Labour and automation in reshoring
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Abstract

Background: Companies operating in the low-cost offshore locations are increasingly challenged with various critical issues more recently that have directed their attention towards re-evaluating offshore strategies and considering reshoring. Rising labour costs, labour shortage and high labour fluctuation in offshore locations continues to create substantial risks and disturbances to the business and supply chain. These difficulties, especially in the light of higher labour productivity levels of developed countries and prospects of automation and robotisation, has persuaded many to believe this trend would encourage reshoring and enable companies to see manufacturing in developed countries cost effective once again. However, studies in reshoring are scarce, very little is known about labour or automation and especially how the two interrelates.

Purpose: This thesis aims to explore the concepts of labour and automation and their interrelations in reshoring.

Method: This research has adopted case study approach. Semi-structured interviews were carried out with a total of 6 companies from various countries, situated in both high and low-cost environments with reshoring intention or previous reshoring experiences. Transaction cost economics and the resource-based view have been applied in analysing the findings.

Findings: This study has identified twelve labour factors and five automation factors in reshoring. The empirical findings showed labour cost as well as labour availability important in the decision of two companies. This study did not find empirical evidence to suggest automation as a significant reshoring motivating factor. Reviewing the literature also did not yield sufficient reliable evidence in support of automation. Labour and automation interrelations in reshoring have also been discussed as well as elucidating some considerations in applying automation in manufacturing.
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1. Introduction

In this chapter, we provide some preliminary information about our study. We then present the problem statement, purpose, and research question. Finally, delimitations of our study are illustrated at the end of this chapter.

1.1 Background

Globalization of economies through relocation of firm’s activities to foreign locations is not a new phenomenon and has been practised since the 1980s when firms started to offshore with the desire of reducing labour costs (Carincazeaux and Coris, 2015). Countries decision to reduce trade restrictions and barriers enabled firms offshore to developing countries (Ashby, 2016). Additionally, global sourcing became more viable with technological improvements in telecommunication especially that the internet has shrunk space and time which in turn has enabled coordination of activities on a worldwide basis (Oshri et al. 2015). Offshore sourcing has offered significant cost advantageous over domestic sourcing and has influenced many company’s make or buy decision (Christopher, 2016). Numerous company’s survival depends on supply chain cost effectiveness as the purchased products and services can sum up to even 80 percent of their revenue (Quayle, 2005). Suppliers in developing countries such as China have offered prices 25 to 40 percent lower compared to the ones in house locations (Johnsen et al. 2014). In addition to the cost savings, offshore sourcing has allowed companies to gain access to resources of strong values such as knowledge, technology, and skills (Kinkel, 2012; Oshri et al. 2015; Stepanok, 2015; Ashby, 2016). Moreover, offshoring has provided multinational corporations with enormous tax benefits (Berry, 2005).

Despite all the advantages of offshore sourcing, more recently some companies choose to reshore which means relocating the operations back to home or a neighbouring country (De Backer et al. 2016; Foerstl et al. 2016). Scholars have argued offshore sourcing decisions were often made based on rudimentary calculations and analysis which has led companies to miss around 20 percent of the total costs of relocating offshore (Sprovieri, 2011; Johnsen et al. 2014). Also, cost advantageous of developing countries such as China and India has eroded to a large extent (Plunkett, 2011; Margulescu and Margulescu, 2014). For example, Chinese labour market is experiencing a large shortage of workers and in turn worker’s wage are rising 15 to 20 percent on an annual basis (De Backer et al. 2016). This situation has been much dire for some companies as they were forced to increase wages up to 80 percent (Plunkett, 2011). Consequently, labour related issues in developing countries has played a major role in motivating many companies to reshore their activities (Kinkel, 2012). Labour productivity improvements in developed countries (Moutray and Swift, 2013; Pearce, 2014) as well as having better access to skilled labour
back in reshope locations has also said to be among factors for companies to reconsider in offshoring decisions.

Advances in automation and robotics have been promoted as a game changer and especially a central solution to combat the challenges associated with labour and the path in making reshoring economically feasible (Ancarani et al. 2015; De Backer et al. 2016; Tate and Bals, 2017). Automation and robotisation have enabled companies to operate with lower or even without human intervention, and that is driving many companies to re-evaluate location decisions from manufacturing and supply perspective (Tate and Bals, 2017). Automation increases labour productivity levels (OECD, 2016; Stentoft et al. 2016a) as well as easing the issues with labour availability (Mikael et al. 2008) and labour turnovers (Zhang, 2012). Regional value chains would become more feasible and offshoring less attractive when companies increasingly substitute labours with advanced robots (De Backer et al. 2016). Advanced technologies and automation compensates high labour costs in developed countries, makes domestic productions less expensive (Zhai et al. 2016) and deteriorates comparative advantage enjoyed by the low-wage countries (Robinson and Hsieh, 2016).

1.2 Problem statement

Companies have started re-evaluating offshore sourcing decisions, and reshorings topic have attracted much attention from both academics and practitioners (Fratocchi et al. 2015; Bals et al. 2016) as well as journalists and policymakers. Reshoring is a new phenomenon that has not been studied adequately before and especially very less is known about the motivation of firms to reshore (Fratocchi et al. 2015). Academic literature is very scarce and primitive, especially about causes and the extent of reshorings (Zhai et al. 2016). The fragmented literature on reshoring has left many questions unanswered, and there are clearly many fundamental research gaps that need attention and further explorations (Foerstl et al. 2016). More importantly, fewer studies have devoted attention to the issues of labour market in reshoring (Stentoft et al. 2016a), and various topics concerning automation and reshoring need to be investigated (Arlbjørn and Mikkelsen, 2014). Labour issues namely labour costs (Kinkel, 2012) and labour availability have frequently been discussed to be a major driver for companies to reshape. For example, in an extensive study Fratocchi et al. (2015) found labour costs to be the most important driver for firms to backshore after logistic costs. However, studies are inconsistent and on the contrary findings of Dachs and Zanker (2015) and Heikkilä et al. (2017) shows labour shortage and labour costs not to be an important reshoring motivating factor.

As it was mentioned earlier, many scholars are arguing that automation should encourage companies to reshape. However, there has been no major research that shows the implementation of automation in manufacturing or other sectors would result in offsetting the role of labour substantially for all the works that have been offshored previously. In
fact, the argument we hear (Arlbjørn and Mikkelsen, 2014; Margulescu and Margulescu, 2014; Tate et al. 2014; De Backer et al. 2016; OECD, 2016; Robinson and Hsieh, 2016; Stentoft et al. 2016a; Tate and Bals, 2017; Wiesmann et al. 2017) is rather more of a general speculation that robotics and automation supposedly should make reshoring more feasible, while there is no sufficient evidence to support the claim. Moreover, we should also consider that manufacturers in China are already increasing automation levels substantially as an effort to reduce labour content and increase productivity levels (Zhang, 2012). China has now become the world largest robot market (IFR, 2016) thus with a similar logic one could also argue that automation if not encourage offshoring would at least provide motivation for companies to remain offshore. In addition, fewer reshoring scholars seem to be aware or interested in discussing the feasibility of automating the offshored works or considerable drawbacks and difficulties associated with implementing higher degrees of automation in manufacturing. Reshoring literature largely neglects to consider and elucidate how labour and automation interrelate in manufacturing. Undoubtedly researchers need to develop a deeper understanding of approaching automation decisions (Frohm et al. 2008) in reshoring.

1.3 Purpose and Research Questions
Previous sections briefly pointed at to some of the main discussions concerning the topic of labour and automation in reshoring. The purpose of this thesis is to explore the concepts of labour and automation and their interrelations in reshoring. We are hoping that this study would contribute to further advancing our understanding in the field of reshoring. Our thesis has two research questions:

Q1: What are the labour and automation drivers and barriers in reshoring?

Q2: How labour and automation interrelates in reshoring?

1.4 Delimitations
Reshoring is a new phenomenon, and a limited number of credible researches have been available to be used in our study, especially that there is no research exclusively conducted to address automation or labour in reshoring. Moreover, the scope of our research is quite broad. Lastly, results of this study may not be applicable worldwide due to the regional focus of the collected data.
2. Literature Review

In this chapter, we illustrate our findings from reviewing the existing literatures about the topic. Within the frame of reference, we have used various articles, books, and other publications to provide an in depth and critical discussion from various sources.

2.1 Definition of terms

Supply chain terminologies lack clarities in various cases. Especially defining reshoring has resulted into creation of much confusions and uncertainties among many scholars and practitioners (Foerstl et al. 2016). Ironically, even Obama administration misguidedly used “Insourcing American jobs” when their efforts were essentially concerned with reshoring of jobs back to America (Foerstl et al. 2016). Therefore, we found it necessary to include adopted definition of the relevant terms in an orderly and understandable manner.

2.1.1 Sourcing

Sourcing refers to activities in searching markets to find sources of goods or services (Johnsen et al. 2014). Oshri et al. (2015) define sourcing as the act of contracting or delegating work to an internal or external entity.

2.1.2 Insourcing

Insourcing could be defined as sourcing of business activities internally and allocation of resources within the same organisation, regardless of geographical locations (Schniederjans et al. 2015).

2.1.3 Outsourcing

Outsourcing could be defined as contracting out activities and functions to outside providers or in another word outsourcing is the procurement of products or services from external sources (Oshri et al. 2015; Schniederjans et al. 2015).

2.1.4 Offshoring

Offshoring is the relocation of organisational activities and provisions across national borders (Rushton, 2007; NAE, 2008; Oshri et al. 2015). If a wholly owned subsidiary performs the work, it is a captive model, and if the work is contracted out to an
independent third party, it would be called an offshore outsourcing model (Oshri et al. 2015).

### 2.1.5 Reshoring

Reshoring refers to the relocation of activities from offshore sites back to home country or a neighbouring country (De Backer et al. 2016; Foerstl et al. 2016). Reshoring could be separated into two broad forms. In the shape of backshoring that is the relocation of activities to the home country from an offshore location or in the form of nearshoring when previously offshored activity would be performed in a neighbouring country (De Backer et al. 2016; Foerstl et al. 2016). Important to mention that reshoring is not concerned with ownership of the activities or closure of previously offshored work (De Backer et al. 2016).

### 2.2 Theories

Resource-based view and transaction cost economics are two prominent and useful theories in supply chain management. These theories are particularly relevant when considering the make or buy decision. It is strongly suggested to take advantage of the two concepts when evaluating offshoring and reshoring decisions (Canham and Hamilton, 2013) even though the theories are not without limitations (McIvor, 2005; Daub, 2009; Foerstl et al. 2016) or can be seen suggesting contradictory recommendations in different situations (Johnsen et al. 2014).

#### 2.2.1 Resource-based view

It is believed that Penrose (1959) book “the theory of the growth of the firm” laid the cornerstone of the modern resource-based theory (Rugman and Verbeke, 2002) and it was further developed by the work of Wernerfeldt (1984) and Barney (1991) among other scholars. RBV suggests a sustainable competitive advantage could be created from resources that are valuable, inimitable, rare, and non-substitutable (Quayle, 2005). These are the essential characteristics but may not necessarily lead to the creation of competitive advantage (Mitchell, 2015) if, for instance, various resources are not combined and used effectively (Daub, 2009). One important reason that firms offshore is that they seek to obtain a unique set of resources that can provide them with sustainable competitive advantage such as getting access to the cheap and highly skilled workforce (Canham and Hamilton, 2013).

The central view of this theory is that organisations grasp sustainable competitive advantage through their internal resources (Johansson, 2004). RBV recommends strategic resources, and core competencies shall be protected and not outsourced as external resources do not provide sources to achieve sustainable competitive advantage (Johnsen
et al. 2014). However, on the contrary to this theory, relational view suggests that critical resources can also be sourced from strategic partners and the ability to have such relational capabilities may, in fact, establish a source of sustainable competitive advantage (Johnsen et al. 2014). Many used to see vertical integration as a great strategy in the past, but now companies are increasingly focused on their core and what they are good at (Christopher, 2016). Nevertheless, it is of utmost importance to correctly identify which resources and activities are strategically critical. However, what is core and non-core to a business mostly depends on the perception of senior managers which can be flawed in many occasions (Bravard and Morgan, 2006). Many companies have a problem identifying what is core and critical to their business and what processes should be outsourced and what must be kept internally (Oshri et al. 2015).

