Circular economy and social responsibility: a study on the Dutch SME construction sector

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ABSTRACT

The construction sector uses many resources and produces much waste. The circular economy has been recognized as an upcoming term that can disunite economic growth from negative societal impact and natural resources. This research examines what motivates Dutch SME construction firms to implement circular economic activities. Furthermore, it explores how circular economic activities can improve these firms' social responsibility. Conducting an explorative multiple case study, the circular economy and social responsibility were examined among seven firms during semi-structured interviews to gain in-depth insights. Data was analysed within and across the cases to find similarities and differences. Findings show that competitiveness is the most important motivation for the implementation of circular economic activities. Other important reasons were environmental, financial or client based. It has been recognized that firms had different perspectives on how circular economic activities could improve their social responsibility. Most mentioned was that using fewer materials would put less pressure on the environment and future society. Besides, circular economic activities can, for example, create awareness among the environment. Firms that were focusing on circular economic activities had also social responsibility practices in place. The thesis offers insights for theory on how further research can spur implementation of circular economic activities in SME construction firms to improve their social responsibility. Practically this can give firms insight in how circular economic activities can improve their social responsibility and how they can further implement circular economic activities. Implicated is that SME construction firms should delve deeper into the circular economy and invest in the future to stay competitive.

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1. INTRODUCTION

The construction sector is a highly material-intensive industry. The different activities that take place in this sector, such as construction, renovation, design and demolition, use a lot of energy and resources and produce much waste (Zhang & Lim, 2019; Górecki et al., 2019). It is one of the sectors with the highest volume of waste streams, and the majority ends up in landfills (Llatas, 2011). Besides, the world population is growing, with an expected population of 10 billion people in 2050 (Jeyanthan & Ilankumaran, 2019). Consequence of this growth is that the demand of natural resources is also increasing, which will lead to a scarcity of these resources in the future (Jeyanthan & Ilankumaran, 2019). Besides the high volume of resource use in the construction sector, other environmental impacts apply, such as risks to public health, air pollution and a loss of biodiversity. Therefore, the construction sector is experiencing socio-environmental pressures to close its material loops (van den Berg et al., 2020).

The concept circular economy (henceforth, CE) has been considered in the construction sector as an important term that can guide the sector to close the material loop (Basuyau, 2020). The idea of a CE is to disunite economic growth from negative societal impact and natural resources (Li et al., 2009; Xue et al., 2010; UTS, 2015). The term is based on an economy with no net effect on the environment, instead of the conversion of natural resources into waste (Murray et al., 2017). CE activities can result in further improvement in firm's social responsibility (SR) (Wang et al., 2010). Firms' SR refers to the response of "the economic, legal, ethical, and discretionary expectations that society has of organizations" (Carrol, 1979, p. 500). CE compounds opportunities for firms to practice SR in a way that social and economic areas both can benefit (Sarkis et al., 2011). Thus, CE offers the opportunity to rethink the current economy (Stoyanova, 2019), and it is expected that CE activities affect construction firms' social responsibility.

However, the term CE is still lacking academic research, especially in the construction sector. Furthermore, with regard to motivations to implement CE activities (Murray et al., 2017). The goal of this research is to identify what motivates small and medium-sized construction firms to implement CE activities. Two research question are provided to gain understanding and insight:

RQ 1: What motivates small and medium sized construction firms in the Netherlands to implement circular economic activities?

Furthermore, little is known about how small and medium-sized enterprises (SMEs) in the construction sector can implement CE activities that lead to improved social responsibility (Murray et al., 2017; Geisendorf & Pietrulla, 2017). Thus, this research explores whether CE activities can improve small and medium-sized construction firms' social responsibility, which can release the pressure regarding environmental and social impact in the Netherlands.

RQ 2: How can the implementation of circular economic activities improve small and medium-sized construction firms' social responsibility?

The study offers contributions to research on CE and SR in SMEs. Research on CE is mostly theoretical and based on literature reviews (Mura et al., 2020) emphasizing the essential characteristics of the concept or create frameworks for the assessment of CE activities (Ghisellini et al., 2016; Sassanelli et al., 2019).

However, research on CE activities and motivations for businesses do exist, but little research is undertaken on this subject within the construction sector (Adams et al., 2017). Moreover, less can be found on CE activities in SMEs. This research will address these shortcomings by focusing only on Dutch SMEs. It outlines their motivations of implementing CE activities, how this implementation can lead to improved SR and support the relationship between other social responsibility activities. It will add value to the existing literature by providing an in-depth insight into the concept of CE in SMEs (Tezel et al., 2020). SMEs are likely to play a big role in the discussion about CE activities and few research has been conducted in this field, while SMEs created 85% of new jobs in the EU in the past five years (OECD, 2020). Practically it adds value by giving firms insight in how CE activities could improve their SR and how they can implement CE activities further. Society will benefit from this, as CE activities are less harmful to the environment (Murray et al., 2017; Kirchherr et al., 2017).

In the next section the previous literature on the research topic drawing on CE and SR in SMEs and their motivations to implement CE activities and the influence on SR is outlined. This is followed by the research methodology section and findings. Finally, the findings will be discussed, followed by the conclusion and limitations and directions for future research.

2. THEORETICAL FRAMEWORK

2.1 Definition and conceptualization of the circular economy

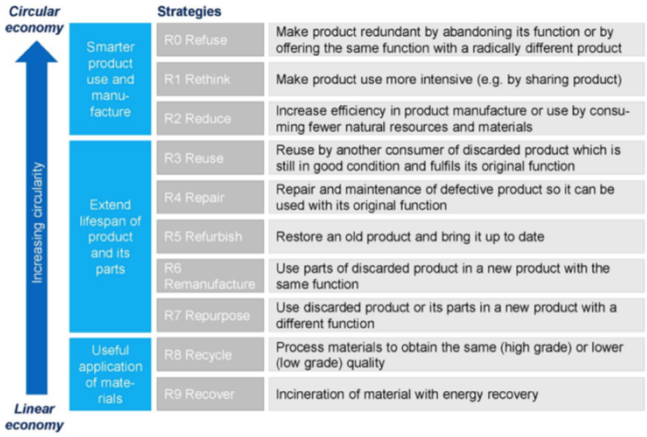
CE refers to an industrial economy 'which is restorative and regenerative by intent and design' (Górecki et al., 2019, p. 5). Notable is the recognition that resources are finite and should be managed in order to sustain them for the next generations (Murray et al., 2017). This is also being recognized in the following definition of CE:

> The model of a linear economy, in which it is assumed that there is an unlimited supply of natural resources and that the environment has an unlimited capacity to absorb waste and pollution, is dismissed. Instead, a circular economy is proposed, in which the throughput of energy and raw materials is reduced. (Cooper, 1999a, b, p. 10)

Thus, the overarching goal of CE is to minimize energy use, eliminate toxic chemicals usage, eliminate waste products, and it is established on renewable energy (Górecki et al., 2019).

