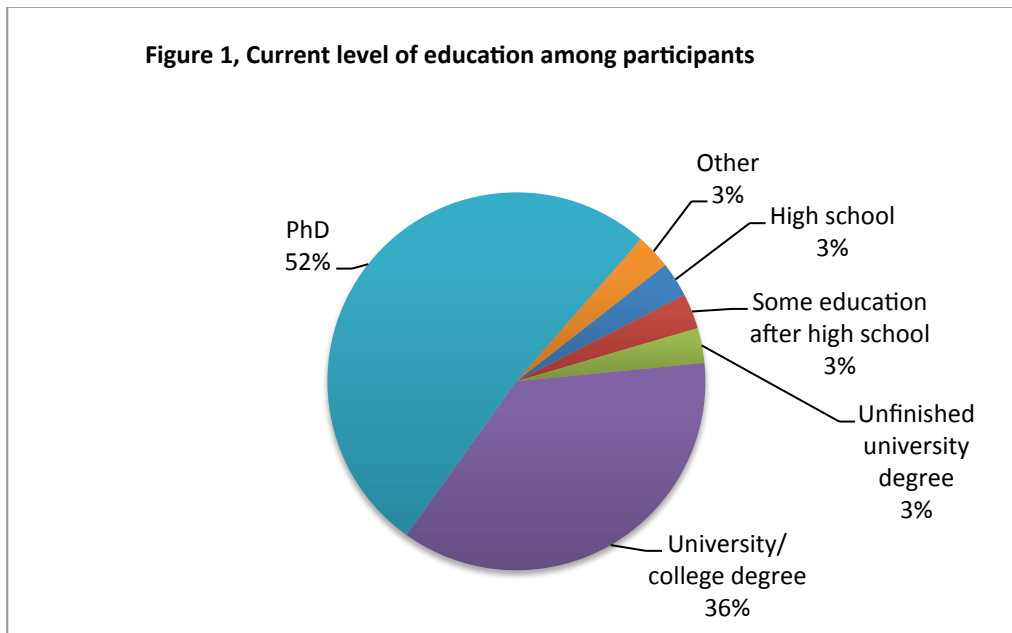
### 5.1 Overview

The purpose of this study was to analyze and learn about the knowledge spillovers and idea generation that took place while displaced employees from AstraZeneca started their own companies. The results from the survey and telephone interviews will be reviewed in a categorical manner, meaning the knowledge spillover and idea generation results and discussion will be presented and discussed separately by topic to create a cohesive overview. First the results regarding knowledge spillovers from the surveys and phone interview will be reviewed followed by a discussion. Next, in a similar manner the idea generation will be presented followed by a discussion. Most survey questions that are closed ended will be presented with a graph, whereas open-ended questions will be presented without graphs.

### 5.2 Knowledge Spillovers

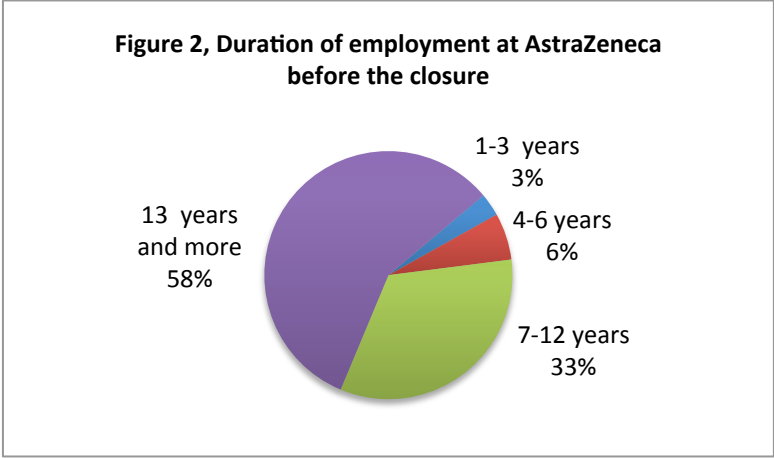
This section presents data revealed in regards to knowledge spillovers from both the surveys and the interviews, followed by a discussion. It is key to analyze the overall level of expertise held by the participants, since it denotes the level of knowledge spillovers that took place.

#### Results from the Survey

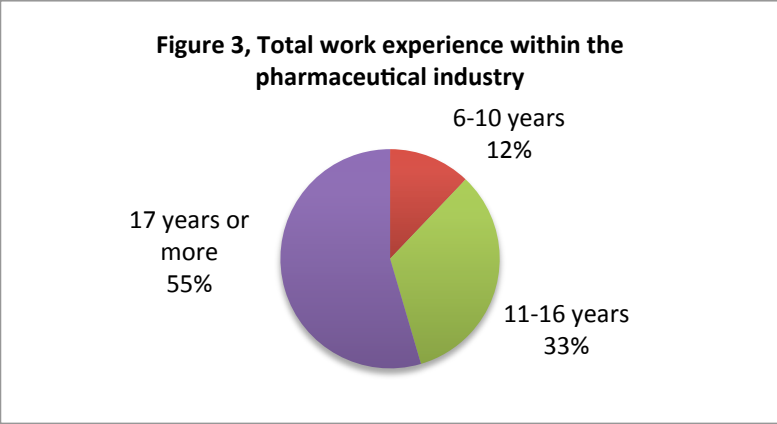


Educational level varied among participants, such as PhD 52%, university degree 37%, and the rest is related to not completing a university degree. In total 89% have completed a higher level of education, which means most participants are highly educated.

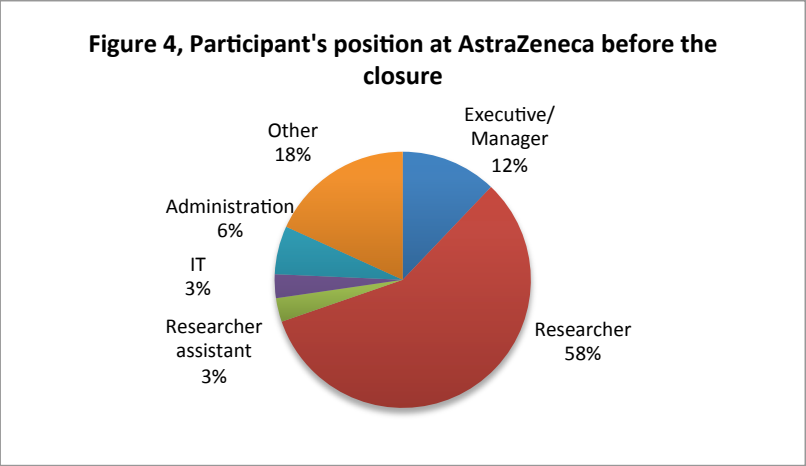




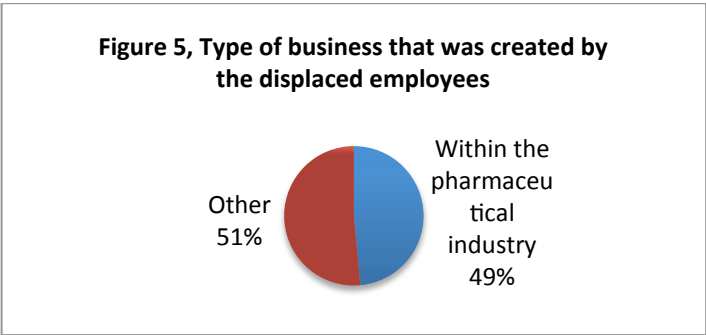
Close to 60% of the participants worked at AstraZeneca for 13 years and more, and 33% worked 7-12 years. The data shows that the participants worked at AstraZeneca for many years, which means that they have built up an extensive expertise and knowledge base within the company.



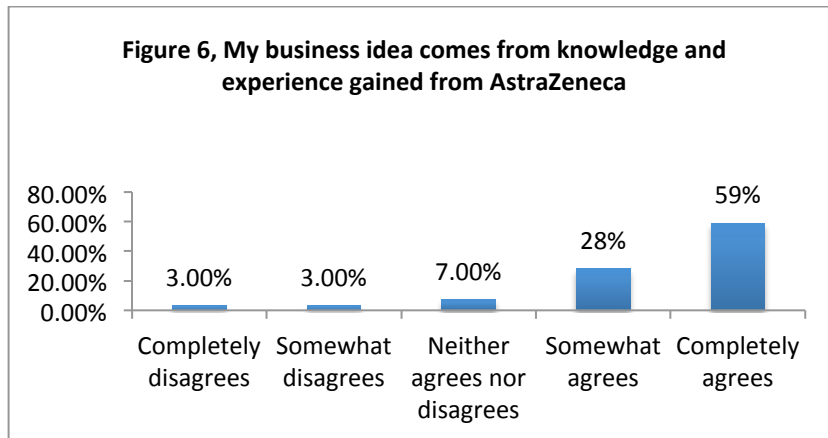
Additionally, the participants have many years of work experience within the pharmaceutical industry. More than half of the participants have 17 years or more of work experience, and 33% have 11-16 years of work experience within the pharmaceutical industry. In total 88% of the participants worked within the field for the minimum of eleven years. Therefore, the displaced employees from AstraZeneca bring extensive expertise and knowledge within their field to their new businesses.



Close to 60% of the participants worked as researcher at AstraZeneca, while 12% were executives or managers. The distribution of knowledge and expertise is key for learning and understanding of the level of knowledge spillovers that took place while displaced employees transition into entrepreneurship.



It is clear that about half of the participants started a business within the pharmaceutical industry, which confirms that at least 49% of the participants diffused AstraZeneca’s knowledge and expertise to their new companies. Unfortunately the survey did not display what “other” mean for the participants. Therefore, to get an understanding of the “other” please refer to the list in the Appendix section 8.3 of all the 69 companies that were created by the displaced employees from AstraZeneca.



In total 87% of the participants agrees that their business idea comes from knowledge and experience gained from AstraZeneca, which shows that a knowledge spillover took place between AstraZeneca and the new businesses started by the displaced employees.

**Question nr 1 - (open ended). “What knowledge and experiences gained from AstraZeneca did you bring to your company?”** Themes that emerged are;

knowledge, experience and expertise within our field, “everything we did at AstraZeneca we do today, though we sell our services to other companies,” management and leadership, great knowledge about jurisdiction, knowledge about potential products and services, academic and organizational competence, research experience, project experience, IT knowledge, experience in drug development, science advisor, scientific methods, programming, experience how to run clinical studies, knowledge about customers’ product development process and their needs, environmental and safety procedures in the lab environment, lab-support, and lastly the “Lean” concept.

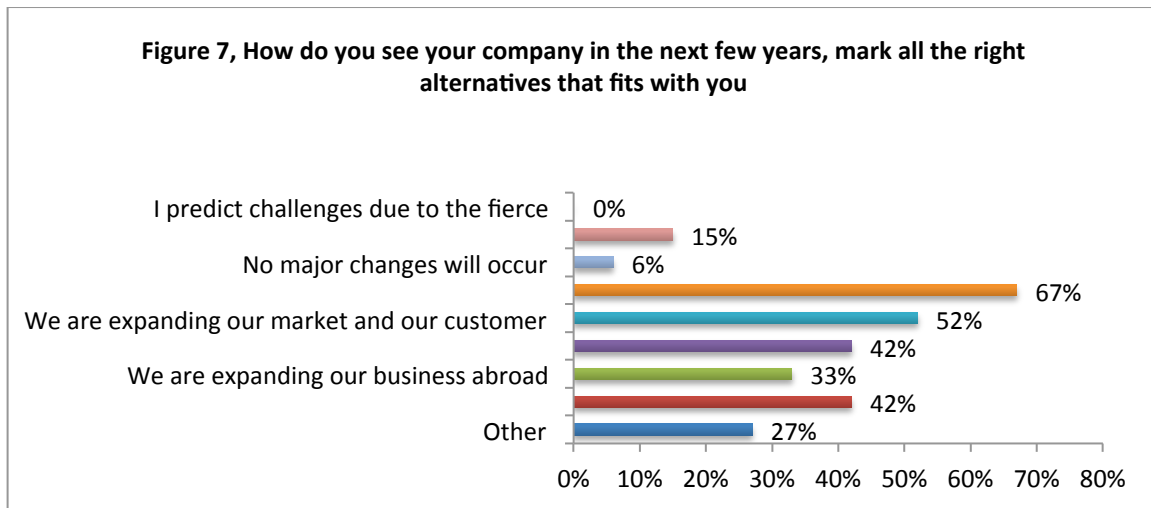
From the previous question we learned that 87% of the participants agreed that their business idea comes from knowledge and experience gained from AstraZeneca. However, this question explains how and in what way, to learn more in depth about the knowledge spillovers that took place. Many participants expressed that they learned specific and hands on knowledge that they could bring to their new businesses.