2.2.2 Transaction cost economics

Transaction cost economics provides a theory that helps to decide whether to insource or buy from the market through focusing primarily on transaction costs and determining what is the most economical governance structure for an organisation (Johnsen et al. 2014). Important to consider outsourcing today accounts for more than 90 percent of many companies supply chains value (Johnsen et al. 2014). It is believed that Ronald Coase (1937) laid the foundation to this theory, but work of Williamson (1975) was central to the development of the theory among other scholars. Transaction costs could be defined as the expenses associated with running the economic system (Berghuis and den Butter, 2013). Expenses incurred in exchange of goods and services, collecting market information, negotiation, contract, and invoicing are examples of such costs (Johnsen et al. 2014). Transaction costs largely impact the development of offshoring processes and production (Kraciuk, 2014). A considerable portion of the total cost is made up of various transaction costs, especially in international trades and therefore through transaction management, these costs shall be reduced and kept as low as possible (Berghuis and den Butter, 2013). Transaction costs such as searching for suppliers, negotiations, and the relationship management could be substantially higher when outsourcing and the costs are even higher when offshoring due to the complexities of these ventures (Oshri et al. 2015). In general, according to this theory, one can propose concentrating operations in one local setting could be strongly justifiable considering the transaction cost advantages (Kinkel and Maloca, 2009). Companies operating in foreign sites or working with foreign suppliers are increasingly faced with higher uncertainties and challenges like recruitment, turnover, and coordination which can be translated as higher transaction costs and therefore a motivating factor to consider reshoring (Kinkel, 2012, 2014).

Two other significant concepts in this theory includes asset specificity and opportunism. Asset specificity has been defined as the degree to which the investments incurred for a specific transaction have a greater value to that transaction than they would have in case they were redeployed for another purpose (Johnsen et al. 2014). The degree of asset
specificity is considered high, for instance, if a supplier makes a customised product for one customer. Another example could be purchasing an asset with only one specific function. Opportunism is self-interest seeking in a way that involves guile and deceit (Williamson, 1979). For example, purposely withholding or altering commercial information or violating contracts (Johnsen et al. 2014).

2.3 Offshoring and Reshoring

Offshoring has provided companies with myriad benefits and opportunities. For decades, corporations have taken advantage of low-cost environments in developing countries and benefited immensely from the large population of low wage and talented workforce available in these countries. However, more recently many companies have directed their attention towards reshoring and begun to re-evaluate their offshoring strategies. Reshoring is now an important sourcing strategy for many companies which enables them to stay competitive and meet customer demands in today’s competitive and highly dynamic market.

2.3.1 Offshoring

Offshoring especially has enabled many western companies to gain the competitive edge in their market through producing products significantly cheaper and shipping it back into their market. However, relocating to a foreign location is no longer mainly driven by labour costs to manufacture products that can be sold in the original location, but more importantly proximity to customers and access to foreign markets are some of the main reasons companies offshore and expand into other countries and regions of the world (Plunkett, 2011; Kinkel, 2012; Zhang, 2012). Foreign manufacturing firms in China currently export less than 25% of their gross industrial output (Zhang, 2012). Offshore sourcing has fundamentally transformed supply chains of today’s manufacturing and assembly to a global level (Christopher, 2016). Today prototyping could take place in-house, afterwards, assembly carried out in an offshore location and finally finished product could be sold in a third market (Foerstl et al. 2016).

Globalization has, in fact, helped reduce poverty in the world (Auer, 2006). Over 600 million Chinese were living on less than a dollar per day in 1981, and by 2005 that number has reduced to only 150 million (Plunkett, 2011). Economic growth of China is expected to triple the population of Chinese middle class in just about a decade (Zhang, 2012). Wage increases, especially in Asian countries like China and India have accelerated growth of the middle class to the extent that by 2030 worldwide population of the middle class can rise to 4.9 billion (De Backer et al. 2016). This could be a huge emerging population of consumers and a great opportunity for business growth of multinational corporations. It is suggested that a prime motive behind the shoring decision could, in fact, be proximity to the emerging population (Moradlou et al. 2017).
Public opinion in industrialised countries usually regards globalisation as a threat to employment and not an opportunity (Auer, 2006). It is hard to provide detailed statistics about offshoring, but annual job losses associated with offshoring in the United States are estimated to be between 15,000 to 192,000 which is still a minimal number considering that US economy roughly experiences 7 million job loss and gains annually (NAE, 2008). EU annual job losses due to relocations to offshore locations are also estimated to be only a few thousand (Auer, 2006), but major disagreements exist among different studies. For example, Kinkel (2014) argues based on EMS survey data from 2006 that 86,000 manufacturing jobs were offshored per year in the years 2004 to 2005 in Germany alone. Nevertheless, offshoring can be responsible for creating several short-term and long-term problems in the economy and particularly great difficulties for people who lose their jobs. For example, learning new skills and transition between jobs can be very difficult for displaced workers and comes at considerable adjustment costs to the economy, especially if job losses accumulate in one area (Auer, 2006). Moreover, displaced workers usually can’t find a job that is intellectually and financially comparable to their previous jobs (Berry, 2005). However, it is also important to bear in mind that adverse impacts of offshoring are immediate, but significant benefits it provides to the economy and labour market are deferred, and people usually neglect to see that (Berry, 2005).

2.3.2 Reshoring

The competition requires many companies to adopt various types of sourcing models, such as offshoring, nearshoring and backshoring (Oshri et al. 2015). Firms are increasingly voicing enthusiasm towards finding solutions to combine local and global sourcing and manufacturing activities (Robinson and Hsieh, 2016). Domestic manufacturing enables a company to have the agility and flexibility to respond to market changes and customer demands (Wu and Zhang, 2014). Sourcing decisions are not permanent, and it requires continues evaluation (Hartman et al. 2017). Therefore, considering current changes and opportunities, companies are increasingly convinced to consider diversifying sourcing strategies when structuring manufacturing processes (De Backer et al. 2016). Hence, reshoring has become ever more important sourcing strategy for many corporations.

Based on existing literature, it appears that the most relevant reasons for companies to reshore is quality concerns (Kinkel, 2012; Dachs and Zanker, 2015; De Backer et al. 2016; Stentoft et al. 2016b; Zhai et al. 2016; Heikkilä et al. 2017) followed by responsiveness and flexibility (Brennan et al. 2015; Dachs and Zanker, 2015; De Backer et al. 2016; Stentoft et al. 2016b; Zhai et al. 2016; Heikkilä et al. 2017; Moradlou et al. 2017). Literature also points at to a large number of other factors that could play a role in encouraging companies to reshore. These factors include labour cost, labour availability, automation, supply risks, supply chain visibility, government incentives, transportation cost, inventory cost, packaging cost, travel cost, energy cost, decreasing the cost gap,
contributing to the local economy, loss of innovation, exchange rates, capacity utilization and loss of intellectual properties (Sprovieri, 2011; Johnsen et al. 2014; Brennan et al. 2015; Dachs and Zanker, 2015; Ashby, 2016; Christopher, 2016; De Backer, et al. 2016; Foerstl et al. 2016; Stentoft et al. 2016b; Zhai et al. 2016; Albertoni et al. 2017). Furthermore, Important to be mentioned that most cases of reshoring are attributed to backshoring and apparently nearshoring is much less common (De Backer et al. 2016). Reading the literature also conveys the message that many scholars are attempting to point at offshoring failures to motivate a reshoring decision (Foerstl et al. 2016; Albertoni et al. 2017). However, companies can pursue reshoring even with satisfactory results from offshoring decisions which could be connected to many different reasons such as a change in strategy (Albertoni et al. 2017). Moreover, this is important to be said that not all companies that experience failure of an offshoring decision would not or should not necessarily be inclined to reshore for various reasons (Albertoni et al. 2017).

Available researches on reshoring are conflicting in many cases. For example, it has been argued that government incentives are an important reshoring driver while Zhai et al. (2016) found government incentives and policy competition among countries not to be a major motivating factor for reshoring. Also, Hartman et al. (2017) found the loss of intellectual property not to be a major reason for companies to consider insourcing. Neither study conducted by Dachs and Zanker (2015) found the loss of know-how and separating R&D important factor to reshore. In contrast, findings of Heikkilä et al. (2017) shows proximity to R&D being among the important factors for companies in Denmark, Finland, and Sweden. There are also those like BCG that estimate millions of job creations. However, findings of Brennan et al. (2015) and De Backer et al. (2016) suggest companies that reshore is limited and consequently it would be unlikely to result in significant employment.

2.4 Labour and Automation

The dominating single reason companies relocate manufacturing abroad is labour costs (Kinkel, 2012; Wu and Zhang, 2014). Which is also confirmed to be true for companies located in Denmark, Finland, and Sweden (Heikkilä et al. 2017). However, companies are now challenged with many labour issues in offshore locations such as labour shortage, rising labour costs and high labour turnovers. These difficulties in the light of higher productivity levels in developed countries and automation and robotisation is expected to encourage reshoring and enable companies to see manufacturing cost-effective once again.

2.4.1 Labour

Offshoring to developing countries has been providing companies with substantial cost savings on labour (Auer, 2006). However, this situation has changed quite significantly
in the recent years. Increasing labour costs together with the availability and fluctuation of qualified workers at foreign locations are now argued to be among the main motivating reasons for companies to consider reshoring (Kinkel, 2012; De Backer et al. 2016). In some cases, the largest employers in China have been forced to increase wages up to 80% due to the shortage of workforce and employee unrest (Plunkett, 2011). China’s average hourly wage has risen 15 to 20% per year, and while in 2000 the average hourly wage in emerging economies was about 2% of the US average, that amount has changed to 9% in 2015 (De Backer et al. 2016). American workers per capita income after tax was 41,532 dollars on average in 2000 and that number increased to 61,673 dollars in 2011, whereas Chinese workers in urban regions experienced a more significant increase from 1127 dollars in 2000 to 6469 dollars in 2011 (Zhai et al. 2016). As a result, some companies have even moved to more inland regions of China to lower the labour costs but achieving that has created longer supply chains, higher transport cost and larger pipeline inventory (Tate et al. 2014). Therefore, interestingly some found it convincing to suggest that the cost gap depreciation between China and US should result in making manufacturing in the US as economical as producing in China by 2015 (Mitchell, 2015). China wage increases have turned Vietnam and Mexico to be more attractive locations for some companies (Tate et al. 2014). In general, labour costs are not increasing the rate of China in countries like Vietnam, India, and Mexico (Zhang, 2012). Mexico has also shown numerous improvements, especially in infrastructure, training, labour productivity, and trade policy and with proximity to the US market, it is a cheaper and better destination for some industries in comparison to China (De Backer et al. 2016). However, it is important not to forget that labour costs are not making up the total manufacturing cost and labour costs are usually a fraction of the total landed cost. Moreover, labour costs are not the single important factor when considering a location. In addition, new EU member states are also an ideal place for production relocation, but what we have witnessed recently is a substantial wage increase in these countries as well (Kinkel, 2012). Consequently, that has played a major role in motivating German companies in particular to backshore some of their activities (Kinkel, 2012). Although the diminishing wage gap between the developed and developing countries has been widely argued to be a major reason to support backshoring, Dachs and Zanker (2015), as well as De Backer et al. (2016), found labour costs to play only a minor role in company’s motivation to backshore. Should also not forget that the high labour costs in developed countries is still the most frequent reshoring obstacle (Bailey and De Propris, 2014).

Taking use of human resources in countries like China and India has had vast contributions in cost savings as well as enhancing innovative capabilities of corporations (Canham and Hamilton, 2013). Thus access to the highly skilled workforce has been a major driver for companies to offshore to foreign locations (Canham and Hamilton, 2013). While American students have become more reluctant to study engineering, Chinese universities, graduate hundreds of thousands of people with engineering bachelor degrees annually (NAE, 2008; Plunkett, 2011). However, the Chinese labour market is experiencing a growing shortage of both skilled and semi-skilled workers (Tate et al.
India has also been affected tremendously by the skilled labour shortage, especially in critical sectors such as IT and call centres (Tate et al. 2014; Oshri et al. 2015). Consequently, lack of appropriate workforce and employee turnovers at foreign locations has been argued to encourage insourcing and backshoring (Kinkel, 2012). However, in contrast to this belief studies conducted by Dachs and Zanker (2015) and Fratocchi et al. (2015) suggests that shortage of qualified workers in host countries not to be an important factor for reshoring. Interestingly, employee’s poor skills are also found not to be an important reshoring motive (Fratocchi et al. 2015).

Bhagwati and Blinder (2009) state China and India can add 300 million skilled workers into the labour market in about two or three decades that is approximately equal to the total current workforces of the US and Western Europe combined. Therefore, it can be an important motivating factor for many companies to have a presence in the offshore locations to benefit from this vast population of the workforce. Yet there are already more than 30 million young professionals holding degrees in fields relevant to offshoring works in the developing countries, but only 13% of that population is fit for actual employment in multinational corporations which are roughly 3 million population (Auer, 2006). Companies usually consider labour cost reductions with comparable labour performance since there is little advantage to cost savings at the expense of quality (Berry, 2005). Obstacles preventing employment of this vast population include language and cultural barriers, poor education standards and lack of regional mobility (Auer, 2006). English language skills and cultural affinities have enabled countries like Ireland, Philippines, and even India to attract significant offshoring investments (Berry, 2005). At the same time some companies’ backshore from offshore locations due to unsatisfactory language skills and cultural distances (Kinkel, 2012). The issue of language in cases could perhaps be a bigger problem for European companies such as German and Swedish ones than Americans as their first language is not English.