Different circular economic strategies that firms can implement are recover, recycle, repurpose, remanufacture, refurbish, repair, reuse, reduce, rethink and refuse (Potting et al., 2017; Kirchherr et al., 2017). These different strategies, as can be seen in Figure 1, range from high circularity (low R-number) to low circularity (high R-number). Strategies from the first category, 'smarter product use and manufacture', ensure fewer products are needed for the same function, for example by sharing products or by increasing the efficiency of product use. As fewer products are needed, the use of natural resources decreases. It is the category with the highest circularity (Potting et al., 2017). The second, more linear, category, 'extent the lifespan of product and its parts', refers to that products are remanufactured, refurbished, repaired or re-used to extend the lifetime with its original function or to use the product in a new product with a different function. The third and most linear category 'useful application of material', does not use the product for a more extended period but processes the materials or recovers energy from the products (Potting et al., 2017).

Figure 1. The 9R Framework. Taken from *Conceptualizing the circular economy: An analysis of 114 definitions* (p. 234) by Kirchherr et al., 2017.



2.1.1 Development of the concept

The idea behind the practices of CE date from a long time ago, however, the origin of the term is discussable (Murray et al., 2017). An example is the statement of Hofman (1848): ". . . in an ideal chemical factory there is, strictly speaking, no waste, but only products. The better a real factory makes use of its waste, the closer it gets to its ideal, the bigger is the profit" (Lancaster, 2002, p. 26). Others claim China as the originator of the CE concept (Liu et al., 2009; Yuan et al., 2006). Whereas Pearce and Turner (1990) argue that the origin of the concept is from the western literature in the 1980s (Murray et al., 2017).

The first academic publications on the term come from 2004 (Feng, 2004; Huang, 2004) and since 2008 the term has become widely discussed in literature (Merli et al., 2018). From 2008 till 2013 almost all articles about CE with a well-defined geographical area came from China. However, since the enactment of the Circular Economy Package and activities of the Ellen McArthur Foundation, academic research on CE gained interest in Europe in 2013 (Masi et al., 2017). In the beginning, CE research was mainly related with the 3R principles (Reuse, Reduce and Recycle), later on this was broadened into 4R, 6R or even 9R, as referred to in Figure 1 (Kirchherr et al., 2017).

The approach to CE was first mostly a top-down approach, focused on the development of eco-cities and eco-provinces (Yuan et al., 2006). Later on, the bottom-up approach was combined with the macro and meso level implementation, which made CE also being implemented on a micro level (Merli et al., 2018). With the specific plan of Europe for CE, as for example the McArthur Foundation, CE became a new socio-economic paradigm (Merli et al., 2018). CE was not only seen as a concept for production practices, it also involved consumers. Besides, concerns about it were extended to the societal level (Merli et al., 2018).

2.1.2 Circular economy in the construction sector

Benachio et al., (2020) did a literature review of CE in the construction sector and found that the term CE is still broadly defined. Taveres et al. (2020) brought a new definition to the debate of CE in the construction sector which refer to "the use of practices, in all stages of the life cycle of a building, to keep the materials as long as possible in a closed-loop, to reduce the use of new natural resources in a construction project" (Benachio et al., 2020, p. 5). The concept of *all stages* in this definition scopes the following five stages: project design, manufacture, construction, operation, and end of life. This stage definition takes into account the European standard EN 15978:2011 and the definition from the EU funded Building As Material Banks (BAMB) (Benachio et al., 2020). In this research no stage is preferred in advance, all stages will be taken into consideration when selecting cases and performing interviews.

Research shows that the awareness of the concept inside and on an individual level in the construction sector is good (Adams et al., 2017; Benachio et al., 2020). Rijkswaterstaat (2016) also published a report which stated that Dutch firms in the construction sector are aware of the need to close the material chain loop to limit the environmental impact (Schut et al., 2016). Thus, it can be assumed that most participants interviewed for this research are aware of the concept and know about strategies of implementation.

2.2 Definition and conceptualization of social responsibility

2.2.1 Development of social responsibility

In order to get a deeper understanding of the development of social responsibility and the link it has with other terms; the evolution of the concept is considered.

The first formal definition of social responsibility came from Bowen (1953) "the set of moral and personal obligations that the employer must follow, considering the exercise of policies, decisions or courses of action in terms of objectives and values desired by society" (p. 6), in which businesses can have a positive impact on people's life. Firms could not ignore their businesses' impact on society and started a debate about SR within Europe and America (Mosca & Civera, 2017).

After some further exploration of the concept in the following years, SR became popular in the 1970s, because of growing awareness for the environment and human rights (Agudelo et al., 2019). Carrol (1979) came up with a, for the first time, worldwide accepted definition (Agudelo et al., 2019). Carrol (1979) defined CSR as "a three-dimensional conceptual model of corporate performance" (p. 497), which refers to the response of firms to "the economic, legal, ethical, and discretionary expectations that society has of organizations" (Carrol, 1979, p. 500). His conceptualization led to the development of international agreements, such as the creation of the Intergovernmental Panel on Climate Change (IPCC) in 1988 (Agudelo et al., 2019).

An essential contribution in that period came from Elkington (1994), as he invented the concept of 'the triple bottom line' as a sustainability framework that refers to the social, environmental and economic responsibility of firms (Agudelo et al., 2019). The concept was and remained relevant in the SR discussion, as also has been recognized by Fontaine (2013). He argues that the evolution of SR resulted in a convergence between SR and corporate sustainability, as both aim for achieving a balance between social integrity, economic prosperity and environmental responsibility (Fontaine, 2013). Ashrafi et al., (2018) also found that SR has transformed from more of a social or philanthropic focus into a more comprehensive view of social, environmental and economic responsibilities. SR aims for creating shared value and provides a benefit to both society and the environment (Ashrafi et al., 2018).

Xia et al., (2018) state that the execution of SR practices within the construction sector is often divided among these three dimensions within recent literature. The social dimension scopes the obligation for the organizations and their actions to positively contribute to the interest and welfare of the society (Uddin et al.,

2008). The environmental dimension contains the impact of the actions of organizations on the living and non-living natural systems in the environment (Jamali et al., 2006). Lastly, the economic dimension, which refers to the direct and indirect economic footprint of organizations on the society (Uddin et al., 2008). Xia et al. (2018) came to the conclusion that the social aspect is most dominant in the construction sector. In this research social responsibility is referred to "company activities – voluntary by definition – demonstrating the inclusion of social and environmental concerns in business operations and in interaction with stakeholder" (van Marrewijk, 2002, p. 8).