**Question nr 2 - (closed and open ended). “Is your company’s customers related to AstraZeneca? “If you answered yes, then please elaborate in what way?”**

47% answered that their company’s customers are related to AstraZeneca, and 53% disagrees.

*Participants who answered yes shared the following information;* “customers and contacts,” “the use of medicine,” “AstraZeneca is a big costumer,” “both as friends and competitors,” “AstraZeneca have bought licenses and gives some support and development,” “ we are within the same industry,” “some of AstraZeneca’s displaced employees are included in our customer base,” “we apply the same techniques and procedures as we did at AstraZeneca.”

The data from the surveys revealed that about half of the participants’ new established companies’ customers are related to AstraZeneca, which adds on to the knowledge spillover that took place between AstraZeneca and the new startups.



According to figure 7, founders of the new businesses are very optimistic of the future of their business, which indicate that the participants’ companies that they started are successful. This chart’s results confirm that a positive knowledge spillover took place between AstraZeneca and the new firms that was started by the displaced employees. The knowledge and expertise that the displaced employees passed to their new businesses brought the companies’ success. However, for those entrepreneurs who it didn’t go so well for have probably already closed down and therefore are not participating in this study.

#### Results from Telephone Interviews

Moreover, even though the telephone interviews that took place with nine different companies were focusing on idea generation, some information that was revealed were also related to knowledge spillovers, which will be discussed in this section. Many participants from the interviews expressed that knowledge and experience gained at AstraZeneca are used in their new businesses. Below are statements from the interviews that confirms this argument (statements below can be found in Appendix):

“We created our own job opportunity utilizing our knowledge gained at AstraZeneca, and we created our business idea to do the same thing as we did at AstraZeneca. So AstraZeneca truly influenced our business”

“My colleagues and I were working on and building a unique idea at AstraZeneca within Scientific Services to harmonize the lab support within Europe, “and we brought this whole idea and way of thinking of how to deliver and started our own business using this concept”

“We gained knowledge and expertise while working at AstraZeneca, and now we could further develop the software and methods we were working on within our business”

“My business is related to what I was doing at AstraZeneca, “and I have not invented something new”

“While running tests at AstraZeneca my ideas developed, and “I knew the needs and I saw the possibilities immediately for both AstraZeneca and the rest of the market”

“It already excised internally within AstraZeneca” “It’s the same idea.”

“While working for AstraZeneca I learned the market gap, the difficulties to find employees within our field and expertise, which then was used to create our business idea”

“I used everything I learned at AstraZeneca,” “it was the core of my business model. “

“It would have been impossible without my time at AstraZeneca” and “my time there was crucial”

All the above statements from the participants exploits the knowledge spillovers that took place from the closed firm to the new businesses. Clearly the displaced employees brought knowledge and expertise that they utilized in their new business. Thus, these statements are aligned with the results from figure 6 from the survey, where 87% of the participants agrees that their business idea comes from knowledge and experience gained from AstraZeneca.

### Discussion

The first research question that this study anticipated to answer is displayed below, and will be further discussed in this section.

- *To what extent are the entrepreneurs utilizing their knowledge and experience gained at AstraZeneca in their current businesses, and are they using contacts gained while working for AstraZeneca?*

As mentioned earlier, it’s key to analyze the overall level of expertise held by the participants, since it denotes the level of knowledge spillovers that took place. According to Hoetker and Agarwal (2007) previous employment experience in the same industry may have a positive effect on the overall performance of the entrepreneurial firm formed after displacement. In total 89% completed a higher level of education (52% PhD, 36% university/colleague degree), thereof most participants are highly educated. Moreover, 91% of the participants worked a minimum of seven years or more at AstraZeneca, while 88% worked eleven years or more within the pharmaceutical industry. Close to 60% of the participants worked as a researcher at AstraZeneca, while 12% were executives or

managers. These results indicate that the participants have built up an extensive expertise and knowledge base within both the pharmaceutical industry and at AstraZeneca. According to Krugman (1991) important sources of knowledge spillovers are universities and private research and development laboratories, which create codified knowledge, and is easily documented, reproducible and transferable. Therefore, important sources of knowledge spillover took place between AstraZeneca and the new businesses since; most participants have university degrees, 60% of the participants worked as a researcher at AstraZeneca and about half of the new businesses (figure 5) operate within the pharmaceutical industry (conducting some level of research). Furthermore, we have now established the level of knowledge and expertise the participants held before they started their businesses. Let's now discuss to *what extent are the entrepreneurs utilizing their knowledge and experience gained at AstraZeneca in their current businesses, and are they using contacts gained while working for AstraZeneca?*

According to both results from the survey (figure 6) and telephone interviews a clear knowledge spillover took place between AstraZeneca and the new businesses founded by the displaced employees. 87% of the participants agreed that they brought knowledge and expertise from AstraZeneca to their new business; interviewees stated that their business are linked to AstraZeneca or that they utilize their knowledge and expertise gained at AstraZeneca in the new businesses. However, studying the exact level of total knowledge spillovers taken place including all displaced employees from AstraZeneca is not possible, since this study only include the new businesses founded by the displaced employees. Hoetker and Agarwal's study (2007) shows that firm exit does not kill the knowledge diffusion, however, it does reduce it considerably. Therefore, Hoetker and Agarwal's study is aligned with this study's results that AstraZeneca's firm exit does not kill the knowledge diffusion.

Furthermore, to learn more in depth about what type of knowledge spillovers took place between AstraZeneca and the new businesses, the question; *"what knowledge and experiences gained from AstraZeneca did you bring to your company?"* were asked in the survey. Many participants expressed that they learned specific and hands on knowledge and routines that they could bring to their new businesses. Additionally about 50% of the participants in the survey answered that their company's customers are related to AstraZeneca. The above statements may indicate an effective knowledge diffusion taken place. Hoetker and Agarwal (2007) states that in order for an effective knowledge diffusion to happen, it's crucial for an entrepreneur to utilize the existing firm as a template to observe and maybe interact with their routines and rules to completely benefit from knowledge spillovers. Their argument seems to be aligned with this study's results; most founders of the new businesses used AstraZeneca as a template and used some of the closing firms routines, rules and accumulated knowledge.

The literature that connects knowledge spillovers to entrepreneurship stresses that incumbent organizations are an essential source of new entrants, specifically when the incubator underutilize the knowledge they create (Agarwal *et al.*, 2004; Klepper, 2007; Klepper and Sleeper, 2005; Shane and Stuart, 2002). This argument is aligned with this study's results- AstraZeneca acted as the

incumbent organization, and when it closed down the displaced employees from AstraZeneca now used the knowledge that was generated within the incumbent firm for the new business founded, since the closing firm were no longer utilizing these resources. The knowledge spillover theory of entrepreneurship agrees in a similar manner; knowledge, which is endogenously created, results in knowledge spillovers, and thereof permits entrepreneurs to identify and exploit opportunities (Acs et al., 2008). In other words, when incumbent firm doesn't commercialize the knowledge that they have invested in, opportunities are then created for entrants. Now when AstraZeneca no longer utilize the knowledge they created, startups created by the displaced employees may then use their knowledge, which created a knowledge flow between firms leading to knowledge spillover.

### 5.3 Idea Generation

This section of the paper presents data revealed in regards to idea generation from the surveys and the phone interviews, followed by a discussion. The process of searching for new ideas for new business models will be analyzed below as it defines idea generation and what it prevails. Keep in mind that all participants are founders of a business after being displaced.

#### Results from the Survey and Telephone Interviews

All results from the figures are from the survey, while two open-ended questions from the survey will be displayed, and the rest of the open-ended questions are from the telephone interviews. Results from the phone interviews will be disclosed and analyzed, thus themes will be presented and discussed. Therefore, please view Appendix for more in depth answers by all nine interviewees.

The results from the survey and telephone interviews displayed below follow a categorical order due to the developmental process of the idea generation that took place. Therefore, a table of the structure is displaced below before presenting the data:

- Incentives for starting a business (figure 8-12, interview Q nr.1)
- Timing of the idea generation process (figure 13-14, survey Q nr.1, interview Q nr.2)
- How the business idea developed; related to AstraZeneca?; related to other previous employment? (figure 15, interview Q nr.3 &6)
- Idea generation -group settings and influences (figure 16-17, interview Q nr.4)
- Support affecting the idea generation process (figure 18-21, interview Q nr.7)
- Major steps and conditions that was key to realize the business idea (survey Q nr 2., figure 22- 23, interview Q nr.5)
- Final remark on starting a business, was it a good decision? (Figure 24, interview Q nr.8)

*Incentives for starting a business (figure 8-12, interview Q nr.1)*

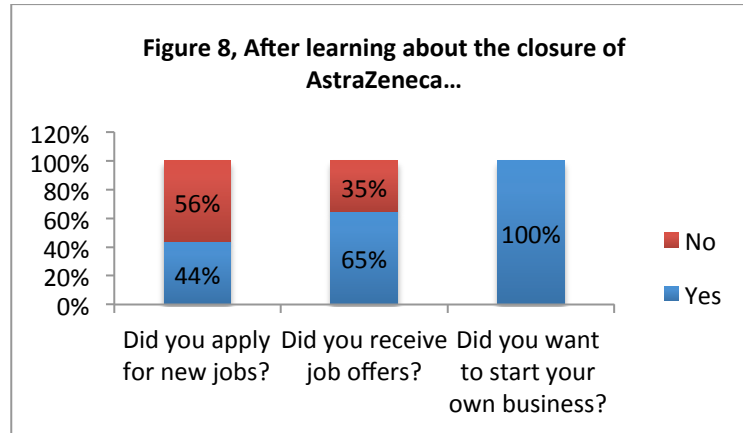
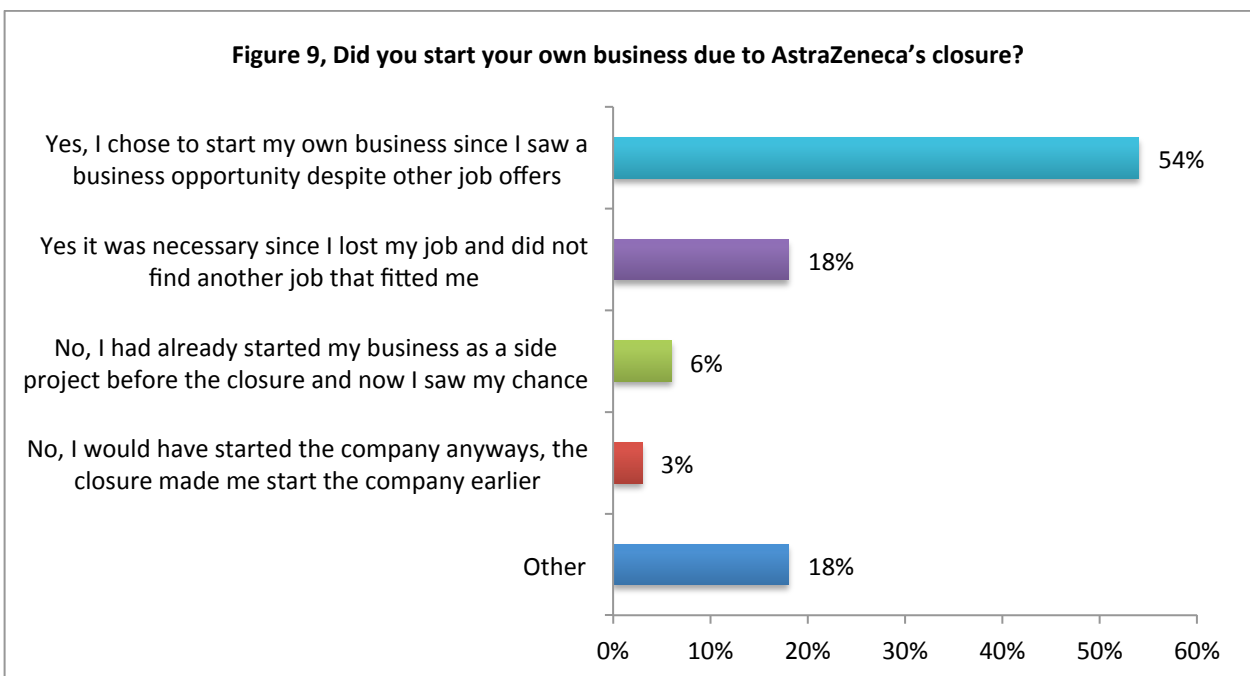