Shortage of qualified workers is also an important barrier to reshoring (Wiesmann et al. 2017). Labour availability is especially an obstacle in manufacturing backshoring (Kinkel, 2012, 2014; Ashby, 2016). Furthermore, many European companies are increasingly experiencing difficulties with recruitment and availability of qualified workforce (Mikael et al. 2008). The average manufacturing employee earns over 77,000 dollars in the US which is 20% higher than other industry earners and still many companies are willing to pay even more to recruit and retain workers due to labour availability issues (Deloitte, 2015). The US labour department has estimated a shortage of 28 million employees in the job market by 2020 which is to a large degree the implication of baby boomer’s retirement in the United States (Oshri et al. 2015). Many US workers with technical and mechanical skills are retiring, and skill gap in manufacturing is expected to worsen (Diesing, 2012; Deloitte 2015). Interestingly, it has been argued that the average age of skilled manufacturing worker in the US be about 56 years old (Diesing, 2012). However, it is also important to question how this study was carried out and under what evaluations and parameters workers were considered as a
skilled worker. Especially that official statistics show the average age of manufacturing workers in the US not to be that high and occurrence of less trustworthy estimations about a variety of issues with labour market appears to be quite frequent in the literature. According to a study conducted in 2011 by Deloitte and manufacturing Institute 600,000 manufacturing jobs that requires technical skills are unfilled in the united states, however, according to BCG this number is about 100,000 and therefore the skill gap should not be as bad as some might suggest, but the definition of skilled worker is different between the two studies which create such considerable inconsistencies (Diesing, 2012). It is also important to note that a significant number of engineering graduates in the United States receive employment in non-engineering fields while some people without engineering degrees hold engineering positions (NAE, 2008). Moreover, it should also be considered that not every engineering work requires licensing to practice and nevertheless it is generally difficult to gather detailed data in the engineering field (NAE, 2008).

Companies that relocate to take advantage of low-cost, low-skilled workers of developing countries usually do not make efforts in training their employees since their main interest is primarily the low labour cost to produce more basic items (Daub, 2009). For instance, we might see many companies do not invest in training their employees in Mexico or China. Moreover, employee turnover rate in Mexico is over 10% and in China over 20%. While US employee turnover is only 3.6% (BLS, 2017). Such high turnover rates in the developing countries could be translated as high transaction costs and further pose considerable risk to invest in employee training. Especially that turnover rates are usually higher among those skilled employees that are in high demands such as R&D workers. Companies that seek to backshore may decide to promote this decision by increasing training efforts (Dachs and Zanker, 2015). It is assumed that backshoring jobs are usually the type of employment that require technical skills (De Backer et al. 2016). Kinkel (2012) argues that the comparative advantage of high wage and developed countries could largely depend on its highly qualified workforce that can utilise and optimise capital-intensive production machinery. However, Chinese labour market do have large number of qualified labour to use advanced machineries too. Anyhow, in such capital intensive working environment that is currently struggling with the shortage of skilled workers, companies might be forced to consider hiring people with lower skill profiles and train them to utilise the production machinery. However, recruiting less qualified labour requires long-term trainings that takes both time and capital to prepare the employee to deliver the expected workload and that is a great risk many companies are unwilling to take since there isn’t a guarantee that the employee would remain with the company which consequently negatively affects backshoring decisions as well (Hartman et al. 2017).

Another important factor to be considered is labour productivity. Labour productivity could be defined as the amount of goods or services that a worker generates over a given amount of time (Kumar et al. 2013). US manufacturing labours have higher productivity levels in comparison to labours in developing countries (Berry, 2005). Pearce (2014)
believes Chinese productivity levels are in a sharp decline in comparison to the American workers. Therefore, it is suggested that further labour productivity improvements in the US could be a major factor in making reshoring more feasible (Tate et al. 2014). However, it is important to note that offshoring and outsourcing is also a way to boost labour productivity since the company can retain quality workers and concentrate them on critical and essential tasks (Berry, 2005). In fact, it is estimated that 10% of US productivity growth from 1992 to 2000 is attributed to offshoring (NAE, 2008). Therefore, in some cases, negative implications on productivity levels could perhaps be possible with reshoring. Moreover, Chinese productivity levels are also increasing substantially (BCG, 2011; Zhang, 2012; Moutray and Swift, 2013) which can partially offset the rising labour costs as well as to help compete with countries like Vietnam that offers significantly lower labour costs than China (Zhang, 2012). Wiesmann et al. (2017) argue productivity and higher work morale of employees from developed countries can reduce both direct and indirect associated costs of manufacturing and thus assert it as an important reshoring motivating factor. Yet, it is important to keep in mind that with consideration of compensation costs one Swedish manufacturing employee productivity is against having the prospects to hire probably 8 Mexican or 22 Filipino. Knowing that manufacturing compensation costs in Sweden amounts to over 49 dollars per hour while in a country like Mexico it is only about 6 dollars and 2 dollars in Philippine (BLS, 2012). Therefore, although productivity levels in developed countries can be important in some settings, still it may also be unwise to generalise the factor and extend it across different industries and businesses.

Loss of innovation mainly innovation potential and intellectual properties have been discussed in several studies (Fratocchi et al. 2015; Hartman et al. 2017) but also concerns regarding loss of innovation from factory floors when offshoring. Additionally, separation of R&D (Dachs and Zanker 2015; Heikkilä et al. 2017) and the strains distance may have on innovation (Ceci and Prencipe, 2013) has created some considerable debates. Innovation and innovative behaviour of employees are closely connected but has not received the attention of reshoring scholars, and therefore sufficient discussions in this area do not exist. Interestingly a research conducted by Eriksson et al. (2014) suggests that organisational culture of R&D organisations located in China hinders transmission of knowledge that is normally supposed to be observed by labour mobility and consequently this has affected labour innovative behaviour of employees negatively.

Another factor that we see in the literature is labour policy. Workers in developing countries are left largely unprotected by law. In many cases, even the basic worker safety measures are being ignored, and the lax labour laws of such countries have played a role in motivating companies to relocate their activities abroad (Hutzel and Lippert, 2014). The collapse of garment factories in Bangladesh that resulted in the death of over a thousand people illustrates how severe working conditions are and how workers are being abused in many working environments of developing countries (Ashby, 2016). Unethical exploitation of employees especially use of child labour and suicide reports in recent years
have forced companies such as IKEA and Apple to reconsider their sourcing and purchasing strategies entirely (Johnsen et al. 2014). Grappi et al. (2015) argue ceasing to exploit labour in developing countries and considering corporate social responsibilities and deciding to reshore can lead to strengthening the firm image and positive consumer reactions. Nonetheless, very few companies consider ethical issues and procurement sustainability (Johnsen et al. 2014). On the other hand, some found it important to mention that strong employment protection laws in some of the developed countries may have diminished willingness of companies to recruit people as it is costly to layoff and therefore businesses can become stuck in old ways of manufacturing due to the inadequate restructuring and organizational change (Stentoft et al. 2016a). To offer a solution Stentoft et al. (2016a) recommend reshoring can be encouraged if countries consider implementing flexicurity policies which are intended to simultaneously enhance security in the labour market and enabling companies to hire and fire easily. Lastly, labour market inflexibilities create considerable difficulties for companies to adjust labour costs, according to demand (Wiesmann et al. 2017). Even though labour policy can be important for businesses, but implications of labour policy on reshoring is rather blurry and difficult to be considered as an important reshoring motivation yet. More research is required to justify the significance of this issue and to explore different dimensions of the proposed factor. More importantly, considering the absence of adequate findings it seems rather premature to suggest productivity levels of developed countries plays crucial role in motivating companies to reshore. Likewise, it is also difficult to draw a conclusive conclusion on significance of other issues such as labour cost and labour availability especially due to the considerable inconsistencies and contradictory results of available researches and complexity of the issue in hand.
<table>
<thead>
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<th>Factors</th>
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<td>Labour cost</td>
<td>Kinkel (2012); Ellram et al. (2013); Bailey and De Propris (2014); Margulescu and Margulescu (2014); Van den Bossche et al. (2014); Dachs and Zanker (2015); De Backer et al. (2016); Mlody (2016); Srai and Ané (2016); Uluskan et al. (2016)</td>
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<td>Labour wage</td>
<td>Kinkel (2012); Bailey and De Propris (2014); Margulescu and Margulescu (2014); Rice and Stefanelli (2015); De Backer et al. (2016); Foerstl et al. (2016); Mlody (2016); Zhai et al. (2016); Fel and Griette (2017)</td>
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<tr>
<td>Labour productivity</td>
<td>Ellram et al. (2013); Tate et al. (2014); Ancarani et al. (2015); De Backer et al. (2016); Mlody (2016); Zhai et al. (2016); Wiesmann et al. (2017)</td>
</tr>
<tr>
<td>Labour availability</td>
<td>Ellram et al. (2013); Bailey and De Propris (2014); Van den Bossche et al. (2014); Kinkel (2014); Margulescu and Margulescu (2014); Ashby (2016); Mlody (2016); Srai and Ané (2016); Uluskan et al. (2016); Vanchan et al. (2017)</td>
</tr>
<tr>
<td>Labour shortage</td>
<td>Tate et al. (2014); Dachs and Zanker (2015); Fratocchi et al. (2015); Oshri et al. (2015); Wiesmann et al. (2017)</td>
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<tr>
<td>Skill gap</td>
<td>Diesing (2012); Bailey and De Propris (2014); Van den Bossche et al. (2014); Rice and Stefanelli (2015); Mlody (2016); Lacity et al. (2016)</td>
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<tr>
<td>Training</td>
<td>Dachs and Zanker (2015); Hartman et al. (2017)</td>
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<td>Labour quality</td>
<td>Mlody (2016); Srai and Ané (2016)</td>
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<td>Employee turnover</td>
<td>Kinkel (2012); Margulescu and Margulescu (2014); Rice and Stefanelli (2015); Srai and Ané (2016); Hartman et al. (2017); Wiesmann et al. (2017)</td>
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<td>Labour retirement</td>
<td>Diesing (2012); Van den Bossche et al. (2014); Oshri et al. (2015)</td>
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<tr>
<td>Labour policy</td>
<td>Margulescu and Margulescu (2014); Foerstl et al. (2016); Mlody (2016); Stentoft et al. (2016a); Wiesmann et al. (2017)</td>
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<tr>
<td>Employee morale</td>
<td>Raiborn et al. (2009); Brown (2014); Raghuram (2016); Lam and Khar (2016); Fjellström et al. (2017); Wiesmann et al. (2017)</td>
</tr>
<tr>
<td>Employee innovative behavior</td>
<td>Ceci and Prencipe (2013); Eriksson et al. (2014)</td>
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Table 1: Labour drivers and barriers in reshoring
2.4.2 Automation

Advances in technology and increased use of automation has been argued to play major role in keeping companies from offshoring to foreign locations and even reshoring activities back to home (Arlbjørn and Mikkelsen, 2014; De Backer et al. 2016). Production in western countries has become more viable due to the increased use of automation (An caricani et al. 2015). Access to technology has also been an important reshoring driver for companies in Denmark, Finland, and Sweden (Heikkilä et al. 2017). Automation and robotisation have enabled firms to operate with lower or even without human intervention, and that is driving many companies to re-evaluate location decisions from manufacturing and supply perspective (Tate and Bals, 2017). Automation in developed countries is presumed to be deteriorating the comparative advantage enjoyed by the low-wage countries (Robinson and Hsieh, 2016). As the result of automation and efficiency gains, direct labour cost in many manufacturing firms of developed countries such as Germany accounts for only about 10% of the production output value (Brennan et al. 2015).

Automation in production could be defined as the use of electronic, mechanical, and computer-based systems in operating and controlling manufacturing (Säfsten et al. 2007). Automation changes the workforce composition by increasing the number of required engineers and decreasing the need for operators (NAE, 2008). Therefore, a major shift in task composition is expected to take place (NAE, 2008). Typically, number of employees would be expected to reduce substantially as the result of automation, but there are also cases that the overall number of employees remain unchanged (NAE, 2008; De Backer et al. 2016). Modern manufacturing systems are usually semi-automated (Säfsten et al. 2007). Frohm et al. (2008) argues automation varies in different levels and can be described as a continuum of full, partial, or no replacement of a task carried out previously by human operator and most tasks fall between manual and full automation and thus human and automation in manufacturing are usually in connection and complementary to each other. Highly automated production systems require a limited number of manual workers and could be a solution for companies operating in countries like Sweden to combat the high labour costs (Mikael et al. 2008; Zhai et al. 2016). Use of automation in Denmark has also shown to yield very positive outcomes that could further increase possibilities of reshoring to developed countries (Stentoft et al. 2016a). However, implementing more automation is not only limited to developed countries. The upsurge in labour costs, shortage of skilled workforce and the high labour turnover has persuaded many companies in China to gradually improve their manufacturing system with increasing automation levels (Zhang, 2012). In fact, China is the world largest robot market now, and sales of robots in China has surpassed Europe total sales volume (IFR, 2016).