Another important evolution was recognized in 2005 as a shift in the concept from being considered as a minimal commitment to a strategic necessity (Agudelo et al., 2019; Chandler & Werther, 2005). This led to the debate that the implementation of the right SR practices could improve the competitiveness of firms (Agudelo et al., 2019). Therefore, it is assumed that the implementation of CE activities can improve the competitive position of the firms.

2.2.2 Stakeholder theory

In the last decade, SR is often linked to the stakeholder theory (Russo & Perrini, 2010), since the stakeholder perspective towards SR offers a roadmap in the understanding of SR behaviours (Costa & Menichini, 2014). This idea has been accepted among businesses (Russo & Perrini, 2009) and has been recognized in the literature (Costa & Menichini, 2014). Stakeholders can be defined as "those groups who can affect or are affected by the achievement of an organization's purpose" (Freeman, 1984, p. 49). Whereas according to Friedman (1962) the primary goal, and also the social responsibility of firms, is to generate money. The stakeholder theory argues that in order to reach firms' goals they have to consider *all* legitimate stakeholders (Berg et al., 2018). When applying this approach to SR, one can see the development of the right SR practices as a response towards all stakeholder pressures (Berg et al., 2018). Stakeholders of construction firms are more and more expressing their worries and demand for the implementation of SR in the sector (Xia et al., 2018). Thus, it can be said that stakeholder pressure is high for the construction sector and, therefore, there is a high need for SR activities.

Adams et al. (2017) argue that the CE concept in the construction sector is slowly developing because stakeholders do not fully understand how the idea behind CE activities should applicate. However, stakeholders are increasingly being involved in the firms' activities and process of construction, as for example researches and consultants, contractors, clients, product manufacturers, demolition contractors, designers, government representatives and trade associations (Adams et al., 2017).

2.2.3 Social responsibility within SMEs

SR has been associated with large firms and corporations, but as the SME sector has important economic, environmental and social impact, more academic research is needed in the field of SMEs' SR (Kechiche & Soparnot, 2012). Literature about the relationship between SR and SMEs has not been conclusive (Russo & Tencati, 2009), but it is clear that SMEs employ multi-skilled workers and engage in local activities, which provides a good environment for SMEs activities (Draper, 2000). However, a lack of time or a lack of financial resources are often mentioned as a constraint for SMEs to implement SR activities (Burlea-Schiopoiu & Mihai, 2019; Xia et al., 2018; Mura et al., 2020).

2.3 Motivations for the implementation of circular economic activities and the impact on social responsibility

2.3.1 Motivations for the implementation of circular economic activities

Drabe and Herstatt (2016) have researched why companies implement CE activities, such as Cradle to Cradle practices (C2C), with the idea of creating products that can circulate in a circular system (Drabe & Herstatt, 2016). They found that "the fit of the C2C or circular concept with the company's philosophy, the potential loss of market share if the company does not implement C2C standards and the competition from other C2C certified companies" can motivate firms to implement circular activities (Drabe & Herstatt, 2016, p. 5). Zhang et al. (2019) argue that the motivations for the implementation of SR activities in construction firms is referred to "financial benefits, branding, reputation and image, human resource benefits, supplier-inducted risks, strategic business direction, availability of resource and capability, policy benefits, relationship building and organizational culture and awareness" (p. 573). They refer to SR, but not to specific CE activities. However, they describe SR as conservation of energy and resources and emission reduction, which overlap the goals of the CE activities. Besides, as mentioned before, SR has moved towards the concept of sustainability and CE. Therefore, these motivations could be to some extent the same for the motivations to implement CE activities.

2.3.2 The impact on social responsibility

The impact of CE on the economic perspective of SR can be stated as positive, based on literature (Tuladhar et al., 2016). Kirchherr et al. (2017) describe CE as a concept that reduces and recycled materials in the production process on a micro level (consumers, companies), meso level (eco-industrial park) and macro level (city, region, nation), with the objective of creating economic welfare, environmental quality and social equity. This way CE activities can achieve sustainable development, to benefit the current and future society (Kirchherr et al., 2017). With regard to the concept of SR as described in section 2.2 and the fact that sustainable business integrates the principles of SR, it can be assumed that the CE improves the SR (Wang et al., 2010; Aluchna & Rok, 2019).

While reduction of material, resource and energy use benefits the economy and society in general and the future generations, it is not clear how CE activities improve the equality of people and social opportunities (Murray et al., 2017; Geisendorf & Pietrulla, 2017). However, Ness (2008) stated that resource savings for future generations increases social wellbeing indirectly. From an economic perspective, Tuladhar et al. (2016) state that bringing the CE into the construction sector leads to growth that contributes to the sector and the GDP growth. Besides they stated that bringing CE activities into business improves the competitiveness and output.

3. METHODOLOGY

3.1 Analytical approach

The goal of this bachelor thesis is to examine the concept of SR within SME construction firms and to find their motivations to implement CE activities. To answer the research questions *'What motivates small and medium-sized construction firms in the Netherlands to implement circular economy activities?'* and '*How can the implementation of circular economic activities improve small and medium-sized construction firms' social responsibility?*' an exploratory qualitative multiple case study

was conducted. Qualitative research aims for the gathering of an in-depth understanding of behaviours and the reasons for these behaviours that can result in details of the situation (Myers, 1997; Islam & Faruque, 2016).

Case studies are a common method for doing research, and it is important to concentrate on the case research but not entirely on the research methods used (Stake, 2005). Yin (1994) defined case studies as "a case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p. 13). Multiple cases were selected, which made it possible to compare cases and understand their similarities and differences (Baxter & Jack, 2008; Stake, 1995). Moreover, data could be analysed within each case and across cases (Yin, 2003). Baxter and Jack (2008) claim that results from multiple case studies are often robust and reliable. To practice and test the interview questions, a pilot-case study was done before the other cases (Griffee, 2005). After the pilot-case study, the questions were slightly changed.

3.2 Case selection

According to Stake (2005) it is most convenient to select between four and ten cases. Since the goal of this type of research is not to represent the world, but to represent the case (Stake, 2005). Therefore, in this research seven firms were selected, including the pilot case study. Fusch and Ness (2015) conclude that data saturation is reached when no new themes arise, it depends on the research when data saturation is reached. In this research data saturation was reached after seven cases, as no new themes arose. The firms had to be SMEs in the construction sector based in the Netherlands. The European Union (2003) defines SMEs as enterprises that have not more than 249 employees and an annual turnover not higher than 50 million euros or a total balance sheet not higher than 43 million euros (European Commission, 2015).