Figure 8 shows that all founders of the startups wanted to start a business, and 65% received job offers, meaning more than half of the participants actually said no to job opportunities to pursue starting a business.



As figure 9 disclose, 54% of the participants chose to start their own business since they saw a business opportunity despite job offers, which is close the 65% who received job offers expressed in figure 7 (keep in mind that they chose to start a business even though they received job offers). Close to 20% of the participants started a business since it was necessary since they lost their jobs and could not find another job that fitted them. Unfortunately 18% of the participants answered other, but did not state in what other way. However, 9% participants would have started the business anyways or had already started it. It is critical to learn the specific incentive to start the businesses in



this case, since all participants were displaced. Was it necessity based or not? In this case only 18% agreed to this statement. Others saw an opportunity for a potential business model, few had already started the process of idea generation to come up with a business model before learning about the closure. The participants had slightly different incentives to start a business despite the fact that everyone lost their jobs.

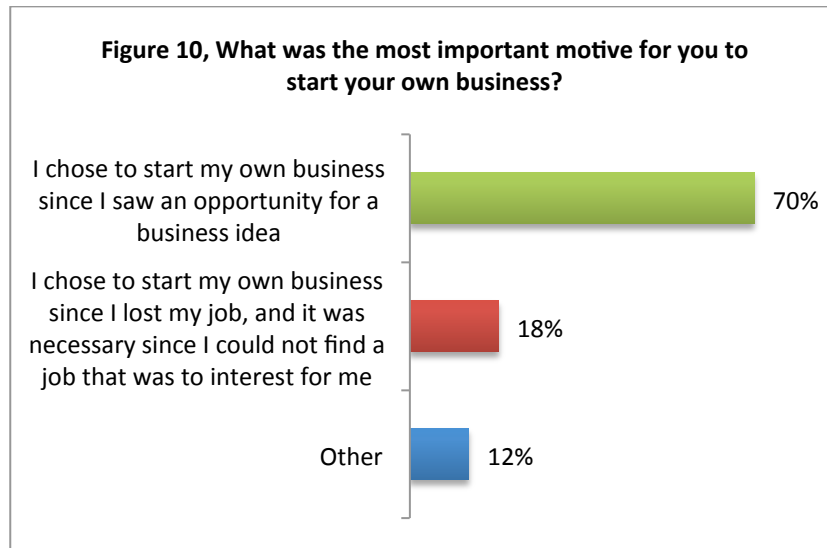
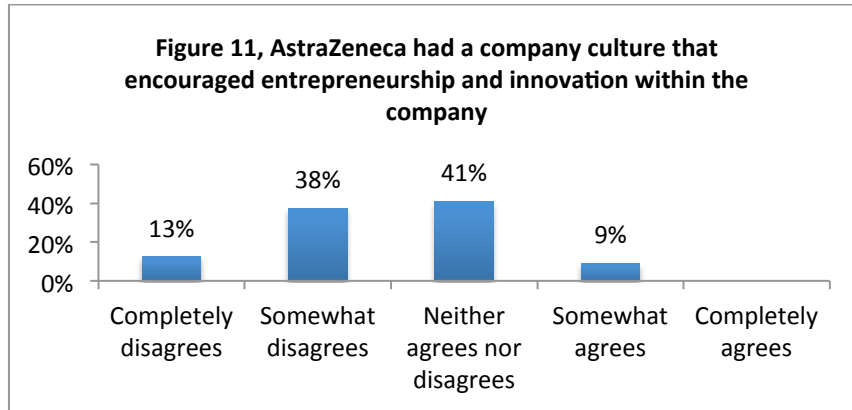


Figure 10 shows that 18% of the participants agrees that the most important motive to start the business was necessity based. As high as 70% of the participants chose to start their own business due to an opportunity for a business idea. The incentive for starting a business is the very start of the process of idea generation.

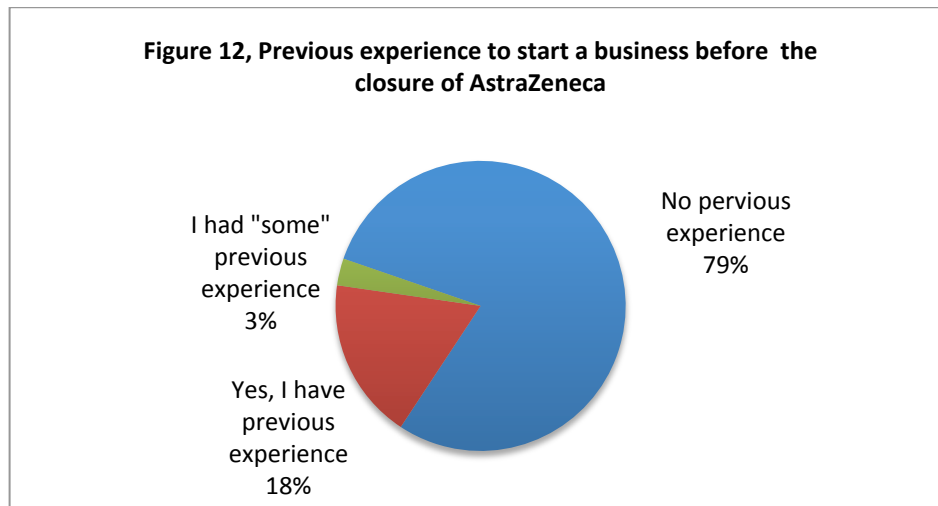
**Interview question nr1. In what way did AstraZeneca’s closure affect your process to start your business?** Three themes emerged:

- ✓ It was an opportunity, now’s the time to start this idea, a push
- ✓ Already had a business idea, already started a business
- ✓ It was crucial, otherwise I/we would not have started the business

How the business closure affected the displaced employees to start a company differ in three different ways among the participants; either it was an opportunity now when the closure took place, that the tipping point was crucial, or lastly they already had a business plan.



According to figure 11, about 50% of the participants feel that AstraZeneca did not have a company culture that encouraged entrepreneurship and innovation within the company, 41% has no opinion, and about 10% agrees.



People who have previous experience starting their own business are more prone to start another business. Figure 12 shows that about 80% of the participants have no previous experience starting a business, whereas 21% have/or have some previous experience. Therefore, about 1/4 of the participants might have been influenced to start a business due to previous startup experience.

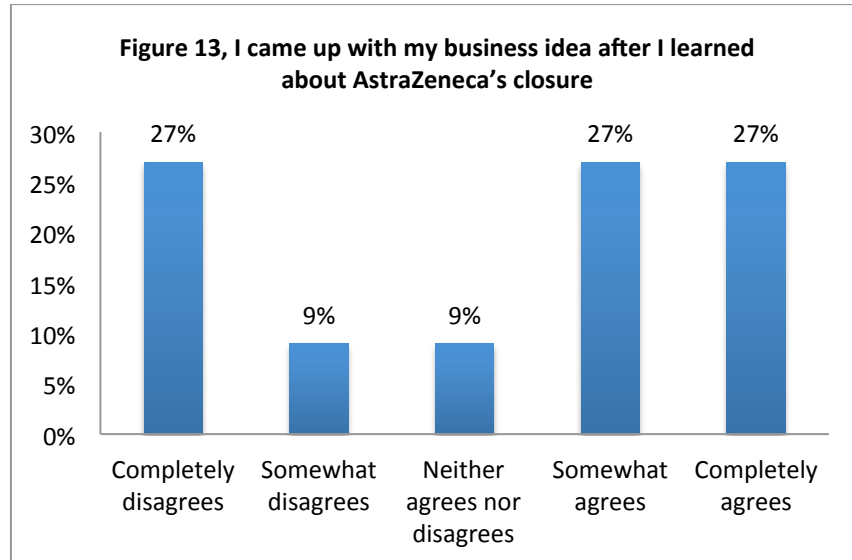


Figure 13 shows that 54% agrees that they came up with the business idea after learning about the closure, while 36% disagrees. The results show that participants were more likely to come up with the business idea after learning about the closure, which confirms that most business ideas were acknowledged in relation to the closure. Therefore, most participants' idea generation process started after learning about the displacement.

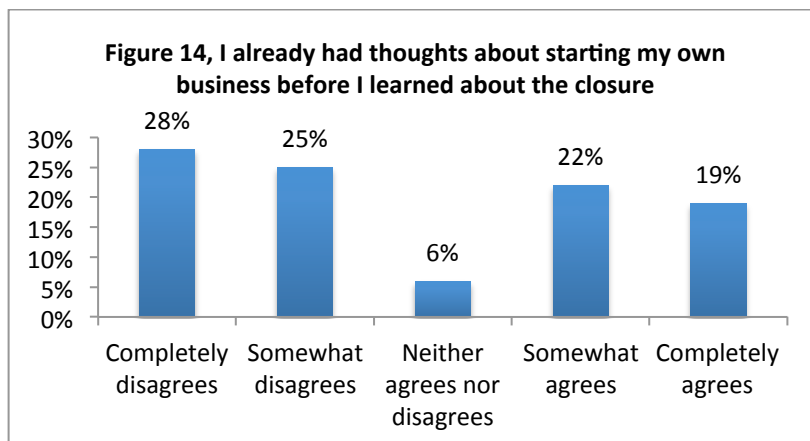


Figure 14 shows that 41% agrees that they already had thoughts about starting a company before learning about the closure, while 53% did not. Less than half of the participants had already thought about starting a business before learning about the closure. However, thinking is not the same as action, so this question does not relate to actually taking actions to develop a business idea/model.