Investment in automation could help companies in handling the challenge of low availability of the workforce and recruitment problems that businesses are currently
struggling with (Mikael et al. 2008). Moreover, automation can promote quality, increase profit, increase throughput, and enhance safety in the workplace (Manyika et al. 2017). Automation also enables companies to considerably reduce waste and lower overhead costs (Webster, 1999). Automation is viewed as one of the key solutions to improve manufacturing efficiency (Winroth et al. 2006). Machines outperform humans on many capabilities (Manyika et al. 2017). Human bodies are limited in range and speed, fragile and prone to fatigue, but automated machines can work nonstop and steadily with high precision, speed, and accuracy (Ross, 2016). Computers have also greatly facilitated route optimisation for logistic companies (Manyika et al. 2017). As another example, electronic revenue billing and automatic invoice generation have helped many businesses cash flow, and client satisfaction increase as the result of issuing invoices quickly and free of errors (Bravard and Morgan, 2006).

Industry characteristics are important to be considered when studying reshoring. Reshoring drivers and outcomes are likely to be influenced by the technological intensity of an industry which can explain the reason that some industries are strongly affected by the drivers of asset specificity and transformed significantly but some industries are not impacted at all (Foerstl et al. 2016). Automation is often uneven across industries, for example, Automotive, Pharmaceutical and Electronics are typically more adaptive to technology. Low-technology sectors have the lowest share in backshoring, and it is more frequent in high-technology sectors to backshore (Dachs and Zanker, 2015). However, Fratocchi et al. (2015) did not find a difference in backshoring occurrence between labour and capital-intensive industries. The size of the firm could also play a role in choosing higher degrees of automation. Larger firms usually may evaluate the possibilities of automation when considering a reshoring decision, but small companies are unlikely to pursue such strategies (Arlbjørn and Mikkelsen, 2014). Countries with higher manufacturing salaries are also expected to adopt manufacturing automation faster than the low wage countries (Manyika et al. 2017).

Competition and customer demands in many sectors have required companies to offer higher degrees of flexibility, low cost, and low volume manufacturing with short time deliveries (Mikael et al. 2008). In fact, we are experiencing a shift from economies of scale model to the economies of scope model with producing smaller quantities but a wider range of products (Christopher, 2016). An important obstacle to use of automation is that it may not be suitable especially to produce products with very short life cycle and manufacturing a vast variety of goods in small volumes (Winroth et al. 2006). It is also worth to mention that automation is not always the only solution. For example, in cases, companies invested heavily in automation to reduce throughput times, and speed was dramatically improved, but the product had to sit in the warehouses for weeks to be sold, it is important to consider the supply chain structure and see how time as a whole can be managed (Christopher, 2016). Companies should also put efforts in preparing the organisation to accept automation and adapt to transition when introducing new
manufacturing process. Accordingly handling resistance to can become an important issue on the top of others (Manyika et al. 2017).

Manufacturing strategy should consider various interlinked issues when choosing a degree of automation (Säfsten et al. 2007). Under and over automation can negatively affect the manufacturing performance (Säfsten et al. 2007; Frohm et al. 2008). In many cases, heavily automated companies were faced with a situation called monumental automation, which means production has become too rigid and vulnerable to change as the result of automation (Hedelind and Jackson, 2008). Poor system performance could be followed by implementing excessive levels of automation or production could experience overall equipment efficiency degradation (OEE) after implementing complex manufacturing systems (Frohm et al. 2008). Complex machines can disturb manufacturing due to the rigidness and limited transparency (Jackson et al. 2011).

Similarly, an important drawback associated with the fully automated system could also be that such systems demand very high investments and are vulnerable to unpredicted situations (Säfsten et al. 2007). Consequently, in some cases, companies were forced to remove automation to become more flexible and robust. Hedelind and Jackson (2008) argued many Swedish businesses consider automation and industrial robotic unfit in a lean manufacturing system as they believe the production system becomes inflexible and rigid with higher use of automation. In some cases, companies may not have much confidence in operating robotic systems. For example, relying on external experts to handle daily operations or introducing new products, and fixing minor issues can create discomfort for management (Hedelind and Jackson, 2008). Robots are also imperfect and can be seen dropping components or being unable to pick up goods (Hedelind and Jackson, 2008).

Companies may also experience several other important difficulties in the use of automation such as adapting the product to automatic manufacturing, lack of competence and issues with having a large number of product variants (Mikael et al. 2008). Moreover, SMEs do not have sufficient resources usually to install highly automated manufacturing systems (Arlbjørn and Mikkelsen, 2014). Investment in industrial robotics for SMEs has proven to be difficult not only because it is expensive but also because it requires expertise and experience (Hedelind and Jackson, 2008). Robot automation is in most cases too technically advanced for SMEs, and they need manufacturing systems which can provide high efficiency with high adaptability and flexibility (Mikael et al. 2008). Implementing a machine designed solely to serve a predicted future demand could also be a too risky investment (Harris and Harris, 2008). SMEs need machines that can be reconfigured for different functions and producing future product variants (Mikael et al. 2008). Improving ease of use and better system solutions can potentially lead to a situation where industrial robotics could become a commodity in all kinds of organisations and manufacturing systems (Hedelind and Jackson, 2008).
Overtime automation costs are expected to decline while safer, more flexible, and advanced robots could become available (Manyika et al. 2017). We are experiencing an ongoing trend towards automation and a significant rise in demand for industrial robots in the world (IFR, 2016). Governments may support companies in relocating to developed countries by providing incentives for automatic manufacturing processes that can support companies in reducing the total cost gap between the locations (Ancarani et al. 2015; Zhai et al. 2016). Some argue that automation can help retain jobs as it keeps the manufacturing from going to offshore locations (Arlbjørn and Mikkelsen 2014; De Backer et al. 2016). Some also suggest that automation is supporting reshoring which consequently is expected to create jobs. These statements might be true to some extent, but labour-intensive industries in developed countries are usually more automated, and reshoring only leads to a limited employment of people with mostly high skilled technical profiles. Thus significant job creation from reshoring is not supported (Tate, 2014; De Backer et al. 2016). Automation itself can also lead to increasing unemployment rates. It is feared that automation can cause a rapid transition to the economy with drastic impacts on the labour market. Frey and Osborne (2013) estimate 47% of total US employment to be at risk of computerisation in the future. Another study suggests roughly 50% of world work activities could be automated by around 2055 (Manyika et al. 2017). Even though automation and robotics have significant potentials in the future of manufacturing, but it is too early to evaluate and forecast magnitudes of their impacts accurately (Brennan et al. 2015). However, it might be true that some jobs are susceptible to automation and can be lost, but labours can also be trained and redeployed for other purposes especially where interpersonal interactions are significant (David, 2015). Anyhow, it appears unpractical to foresee the future for many years ahead but what is seen today is the growing arguments for robot taxations and universal basic income.

Literature discussing automation in reshoring is scarce, and often authors only mention it briefly as a reshoring driver, a strong tool that is assumed to conclusively combat the issues related with labour, promote quality, and increase productivity. Authors in this regard usually speak about increasing the degree of automation and mostly do not provide discussions for the importance of automation advancement and automation strategy or the drawbacks and difficulties associated with automation and automating the processes. Furthermore, reshoring literature usually ignores the fact that automation could also be realized in offshore locations and possibly some of the intended results be attained there. Especially that we know china is the world largest robot market now and productivity of Chinese manufacturing is increasing substantially. However, BCG (2011) argues based on some rudimentary calculations that the total cost advantages of china over the US are unlikely to increase significantly as the result of automation in china. Anyhow, literature views automation as a driver for reshoring and does not view it negatively only to suggest that in cases it can be costly but confidently suggesting that productivity levels and quality improvements shall follow and thus repay the incurred considerable amounts of investment and costs which is not always the case.
Regarding the state of published papers mentioning automation in reshoring. Wiesmann et al. (2017) mentions automation as a noteworthy reshoring driver and argues that increased degree of automation decreases the significance of labour cost and makes producing in high-cost environment viable while referring to Arlbjørn and Mikkelsen (2014) as well as Bailey and De Propris (2014) to support automation argument. Bailey and De Propris (2014) study discusses automotive industry in the UK and does not provide discussions for automation and robotization. Arlbjørn and Mikkelsen (2014) on the other hand offers empirical results from a questionnaire survey conducted among Danish manufacturers and claims that among other factors automation has been a driving force for the decision of these companies to insource to Denmark. Some issues with this study are important to be mentioned. First, we do not see much methodological information in this two-page study. Second, we do not know how many companies named automation as a motive and how strongly automation was associated with their decision. Third, this study is limited to manufacturers in Denmark. Tate et al. (2014) also provides survey responses but not from manufacturers that have reshored or have the intention of it but managers from the US that have experience mostly in the offshore location decision. Tate et al. (2014) study leaves automation at the bottom of not the key factor table of the study but the second least important table. In there, only briefly argues that labour costs are probably a decreasing factor in production because of automation and since low-cost labour is a main advantage of offshoring to developing countries thus we might find it worthwhile to reanalyse the situation. This list and table are basically designed to illustrate the factors we can consider when making a reshoring location decision and is not evidence that shows automation is driving or has driven companies to reshore.

Robinson and Hsieh (2016) mentions in their paper that comparative advantage enjoyed by the low-wage countries is eroded gradually because of developments in automation and cites Kinkel (2014) but Kinkel does provide any discussion for automation in his study. De Backer et al. (2016) argues that because OECD (2015) has found a negative link between automation and offshoring, then automation should favour reshoring. Finding a negative link to offshoring does not necessarily provide a rationale for reshoring and cannot be translated as a reason for companies to consider reshoring. Tate and Bals (2017) explain very briefly that robotisation and automation enable companies to use a lower number of employees or operate even without the need of human interventions in developed countries. Therefore it is driving companies to re-evaluate shoring decision and refers to OECD (2016). OECD (2016) speculates that technological changes can contribute to creating a shift in the global value chain and reshoring can become attractive for companies since technology diminishes the labour cost advantages of developing countries. Stentoft et al. (2016a) study discuss that for a single Danish company automation, and flexicurity played a role in moving some production from various locations to Denmark but also mentions that the Chinese manufacturing site of this company outperformed manufacturing in Denmark with cost-effectiveness due to the low wages. This study also doesn’t provide sufficient evidence for automation and reshoring
from developing countries. Many of the studies that we discussed are currently among the important studies that address automation in reshoring.

<table>
<thead>
<tr>
<th>Factors</th>
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<td>Increased automation</td>
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<td>Automation advancement</td>
<td>De Backer et al. (2016); Zhai et al. (2016)</td>
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<td>Automation cost</td>
<td>Arlbjørn and Mikkelsen (2014); Margulescu and Margulescu (2014); Zhai et al. (2016)</td>
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<td>Competency to use automation</td>
<td>Mikael et al. (2008); Frohm et al. (2008); Hedelind and Jackson (2008); Kinkel (2012)</td>
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<td>Automation flexibility</td>
<td>Winroth et al. (2006); Säfsten et al. (2007); Hedelind and Jackson (2008); Mikael et al. (2008); Frohm et al. (2008); Jackson et al. (2011)</td>
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Table 2: Automation drivers and barriers in reshoring
3. Methodology

In this chapter, we will illustrate our research approach and explain the data collection and analysis procedures that we carried out in writing this paper as well as the research quality considerations.

3.1 Research approach

We adopted a qualitative research approach (multiple-case study). We found a qualitative research design appropriate for this research because qualitative approach can especially be useful to study a phenomenon that we know little about (Algozzine and Hancock, 2006). Quantitative studies, on the other hand, are typically useful in investigating the impact of a limited number of variables while a qualitative study enables the exploration of many factors that could play a role in influencing a situation (Algozzine and Hancock, 2006). Considering the purpose of this study and research question and scarcity of previous academic publications in reshoring, we chose to have an in-depth investigation to explore the subject in hand. Five primary qualitative approaches are narrative, phenomenological, grounded theory, case study and ethnographic approach. The case study can be an ideal methodology for having a holistic and in-depth investigations (Tellis, 1997; Algozzine and Hancock, 2006). Also, a case study is particularly preferred in studying a contemporary phenomenon (Yin 1994).