The same selection criteria for SMEs are used by the Netherlands Enterprise Agency (Netherlands Chamber of Commerce, 2020). This selection method uses convenience sampling and snowball sampling. Convenience sampling is a nonprobability sampling method which selects people based on their level of convenience to access (Suen et al., 2014). This means that cases from which most can be learned are chosen, so that most time can be spent with these firms or they are most accessible (Stake, 2005).

The firms were selected using the website of 'MKB Nederland' (SME the Netherlands), from this website firms are accessible, and therefore, their convenience level to access is high. Next to this, firms found on Google were contacted, since this broadens the range of the target group. These firms were contacted by e-mail. Snowball sampling occurs when the researcher gets access to informants by contact information obtained from other informants (Noy, 2008). Firm owner names were obtained from the pilot-case informant, and they were called by phone. If they wanted to participate, further information was sent by e-mail.

In Table 1, a summary of the profiles of the seven firms that were interviewed can be found. As can be seen, all owners were male, and the number of employees ranged from 7 to 180.

3.3 Data collection

3.3.1 Data collection method

In this research the most important data collection method consists of seven semi-structured interviews. Interviews allow for the interviewees to discuss their views and perception of concepts and situations (Cohen et al., 2017). Semi-structured means that key themes, issues and questions are covered, but the order of the questions can be changed during the interview depending on the development and direction of the interview (Kajornboon, 2005). Moreover, additional questions can be asked that were not thought of before the interview (Kajornboon, 2005). Interviews were done with the business owner of the firm, since they are at the centre of strategy development and execution of activities. When during the interview the interviewees were uncertain about concepts, a definition was provided. Before the interview, the interviewees got some explanation about the subject of the interview, which made some preparation possible. The interviews were recorded with permission of the interviewees.

Data collection often depends on multiple methods and data collection based on one method is quite weak (O'Leary, 2004). Therefore, follow-up questions and emails are another data collection method used in this research. Observations during the interview and the records are used as a data source. Furthermore, there is made use of an analysis of the websites and other available documents of the firms before and after the interview to increase the reliability of this research (Roberts, 1999).

3.3.2 Interview design

The interview in this research consists of 16 questions, four closed-ended questions and 12 open-ended ones. The closed questions were asked in order to be able to set up the open question. The interview started with an introduction about the research and the question if the interviewees had questions beforehand, thereafter the interview started. The first part was about CE activities within the firms and whether they are aligning their activities toward the CE, and if yes, how? The second part was about their SR activities to understand whether CE can lead to improved SR of the firms. The final part was specifically about the motivations of the current or future use of

Table 1. Profiles of the cases

	Founding age	*Revenue last year*	*Number of employees*	*Age of owner*	*Gender of owner*	*Owner since*	*Interview date*
Firm A (Pilot)	1970	7.000.000	22	49	Male	2014	06-05-20
Firm B	2007	1.700.000	7	31	Male	2007	20-05-20
Firm C	1970	2.500.000	10	40	Male	2018	19-05-20
Firm D	2007	25.000.000	180	51	Male	2007	22-05-20
Firm E	1980	6.000.000	25	43	Male	2016	25-05-20
Firm F	1963	7.500.000	30	56	Male	1998	27-05-20
Firm G	1900	40.000.000	80	53	Male	2001	29-05-20

CE activities and SR activities. The interviews were all done in Dutch via Google meet, two were done in real life. The interview questions can be found in *Appendix A* of this study.

3.4 Data analysis

After the interviews were recorded, a transcript was made of each interview using '*Amberscript*', which is an online transcription programme. After this the interviews were sent to the interviewees, who checked the transcript and confirmed them, to improve the confidentiality.

The data analysis method used in this research is 'qualitative content analysis', defined by Hsieh and Shannon (2005) as "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (p. 1278). The data was first analysed by coding each case separately and then by coding across cases. The individual cases were all read through very carefully. Then they were further analysed by the recognition of the relevant text and next by the labelling of relevant sentences and ideas (Auerbach & Silverstein, 2003). These ideas were then grouped into categories and labelled based on their importance for this research, also being recognized as primary and secondary codes (Auerbach & Silverstein, 2003; Campbell et al., 2013). Categories that arose were 'CE familiarity and application', 'CE activities', 'Firms' strategy', 'mission and vision', 'SR strategy', 'CE (dis)advantages', 'motivations for CE', 'the future of CE', 'CE in relation with SR' and 'stakeholders and CE'. These categories and their codes can be found in *Appendix B*. A cross case analysis was done in order to see the similarities and differences across firms regarding these categories.

4. FINDINGS

4.1 Overview of the cases and their motivations for implementing circular economic activities

In Table 2 an overview of the cases can be found with regard to their motivations to apply CE activities. Also, it is listed if they were familiar with CE, if they applied CE activities and if they applied social responsibility practices.

4.1 The circular economy within and across the cases

4.1.1 Familiarity and application of the concept

Out of the seven interviewed firms, two (B and C) were not or to a minimal familiar with the concept, where after a definition was provided. Firm C applied some (very minimal) CE activities, and firm B did not apply any activities at all. The other five firms did know the concept. From these five firms, two (A and F) answered the question of application with a resolute *"yes"*, the other ones applied with "to some extent" (D and E) or "it occurs" (G). They explained this with "real application is a big word, I guess…" (Owner firm E), "circularity occurs but is not a goal on itself" (Owner firm G) or "we try or best on that issue" (Owner firm D).

4.1.2 Circular economic activities

CE activities are classified according to the three strategies from the 9R framework: smarter product use, extending the lifespan of a product and the useful application of materials. For the third category 'useful application of materials', five out of seven firms mentioned separation of materials after demolition and recycling of these, which is an activity with quite a low circularity. As stated by the owner of firm E "of course, we all separate waste, so we have a whole battery of containers at a demolition project".

Among the interviewees was also mentioned specifically the Forest Stewardship Council (FSC) certification, which is a certification that ensures that products provide social, economic and environmental benefits and originate from responsibly managed forests (FSC United Stated, 2020). The most discussed strategy, for all firms, was the 'extent the lifespan of a product' group, with activities as the transformation of an old office or barn or the use of old materials while keeping its function. The owner of firm F said: "Last year, we made a house from a very old pig shed, we also made a house from a half- timbered house, which is even older than a pig shed".