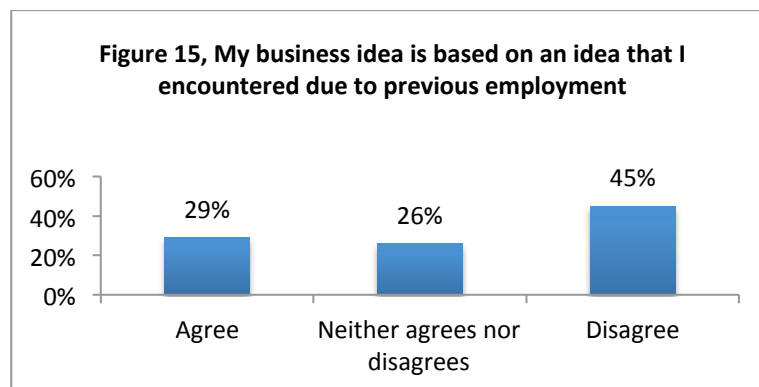
**Survey question nr 1 - (open ended).** “At what point in time, in relation to the decision about the closure, did you start to spend time and resources to start your business?” The themes that emerged was: two years before, half a year before, up to two months before the announcement of the closure, 3-6 months after the closure, within one year and up to 1.5 years after the announcement of the closure. The participants started to spend time and resources to start their own company during different point in time.

**Interview question nr 2. How far was your business idea developed when you got to know about AstraZeneca’s closure?** Three themes emerged:

- ✓ It was not developed, just thoughts
- ✓ The business idea/plan was already well established
- ✓ The business idea/plan was already created but not well established

**Versus, When did you come up with the business idea after learning about the closure?** The themes that emerged were: after two months, after few months, within a month, right after the announcement.

*How the Business Idea Developed (figure 15, interview Q nr.3 & 6)*



Is the participants’ business idea based on an idea encountered at previous employment? Figure 15 states that 29% of participants agree, 26% neither agree nor disagree, whereas 45% disagree. This question relates to if the business ideas are built on specific elements or processes conducted and developed at earlier employment, though, it’s also related to knowledge and experience gained from previous employment. Figure 15 shows that not all business ideas are imitated by pervious companies’ products, elements or processes. This fact will be proven in the results from the below interview question, where one of the themes that emerged agrees that not all business ideas are imitated by previous employment.

### **Interview question nr 3. How did you come up with your business idea?**

Three themes emerged:

- ✓ We are doing the same thing as we did at AstraZeneca, and we are utilizing knowledge and expertise gained at AstraZeneca
- ✓ The business idea came about while working at AstraZeneca
- ✓ I did not bring any idea from AstraZeneca, and it was a long process to come up with a potential business idea -finding a business need and a way to make money

The main theme here was really the “doing the same thing as we did at AstraZeneca,” as many as 6 interviewees stated this, while 2 interviewees stated that the business idea came about while working at AstraZeneca, and only one interviewee did not bring any idea from AstraZeneca, instead it was a long process to come up with a potential business idea. Moreover, these results are aligned with figure 6, which shows that close to 90% of the business ideas came from knowledge and experience gained from AstraZeneca. However, most business ideas by the displaced employees are either related or imitated by previous employment at AstraZeneca, and very few business ideas are not imitated or related to previous employment.

### **Interview question nr 6. In what way did your previous knowledge gained from working at AstraZeneca help you to develop your business idea?**

Themes and statements will be disclosed below from the interviewees:

*Our business is very similar to AstraZeneca, our business idea was further developed and more niched to be able to deliver more specialized services.*

*While working for AstraZeneca I learned the market gap, which then was used to create our business idea.*

*The type of work we did at AstraZeneca had a market potential, and we utilized our network from AstraZeneca for our business*

*I realized the business opportunity “due to my passion for this technology” we were working with*

*“The knowledge I gained at AstraZeneca was a condition,” and it helped me to understand how large firms are operating.*

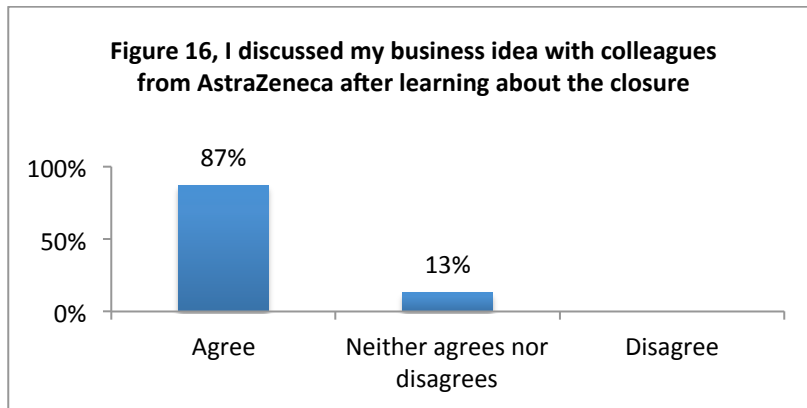
*“I used everything I learned at AstraZeneca,” “it was the core of my business model. “*

*“It would have been impossible without my time at AstraZeneca” and “my time there was crucial.” My idea did not come automatically, and instead it came while working.*

Clearly the previous knowledge gained from working at AstraZeneca help the participants to develop their business idea. These statements are aligned with the first two themes from the

interview question number three; we are doing the same thing as we did at AstraZeneca, and we are utilizing knowledge and expertise gained at AstraZeneca; the business idea came about while working at AstraZeneca.

*Idea generation -group settings and influences (figure 16-17, interview Q nr.4)*



Most participants discussed their business idea with others colleagues from AstraZeneca after learning about the closure; figure 16 show that about 90% of the displaced employees did discuss, about 10% neither agree nor disagree, while no one disagrees.

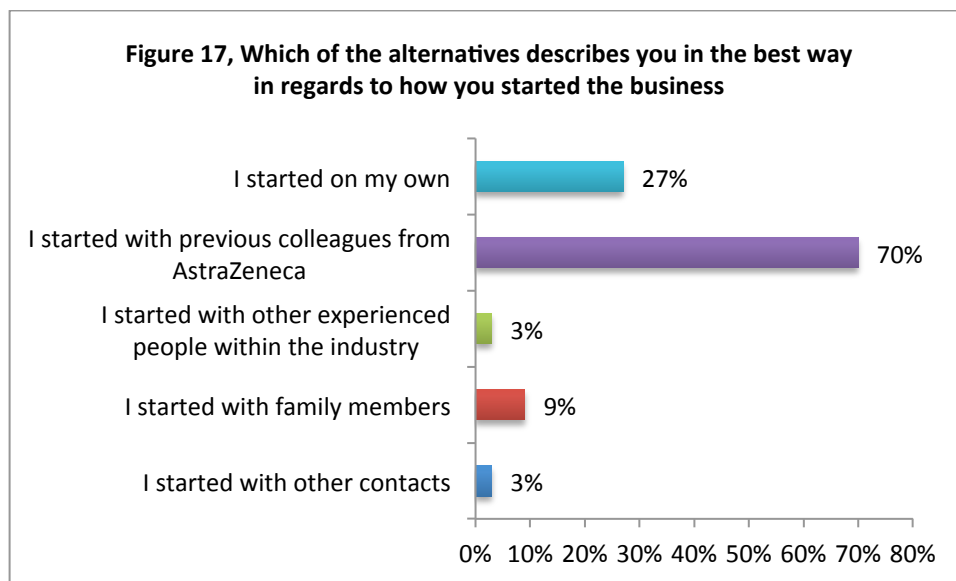


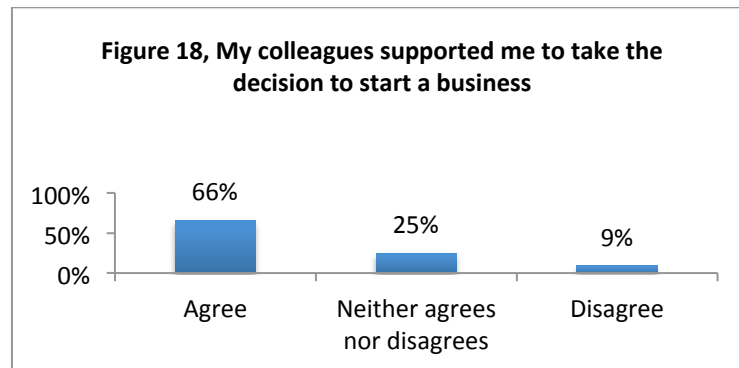
Figure 17 show that most people (70%) started the business with previous colleagues from AstraZeneca, whereas significant less people started on their own.

**Interview question nr 4. Did the business idea develop within a group or by yourself?**

Two themes emerged: within a *group* versus *alone*. The themes are equally distributed.

The differences in the results between figure 16 and the interview question above can be explained by the variance between participants, keep in mind that interviewees were only nine displaced employees and could therefore skew the data in comparison to the survey results who had 33 participants. Overall, groups that formed were either in group or alone, however, the survey indicates as much as 70% of the participants started with previous colleagues from AstraZeneca.

*Support affecting the idea generation process (figure 18-21, interview Q nr.7)*



According to figure 18, 66% of the participants got support from colleagues to take the decision to start a business, while only 9% did not.

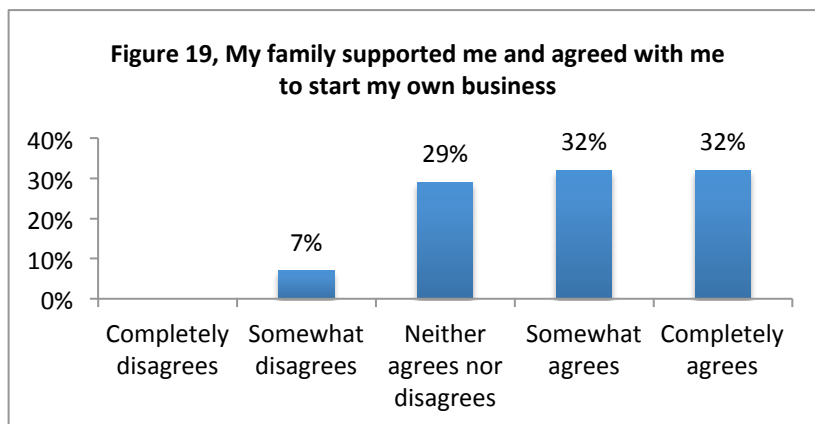
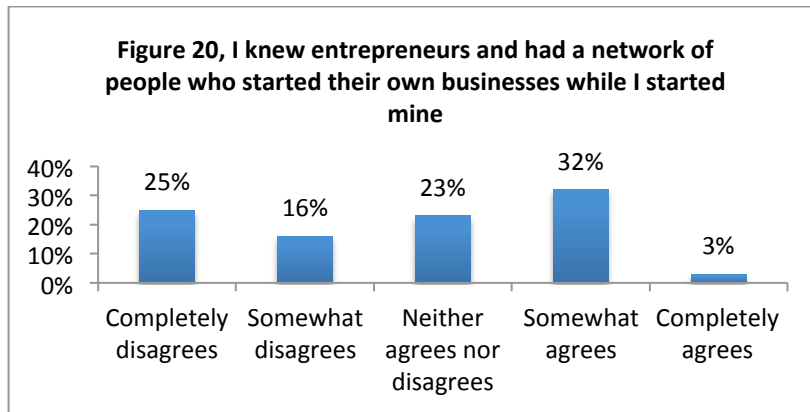
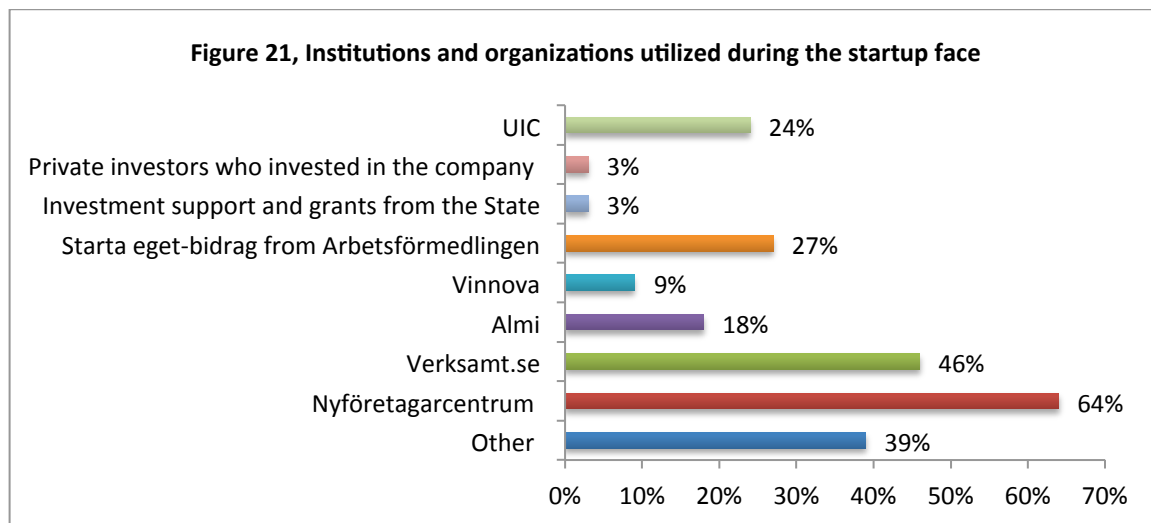


Figure 19 display similar data as figure 17; 65% agree that family members supported them and agreed with starting a business, though 7% somewhat disagree.