Case study research is a form of qualitative approach in which researcher explores a bounded system or several cases over time and through a detailed and in-depth collection of data using multiple information sources (Creswell, 2007). Single case study and multiple case study are the two types of case studies. Single cases can be useful in confirming or challenging a theory or showing a unique case while multiple cases allow a replication logic (Tellis, 1997). Both come with their unique characteristics and applicability as well as limitations. We are choosing to investigate several companies which means this research would be a multiple case study. Case study research designs could also be differentiated into some specific types as Yin (1994) suggests case studies can be exploratory, explanatory, and descriptive while Stake (1995) differentiates them into intrinsic, instrumental, and collective.

A case study could take use of qualitative or quantitative data or even both, but often it involves some form of field-based data collection (Yin, 2011). Various sources of evidence that could be used in a case study data collection consist of interviews, direct observation, archival records, participant observation, physical artefacts, and documentation (Yin, 1994). In our study interviews are the most relevant source of information. Interviews could be divided into structured, semi-structured and
unstructured. For case studies, semi-structured interviews are very well suited (Algozzine and Hancock, 2006). Semi-structured interviews enable participants to express themselves freely and provides researchers with the ability to yield an in-depth insight about the matter under investigation. Thus, we decided to have semi-structured interviews as our data collection method. A limitation to interviews could be that interviews are essentially interpretations created between interviewer and interviewee and not exactly an accurate reflection of the situation (Briggs, 1986). Creswell (2007) suggests including 4 to 5 case studies in a single research and not more. Eisenhardt (1989), as well as Stake (2006) on the other hand, suggests having 4 to 10 cases. However, it is not unusual to see many researchers go much beyond these numbers and find it an adequate justification to simply argue that there is no general rule in case studies regarding the number of cases and then continuing to argue that it is a matter of choice. However, authors in these instances usually do not provide further elaboration on the reasons behind having a larger number of cases. Although having a great many numbers of cases does not necessarily lead to the creation of a better research or producing stronger results and that it could very well create several complications for a case study research. However, many studies do have good reasons to have less than 4 or more than 15 cases as well (Stake, 2006). In writing this research initially, we decided to include 5 to 10 cases. We contacted 30 active companies via email and phone calls. Out of these 30 companies, 6 gave a positive reply. The remaining companies either could not participate or did not respond even after contacting them again.

A significant step in conducting an interview for our study was to have a purposeful sampling strategy and to identify and get access to participants whose knowledge and opinions could provide us with valuable insights about our research questions (Algozzine and Hancock, 2006; Creswell, 2007). Selection of cases has been made on the basis that would not be limited by the type or size of the industry that the companies operate in. We reached out to companies with different sizes, profiles and from different countries. We were not focused on collecting data from a specific region and level of development, as we wanted to get a broader perspective on how significant labour and automation are overall, not just in a specific environment. This kind of multi-background approach would allow us to make a more comprehensive study of the matter. Our main criteria in choosing and contacting the companies were for them to have had the experience of reshoring or having the intention of it. As in regards of reshoring, depending on the industry, there may be differences in the degree of how much labour and automation were involved in their decision to reshore. The search for the potential businesses that could suit our criteria was done from several sources. The first one being a contact list of companies which are involved in the reshoring research project with our university. This list was provided to us by our thesis supervisor. The second source was an online search of businesses which have or had operations abroad. Moreover, the last source was business connections from our professional backgrounds. Especially, a number of the companies that were reached
to and interviewed came as contacts from one of our previous experience of working with the companies as CE marking quality auditor. CE marking is a mark of conformity of the EEA (European Economic Area) with its health, safety, and environmental protection standards related to products sold within the area. The products have to conform to the standards whether they are produced within the EEA or outside in order to be sold in the EEA (Growth, 2017). The companies in question are companies three, four and five. These companies although from different countries and sectors were specifically targeted for contact, because of their hands-on knowledge that they have dealt with reshoring and automation and could provide valuable data towards the research.

3.2 Data collection

Interviews are the very usual type of data collection in conducting a case study research which allows attaining rich and personalised information. (Algozzine and Hancock, 2006). We developed our interview guide based on open-ended questions and avoided directing the participant's answers or asking multiple part questions (Algozzine and Hancock, 2006). We shortened our interview guide after creating the first draft, so it would cover the fundamental questions and yield what is important instead of bombarding the interviewee with questions. Keeping in mind that a good interviewer should be a good listener and not a frequent speaker (Creswell, 2007). Interviews were conducted in quiet and comfortable settings and we audio recorded when possible, but some of our interviewees preferred not to be audio recorded during interviews, so we took notes instead. We also believe taking notes instead of audio recording can persuade participants in sharing more detailed and sensitive information. At the beginning of every interview we provided informed consent to the interviewees and acknowledged their right to avoid answering questions or withdrawing from the interview and that we are obliged to protect their anonymity and confidentiality of the obtained information. Interviews were conducted in English, Russian, Bulgarian, Turkish, and Persian, therefore, accurate translation to English was necessary. To make sure that our translation was correct we sent the script to interviewees for confirmation when they could speak English and in other times we double checked with another native speaker of that language who had a good command of English. To familiarise ourselves with the case and obtain relevant information, we checked company’s web page and gathered as many preliminary data before conducting the interviews.
The table below depicts an overview of the conducted interviews:

<table>
<thead>
<tr>
<th>Company</th>
<th>Name</th>
<th>Country</th>
<th>Position</th>
<th>Type</th>
<th>Time</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company 1</td>
<td>M 1</td>
<td>Sweden</td>
<td>Supply Chain Analyst</td>
<td>Video call</td>
<td>45 min</td>
<td>05.08.2017</td>
</tr>
<tr>
<td>Company 2</td>
<td>M 2</td>
<td>Sweden</td>
<td>Deputy CEO</td>
<td>Face-to-face</td>
<td>80 min</td>
<td>01.09.2017</td>
</tr>
<tr>
<td>Company 3</td>
<td>M 3</td>
<td>Bulgaria</td>
<td>Quality Manager</td>
<td>Face-to-face</td>
<td>70 min</td>
<td>15.07.2017</td>
</tr>
<tr>
<td>Company 4</td>
<td>M 4</td>
<td>Russia</td>
<td>Logistics Director</td>
<td>Video call</td>
<td>50 min</td>
<td>10.08.2017</td>
</tr>
<tr>
<td>Company 5</td>
<td>M 5</td>
<td>Turkey</td>
<td>Logistics Manager</td>
<td>Face-to-face</td>
<td>90 min</td>
<td>25.07.2017</td>
</tr>
<tr>
<td>Company 6</td>
<td>M 6</td>
<td>Confidential</td>
<td>Supply Chain Manager</td>
<td>Audio call</td>
<td>90 min</td>
<td>30.07.2017</td>
</tr>
</tbody>
</table>

Table 3: Interviews

The questions for the interviews were divided into categories that would help us get a fuller understanding of the reshoring process and its aspects regarding labour and automation. These categories, in turn, will help us better analyse the collected data. The categories of questions are as follows:

1. Offshoring
2. Reshoring
3. Labour
4. Automation

We start with questions about offshoring in order to understand the initial reason why the companies decided to adopt offshore sourcing strategies. With the second question theme being reshoring, we wanted to know what has changed and provoked the companies to reshape. The third theme being labour, we wanted to see if labour had an impact on their decision and if after the process of reshoring it brought any improvements or complications. The last questions concerned automation, with these questions we tried to learn how automation is involved in the decision-making process for reshoring and how it connects with labour. At the end of the interview, we asked the participants to voice their own opinions about the positions of labour and automation within reshoring and whether they would have done something differently in the implementation of the reshoring process considering their gained knowledge after the process.

The information provided to us by the interviewees was transcribed and translated from the recordings or the notes after the interviews. This method of recording and transcribing proved to be beneficial, as it allows for a re-examination of the collected information from the respondents, which helped to get a better understanding of their answers as mentioned by Bryman & Bell (2015). The method is also advantageous from the point of the
interviewers being able to concentrate more on the discussion with the interviewee. In cases where the recording was not possible, the interviewers divided the roles of listening and transcribing the interview in order to achieve a similar consistency of data collection as with the recordings. After the information processed, the transcripts of the interviews were sent back to the participants in the interviews for them to confirm that everything they said was not out of context or changed in any way. This was done to ensure trustworthiness and quality of the obtained information. The next step for the authors was to go through the collected materials several times before the final analysis, due to the importance of the proper processing of the collected material (Patel and Davidson, 2011).

3.3 Data analysis

In the analysis stage of a qualitative research project collected data shall be stored, categorised, named, and connected and all these activities involve interpretations (Boeije, 2010). Creswell (2007) explains that qualitative data analysis includes organising the data and reducing it into themes through coding and condensing the codes to represent the data in tables, figures, or discussion. However, analysis of the collected data is one of the most challenging and least developed aspects of conducting a case study research (Yin, 1994). Analyzing in a case study research in contrast with quantitative research is an ongoing process which takes place simultaneously as the research proceeds and researcher collects the data and not an activity which is done right after concluding the data collection phase (Farquhar, 2012). A case study is either holistic that is to have a single unit of analysis or is embedded which refers to having multiple units of analysis (Creswell, 2007). Holistic designs seek to study the global nature of the research phenomenon and would include no subunits while an embedded design covers several units of analysis and study can have main and smaller units (Yin, 1994).

Different experts in the field of case study have recommendations on how to approach this stage and how to analyse the data in systematic and meaningful ways, but their recommendations differ and have not used exact similar names to describe the proposed strategies. For example, Yin (2014) suggests that one of the means to approach case study analysis is to develop your own strategy through looking for patterns, concepts or insights that could be promising and called it “Play” with your data. He then recommends four general strategy that includes working your data from the ground up, developing a case description, examining plausible rival explanations, and relying on theoretical propositions. Algozzine and Hancock (2006) also name some strategies such as thematic analysis, narrative analysis, and categorical analysis to identify and report case study findings. Farquhar (2012) in this matter explains that the case study analysis is mainly influenced by research style and when it is a deductive approach researcher should use the theories developed in the conceptual framework, i.e. theory testing and create codes from the theories (sometimes called prior codes or prior technique). When it is an inductive analysis, then analysis should be concerned with generating theory and has links
to grounded theory. Furthermore, techniques to analyse case study evidence is not well defined (Yin 2014). Five analytical techniques used in case study analysis includes Pattern matching, explanation building, logic models, time series analysis and cross-case synthesis (Yin 2014). Pattern matching is one the favoured strategies in case study analysis which involves comparing empirically based pattern with a predicted one (Tellis, 1997). In the case when patterns match, it will also result in strengthening the internal reliability of the research (Tellis, 1997). Explanation building strategy is especially beneficial for explanatory case studies (Tellis, 1997).

We opted for the creation of themes through our understandings of the literature, empirical findings and consideration of our purpose and study question. During the categorisation, we condensed the information and made it more focused and in line with the themes, so that similarities, connections, discrepancies and contradictions could be more easily identified within the collected data. Doing this enabled us to be able to draw a more precise and comprehensive analysis. Likewise, we took use of the two theories that we discussed previously, resource based-view and transaction cost economics in analysing our findings.

3.4 Research quality

Addressing quality matters appropriately are a central part of conducting any research. Especially considerations should be dedicated to the study external validity, reliability, construct validity and internal validity (Tellis, 1997). The quality criteria developed by Lincoln and Guba (1985) has been valuable to our study quality considerations. Lack of rigour in qualitative data analysis is a frequent criticism of such study, but this limitation could largely be attributed to the researcher’s failure to develop required protocols and to provide a detailed account of their analysis (Tellis, 1997; Farquhar 2012). Important to note that rigour in this study should not necessarily be viewed and compared similarly to a quantitative approach (Halldorsson and Aastrup, 2013). Some of the relevant issues have already been discussed in data collection and analysis. Conducting a multiple case study allows cross-case analysis and possible replications and therefore aiding external validity. External validity could also be attained through building a theoretical relationship (Yin, 1994). Moreover, we used multiple sources of information such as interviews and documents which is a way to enhance construct validity (Yin, 1994). As suggested by Algozzine and Hancock (2006) we also confirmed our findings through sharing the findings with those who were examined in this study and in addition to that we also asked a colleague to thoroughly review and critique our study procedures and findings to find discrepancies that could affect the credibility of this work. We also received highly valuable feedbacks from our supervisor. Finally, we asked other experts to review our study to receive additional feedbacks on the meaningfulness and accuracy of the work.
4. Findings

In this chapter, we will illustrate our empirical findings from interviews as well as reviews of relevant documentations of companies. 6 cases in total are included in this chapter.

4.1 Company 1

This is an SME established in the late 90s in Sweden mainly active in developing and providing business software solutions (ERP) as well as offering consultancies. The company has several offices around the world and operates with 150 employees in Sweden. Majority of the workers have been with the company for many years. There are some new recruitments some of which are temporary and only employed to finish certain projects. They have considerable investments in developing software as their nature of business demands.