Table 2. Overview of the cases regarding their social responsibility and motivations for circular economic activities

Firm	***A***	***B***	***C***	***D***	***E***	***F***	***G***
Familiar with CE	Yes	No	No	Yes	Yes	Yes	Yes
Application of CE	Yes	No	Yes	Yes	Yes	Yes	Yes
Application of SR practices	Yes	No	No	Yes	Yes	Yes	Yes
Gender of owner	Male	Male	Male	Male	Male	Male	Male
Number of employees	24	7	10	180	25	56	80
Motivations for CE activities							
Competitiveness	x	x	x	x	x	x	x
The environment	x				x	x	x
Clients initiative			x	x	x		
Financial benefits for customers		x	x				x
Financial benefits for the firm			x	x			
Personal	x					x	
Policy issues		x			x		
Historical reasons				x	x		

Table 3. Founded circular economic activities

Strategy	Activity
Smarter product use	➢ Thinking beforehand on the material choice, to make it easier to disassemble and to use again after demolishing ➢ Thinking very good about the way of isolation, to make sure the building has not to be halfly demolished later on
Extent the lifespan of a product	➢ Before demolishing a building in total, first check which constructions can be preserved, perhaps with some refurbishing ➢ Choosing for more expensive, but longer usable products ➢ Using a used steel construction, frame or another refurbished product ➢ Transform an old office or barn into a house
Useful application of materials	➢ Waste material being separated after demolishing and being recycled ➢ Being FSC certificated ➢ Using recycled products

Only two firms (A and D) mentioned activities that used products smarter, they were thinking already on the disassembling process, explained by the owner of firm A as "with new construction houses we are going to find out how to use materials that are able to be taken back at the end of life of the product, so assemble and disassemble".

4.2 Motivations for implementing circular economic activities

4.2.1 Summary of motivations

During the interviews, it was asked what motivated firms to implement CE activities, it also became clear from their tone of speaking. The most mentioned motivation was that CE activities can **enhance competitiveness and therefore continuity of the firm**. Mentioned by the owner of firm E as "also, for the firm of course, I think you should see this as an opportunity to be right in there distinctive and must be able to serve the demand", and firm F "… it is important to involve your employees with this. So, later on they can say this is something great. And I think you can say we have few illnesses and staff turnover; you have to see it in total and not only the costs at this moment".

A possible explanation for the fact that all firms mentioned this motivation was given by the owner of firm A: "… an entrepreneur is generally still put together to see how I can keep my business running, what does the market demand and what profit balance remains, certainly with small or medium sized companies". It has to be mentioned that two firms (F and G) clearly stated that competitiveness is a side issue, and not the main reason of importance.

Among the firms that were applying CE activities, **the environment and scarcity of raw materials** were also relatively often mentioned as a motivation. The owner of firm A performed CE activities "because the raw materials deplete, no more or no less. … So, you cannot only say all the time we have enough resources, because we do not have at all". The owner of firm E mentioned: "Partly my responsibility towards society and the environment, that responsibility comes first".

Another reason for CE activities is **the initiative of the client**. Interviewees explained that when the clients ask for more circular and sustainable materials, they act on this:

> In the luxury building of houses we see clients that ask for this and think it is a very important item, the circular character of a house. As for now we are building a fully wooden house, so also here is a part of circularity. (Owner firm E)

Also mentioned are **the financial benefits for the customers**. Sometimes when materials that are needed are accidently in stock, it is cheaper to use them, than new ones. Or if one can use a great part of the old construction it is less costly, this was explained by the owner of firm G as:

> Around 2012/2013 a lot of office buildings became empty. … In cities in Twente or other parts of the Netherlands there is a lot of demand for new houses, with a transformation where big parts can be saved and reused, it means that you are more cost-efficient and therefore a more cost-efficient price for the house. This way you can serve the lower segment in the house building sector, the starters.

The firms C and D explained that CE activities sometimes brought **a financial advantage** for them. The owner of firm D described "we also try to separate materials after demolition, also on location, just because it is cheaper".

Also mentioned sometimes as motivation are **historical reasons**. Interviewees explained that sometimes monuments cannot be demolished, or very old tiles have to be used in the new building: "With monuments you are obliged to reuse materials and constructions, because you are not allowed to throw everything away" (Owner firm D).

Another reason mentioned among the firms are **policy issues**. The owner of firm B mentioned this as: "Regulations from the government, if it is going to be obligated by the government, then that is definitely a motivation to perform CE activities".

Finally, firm A and F mentioned several times that they performed CE activities because of **personal reasons**, they did it for a good feeling and it gave them a kick. It became clear they really gave about the environment, they did it because they really want to. Reasons mentioned above, as financial benefits, policy issues or client's initiative were not mentioned by these firms. The owner of firm F described "I think that is magnificent, I get goose bumps when I walk through a building with a lot of re-used constructions and materials. I think that is great and priceless. I am a man of nature and I do it for a good feeling".

In Table 2 these motivations are summarized, ranging from most mentioned and important to not important.

4.2.2 Motivations in relation with other factors

Interesting to see is that the firms who were not familiar with CE activities had motivations that were mostly about money. Those were the ones with the fewest employees, so the smallest firms, and the youngest owners.

Despite their motivations, all firms talked about the cost issue of CE activities that kept them from implementing more CE activities, however some put more clearance on this barrier. The owner of firm D explained this: "What can be seen, and it is a big issue, that the costs of circular products are too high, and people do not have enough money, then such projects die".

Another barrier that was often mentioned is that stakeholders are currently not really thinking about this kind of activities. Mentioned by the owner of firm E as "I think this still has to grow, and the clients have to be ready for this. At the moment I have many clients where this does not play a role". Or that firms which apply CE-activities are being seen as cumbersome, and therefore be skipped for projects. According to the owner of firm A:

> A disadvantage is that you are being put away as a devious contractor with a lot of processes. A big category will not be doing business with you, since he is less free in material choice or in his design.

4.3 The circular economy in relation with social responsibility

4.3.1 How do circular economic activities improve the social responsibility of firms?

When during the interview the interviewees were asked questions about how they thought their CE activities could improve their SR, different kinds of answers came up. Some clearly stated they thought the more CE activities they had in their strategy, the greater the contribution to their SR. As referred to by the owner of firm D concerning the environmental aspect: "If you perform CE activities well and have as little as possible waste, then you put less pressure on the environment, those two are an effect of each other".

On the other hand, he explained that "Circularity is because I think it is going to change that way, and the SR part is about me thinking it is important that people have a good image of our firm, that we do more than just fill or own pockets". Opposite, the owner of firm C mentioned that performing CE activities could actually create appreciation from people, and therefore actually create that good image: "You will create a supporting base, appreciation among the clients but also among the employees".