According to figure 20, 35% of the participants had an entrepreneurial network in place while starting their own business, while 41% didn't. Overall support from colleagues, family members, and entrepreneurial network is valuable when deciding to pursue ones business idea.



The above figure displays different institutional and organizational help utilized during the startup face. Below question will address the same matter.

**Interview question nr 7. Describe the help received from AstraZeneca and other organizations to start your business after your job displacement.**

The following themes emerged:

*“We received great support for starting our own companies” both from Nyföretagarcentrum (Swedish organization helping startups), Uppsala Innovation Center, Karolinska Innovation Center (hospital in Sweden), Karolinska Institute Science Park, Medicon village, Technopool (which now is named Innovation Skåne). Additionally, Trygghetsrådet (a Swedish insurance for firms, and supports people who got laid off) supported us, they helped us with education in accounting, and planning my taxes.*



*AstraZeneca and Uppsala Innovation Center had an agreement, and approximately 14 companies out of the applicants were selected to receive further help with the startup process, such as education, knowledge and contacts etc. Additionally AstraZeneca supported us economically by giving the displaced employees a severance pay for several months. Also AstraZeneca lent out their labs without no costs to us who needed the facilities in the startup phase up to half a year. Acturum who took over AstraZeneca's facilities after the closure had a reduced rental price later on for us.*

*“AstraZeneca informed us about Technopool and Nyföretagarcentrum,” and they helped us in our startup face with how to run a business such as agreements etc. All the employees at AstraZeneca had the chance to meet and discuss opportunities etc.*

*AstraZeneca was really good at helping us during our startup face (stated several times by participants).*

*Södertälje municipality in Sweden supported us by giving us 100 000SEK to support us in the beginning of our startup face.*

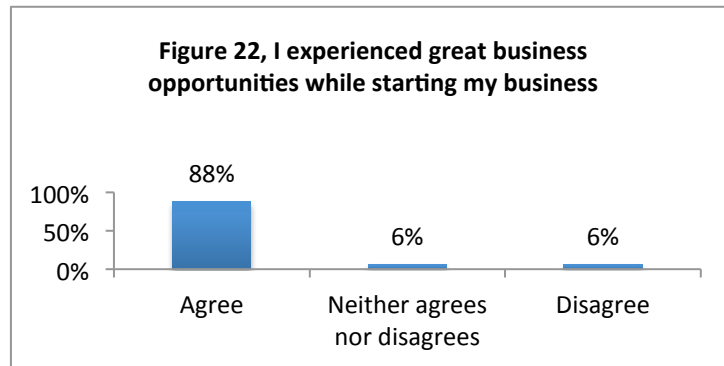
Financial and educational support are important when finally pursuing one's ideas and starting a business. Without this possibility for support some business ideas would have not been realized, since the financial situation is key for the survival of the business and personally, which is confirmed by statements from the interviewees where most participants expresses that the support available to them was key in order for them to realize their business idea. Most participants expressed that AstraZeneca and other organizations were very helpful during the startup face.

*Major steps and conditions that was key to realize the business idea (survey Q nr 2., figure 22-23, interview Q nr.5)*

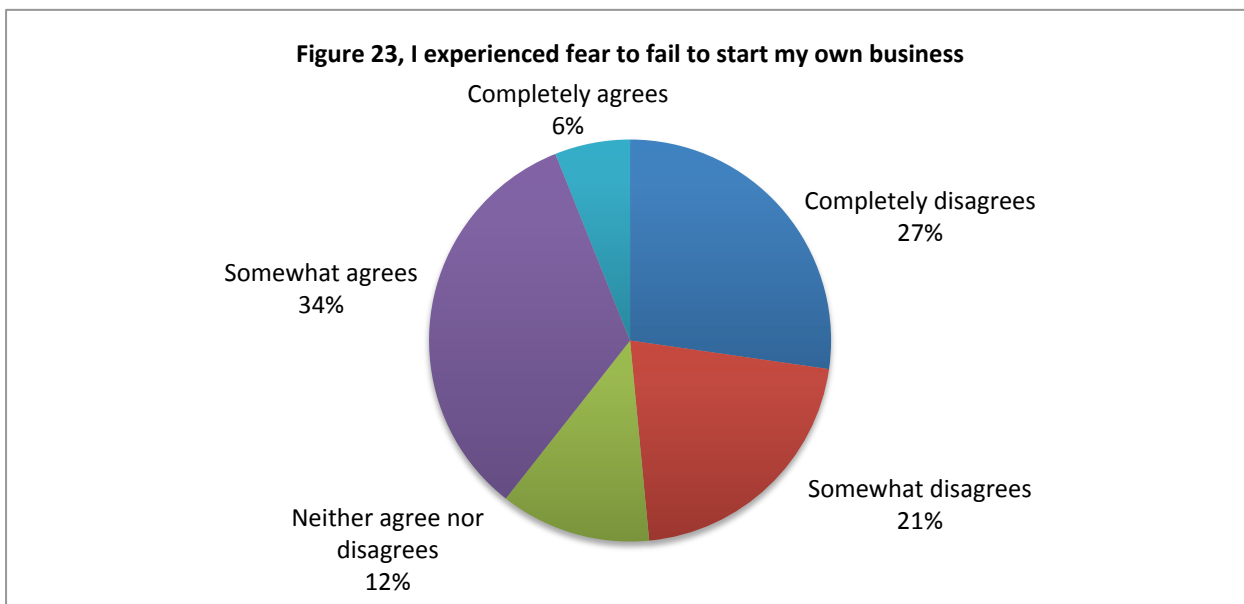
**Survey question nr 2 - (open ended). “Describe the major three steps you took to start the company”.** The following themes emerged:

the severance pay, contacted and attended external organizations and institutions that support innovation and entrepreneurship, possibility for great rental agreements of AstraZeneca's old facilitates and equipment, the money support from EU, the creation of the team, business classes, development of business model, cut personal expenses, completed a market research, discussed and tested the business idea on colleagues, registered the company, checked that the first customers were interested in our solution, build my network.

Overall steps taken to realize ones business idea are part of the developmental process of the idea generation, and is key for the outcome of the business model.



In figure 22, 88% of the participants agree that they experienced great business opportunities while starting their business, while 6% disagree. Conditions to start a business are key, and people who are positive to start a business are usually optimistic about the opportunity they have, otherwise they might not have started the business. However, since these participants were displaced, other incentives might as well affect why they started the business. The very few who disagreed might be the ones who started a business based on necessity.



Another condition that might impact the decision to realize ones business idea is the fear of failure. Figure 23 displaces participants view in this matter. The answers are distributed both negatively and positively.

**Interview question nr 5. What was the final motive to finally realize your business idea in relation to AstraZeneca’s closure?** Themes and statements will be disclosed below from the interviewees:

*Passion for the subject for our business idea and what we were working with at AstraZeneca, and I/we did not want to work with anything else.*

*The incubator Technopool helped us, and the meetings with potential customers made it an easy choice, also the fact that we did not need any large amounts of investments.*

*I was done working in large multinational businesses, and wanted to work with my own idea.*

*“The circumstances, the fact that my job disappeared, so I had to find something else and it was hard to find a job since there were no jobs matching my profile.” In combination of that we received great conditions and agreements when displaced.*

*I saw this an opportunity to do what I wanted.*

Overall the final motive differ somewhat between the interviewees, which is expected since most people have different motives and drive in life.

*Final remark on starting a business, was it a good decision? (Figure 24, interview Q nr.8)*

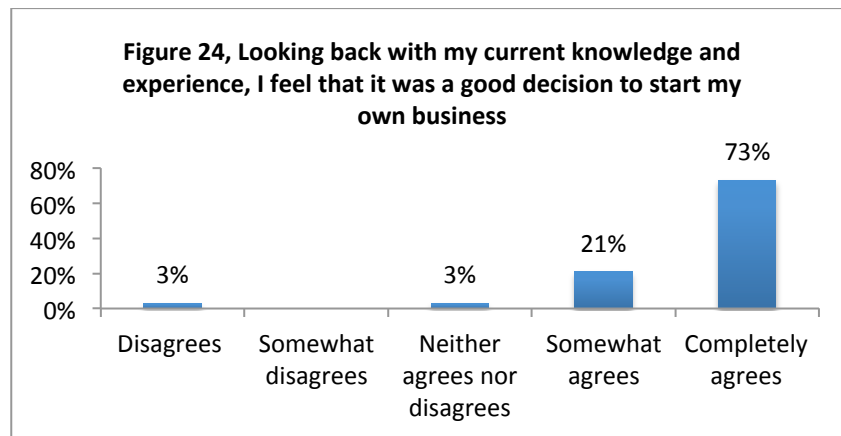


Figure 24 reveals that 94% of the participants agree that it was a good decision to start the company, and only 3% disagree. Overall it seems that most participants are happy about the decision to pursue ones business ideas.

**Interview question nr 8. Looking back is there anything you would have done different today or regret in regards to your processes and applications for your business?**  
The following themes emerged:

*Our processes would differ: increase the speed of our work, we were too thorough and too research oriented in the beginning in our processes, we should have started our business earlier, I regret that*

*I put down so much time on the business, I wished that I would have applied and searched for jobs instead, I regret that I did not start the business earlier, I should have done my strategy for meetings with customers and marketing differently, and lastly we could have worked more.*

*Additional statements from the interviewees:*

*There are many things one could have done differently when gained more experience, however, I don't regret anything.*

*"No," however, of course with my current experience I might have done some smaller changes, but that's easy to say now looking back.*

*"No, everything goes very well"*

*"There were so many obstacles to find the right people to continue" It would have been helpful if I had had a business coach to help me with marketing at an earlier stage.*

Overall it seems that most participants are happy about the decision to pursue one's business ideas. They, however, expresses that there were few things that could have been done differently in regards to the processes.

## Discussion

The second research question that this study anticipates to answer is displayed below, and will be further discussed in this section.

- *What are the different factors and idea processes that made the displaced employees start their own businesses?*

The developmental processes of idea generation, searching for new ideas for new business models will be discussed. Thus, the discussion will follow the same order as the result section:

- Incentives for starting a business
- Timing of the idea generation process
- How the business idea developed; related to AstraZeneca?; related to other previous employment?
- Idea generation -group settings and influences
- Support affecting the idea generation process
- Major steps and conditions that was key to realize the business idea
- Final remark on starting a business, was it a good decision?