The company does not plan to have much offshoring now, but they had their customer support offshore to India before and as the respondent explained customers frequently complained that they could not communicate well enough with their employees in India. Therefore, the company had to reshore mainly because of that. However, the company still has offices around the world to work around clocks and provide services to their customers.

The company has some temporary recruitments for developing software but also some permanents in customer support and consultancies. The respondent expressed that the company does not think that they have problems with labour availability in Sweden or even abroad. The respondent also noted that they do not consider reshoring operations because of labour costs. The interviewee explained that company needs to maintain its presence in different regions and that they do not have many employees in those offices. The interviewee also explained that the company does not think that there is really a big skill or productivity difference between employees of their company working in Sweden and other regions that they operate in. The Company provides training but not very comprehensive and long-term courses. Many of new employees start doing their actual tasks in a few days.

The respondent also mentioned that their software is not bug-free and creates a problem for customers sometimes, but in most cases, it is customers that do not know how to use the software, so they contact the company and ask how to do certain things. Many of customers do not have a professional background in using such software, and therefore it is not unusual for the customers to find it difficult and require assistance. Interviewee mentioned that automation certainly facilitates many things at the workplace and that
many of tasks even within their company can be automated and eliminated, but the importance of personal interactions would remain important and non-substitutable.

### 4.2 Company 2

This is an SME established in only a few years ago. Currently active in the home-appliances business. Having offshore outsourcing productions in China with their major market in the middle-east. Main items are the coffee maker, toaster, kettle, egg boiler and sandwich maker and not large items like refrigerators or washing machines. The company has the intention to reshore production of some specific items to Europe because some customers value country of origin and would pay higher to buy such items as noted by the respondent. This company has a few employees and operates with limited financial capabilities.

The company supplies its products from Chinese manufacturers and does not consider insourcing because they do not have the financial means nor the competencies to run a manufacturing business as it was explained by the respondent. The respondent then explained that they are good at marketing and sales and would do not want to spend their money or time on manufacturing. The respondent expressed that shortage of employees in China does not have a direct effect on this company. The interviewee then continued and said labour costs are increasing in China, but in overall it does not mean they would reshore everything because of that since it is still much cheaper to produce in China and that customers of their company do not want expensive items.

The respondent held this opinion, that home appliances are still a labour-intensive production, and it is still costly to produce in Europe even though automation has changed manufacturing to some extent. The respondent explained that automation systems are costly and that there is a higher cost of raw material, transportation, taxes and production in Sweden that makes producing in Europe more complicated.

### 4.3 Company 3

The company is of Bulgarian origin. It is one of the leaders in Europe for the production of packaging solutions for food items, electronic products and transportation. It employs 600 people and has a relatively high degree of automation. Currently, all the production facilities are located on the territory of Bulgaria; only the main raw materials are imported from China or Russia. The production was offshore in China until four years ago. With large orders, it outsources some of the products when needed. The company operates mainly in Europe and the surrounding non-EU states as Macedonia, Turkey, Ukraine, and Serbia. There are warehouses located around central hub locations in Europe. It has and operates its own transportation, which was acquired and put to motion in the last two years. Third-party logistics are still however involved when there are last-minute orders or emergencies.
The reason for offshoring for the company was that at the time it could not find the proper equipment for the production in Bulgaria and bring it from elsewhere would be expensive. Another reason was that the labour price in Bulgaria at the time of offshoring was not as low as in China. The total span of the offshoring operation in China was six years. The main offshored activities were the main production facilities, while the administrative operations remained headquartered in Bulgaria.

The reshoring operation for the company took place three years ago. The activities that have been restored from China were the main production plant and some of the raw material production activities. The reshoring process took their company a little over a year to finish.

Labour was one of the reasons for the company to reshore, due to the salary increase on the Chinese labour market, which has become higher than Bulgaria. Currently, the situation in the Bulgarian labour market is stagnant, and there is big choice of affordable low wage labour. The company managed to obtain savings from the reshoring, mainly through the cut downs on labour expenses. The responded confirmed that company did not have a major increase in regard to the quality and productivity, which are currently more reliant on the production machines which are automated, but communication has become easier to make, and this helped us with improving quality. Currently, the company is not thinking of increasing the qualification of existing workers, but maintaining we would like to maintain it with yearly checks. The company is sponsored to a degree from the government and the European Union for development of low industrialised regions in terms of providing jobs. The government provides for the safety and machine operations training for free because the authorities of Bulgaria and Europe sponsor them.

The current degree of automation in the company is quite high, the only thing that is done manually is to put the raw material into the machine, its packaging and the transportation. The investment to automate the production was quite high, the respondent could not say the specific figure but mentioned it was worth two full years of company earnings and a significant bank credit. One of the main difficulties was the time of the implementation because for the automation process to start the management had to lower the company’s normal production tempo, because of which some of the customers were not willing to wait and eventually went to the competitors. Another difficulty was that the machines were producing slightly different products from what they used to sell before and, so they needed to calm and prove to their customers that the quality was not inferior. With the help of automation compared to their production facility in China they reduced the number of employees by 20%, but they expanded their product range and production rates, so in the end, the company hired additional employees. The management has retained and brought to Bulgaria the main specialists that were used in China, but due to the expansion, they had to employ additional specialised labour to fit their needs.
Currently, the company is working on securing a grant from the EU to increase their automation levels; the grant is from the European - Horizons 2020 initiative.

During the interview conducted on 15 July 2017, M 3 stated:

“I would say that it depends on the company, whether to reshore or not. In our case, because we focus on the EU market, went through the process of automation and the labour wages were the same as in China, even lower in some instances, I would say that it was a good decision. As the respondent, however, I would not recommend reshoring to any company if it has not done the proper research first or weighted the pros and cons”.

“My thoughts are that automation certainly makes a great impact today in terms of quality and production, but we are still a long way from being able to replace human expertise and management. I would like to think that our company has found a balance point, where everybody is satisfied” (M 3 2017, pers. comm., 15 July).

4.4 Company 4

Being a small Russian company, it is a developer, manufacturer and supplier of automation systems for hazardous production facilities. One of the main activities is to provide companies in the oil and gas industry by automatic systems of fire protection and hazard control. The company has developed a hardware-software complex of technical means, which is designed for building fire alarm systems, monitoring, the permissible concentration of the gas environment and management of extinguishing systems of various types. At this moment the company employs only 50 people. The production facilities of the company are located in Russia. However, it had offshored until six years ago its fire protection and hazard control systems to China. A reshoring has taken place in the company because they wanted everything to be made in Russia. The company mainly operates in the Russian market for 25 years and works primarily with large government and private companies involved in the oil/gas, mining and seafaring industries. The company’s logistics are handled in-house, but the transportation is managed by the clients, due to the sensitivity of the products.

The reason why the company offshored is that they wanted to increase their product range with fire protection and hazard control products, but the cost of investment in Russia at the time was too high for them. That is why the company decided to offshore this production to China where they bought second-hand equipment to start their operation at a significantly lower price than in Russia. The total length of the company’s offshore operation was ten years. At the moment everything is produced in Russia for which the management of the company is very proud of, as we were told by the respondent.

The company restored the production of fire protection and hazard control systems six years ago. The process of reshoring took us six months, which is due to the small size of the company and the production equipment needed to do it. One major obstacle was to design a more efficient production facility.
When asked if they had any problems, the respondent said to us that there were not many major issues, but the company had some problems in China. The communication was one of the issues, which sometimes affected the quality or the correct ordering, where they would sometimes receive a product which did not meet the specifications of the client. Another reason was that the company wanted to contribute to its country and provide additional jobs for the local population in Russia. When asked about involvement with the government in regards to training or finding labour. Due to the nature of their production the company is using specialised third-party companies for scouting. The respondent told us that in Russia the labour market is in quite a good condition. Based on the respondent the country has many young specialists that are seeking opportunities in the company’s sector of work. In China, however, they could not say the same, at the time of their offshoring operation it was hard for the company to find the right personnel that is specialised in fire protection and hazard control equipment and training proved to be challenging to say the least. As it is a small company they could not achieve major savings in the labour department, the savings mostly came from insourcing of the materials from Russia and transportation costs. As mentioned above they had some quality issues due to bad communication with their Chinese colleagues. After the company restored it was able to enforce better quality management over the work of its own employees. In regard to productivity, the company managed to embrace a lean model of production, which was made possible by the reshoring that took place. Thus they are not producing extra as before and keep their warehouse management efficient. The company is constantly investing in its employees, in order to increase their skillset. The management of the company believes that their employees are what makes the product great and not the other way around. Due to the uniqueness of their products the company is doing all the training in-house. The respondent thinks it is possible, because of the company’s relatively small size with just 50 people. They have many patents and do not want their technology to be leaked to the competition.

The company being a provider of automation services and software is of a high degree of automation itself. This said though it has not implemented full automation for the reshored production of the fire protection and hazard control systems. This was made because the company wanted to give a product of higher quality to the customer, which at the same time is very customizable. At the current stage, although automation is possible for this range of product, but it would prove inefficient, because of the different customisations that are being made to it. They have spent more than 500 000 dollars on automation. This said, the company paid only for the needed materials and research, because they designed and built it inhouse. The company is on the market of automation for more than 20 years, so they had enough experience to avoid most of the difficulties that related to the automation process. A common problem that the company encounter, however, is the time that is needed for their oldest employees to get adjusted to the new system of production. However, in other companies to which they have provided automation services with the company has encountered many challenges over the years.
Ranging from the management stopping the project due to financial problems and once they were challenged by weather itself.

During the interview conducted on 10 August 2017, M 4 stated: “When we were installing the automation equipment, which was situated outside, the sheer cold temperatures of minus 70 degrees Celsius were frying the electronic components, so we had to get back to the drawing board to isolate them better”.

At the moment the company is not planning a reduction or increase in the number of their employees because the production and quality control is satisfactory. If a governmental program would become available, they could consider an additional expansion of their product range, but at the moment they do not.

“Reshoring has given a chance to our company to bring the production back home. We take pride in what we do and initially did not want to offshore, but the market conditions forced us to do it. This is why we are happy that we could say that all our products are made in Russia. The “homemade” image has actually helped us with government orders, so I would say that reshoring is a great way to improve the company’s success on the home market” (M 4 2017, pers. comm., 10 August).

“We deal with automation for more than 20 years, as mentioned before. From the company’s perspective automation is good for business, because we sell it. On the other hand, we have learned that when we want to make a product of exceptional quality, only a human expert can manage to do it. The attention to detail, customisation and strict quality control are still difficult to implement into full automation” (M 4 2017, pers. comm., 10 August).

4.5 Company 5

The company is of Turkish origin. It is one of the leaders in the world for the production of construction equipment, attachments and spare parts for other brands/competitors. It employs 400 people and is planning to introduce automation. Currently, the main production facilities are located on the territory of Turkey and South Korea where a daughter company is situated, which produces only the electronic controller, but there are plans to make them in-house in Turkey too. The production was partially outsourced to China for the spare parts. The company operates around the world with established markets in Europe, North America, and Asia. Warehouses of the company are located in Europe and China, which help with the distribution of the spare parts. The company has a logistic department which manages the shipping and order, the transportation itself is handled by third-party logistics companies.

The company sourced factories in China to produce some of the components for their product which they could not make themselves due to their complexity. The South Korean
company which produces the electronic controllers, however, was a partner at first and eventually, the management acquired them and made them a part of their company, but they are now planning to shift its production to Turkey, leaving only a warehouse and representative office there. The span of this relationship has continued for 20 years until they acquired them, thus making them a daughter company in South Korea. As of now, they can say that this is their only offshoring activity.

The company has not reshored yet. Management of the company wants to reshore its production of electronic controllers, which are currently produced in South Korea. From their estimations it will take around six months to transfer the production, they are currently building a new production facility and hope to accommodate the reshored activities there as soon as it is done.

Production in South Korea is a lot costlier than in Turkey especially when it comes to electronics as in the company’s case, so this is one of the main reasons they want to shift the production to Turkey. From their reshoring project calculations, the company will save around 40% percent of their expenditures on labour in regard to the production of electronic controllers in South Korea. Turkey has a large number of highly skilled professionals that are more affordable than the employees in South Korea, and as the management thinks of expanding they will need more skilled labour force than before. Labour will play a major role as the company wants to shift their electronic controller production and it demands a high degree of quality, for which they will need good specialists to manage the production process. With the company’s expansion, they are planning to hire a higher number of skilled employees than was required in South Korea. They want to invest in training and have already started the process for existing employees and prepared a program for future employees. The company is currently not thinking to be involved with the government in regard to training or finding labour. Due to the nature of their production, they are using specialised third-party companies for training and scouting.