Another aspect that was mentioned is that the construction sector uses a lot of materials and could therefore help society on the successfulness of the CE. The owner of firm E described this as: "In relation with other branches the construction sector uses a lot of materials in the Netherlands, therefore the construction sector could contribute substantially to the success of the CE in the Netherlands".

Something that was also brought up, is that the CE could raise awareness on the great possibilities there are concerning re-use, materials and the concerns among the environment. This argument explains that when people see all these CE possibilities, they will start to think about the world and the environment, which could make CE activities attribute positively to the responsibility towards the environment of the whole society. The owner of firm F referred to this as:

> It is purely about creating awareness, for example, we separate tempex from white tempex, in the beginning the boys are sceptical about that, but if I explain this way you do not have to make new materials, but recycle the old ones, they go for it.

The economic perspective of SR was not mentioned by the firms. Specifically, for the social aspect of SR, the owner of firm F explained that they can help people at a care farm using CE activities: "We take waste wood with us and bring it to the care farm, where those people make nice things out of it. . . . They are hammering all day with our wood. With Christmas our clients get these as a present".

When other interviewees were asked about this social aspect, most did not see a relation with CE, however firm A and D mentioned that when using CE activities a house is easier to adjust if necessary, for example if people get older and you think beforehand how people can stay in their house as long as possible. Described by the owner of firm A as: "So, for example that you construct life course resistant houses, so you think beforehand could these people later on, perhaps with small adjustments, live on the ground floor".

4.3.2 The social responsibility strategy in relation with circular economic activities

Interesting to see is the relation of CE with the firms' general SR strategy. From the two firms that were not familiar with the CE and did not refer to it or to a minimum, both also did not have a strategy or applied any SR practices. Although firm B states on their website it has several CE activities and SR practices in place, concerning their CE activities it says: "And good to know, we are committed to re-use and recycle materials" (Website firm B). When asking about this, the owner of firm B stated: "Our website is made by specialized website designers, they do this in the most efficient way and say that when you put words like this on your website you attract people, in general we do nothing with SR".

Actually, these firms seemed to care mostly about the costs, when asking about their mission and vision ". . . actually, it is to earn a good living with this firm" (Owner firm B), and "of course money, that is priority number one" (Owner firm C). It seemed they did not really feel that their firm has a big impact on the environment and society. The owner of firm C felt about SR as: "The government tries to put us there in the corner, I am not sure if we agree with that, but it is happening…".

Among the other firms, no firm had a formulated strategy regarding SR. However, all of them applied several SR practices. For example, they are all supporting local sport clubs and local activities. Firm G focusses on their own foundation with support for children in Africa, instead of focusing on local activities. Furthermore, they all mentioned they think SR is very important when doing business, except for firm D, where this was not discussed, and seemed less important, as he stated: "You can see again that SR is good for your firms' name". When connecting this towards the motivations for CE activities, firm D also did not mention the environment and scarcity of resources as a motivation. Firm F seemed to regard SR most important, as mentioned by the owner: "I think it is very important, I would almost say that if we do not have that anymore, I will stop tomorrow, that is my motivation".

This observation was recognized by the owner of firm G, as he mentioned: "If you think society and the environment are important within your organization, then this also means that the kind of projects you do are in agreement with this".

5. DISCUSSION

5.1 Conclusion

5.1.1 Theoretical implications

This research aimed to identify motivations for small and medium sized construction firms to implement CE activities, and to discover how this implementation could improve these firms' SR. Based on in-depth interviews with the owners of seven SME construction firms it seemed that most SME construction firms are indeed aware of the concept and implement some CE activities (Adams et al., 2017; Benachio et al., 2020; Schut et al., 2016).

The findings for *RQ1: What motivates small and medium sized construction firms in the Netherlands to implement circular economic activities?,* indicate that firms have several motivations for implementing CE activities. The relatively most obvious reason was having a competitive advantage and therefore stimulating the continuity of the firm, as all firms mention this (Tuladhar et al., 2016; Agudelo et al., 2019). This is in line with the findings of Drabe and Herstatt (2016) that firms implement CE activities out of fear of a potential loss of market share or for the competition from other firms that apply CE activities. Other motivations that were mentioned were the environment, financial benefits for the firm or for the clients, initiative of the client (Adams et al., 2017), historical reasons, policy issues and personal reasons.

Motivations as availability of resources, financial benefits and organizational culture are in line with motivations for SR activities recognized by Zhang et al. (2019). The findings indicate that there can be made a distinction between firms that applied no or minimal CE activities, some CE activities (without real awareness of the concept) and CE activities with certainty. Besides competitiveness as motivation, for these first two groups, motivations were mostly financial, policy or client based, whereas the motivations for the last group were more personal and environmental based. This group did not mention financial benefits, their own feeling about it seemed to play a bigger role.

It can be said that motivations for SME construction firms to implement CE activities are mostly competitive based. Next to that, there seems to be a difference between the firms regarding their motivations being more personal/environmental or financial based.

The results for *RQ 2: How can the implementation of circular economic activities improve small and medium sized construction firms' social responsibility?*, indicate that firms see various ways in which CE activities can improve their SR. Recognized is the fact that when one uses fewer materials by performing CE activities, less pressure is put on the environment and the (future) society, which makes a firm more socially responsible (Murray et al., 2017; Ness ,2008). Creating awareness about the environment is also something that CE activities could do to improve the SR, by making people aware of re-using and recycling they will start to think about the environment. Although in existing research it is not clear how CE activities improve the social aspect of SR as social opportunities (Geisendorf & Pietrulla, 2017; Murray et al., 2017), it was found that CE activities in the construction sector could possibly lead to people being able to live longer in their house. Besides, recycled waste material can lead to people becoming more interested in the care farm and therefore bring social opportunities. Furthermore, the findings indicate that if a firm implements CE activities, it is likely to practice SR, or the other way around.

So, there are different ways CE activities could improve SME construction firms' SR, most apparent is by putting less pressure on the environment. Besides, the fact that firms who implemented CE activities also practiced SR, or the other way around, definitely indicates that these two concepts are aligned.

5.1.2 Managerial implications

The research findings indicate that firms are aware of CE and know it is an important upcoming concept. However, the relative higher costs for SMEs (Burlea-Schiopoiu & Mihai, 2019; Xia et al., 2018; Mura et al., 2020), unawareness among their stakeholders and therefore being put away as a devious contractor, are preventing SME construction firms to implement CE activities, thus less likely to improve SR. Firms are advised to delve into this CE and start to learn actively, this will make them more conscious. Perhaps, if they get to learn about CE activities, they will get more enthusiastic about it and start to create some connections in this field.