There are many factors that play as incentives for starting a business. The results indicate that all founders of the startups wanted to start a business, and more than half of the participants actually said no to other job opportunities. Only 6% had already started a business before the closure. Both figure 9 and 10 confirm that 18% of the participants started their business since it was necessary. As high as 70% chose to start their own business due to an opportunity for a business idea. These results are aligned with data from GEM (2015) who reveals that 70% of the total Swedish population experienced good entrepreneurial opportunities, and about 85% of the current entrepreneurs in Sweden based their entrepreneurship on opportunities. Moreover, GEM also reveals that during 2015 the necessity-based entrepreneurs fluctuated between 5-10%. This study's results show a higher necessity-based entrepreneurship in comparison with GEM data based on the circumstances that the participants of this study in fact lost their jobs. However, the incentive for starting a business is the very start of the process of idea generation. The participants had slightly different incentives to start a business despite the fact that everyone lost their jobs, and this is also confirmed by the interview question where three different incentives among the participants emerged. Either it was an opportunity now when the closure took place, that the tipping point was crucial, or lastly they already had a business plan.

Additionally, about half of the participants believed that AstraZeneca did not have a company culture that encouraged entrepreneurship and innovation within the company, 40% had no opinion, and about 10% agreed that AstraZeneca had an entrepreneurial company culture. The company culture affects the employees in many ways, and the question is if AstraZeneca had a more entrepreneurial culture would more displaced employees start their own businesses after the closure? This question however, is interesting but cannot be answered by this study. Moreover, last to mention in regards to incentives to start a business is previous entrepreneurial experience. About 80% of the participants have no previous experience starting a business, whereas 21% have/or have some previous experience. Therefore, about 1/4 of the participants might have been influenced to start a business due to previous startup experience. Previous experience affects idea generation in a positive way. Hence, people who have previous experience starting their own business are more prone to start another business. This statement is confirmed by evidence that shows a consistent positive relationship between experience and entrepreneurship (Hyytinen and Ilmakunnas, 2007).

In regards to timing of the idea generation process, the survey and the interview questions show clear themes. If the business idea was not yet developed before the closure then they started: right after the announcement, within a month, after 2-6 months, within one year and up to 1.5 years after the announcement of the closure. However, if the business plan was well established or created but not well established then they were more likely to start two years before, half a year before, up to two months before the announcement of the closure. However, according to figure 13, 54% of the participants came up with the business idea after learning about the closure, while 36% disagreed. Therefore, the idea generation process amongst the participants did not necessarily start after the announcement of the closure. The fact that as many as 54% of the participants actually started their idea generation process after the announcement of the displacement was expected, due to the nature

of the condition for the participants, since they all lost their jobs and transitioned into entrepreneurship.

Entrepreneurship scholars agree that the accumulated work experience that employees gain during their career is an important source for the generation of new business ideas (Shane, 2000; Politis, 2005; Shepherd and DeTienne, 2005). Because work experience exposes people to unique insights to customer problems and needs, viable markets, product accessibility and competitive resources that eventually influence their ability to spot an opportunity for a business idea (Gabrielsson and Politis, 2012). The empirical literature confirms the findings from this study in regards to idea generation where the founders of the new companies were most likely to derive their ideas from previous work experience from AstraZeneca.

However, to conclude the section on how the business ideas were developed; one can argue that most business ideas by the displaced employees are either related or imitated by previous employment at AstraZeneca, and very few are completely new ideas and not related at all. Hence, interviewees stated that they came up with their business idea *by doing the same thing as they did at AstraZeneca*, or *it came about while working at AstraZeneca*, or *it's not related at all to AstraZeneca*. These results agree with figure 6, which shows that close to 90% of the business ideas came from knowledge and experience gained from AstraZeneca. Additionally, the interview question number six asks: *In what way did your previous knowledge gained from working at AstraZeneca help you to develop your business idea?* It becomes clear that the previous knowledge gained from working at AstraZeneca helped the participants to develop their business idea, which also is aligned with the themes emerged from previous interview question already mentioned above. There are previous empirical literature and studies examined in the result section of this paper that support this study's results. A study from 2011 shows that many Silicon Valley firms have a long list of talented employees leaving large firms with novel ideas (Hellman, Periotti, 2011). Another study reveals that 71% of *Inc. 500* founders had imitated or tailored an idea they had identified in previous employment, compared with only 4% who said that they created their idea through systematic reach (Bhide, 2000). The displaced employees from AstraZeneca display a similar pattern, where almost all of the business ideas came from knowledge and experience gained from AstraZeneca. Dunkelberg *et al.* (1987) observed that firms of founders that identified their ideas from previous employment generally experience higher average rates of growth of their firms. This shows that experience takes the form of valuable direct knowledge transfer. One case study reveals the same results that prior experience are the primary triggers for developing new ideas (Stampfl, 2015). For example, ideas can be based on prior knowledge about a company or industry, the environmental factors, the market, or other existing information. Therefore, the experience and knowledge is the basis of all ideas (Stampfl, 2015).

If entrepreneurs start business related ideas and experiences from their former employments, then overall work experience may promote entrepreneurship. However, a study made by Gabrielsson and Politis found that people's breadth in functional work experience favor the generation of new business ideas, whereas deep industry work experience is negatively related to new business idea

generation. According to this evidence, the entrepreneurs spawning from AstraZeneca held deep industry work experience, which then would have impacted them negatively in regards to developing new business ideas. If this argument is correct is hard to know, since this research only studies entrepreneurs with already up and running businesses. To be able analyze this, a study needs to be done with all the displaced employees from AstraZeneca, and then compare the results to other companies with displaced employees that hold less deep industry work experience than AstraZeneca.

Furthermore, business ideas can be developed alone, in-group, or developed first alone and then in-group. Discussing one's ideas with other colleagues within the same level of expertise and field can give valuable feedback, which will contribute to the developmental process of the idea generation taken place. A recent case study reveals that face-to-face meetings in teams play a significant role in generating new ideas. Ideas comes to ones mind very spontaneously and on an individual level (Stampfl, 2015). Thus, it was observed during the case study that throughout the face-to-face team meetings many new ideas were created. Joint discussion and an evaluation of the ideas that were developed individually were often resulted in other different ideas during the team meetings. Therefore, one idea leads to another idea. In this study, however, figure 16 show that about 90% of the displaced employees did discuss their business idea with others colleagues from AstraZeneca after learning about the closure, while 0% did not. Furthermore, figure 17 show that most people (70%) started the business with previous colleagues from AstraZeneca, whereas significant less people started on their own. These results show that most ideas were developed in groups. As previous research points out; joint discussion and an evaluation of the ideas develops and changes the business idea/model over time, which is key in the idea generation development.

Mentioning the support available to displaced employees transitioning into entrepreneurship is key as it serves as an incentive to realize one's business idea and transition to entrepreneurship. The decision to realize one's business idea indeed depends on the alternative options for income that are available after displacement (Nyström, 2016). According to the results of this study, financial, educational and personal support is important when finally pursuing one's ideas and starting a business. Without this support some business ideas would have not been realized, since the financial situation is key for the survival, which is confirmed by statements from the interviewees and by the surveys. Most participants expressed that AstraZeneca and many other organizations were very helpful during the startup face. However, according to figure 20, 35% of the participants had an entrepreneurial network in place while starting their own business, while 41% didn't. Comparing with GEM data (2015) shows that 37% of Sweden's entrepreneurs have an entrepreneurial network.

Overall steps taken to realize ones business idea are part of the developmental process of the idea generation, and is key for the outcome of the business model. The overall support, team, business classes, developing ones ideas, discussed the idea with other colleagues, market research and customer contact were all the key steps taken to start the business by the participants in this study. Moreover, a case study shows that idea generation start while information gathering takes place, and

idea casting and information gathering are mostly simultaneous stages. The process of information gathering initiates the creation of new business model ideas (Stampfl, 2015).

Last to mention, conditions to start a business are key, and people who are positive to start a business are usually optimistic about the opportunity they have, otherwise they might not have started the business. In figure 22, 88% of the participants agreed that they experienced great business opportunities while starting their business, while 6% disagreed. However, since these participants were displaced, other incentives might as well affect why they started the business. The very few who disagreed might be the ones who started a business based on necessity. Another condition that might impact the decision to realize ones business idea is the fear of failure, and figure 23 shows that 40% of the participants experienced fear to fail the business. According to GEM data (2015), self-perception about entrepreneurship in regards to fear of failure in Sweden has the value of 37%. GEM's value is very close to this study's result: 37% versus 40%. According to GEM, societal attitudes may imply how entrepreneurship is regarded in a society. Thus, personal perceptions about entrepreneurship can influence whether people would consider starting a business. As a concluding remark, it seems that most participants are happy about the decision to pursue ones' business ideas. However, they express that there were few things that could have been done differently in regards to the processes.



## 6. Conclusions and Suggestions for Future Research

### 6.1 Conclusions

The purpose of this thesis is to contribute to the knowledge gap of knowledge spillovers and idea generation that took place while displaced employees transition to entrepreneurship after business closure. This thesis took a closer look at AstraZeneca's displaced employees that started their own businesses after AstraZeneca's firm closure in Lund (2010) and Södertälje (2012) in Sweden. Research was done to anticipate answering the questions of this study.

1. *To what extent are the entrepreneurs utilizing their knowledge and experience gained at AstraZeneca in their current businesses, and are they using contacts gained while working for AstraZeneca?*

It's key to analyze the overall level of expertise held by the participants, since it denotes the level of knowledge spillovers that took place. The results indicate that the participants have built up an extensive expertise and knowledge base within both the pharmaceutical industry and at AstraZeneca. According to both results from the survey and telephone interviews a clear knowledge spillover took place between the closing firm and the new businesses founded by the displaced employees. Therefore, the closing firm's exit did not kill the knowledge accumulated within the company at the closing locations in Sweden.

Furthermore, what knowledge and experiences gained from AstraZeneca did the displaced employees bring to their new businesses? Many participants expressed that they learned specific and hands on knowledge and routines that they could bring to their new businesses. Additionally about 50% of the participants in the survey answered that their company's customers are related to AstraZeneca. The above statements may indicate an effective knowledge diffusion taken place. The closing firm acted as the incumbent organization, and when it closed down the displaced employees used the knowledge that was generated within the incumbent firm for the new business founded, since the closing firm was no longer utilizing these resources, which created a knowledge flow between the firms leading to knowledge spillover.

2. *What are the different factors and idea processes that made the displaced employees start their own businesses?*

The developmental processes of idea generation, searching for new ideas for new business models have been discussed throughout this paper. There are many factors that plays as incentives for starting a business. The results indicates that all founders of the startups wanted to start a business, and more than half of the participants actually said no to other job opportunities, while only few had already started a business before the closure. Moreover, about 20% of the entrepreneurship was necessity based, whereas 70% were opportunity based. Similarly, the interviewees revealed three different incentives among the participants to start the new business; either it was an opportunity now when the closure took place, that the tipping point was crucial, or lastly they already had a

business plan. Furthermore, previous experience affects idea generation in a positive way, and the majority of the participants have no previous experience starting a business. Therefore, about ¼ of the participants might have been influenced to start a business due to previous startup experience. In regards to timing of the idea generation process, the survey and the interview questions show clear themes. Half of the participants came up with the business idea after learning about the closure, while the rest disagrees. Therefore, the idea generation process amongst the participants did not necessarily start after the announcement of the displacement.