The company has just started the automation process which will be mainly in the processing of their product and warehouse automation. They are using metals as a raw material for their products and have their own forgery, the melting, casting and cooling process is hard to fully automate for them. The company, however, wants to automate the CNC machine processing, so it can directly integrate with the automated warehouse for conveyor system distributing the orders to their destinations. Up until now, the company has gone over 5 million euros in investment. From which 1 million euros are just for the implementation of the new system and ERP. As they have just started, the company has not encountered many difficulties. One of the main problems currently is that the company that they have employed to create the new software system and ERP for the automation does not have specialists in Turkey, only sales representatives and because of that, they are currently scouting for skilled people to help them implement it faster. The company does not have an IT department, which also proved to be problematic because
basically they want to automate, but nobody understands how the process should go. Thus they need to heavily rely on external companies, which happens to be very costly as the respondent informed us. The company expects to reduce the number of current employees in the processing and warehouse departments by 35%. The company will need to hire more employees with an engineering background and also IT specialists who are currently their largest concern. In regards of automation, they have already gained a subsidy from the government for developing the industry sector of Turkey; it is 20% of the total investment.

During the interview conducted on 25 July 2017, M 5 stated:
“My opinion is that if we are talking about Turkey compared to South Korea or China, then reshoring is the way to go. Turkey is very industrialized, and everything can be made here for the same price as China or even cheaper in some cases. We also have good specialists in engineering, and affordable labour force compared to developed countries, all of this makes it very attractive for Turkish companies to reshore. Moreover, the government is helping by stimulating businesses to produce locally”.

“Labour is an important factor, but times are changing, and for our company, we have hit the maximum potential that could be achieved without automation. Therefore, we opted to automate our processing and warehouse departments. This does not mean that we are replacing labour with automation, for me it means that the company needs a different type of employee, it is like a shift from the low skilled workforce to the higher skilled workforce. Both are important, but automation shifts the balance towards skilled” (M 5 2017, pers. comm., 25 July).

4.6 Company 6
This is a very large company regarding employees as well as revenue and is owned and operated by the government. The company was established several decades ago and carries out various activities but mainly focused on producing raw materials. A Very big portion of activities are outsourced, and offshore outsourcing is widely practised by the company. Provision of services and products are offshored in very large scale for both strategic and less important matters. Our respondent shared a lot of sensitive information but also asked for more confidentiality and anonymity. In many occasions, offshore sourcing reduced company costs to 1/3, increased the quality as well as speed dramatically. Company reshored several extremely strategic operations, and the outcome was disaster after disaster because domestic vendors could not provide similar competencies with the ones offshore. The company still dose many things in-house and have much domestic outsourcing but is also very dependent on offshoring as they need a lot of advanced equipment and services that cannot be sourced domestically. However, Labour or automation is not considered a key reshoring driver for this company.
The respondent expressed that they can reshore many things in his opinion and have the intentions but company complex bureaucratic system that has many outdated procedures prevents them to easily source different products from different vendors. He noted, “We are trying to buy a very simple thing for seven years now, and we have not been able to close the deal yet” (M 6 2017, pers. comm., 30 July). The company has access to many skilled people in the country but has difficulty hiring them because of labour policies and working conditions of the company. Also, the respondent believes that they should put out a great number of people out of their company to initiate the changes and reshore, but again labour policies prevent them. Also, the respondent believes that they need to put out a great number of people out of their company to initiate the changes and reshore but again labour policies prevent them. He also expressed his opinion that even with new hiring they would not yet be able to improve operations substantially and reshore because of the complex organizational issues of the company.

Organizational politics and procedures do not allow the company to take initiatives and change things easily. The respondent explained that they were using two decades old software and two of them crashed, and a lot of data was lost. They were forced to replace it then and sourced it domestically, but it became a massive failure and created many complications. In contrast, the company is very satisfied with the offshore sourced software. The respondent noted that he believes they are using too many software and that they need to use a single unified software instead, but there is no organisational support for such change. Management views any plans for buying or developing a software costly, risky, and unnecessary.

During the interview conducted on 30 July 2017, M 6 stated: “I am in favour of increasing automation, but we cannot simply implement and operationalise automation. We cannot buy equipment’s because of our complicated procurement procedures and even if we buy many things we would not be easily able to utilise them. Let me tell you a story. Just a few days ago I had to take one our employees to the hospital because he hit his finger with a hammer when working. It was his fourth time hitting his finger with a hammer. I told him we had bought air hammer for you to use, why don’t you use the air hammer? Moreover, he replied I prefer using just a hammer. It’s not that he doesn’t want to use the air hammers, or he doesn’t know how to use air hammer, he prefers to hit his finger and go to hospital because to lend the air hammer and operationalize it he needs to do a lot begging as a form of coordination and lending equipment’s has responsibilities for the employee. He would have to pay for it if he loses it or damages it. He would in fact rather not to wear safety helmet and gloves either. He is also not getting paid for working faster, why should he put himself in trouble?”.
5. Analysis

This chapter provides analysis to our findings. Our analysis is presented under two major categories. One is labour, and the other is automation.

5.1 Labour

Company 1 had their customer support offshored to India before, but this led to ill communication between their Indian employees and customers that were serviced by them. This consequentially led to the reshoring process being started by the company, although the company still needs to retain its global presence by maintaining offices in various locations around the world. Because proximity to customers and access to foreign markets are some of the main reasons, they have offshored and expanded into other countries and regions of the world (Plunkett, 2011; Kinkel, 2012; Zhang, 2012). We can see indications from this occurrence that labour did play the role of a motivator for the company to reshore, but it can also be linked to cultural aspects. It is common to see companies’ backshore due to unsatisfactory language skills and cultural distances (Kinkel, 2012). Greater cultural differences also create higher potentials for opportunism (McIvor, 2013). On the other hand, this has been one of the strategic functions of the company and should not have been offshored to a location where the quality of services could be sacrificed to achieve cost savings. Companies usually consider labour cost reductions with comparable labour performance since there is little advantage to cost savings at the expense of quality (Berry, 2005). Therefore, unavailability of skilled labour in foreign location became a motivation to reshore to Sweden where the company had access to a qualified pool of labour with strong language and communication skills.

From the empirical data, we learn that the Company 1 is recruiting new employees, but most of them turn out to be temporary in the end with the goal to finish certain projects. Many European companies are increasingly experiencing difficulties with recruitment and availability of qualified workforce (Mikael et al. 2008). However, as stated by the manager, the company does not feel that there is a problem with the availability of labour in Sweden as well as the other locations they operate in. This inclines us to think that perhaps with an employee number of 150 people in Sweden it is quite content with the performance that they are generating and therefore labour availability is not a central issue especially that they have been able to retain their highly experienced employees. A major skill gap between the employees working in Sweden and the ones working abroad was also not established in the opinion of the respondent. This can perhaps be explained by the specific sector that they are working in is very standardized in terms of the provided services and their production methods as well as that taking into consideration the absence of interest in providing extensive trainings to their new employees brings us to the point that the majority of new job openings do not actually require to be performed by highly skilled individuals which could partially explain why company does not experience
severe issues with skill gap in the market. Moreover, availability of qualified employees is not seen to be an important factor for Swedish companies in location decision (Heikkilä et al. 2017).

Company 2 as a producer of home appliances, has the intention to reshore some specific products from its range to Europe. The company’s offshoring production is located in China, while their main target market is in the Middle-East. Production location serves as the main motivator in this case since company’s customers wanting to see a “Made in Europe” on the product they are buying. These customers are prepared to pay a higher price and see more value in the country of origin, even though they will get a product with the same quality in the end. Customer perception of quality can depend on manufacturer geographical location and the so-called “made in” effect is relevant in reshoring decisions (Fratocchi et al. 2015). We can see a strong connection from this case that the company is willing to take a step towards reshoring if the customer demands it and is ready reimburse the company to a specific extent where it would be profitable for the producer.

Company 2 is not in possession of significant resources, and the core competency of the company is viewed to be the expertise and capabilities in sales and marketing and not manufacturing. On the other hand, Items that they are dealing with are low in asset specificity, the frequency of transactions is limited, and therefore the threat of opportunism is not viewed to be high, and thus a market hierarchy is adopted and well-functioning for their business. Consequently, the company does not choose to insource. Considering this and having few employees it needs to focus on the core competencies that it has, in this case, them being marketing and sales, as established from the empirical data we have collected. Thus, the company does not want to spend money or time on manufacturing, which forces it to seek out labour with higher skill or specialisation to maintain a steady operation which in turn creates certain amounts of uncertainty and transaction costs that company cannot afford. The respondent from Company 2 expressed that they do not feel a shortage of employees in China important, where their offshore operations are. This is again in line with the findings of Heikkilä et al. (2017) that companies do not find a shortage of qualified employees important in reshoring. Price is the element of competitive advantage for the firm and in search of least cost company has offshored to China, and it is justifiable since on-shore suppliers are unable to offer similar prices. However, it was confirmed by the respondent that labour costs are on the rise in China. This said though; the company would not consider reshoring everything due to this reason because in its situation it is still cheaper to produce in China and most of its customers wanting cheaper products. Even though production in China is not as cost-effective as it used to be, but still China will continue being a cost-effective location for the near future (Plunkett, 2011). From this we can point that the company does not consider the rising labour expenses in China a major motive to reshore that is in line with
the findings of Dachs and Zanker (2015) as well as De Backer et al. (2016) that suggests labour costs to play only a minor role in company’s motivation in reshoring.

Company 3 previously had offshore outsourcing to China but later reshored to Bulgaria in 2014. The process of reshoring took the company a year to finish. A major reason for the company to start the reshoring process was labour. Increasing cost of labour expenses in China led to the point where it was cheaper for the company to employ people from Bulgaria, as the respondent explained. New members of the European union are ideal places for production relocation (Kinkel, 2012). The affordable pool of labour and a considerable population of skilled and semi-skilled workers searching for a job has created an attractive investment environment in Bulgaria. Therefore Company 3 saw the opportunity and transferred the production. From this decision to reshore we can see that labour cost played a significant role for the company to make a move. This is in line with Fratocchi et al. (2015) suggesting labour cost is the second most important reshoring driver after logistic and in this instance, it contrasts with the position of Dachs and Zanker (2015) as well as De Backer et al. (2016) that recommends labour cost to play a minor role in reshoring decision. Company 3 after offshore outsourcing to China found itself in a situation where its relationship with the foreign suppliers caused the company to pay a great transaction cost. Transaction costs can be substantially higher when outsourcing and the costs are even higher when offshoring (Oshri et al. 2015). High frequency of transactions together with uncertainties, safe guarding costs played a crucial role in company decision to reshore and insource the production activities. Vertical integration was then viewed as the solution to minimise the transaction costs caused by these uncertainties (McIvor, 2005). As well as that superior performance could be attained utilising resources available in Bulgaria internally. The company realised that the production was their core competency and that they have access to cheap and skilled human resources in Bulgaria that can enable the creation of sustainable competitive advantage (Canham and Hamilton, 2013). Realizing over engaging in outsourcing and less considering transaction costs can be dangerous (McIvor, 2005). Furthermore, in the case of company 3 government policies was important and effective in contrast to the findings of Zhai et al. (2016) when it came to government providing incentives for sponsoring to train their employees. However, it must also be taken into consideration that they we are looking at re-location between two low-cost environments.

Company 4 offshored to China in the pursuit of getting access to skilled workers when management could not run the company conveniently in Russia due to the lack of local specialist within the field of fire safety. With the knowledge, that situation in China would be challenging management saw no other options but to relocate and establish a company in China and to adopt a captive model. Brownfield investment was the chosen strategy as it is expected to derive numerous advantageous over the other method. Brown field investments, i.e. merge and acquisitions involve ownership transfer of existing asset accounts for 80% of all foreign direct investments and is usually preferred over greenfield investments (Grunfeld and Randaccio, 2005; Davies et al. 2015). However,
communication with the Chinese employees became a significant challenge that in turn gravely affected the quality of produced items. Quality is viewed as the most important reshoring motivator by many (Kinkel, 2012; Dachs and Zanker, 2015; De Backer et al. 2016; Stentoft et al. 2016b; Zhai et al. 2016; Heikkilä et al. 2017). Management efforts in training the Chinese employees did not produce satisfactory results partially due to the communication and cultural issues. This trend proved not to be sustainable posing high transaction costs on the company. Knowing that human resource to Company 4 is a strategic source of sustained competitive advantage that allows the firm to have superior performance. Furthermore, especially that investments made into human asset specificity for this company is necessary and essential to its function.

Company 4 motivation to backshore was reinforced with the intention to serve the community as well as benefiting from “Made in Russia” marking. Reshoring can have positive impacts on company image and promote Corporate social responsibility (Grappi et al. 2015). Lack of appropriate workforce encouraged a backshoring strategy (Kinkel, 2012) accompanied by the decision to provide extensive training (Dachs and Zanker, 2015) in Russia. The management of the company has the opinion that its employees are what makes the company great and not the product, so they constantly invested into them. This suggests that the company’s success is partly based on the image that they portray of their employees being superior as well, which helps them gain a competitive advantage as well as building stronger relationships with private and public institutions.