Besides, firms should see implementation of CE activities as an investment in the future of their firm, as currently these activities are often more expensive, but likely upcoming in the next few years and, as this study shows, firms could become more motivated to develop SR practices. By starting to implement CE activities step-by-step, stakeholders' awareness of the concept will increase, which could make further implementation easier. So, despite sometimes circular economy options will be more expensive, there is a great chance this will pay out and result in a competitive advantage over other construction firms in the future.

5.2 Limitations and directions for future research

This research has several limitations, which reveal, together with the findings of this study, some interesting opportunities for future research. First of all, qualitative research was used to learn about the different cases, not to represent a population. Therefore, generalizations cannot be made from the sample chosen in this research and it is difficult to reveal patterns or themes from only seven cases. To enrich the in-depth insights gained in this study, future research is necessary to explore these concepts. For example, this can be done by using quantitative research methods as survey research and measure CE activities and implementation of CE activities among Dutch SMEs in the construction sector. Besides, the relationship between CE activities and whether CE activities can result in improved SR can be further discovered.

Second, interviews always contain a certain degree of bias. The responses of the interviewees could be influenced by the way the questions were asked by the interviewer. Moreover, the interviewees can perceive the concepts differently or respondents gave socially desirable answers. Also, the research contains interpretation bias in the coding process. To mitigate these limitations, open questions were used, and a definition was provided if necessary. Furthermore, it was clearly stated that the interviews were done anonymously.

The fact that the interviews were conducted via Google meet because of the Covid-19 virus instead of in real-life might also have influenced the outcomes. Although, real life interviews have to some extent a different kind of interaction and might influence the way people perceive questions and answers. This effect was minimized by making sure the internet connection was good, the interviewees felt comfortable doing interviews online and making eye contact with them.

Third, as this research shows, firms are motivated to implement CE activities and these CE activities could improve firms' SR.

However, the findings of this study also show that firms had concerns about the costs regarding CE activities, as CE activities are often more expensive. Therefore, future research should focus on how SME construction firms can learn how the benefits to implement CE activities discovered in this research could outweigh the costs and therefore add value to the firm in a socially responsible way.

Last, this research contributes to the literature of motivations for CE activities and the relation with SR by focusing on a specific sector, as this has not been studied before. This answered calls for complementary research to compare this with other sectors. For example, are their motivations for implementing CE activities similar or are they different, and how do other sectors perceive CE activities and SR according to improvements to competitive advantage. As all interviews were done with men, it would also be interesting to see how women perceive this.

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7. REFERENCES

Adams, K. T., Osmani, M., Thorpe, T., & Thornback, J. (2017). Circular economy in construction: current awareness, challenges and enablers. *Proceedings of the Institution of Civil Engineers - Waste and Resource Management*, *170*(1), 15–24.

Agudelo, M. A. L., Jóhannsdóttir, L., & Davídsdóttir, B. (2019). A literature review of the history and evolution of corporate social responsibility. *International Journal of Corporate Social Responsibility*, *4*(1), 1.

Ashrafi, M., Adams, M., Walker, T. R., & Magnan, G. (2018). How corporate social responsibility can be integrated into corporate sustainability: a theoretical review of their relationships. *International Journal of Sustainable Development & World Ecology*, *25*(8), 672-682.

Auerbach, C., & Silverstein, L. B. (2003). *Qualitative data: An introduction to coding and analysis* (Vol. 21). NYU press.

Basuyau, V. (2020). Construction and demolition waste recycling in Europe: Long-term trends and challenges ahead. *Indian Concrete Journal, 94*(1), 8-18.

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The qualitative report, 13*(4), 544-559.

Benachio, G. L. F., Freitas, M. D. C. D., & Tavares, S. F. (2020). Circular economy in the construction industry: A systematic literature review. *Journal of Cleaner Production*, *260*, 121046.

Berg, N., Holtbrügge, D., Egri, C. P., Furrer, O., Sinding, K., & Dögl, C. (2018). Stakeholder pressures, CSR practices, and business outcomes in Denmark, Germany and the Netherlands. *European Journal of International Management, 12*(4), 472-500.

Bowen, H. R. (2013). *Social responsibilities of the businessman*. University of Iowa Press.

Burlea-Schiopoiu, A., & Mihai, L. S. (2019). An Integrated Framework on the Sustainability of SMEs. *Sustainability, 11*(21), 6026.

Campbell, J. L., Quincy, C., Osserman, J., & Pedersen, O. K. (2013). Coding in-depth semistructured interviews: Problems of unitization and intercoder reliability and agreement. *Sociological Methods & Research*, *42*(3), 294-320.

Carroll, A. B. (1979). A three-dimensional conceptual model of corporate performance. *Academy of management review, 4*(4), 497-505.

Cohen, L., Manion, L., & Morrison, K. (2017). *Research Methods in Education* (8th ed.). Routledge.

Cooper, T. (1999). Creating an economic infrastructure for sustainable product design. *Journal of sustainable product design, 8*(8), 7-17.

Costa, R., & Menichini, T. (2013). A multidimensional approach for CSR assessment: The importance of the stakeholder perception. *Expert systems with applications, 40*(1), 150-161.

Drabe, V., & Herstatt, C. (2016). Why and how companies implement circular economy concepts – The case of cradle to cradle innovations. *R&D Management Conference from Science to Society – Innovation and Value Creation,* 3-6.

Draper S. (2000). *Corporate Nirvana: Is the Future Socially Responsible?* Industrial Society.

European Commission. (2015). *The Revised User Guide to the SME definition. https://ec.europa.eu/growth/content/revised-user-guide-sme-definition-0_en*

Feng, Z. (2004). Circular economy overview. *People's Publishing House*, 18-25.

Fontaine, M. (2013). Corporate social responsibility and sustainability: the new bottom line? *International Journal of Business and Social Science, 4*(4).

Freeman, E. R. (1984). *Strategic Management: A Stakeholder Approach.* Pitman.

Fusch, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *The qualitative report, 20*(9), 1408.

Geisendorf, S., & Pietrulla, F. (2018). The circular economy and circular economic concepts—a literature analysis and redefinition. *Thunderbird International Business Review*, *60*(5), 771-782.

Ghisellini, P., Cialani, C., & Ulgiati, S. (2014). Circular Economy: State of the Art, Promises and Expectations. A Review. *Working papers in transport, tourism, information technology and microdata analysis,* 39.

Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner production*, *114*, 11-32.