However, how were the business ideas developed? The results from both surveys and interviews showed that most business ideas by the displaced employees are either related or imitated by previous employment at AstraZeneca, while very few were completely new ideas and not related at all. About 90% of the business ideas come from knowledge and experience gained from AstraZeneca. Moreover, discussing one's ideas with other colleagues within the same level of expertise and field can give valuable feedback, which will contribute to the developmental process of the idea generation taken place. Most of the displaced employees did discuss their business idea with others colleagues from AstraZeneca after learning about the closure. And more than half started the business with previous colleagues from AstraZeneca. These results show that most ideas were developed within groups.

Looking into the support available to displaced employees transitioning into entrepreneurship is key as it serves as an incentive to realize one's business idea and transition to entrepreneurship. According to the results of this study, financial, educational and personal support is important when finally pursuing one's ideas and starting a business. Without this support some business ideas would have not been realized, since the financial situation is key for the survival, which is confirmed by statements from the interviewees and by the surveys.

Overall, it seems that most participants were happy about the decision to pursue one's business ideas. However, they expressed that there were few things that could have been done differently in regards to the processes. One key takeaway from this study is that experience helps us develop new ideas and skills. Therefore, we shall agree with the interviewees that we shall not regret what we have chosen to pursue, but instead learn from it.

As a concluding remark, it is noteworthy to discuss the selection of the participants as a limitation for this thesis. The fact that the participants were not only former employees from AstraZeneca, a highly skilled and expertise labor force, but also successful entrepreneurs of newly established companies that emerged after the displacement may be a limitation. Had this study included all the 69 companies and not discarded the companies that were not up and running, the results may have been different in regards to the knowledge spillover and the idea generation taken place. Hence, we now know only the results from the successful companies. Additionally, the participants came from a highly skilled labor force, and the results from this study might differ for industries with a less skilled labor force. One reason for this might be that less niched displaced employees have an easier

time finding a new job. Overall, it's hard to generalize this study's results to other industries with less skilled displaced employees transitioning into entrepreneurship.

## **6.2 Suggestions for Future Research**

This study only investigated displaced employees transitioning into entrepreneurship from one company closure. It would be interesting if future research would investigate additional cases and company closures (companies operating within different industries) to compare the results with knowledge spillovers and idea generation taking place. In this case, only researching one company closure limits the results to AstraZeneca's displaced employees who were operating within the high tech industry and were highly educated. High-tech industry and low-tech industry's knowledge spillover and idea generation taking place while displaced employees transition to entrepreneurship after business closure probably looks very different from one another. Additional extensive research on the individual processes for both displaced and employed individuals in regards to idea generation would greatly add to the empirical literature, as it continues to not be very well understood.

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## 8. Appendix

### 8.1 Survey- closed and open-ended questions

1. For how long did you work for AstraZeneca?
2. Total years of work experience within the pharmaceutical industry?
3. Participant's position at AstraZeneca before the closure?
4. After learning about the closure of AstraZeneca...Did you apply for new jobs? Did you receive job offers? Did you want to start your own business?
5. Did you start your own business due to AstraZeneca's closure? Which answer fits best with you?
  - Yes, I chose to start my own business since I saw a business opportunity despite other job offers.
  - Yes it was necessary since I lost my job and did not find another job that fitted me.
  - No, I had already started my business as a side project before the closure and now I saw my chance.
  - No, I would have started the company anyways, the closure made me start the company earlier.
  - Other.
6. What was the most important motive for you to start your own business?"
  - I chose to start my own business since I saw an opportunity for a business idea.
  - I chose to start my own business since I lost my job, and it was necessary since I could not find a job that was to interest for me.
  - Other.
7. Mark the right answer for you:
  - I came up with my business idea after I learned about AstraZeneca's closure.
  - My business idea comes from knowledge and experience gained from AstraZeneca.
  - AstraZeneca had a company culture that encouraged entrepreneurship and innovation within the company.
  - I already had thoughts about starting my own business before I learned about the closure.
  - I discussed my business idea with colleagues from AstraZeneca after learning about the closure.
  - My colleagues supported me to take the decision to start a business.
  - I experienced great business opportunities while starting my business.
  - My business idea is based on an idea that I encountered due to previous employment.
8. Describe the major three steps you took to start the company (open-ended question).
9. Which of the alternatives describes you in the best way in regards to how you started the company:
  - I started on my own



- I started with previous colleagues from AstraZeneca
- I started with other experienced people within the industry
- I started with family members
- I started with other contacts
- Other

10. At what point in time, in relation to the decision about the closure, did you start to spend time and resources to start your company? (Open-ended question).

11. Mark the right answer for you:

- I knew entrepreneurs and had a network of people who started their own businesses while I started mine.
- My family supported me and agreed that I should start my own business.
- My previous colleagues from AstraZeneca inspired me and supported me to start a business.

12. What resources and support did you utilize from organizations during the startup face?

13. What other social network and support helped you during the startup face?" (open-ended question)

14. What field is your company operating within?

15. How many people does your company employ (including yourself)?

16. How do you see your company in the next few years? Mark all the right alternatives that fit with you.

- I predict challenges due to the fierce competition
- I am pleased with our current status and therefore we will continue as before
- No major changes will occur
- I am optimistic and we will increase our profits with 10%
- We are expanding our market and our customer base
- We are expanding and will hire more employees
- We are expanding our business abroad
- We are expanding our business within Sweden
- Other

17. Looking back with my current knowledge and experience, I feel that it was a good decision to start my own business?

18. Is your company's customers related to AstraZeneca?

19. If you answered yes to the above question, then please elaborate in what way?

20. What knowledge and experiences gained from AstraZeneca did you bring to your company?
21. What previous knowledge and experiences gained are you using at your new company?
22. Do you have previous experience to start a business before you decided to start your own business after the closure of AstraZeneca?
23. I experienced fear to fail to start my own business?
24. What is your current level of education?
25. Gender
26. Age

## 8.2 Phone Interviews (open-ended questions)

### 1. In what way did AstraZeneca's closure affect your process to start your company?

It was an opportunity, "now I have the chance to try this idea and start a company, and see if it would work in reality", this push I would probably never get again, since one tend to be comfortable with one's lifestyle so this was really the opportunity to do it. We enjoyed working at AstraZeneca, and now when it was gone we had the chance to do whatever we wanted.

My colleague and I who later started the company had already created a business plan 2007, however, due to the Lehman's collapse 2008 we waited for a better time. So when AstraZeneca announced the closure "we already had our business plans" so "the announcement wasn't that bad to hear since we already had plans" to start our own business. Therefore, "it was a very easy process for us."

"Actually it was a kick in the butt to just do it, " for me in the end it was a positive feeling that now's the time to [start my own business,] something I had waited for a long time." Earlier I had thoughts of starting my own business and the closure pushed me to do it". However, when the closure took place the business plan changed to become somewhat bigger and clearer of what needed to be done.

My colleagues and I had already started a business on the side before the announcement of the closure, though now we had the chance to use the software we used at AstraZeneca for our own business. Without the closure we would have just continued with our small side project. We had a

dream to be able to deliver this software service to other customers, and to further develop it, which we now were able to realize when AstraZeneca closed down.

“Not at all”, because I am an exception I think from the rest since I put a notice to end my employment with AstraZeneca two months before the announcement of the closure. “So my timing was very interesting actually.” “Already before the announcement of the closure AstraZeneca declared compulsory leave or voluntary leave for employees, and I applied for the voluntary leave “since I felt I wanted to do something different... so I had already started my own business while the announcement of the closure took place. It was a boost for me that I had already chosen to leave before I was forced to leave.

“It was crucial, otherwise I would have never done it”. I had no thoughts about it before.

After a week of the announcement I decided to start my own business, “it was a kick in the ass” it was a nice feeling and I looked forward to do something else in life, since I had been at AstraZeneca for many years.

“Since I did not have an idea to start [a business] it affected me on all levels.” I wanted to stay employed at AstraZeneca, “so I would not have not started a business by myself at that time.”

“It was crucial, I don’t think we would have started our own business if we were not laid off. We acted on the possibilities that emerged.

## **2. How far was your business idea developed when you got to know about AstraZeneca’s closure?**

It was not developed at all, it was just a thought amongst other thoughts that I had for some time. And it developed especially when we started to talk and discuss amongst each other in my team.

We had already created a business plan since before and we were just waiting for the right time to start the business. However, “we had not done a complete market analysis before” the announcement of the closure in terms of demand, finances and strategy, which was done later.

Our business (which was a side project by then) was already running before the announcement of the closure as discussed earlier. However, no one thought we could survive and live of this. During the first year after the closure we did a market analysis and contacted potential customers, and we also went to two conferences to present our business for further development.

“I knew I was good at what I was doing, and I knew other companies needed it, and there were no longer an appreciation at AstraZeneca for what I was doing”. I am very passionate for what I’m doing and there were no longer space to be passionate anymore, the way AstraZeneca’s performance

management became a political game. “I experienced that it no longer was about the actual value making a better life for patients.” Therefore, I started to think about what I can do with what I know. I had a big network and many encouraged me to start my own business, and at the same time many told me “how could you dare to do that? However, I had no customers or project going when I quit at AstraZeneca. I had not conducted a market analysis before the closure, though I had connections and potential customers. LinkedIn is always a really good tool for networking in a business context. I had an idea, expertise, and a budget,” and that was my plan.

“Nothing,” I had not yet developed my business plan.

“I had tested my ideas and they were successful, right before the announcement of the closure “I had a pilot case where we tested one thing to see if we could continue and we could.” I would have revealed my ideas for AstraZeneca if they did not announced the closure at that time, “so I was lucky they announced it right then since I would have revealed it two weeks later for them”. My great results from my pilot case gave me hope to start my own business.

Our business idea was well established, but even though it was not written down it excited in our thoughts. We were mentally prepared for a closure and to start a business since the research facilities in Lund closed down two years earlier. “The most important part is to know with whom you want to do this together with, the team.” Our team, “we had worked and fought together so we knew each other very well.” So if you have the team then the step forward is not that long.”

## **Versus**

### **When did you come up with the business idea after learning about the closure?**

I decided after two months after learning about the closure to start a business. However, we started to talk about starting a business immediately after learning about the closure.

The business I am running is aligned with AstraZeneca’s closure, “if the closure did not take place I would have started another kind of business”.

It was a process that grew and I can’t say exact when, but it was absolutely not my first thought to start my own business. First I looked for jobs, but realized that I was very specialized within my field after working for so long at AstraZeneca, which makes it very hard to go out and find a similar job, because they don’t exist. So after few months of the announcement of the closure I came up with a business idea to start my own business.

I came up with my business idea within a month.

When we got to know about the closure, then my colleagues and I decided to start our business together.

### **3. How did you come up with your business idea?**

“I really liked doing what I was doing [at AstraZeneca] and it took so many years to become good at it, and there are no similar jobs within this region”, and when AstraZeneca closed down there were no similar neuroscience research, and we could create our own job opportunity utilizing our knowledge gained at AstraZeneca, and we created our business idea to do the same thing as we did at AstraZeneca. So AstraZeneca truly influenced our business idea.

Our business idea came about when we “acknowledged that there were missing competent employees within our field,” while working for AstraZeneca, and thereof a need for it in both Sweden and abroad, after been talking to other experts within the field.

My colleagues and I were working on and building a unique idea at AstraZeneca within Scientific Services to harmonize the lab support within Europe, “and this idea when [AstraZeneca] closed down, we felt that we were not finished with this so we brought this whole idea and way of thinking of how to deliver and started” our own business using this concept.

We gained knowledge and expertise while working at AstraZeneca, and now we could further develop the software and methods we were working on within our business.

My business is related to what I was doing at AstraZeneca, “and I have not invented something new.” “I just wanted to do it by myself and for others, which was triggered by disliking working for the company I was at, the financial opportunity that was created, and by scrutinizing what values should drive my life.”