Company 5, offshored to South Korea to obtain valuable strategic resources which were technology to make their products and that worked well, but as years passed Turkey’s industrial potential became capable of matching that technology and employee expertise for a much lower price. The management is considering reshoring of its South Korean subsidiary. The process would take approximately six months to transfer the production to their new facility. The main reason for the reshire is that it is more expensive to produce the parts in the offshore location, which is South Korea. The considerable cost comes from the expensive high-skilled labour that they should pay for as well as the costs for transportation and material sourcing. Therefore, it is a rational decision for the company to move from the high-cost environment to a low-cost environment (McIvor, 2005) as the once scarce and valuable resource is now available in Turkey. The respondent expressed his opinion that Turkey is home to many young highly-skilled professionals in the company’s sector of construction that are available and ready to work up to the specified quality. Manager belief indicates that the labour market in Turkey is suitable for the company to start investing back into the Turkish economy by reshoring and skill gap is not an obstacle. However, Training of employees is still a point company takes into consideration seriously with reshoring decision that is the need to develop the necessary competencies and skills to run the manufacturing.
Company 6, on the other hand, has a very different nature with all the other companies in our study as is owned and run by the government, employing tens of thousands of people. The company is in a developing country with small and large scale offshore outsourcing to both developed and developing countries. Company offshores strategic functions in many cases and avoids hierarchical governance in various cases because opportunism of the transaction specific investment risk is perceived here as the cost of obtaining capabilities that are very costly to be attained in other ways (McIvor, 2005). Also knowing that rapid technological innovation makes it impossible to do everything internally (Johnsen et al. 2014). One of the relatively important labour related barriers to reshoring mentioned by the interviewee was labour policy as well as other unwritten pressures that prevent the company to hire and fire employees. Some of the functions can be reshored but the company is unable to bring in the right human resources to take over the operations. Businesses can become stuck in old ways of operating due to the inadequate restructuring and organisational change (Stentoft et al. 2016a). Therefore, in some cases for this company availability of labour could be motivating to reshore and skill gap in the country is less important than the obstacles associated with hiring procedures, but this motivation seems far to be achieved. Which reminds us that even having all the resources does not guaranty creation of sustained competitive advantage especially in the case of adopting ineffective organisational management that prevents the full exploitation of available resources (McIvor, 2005). Yet on the other hand in many cases available human resources inside the company as well as of the domestic vendors do not possess the necessary skills and capabilities and therefore company should offshore even though in many cases adopting such governance structure is risky, could create asymmetrical distribution of information, requiring substantial safeguarding and leading to considerable transaction costs.

Reviewing the six cases of our thesis illuminated that labour played some role in reshoring decision of the companies or creation of the intention to actively consider reshoring. However, this role varied depending on the case to various degrees of importance. Labour policy showed some indication in company 6 to be considered as a barrier to their organisational functioning that in turn can have implications in reshoring but not that it would be a central barrier. Interestingly, companies did not emphasise on labour productivity levels that could perhaps relate to the fact that four of the companies were situated in developing countries. Moreover, we see that two of the companies had issues with cultural differences and communication, which also affected their quality of products or services that resulted in lower customer satisfaction and etcetera. Which also points at to higher transaction costs (Kinkel, 2012; McIvor, 2013) that can evolve into emphasising a need to reconsider in the sourcing strategy. This provides some illustrations to the position that advocates the importance of linguistic and communication skills challenges in offshoring that in turn relates to labour availability issues of foreign locations and being a motivation of some companies to resshore. However, this could perhaps be viewed contradictory to Dachs and Zanker (2015) and Fratocchi et al. (2015) suggestion that
shortage of qualified workers in host countries not to be an important factor for reshoring. In addition, we observe that in-line with Fratocchi et al. (2015) suggestion, labour cost depreciation between two locations was an effective driver to company 3 and five seeking to change their strategy. However, labour costs were not found significantly important in other company’s reshoring decision. This would be in-line with the position of Dachs and Zanker (2015) as well as De Backer et al. (2016) that suggests labour cost has a minor role in company’s reshoring decision. Therefore, our conceptual and empirical findings do not consistently support a position regarding the importance of labour cost and availability issues in reshoring decision making.

5.2 Automation

Company 1 is already highly automated as it relies on computers largely in conducting their business. However, automation was not a motivating factor in the reshoring decision from India. Moreover, interviewee elaborated the importance of maintaining a degree of personal interaction with customers which also could be an indication that automation cannot undermine the significance of labour so far in many domains for various reasons. In addition, considering that machines and humans are complimentary (Frohm et al. 2008) and creation of sustained competitive advantage may not come from physical assets in many cases as well as that bundles of resources are needed to be combined in the creation of strategic competitiveness (McIvor, 2005). Furthermore, use of ERP software proved to be challenging in cases for the customers due to the lack of competency in the use of software as well as that the software not being bug-free. Lastly, the motive behind offshoring is currently not resource seeking, but market seeking. Therefore, reshoring is not the preferred strategy. Company 2 decision to reshore is also not motivated by the automation factor. Company 2 core competency is not manufacturing and prefers concentrating on marketing and sales. Management views automation costly and not sufficient to compete with cost advantageous that China offers.

Company 3 automation levels are relatively high that came at a high price for the company. This is a frequent challenge and points at a major downside of automation that is the high investment requirements to start the process (Säfsten et al. 2007). Automation was the strategy to increase the output volume and became partially important in the company decision to reshore, but access to cheap labour in Bulgaria and cutting down on other costs were the main factors. However, implementing automation in the reshoring phase proved difficult as the company’s production output was substantially reduced and therefore profit loss was followed together with losing customers to competitors at this transition stage to higher automation levels. 20% reduction in the number of employees were experienced as well as a shift in the composition of labour with employing new engineers. Automation changes the workforce composition by increasing the number of required engineers and decreasing the need for operators (NAE, 2008). Specialists from China were also employed at the Bulgarian production facility to run the automatic machines. Increasing output and some
improvements in quality were then followed and made the investments successful at the end. Moreover, the company experienced greater productivity levels as the result of automation. Automation is viewed as one of the key solutions to improve manufacturing efficiency (Winroth et al. 2006). However, should consider that this is a relocation of manufacturing activity within two well established low-cost environment and similar implications would not necessarily be realised in other countries.

Company 4 that is a small Russian company decision to reshore was not driven by automation. In fact, increasing use of automation was not preferred in reshoring production of the fire suppression system since these products required very high quality and customisations. As well as that the ordered quantities and productions are not high. An important obstacle to use of automation is that it may not be suitable especially to produce products with very short life cycle and manufacturing a vast variety of goods in small volumes (Winroth et al. 2006). The company is relatively automated itself, but for the reshoring parts, they avoided automating the production. More automation also does not come with great savings on labour as they are only operating with 50 people. An issue as noted by the interviewee was that automation is a difficult process to implement and some companies not being prepared for it. Organizational issues can be experienced with the implementation of automation (Manyika et al. 2017). The ineffective organisation would not allow full exploitation of resources as well (McIvor, 2005).

Company 5 has the intentions to reshore and automation is being considered in the reshoring decision. This case illustrates a relocation plan from a developed country to a developing country. Automation is underway for the company, where they are planning to implement higher automation in both production and warehousing. Automation comes at high asset specificity and in this case uncertainties are high leading to the preference of centralisation with long-term agreements. Although it is a big investment for the company, the government does give them a subsidy. Governments may help companies in relocations by providing incentives for automatic manufacturing processes that can support companies in reducing the total cost gap between the locations (Ancarani et al. 2015; Zhai et al. 2016). The company has started preparing for the automation, but one of the immediate problems that arose was that they did not have their own expertise in managing the implementation process, as well as that the company employed to execute this project does not have the needed specialist within Turkey. Therefore, being charged more with the third-party automation consultancy companies to manage this process. Company with these changes needs creating IT department and hiring new specialists as well as that working with third-party training providers to enhance employee’s skills and prepare them for the change. At last, company 6 reshoring was not driven by increasing automation levels. Even though automation levels are high but still company experiences major difficulties in adopting and running automation especially due to organisational issues.
Major emphasis on automation advantage in reshoring literature is that it is supposed to overcome labour cost and availability issues. We know several studies suggest labour cost and availability not to be important reshoring drivers. Therefore, it is a logical question to ask in that case why would automation be viewed as an important reshoring factor. Another important matter is that companies reshore to achieve greater flexibility and responsiveness and the current trend is that manufacturing is shifting ever more to economies of scope model. As it was discussed before automation is generally viewed not suitable and flexible in producing lower quantities and a larger variety of products. On the other hand, automation normally but not always increases productivity levels but still productivity achievements in developed countries do not generally match with labour cost advantages of developing countries. In fact, we do not see sufficient hard facts supporting the notion that higher productivity levels are driving companies to reshore. More importantly, it can be unpractical for a great portion of offshored works to be performed with severe reductions in labour content. Lastly, as it was discussed before automation is also being implemented in China rapidly and in large scales already to make production more economical as well as controlling labour related factors.

In overall automation did not turn out to play a central role in the decision to reshore for all the six companies that were interviewed. Only company 3 and 5 found automation to have some modest effect on their decision to shift their production back home. Some of the findings would point out to the fact that automation and humans are often complementary at the working environment and that severe reduction in the workforce may not be a rational decision or a viable option across different industries and businesses for various reasons (Frohm et al. 2008). For instance, in the case of company 4 automation showed less useful in their manufacturing and business model nonetheless substantially useful to company 3 which points at to an array of issues about automation that we discussed previously. In conclusion, our empirical findings in contrast to the results of Arlbjørn and Mikkelsen (2014) and assumptions did not find strong indications in favour of automation being an important reshoring driver. However, it is important to consider that four of our cases are companies from developing countries and the two other are not manufacturers. More specific discussion was given earlier but in general it is expected of countries with higher manufacturing salaries to adopt automation faster (Manyika et al. 2017) yet a country like China would perhaps be a very important exception in that regard. Another consideration could be that technological intensity of the industry can play role (Foerstl et al. 2016) or that it is more expected of larger firms to choose automation in their reshoring evaluations (Arlbjørn and Mikkelsen, 2014). As well as that issues of automation flexibility and competency are two important factors for companies in manufacturing and should not be neglected in reshoring assessments. Therefore, our results can be subject to the effects of such factors and different results might be observed under different conditions.
6. Conclusion

This chapter includes a conclusion to our thesis as well as limitations of this study and our suggestions for future research.

Labour was at the centre of reshoring debates and automation on the other hand often discussed in connection as a solution to the problems associated with labour. Therefore, in the absence of comprehensive studies addressing the issue we conducted this research to explore labour and automation and their interrelations in reshoring. In this study, we have identified and discussed twelve labour factors found in the literature. Moreover, findings obtained from our respondents further elucidated the labour factors in reshoring. Important mentioning that conceptual and empirical findings of this study did not consistently support a position regarding the importance of labour cost and availability issues in reshoring decision making. Only two companies mentioned labour cost and availability important. Regarding automation, we identified five reshoring factors as illustrated in table 2. Reviewing of the literature did not yield sufficient reliable evidence in support of automation. Important to note that our empirical findings from the six cases failed to provide strong indications in favour of automation being an important reshoring driver. We also discussed how labour and automation interrelate especially in manufacturing setting reviewing the literature as well as analysing the data collected from the cases. Emphasizing the importance of having in consideration a variety of issues when applying automation in manufacturing as well as the possible associated benefits and constraints of automating production processes.

6.1 Limitations & Future research

Reshoring certainly deserves receiving more attention especially from experts in the field of business administration, economics and engineering. There are many gaps in the literature as well as inconsistencies and discrepancies between the findings of scholars on a variety of key issues within reshoring. Some of the contradictions have already been mentioned in the problem statement as well as our conceptual framework. These inconsistencies can provide a good basis for joining the debate and starting a further investigation to contribute to the body of knowledge. This study has been first to devote itself to discuss labour and automation in reshoring exclusively. Theoretical and practical contributions of this research would especially be relevant to the field of supply chain management. This study undoubtedly had various limitations one of which is that the scope of research was obviously quite broad and therefore more narrowed investigations on specific issues within labour and automation are required and strongly recommended. Having access to well informed and high ranked executives within manufacturing as well as selecting varied types of companies in developed countries could create an
advantageous foundation for new research. It would also be interesting to investigate reshoring in various cost environments and different contexts. Labour and automation factors identified within this thesis could also be examined in a quantitative study. In addition, we propose some recommendations for future research. First, how strongly automation motivates reshoring? Second, how strongly labour cost and availability act in motivating reshoring? Third, what is the impact of automation on quality and responsiveness in reshoring? Fourth, how important is higher labour productivity of developed countries in reshoring? Lastly, how automation flexibility impacts reshoring?
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