“I came up with my idea because I had worked for AstraZeneca” and it’s related with what I worked with.

It was a longer process to learn where I potentially could earn money and where there was a need. “I did not bring any idea from AstraZeneca,” and took me a long time to write down my business plan. It took 6-8 months after the closure to finalize my business plan.

While running tests at AstraZeneca my ideas developed and “I knew the needs and I saw the possibilities immediately for both AstraZeneca and the rest of the market.”

“It already existed internally within AstraZeneca” “It’s the same idea.”

### **4. Did the business idea develop within a group or by yourself?**

The business idea developed within a team of three. It was three people in my team that was interested to start a company, so we did it together.

Originally we had meetings with our whole team at AstraZeneca to discuss business opportunities after learning about the closure, however, most people were not interested due to uncertainty, though “three of us had the courage, and it’s about what period in life you are in”, it’s different now when my children are grown up, and no expensive mortgages left to pay and I did not have to worry about that, so for me this would potentially work. Hence, “us three who decided to start a business were older than the rest of the team” and your “life situation influences what one dare to do.” Many others wanted to do it, but did not dare since there is a lot to loose.

We completed a market analysis to learn if there was a need for our business idea and learn about the potential as well as competitors in Sweden. During our analysis we learned that there was a huge need for our business idea, and created a niche after learning more during the market analysis.

Originally we were two employees from AstraZeneca who created the business plan before the announcement of the closure, but were put aside due to the Lehman’s collapse. However, “after the announcement of the closure of AstraZeneca we dusted of the old plans and talked to certain people within our office if there were any interests to built up something together, since the need for different expertise when starting your own business is needed”. And thereof we became four people after the announcement of the closure who together built up the business plan and started it.

Our business idea developed within a group, we were originally four people who started the company (two people from AstraZeneca), however, today we are three people since one quit. We worked on our market analysis for about six to eight months after the closure, “we created a network of potential customers, and we looked at how we could build the business model.” Our group of four people worked with building our business model while we participated in Uppsala Innovation Center’s startup education. There we learned how to question and defend our ideas, which were very helpful for us even though we already had previous experience with startups.

Our idea was created within a group and was already created before the closure as previously discussed. Our manager at AstraZeneca helped us realize our business idea since he allowed us to conduct research, knowledge that we later used for our business.

“Alone,” other employees who lost their jobs started to create teams to brainstorm, but it never really summon with me, since I felt they were too slow in their process so I started my business by myself.

“Only me” but then I tested my idea and discussed it with others. I created a market analysis and contacted potential customers and to find competitors.

“It was my own idea, and I started [the business] on my own as well.” Later on when the business was running a former colleague joined me.

“I developed the idea myself.” I contacted Uppsala Innovation Center at an early point to receive help from them to create a SWOT analysis and a market analysis, and at this point my colleague joined forces with me.

“Our business idea was created within a group.”

## **5. What was the final motive to finally realize your business idea in relation to AstraZeneca’s closures?**

Passion for the subject for our business idea and what we were working with at AstraZeneca, and I did not want to work with anything else. We had a good chance that our business idea could potentially work, “I saw it as a lottery, it could turn out in any way”, though I did not want to do anything else than this, to continue working with what I was working with at AstraZeneca was important, and the feeling that one can help many others.

During the period where we got help to start our business from Technopool we had the chance to meet other companies and we had the chance to present our business idea. “Due to these meetings with potential customers it became an easy choice” to start our business. Our business did not require a large amount of investments since we sell our expertise and our knowledge to other businesses.

“I wanted to have my own company again, and I felt that I was done working in large multinational businesses, I wanted to [work] with my own idea..” “and I contacted few colleagues and a friend and asked if they wanted to join this journey”.

My passion, I did not want to look back at my life as employed at a company where I actually didn’t like anymore.

“The circumstances, the fact that my job disappeared, so I had to find something else and it was hard to find a job since there were no jobs matching my profile.” In combination of that we received great conditions and agreements when displaced, and “I needed to take this opportunity and take a chance” and test my business idea.

I reasoned that this type of chance you only get once a lifetime, where I receive 17 months salary due to displacement, so saw this an opportunity to do what I wanted, so the pressure to earn money immediately disappeared.

“I think that the final motive was that everyone wanted an interesting life, one does not do it to be comfortable or for the money either.” “However, I think everyone really enjoyed working with what we were doing and we wanted to continue with it... and to work with research.”

## **6. In what way did your previous knowledge gained from working at AstraZeneca help you to develop your business idea?**

Our business is very similar to AstraZeneca, however, our business idea was further developed and more niched to be able to deliver more specialized services.

While working for AstraZeneca I learned the market gap, the difficulties to find employees within our field and expertise, which then was used to create our business idea.

As discussed earlier, the type of work we did at AstraZeneca should have a market potential, since it had such good results at AstraZeneca, so we felt that this had to work outside of AstraZeneca as well. Though our business idea have broaden and changed somewhat due to an expanded customer base, since the customer's needs are what shapes our business today. It was positive for us that the AstraZeneca's research facilities closed down, since these researchers became our network for our business, and they already knew us since before how we worked etc., and we could continue our collaboration with these people since they started to work for other companies.

I realized the business opportunity "due to my passion for this technology" we were working with, and if no one would do it, then someone need to realize it, and we could not just let go.

"The knowledge I gained at AstraZeneca was a condition, but if I didn't gain it there then I would have probably gained knowledge somewhere else". It helped me to understand how large firms are operating.

"Because I worked with it in that field"

"I used everything I learned at AstraZeneca," "it was the core of my business model. "

"It would have been impossible without my time at AstraZeneca" and "my time there was crucial." My idea did not come automatically, and instead it came while working.

## **7. Describe the help received from AstraZeneca and other organizations to start your business after your job displacement.**

"We received great support for starting our own companies" both from Nyföretagarcentrum (Swedish organization helping startups), Uppsala Innovation Center, Karolinska Innovation Center (hospital in Sweden), and from AstraZeneca. AstraZeneca and Uppsala Innovation Center had an agreement, and approximately 14 companies out of the applicants were selected to receive further help with the startup process, such as education, knowledge and contacts etc., which we received and were very helpful for us since we had no previous experience starting a company. It would have been much harder for us in our startup process without this help. Additionally AstraZeneca



supported us economically and I received 15 months of pay after the layoffs, which helped me greatly. Moreover, AstraZeneca lent out their labs without no costs to us who needed the facilities in the startup phase up to half a year.

UVC sponsored economically to this program.

“AstraZeneca informed us about Technopool and Nyföretagarcentrum,” and they helped us in our startup face with how to run a business such as agreements etc.

All the employees at AstraZeneca had the chance to meet and discuss opportunities etc. during working hours. Additionally, AstraZeneca supported us economically and we received several months of salary after the layoff, which we used for investment in the company, “which was a great support,” and helped us to not be stressed bringing in clients immediately and instead we had the time to create our market analysis and meet with many potential customers.

Uppsala Innovation Center, and Nyföretagarcentrum supported us, and AstraZeneca supported us by lending out their facilities to us who just started a business. Acturum who took over AstraZeneca’s facilities after the closure had a reduced rental price later on for us, which was important to minimize our expenses in the beginning. AstraZeneca was really good at helping us during our startup face.

Uppsala Innovation Center was helpful, also we borrowed office space from AstraZeneca. Additionally, Södertälje municipality in Sweden supported us by giving us 100 000SEK to support us in the beginning of our startup face. AstraZeneca supported us by giving us a salary for an extended period of time after the closure.

Trygghetsrådet (a Swedish agency who supports people who got laid off) supported me, they helped me for instance with education in accounting, and planning my taxes. “AstraZeneca was not really helpful to me,” probably since I chose to quit right before the announcement of the closure.

Nyföretagarcentrum, Medicon village, Technopool (which now is named Innovation Skåne) all contributed helping me while in the startup face.

The paid salary from AstraZeneca for several months after the closure was very important. Also I am renting the facilities AstraZeneca once used to own. Additionally Nyföretagarcentrum helped us.

Both Karolinska Institute Science Park and Uppsala Innovation Center helped me in my startup process.

AstraZeneca was helpful since they gave us months of salary after the closure, and they also let us work on our idea while it prepared for closure. We also got support from Trygghetsrådet, which is insurance for firms, and “they educated us in business management and marketing”. Additionally, the incubator Uppsala Innovation Center helped us in our startup face, and “they helped us to develop our business plan”.

## **8. Looking back, is there anything you would have done different today or regret in regards to your processes and applications for your business?**

There are many things one could have done differently when gained more experience, however, I don't regret anything " what I knew back then, I could not have done it in a better way anyways." We would not have done our processes in the same way now since we now have more knowledge, we could have done everything much faster, additionally we were too thorough and too research oriented in the beginning in our processes though we probably needed this time to learn.

"No," however, of course with my current experience I might have done some smaller changes, but that's easy to say now looking back.

No I don't think so, though we should have started our business earlier. Other than that we are content about our processes and would not change it.

I regret that I put down so much time on the business, I wished that I would have applied and searched for jobs instead.

"I usually say that the only thing I regret is that I did not do it earlier."

"No," since my business is not so complicated".

"No, everything goes very well so I have nothing to wine about."

"There are probably things I could have done differently, there were so many obstacles to find the right people to continue" It would have been helpful if I would have had a business coach to help me with marketing at an earlier time. I should have done my strategy for meetings with customers and marketing differently.

"We could have worked more."

### **8.3 The List of the 69 New Firms Created by the Displaced Employees from AstraZeneca**

According to Life Science Sweden (2013), after AstraZeneca's closure, former employees created 69 new firms in Sweden. Most of the companies operate within the service and/or consulting industry, and only two companies work with development of pharmaceuticals.

Please see the list below of the names of the companies that were created. For a detailed description of each company please see the original source of this article.

**Firms: Södertälje, 32**

1. Offspring Biosciences
2. MetaSafe
3. Northern Light Pharmaceuticals
4. KeytoLead
5. Analytical Proof Sweden
6. Brain Shuttle
7. Chemnotia
8. Chemovix
9. Evomedicon
10. Novandi Chemistry
11. Toxicology Knowledge Team
12. Adme Ex
13. QPS Sweden
14. N4 Teknik
15. Prosilico
16. Biogasgenerator
17. Pelago Bioscience
18. AC Knutsson Consulting
19. Retort
20. Birchmoor Toxicology Service
21. Carbin Communication
22. Viva Text & Pharma
23. Caliti Group
24. Statistical Support & Solution
25. Alveiro
26. Ipcan Consulting
27. Hundtrim
28. ErSa Invest
29. Regulatory Intelligence Consulting
30. Sveno CMC Consulting
31. Tofsvipan Consulting
32. Sivert Bjurström veterinärkonsult

**Firms: Lund, 37**

1. Adroit Science
2. Apposkop
3. Bocz Design
4. Competitive Intelligence Solutions
5. Delfin kommunikation
6. EMMACE Consulting
7. I-Mind Consulting
8. LabJoy
9. NeoSpot
10. Nordic Biocube
11. Patient Information Broker
12. Pepticon

13. Ready Consulting
14. Red Glead Discovery
15. Trial & Care
16. Truly Translational
17. Ateljé Råbygård
18. B&B villa Orion
19. BRG Consulting
20. Brödlabbet
21. Carettacaretta
22. Dashit
23. Embla träd
24. GERik Medical Consulting
25. Idésprånget
26. Karins vårdträd
27. Kurakademin
28. Ligatum
29. LXI
30. Peak Search
31. Rubus
32. Semator
33. Tornahem
34. Joelson Consulting AB
35. Lars Borgström Inhalation Consulting
36. Stat Mind
37. (The 37<sup>th</sup> company is not listed)