Górecki, J., Núñez-Cacho, P., Corpas-Iglesias, F. A., & Molina, V. (2019). How to convince players in construction market? Strategies for effective implementation of circular economy in construction sector. *Cogent Engineering*, *6*(1), 1690760.

Griffee, D. T. (2005). Research Tips: Interview Data Collection. *Journal of Developmental Education*, *28*(3), 36-37.

Hill, J. E. (2015). The circular economy: from waste to resource stewardship, part I. *Proceedings of the Institution of Civil Engineers-Waste and Resource Management, 168*(1), 3-13.

Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative health research*, *15*(9), 1277-1288.

Huang, X. (2004). Circular economy: Industrial pattern and policy system. *Nanjing University Press,* 18.

Islam, M. R., & Faruque, C. J. (2016). Features of qualitative research. In *Qualitative research: Tools and techniques* 18-53. Farwood Publishing.

Jamali, D., Mezher, T., & Bitar, H. (2006). Corporate social responsibility and the challenge of triple bottom line integration: insights from the Lebanese context. *International journal of environment and sustainable development, 5*(4), 395-414.

Jeyanthan, G., & Ilankumaran, G. (2019). Circular Economy – Key for the Change of Natural Resource from Scarce to Abundance. *International Journal of Recent Technology and Engineering*, *8*(2S6), 666–671.

Kajornboon, A. B. (2005). Using interviews as research instruments. *E-journal for Research Teachers*, *2*(1), 1-9.

Kechiche, A., & Soparnot, R. (2012). CSR within SMEs: Literature review. *International Business Research, 5*(7), 97.

Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, conservation and recycling*, *127*, 221-232.

Lancaster, M. (2002). Principles of sustainable and green chemistry. In J. Clark & D. Macquarrie (Eds.), *Handbook of green chemistry.* Wiley-Blackwell.

Llatas, C. (2011). A model for quantifying construction waste in projects according to the European waste list. *Waste management*, *31*(6), 1261-1276.

Liu, Q., Li, H.-M., Zuo, X.-L., Zhang, F.-F., & Wang, L. (2009). A survey and analysis on public awareness and performance for promoting circular economy in China: A case study from Tianjin. *Journal of Cleaner Production, 17*, 265–270.

Martínez, J. B., Fernández, M. L., & Fernández, P. M. R. (2016). Corporate social responsibility: Evolution through institutional and stakeholder perspectives. *European journal of management and business economics, 25*(1), 8-14.

Masi, D., Day, S., & Godsell, J. (2017). Supply chain configurations in the circular economy: A systematic literature review. *Sustainability*, *9*(9), 1602.

Merli, R., Preziosi, M., & Acampora, A. (2018). How do scholars approach the circular economy? A systematic literature review. *Journal of Cleaner Production*, *178*, 703-722.

Mosca, F., & Civera, C. (2017). The evolution of CSR: An integrated approach. *Symphonya. Emerging Issues in Management, 1*, 16-35.

Mura, M., Longo, M., & Zanni, S. (2020). Circular economy in Italian SMEs: A multi-method study. *Journal of Cleaner Production*, *245*, 118821.

Murray, A., Skene, K., & Haynes, K. (2017). The circular economy: an interdisciplinary exploration of the concept and application in a global context. *Journal of business ethics*, *140*(3), 369-380.

Myers, M. D. (1997). Critical ethnography in information systems. *Information systems and qualitative research* (276-300). Springer.

Ness, D. (2008). Sustainable urban infrastructure in China: Towards a Factor 10 improvement in resource productivity through integrated infra- structure systems. *International Journal of Sustainable Development & World Ecology, 15*, 288–301.

Netherlands Chamber of Commerce, KVK. (2020, January 20). *What is an SME?* Retrieved from https://business.gov.nl/starting-your-business/first-steps-for-setting-up-your-business/what-is-an-sme/

Noy, C. (2008). Sampling knowledge: The hermeneutics of snowball sampling in qualitative research. *International Journal of social research methodology*, *11*(4), 327-344.

OECD. (z.d.). *Small Businesses, job creation and growth: facts, obstacles and best practices*. Retrieved from https://www.oecd.org/cfe/smes/2090740.pdf

O'leary, Z. (2004). *The essential guide to doing research*. Sage.

Pearce, D. W., & Turner, R. K. (1990). *Economics of natural resources and the environment*. JHU Press.

Potting, J., Hekkert, M. P., Worrell, E., & Hanemaaijer, A. (2017). *Circular economy: measuring innovation in the product chain* (No. 2544). PBL Publishers.

Roberts, P 1999. 'The development of NEdSERV: quantitative instrumentation to measure service quality in nurse education'. *Nurse education today, 19*(4), 396-407.

Russo, A., & Perrini, F. (2010). Investigating stakeholder theory and social capital: CSR in large firms and SMEs. *Journal of Business ethics, 91*(2), 207-221.

Russo, A., & Tencati, A. (2009). Formal vs. informal CSR strategies: Evidence from Italian micro, small, medium-sized, and large firms. *Journal of Business Ethics, 85*(2), 339-353.

Sarkis, J., Ni, N., & Zhu, Q. (2011). Winds of change: Corporate social responsibility in China. *Ivey Business Journal*, *75*(1), 1-4.

Sassanelli, C., Rosa, P., Rocca, R., & Terzi, S. (2019). Circular economy performance assessment methods: A systematic literature review. *Journal of Cleaner Production, 229*, 440-453.

Schut, E., Crielaard, M., & Mesman, M. (2016). *Circular economy in the Dutch construction sector: A perspective for the market and government.* Retrieved from https://www.rivm.nl/bibliotheek/rapporten/2016-0024.pdf

Stake, R. E. (1995). *The art of case study research.* Sage Publications Ltd.

Stake, R. E. (2005). *Qualitative Case Studies.* In N. K. Denzin & Y. S. Lincoln (Ed.), *The Sage handbook of qualitative research* 443–466. Sage Publications Ltd.

Stoyanova, T. (2019). CSR Strategies Applied in Terms of Circular Economy. *Economic Alternatives,* (2), 263-274.

Suen, L. J. W., Huang, H. M., & Lee, H. H. (2014). A comparison of convenience sampling and purposive sampling. *Hu Li Za Zhi*, *61*(3), 105.

Tezel, A., Taggart, M., Koskela, L., Tzortzopoulos, P., Hanahoe, J., & Kelly, M. (2020). Lean construction and BIM in small and medium-sized enterprises (SMEs) in construction: a systematic literature review. *Canadian Journal of Civil Engineering*, *47*(2), 186-201.

Tuladhar, S., Yuan, M., & Montgomery, W. D. (2016). An Economic Analysis of The Circular Economy.

Uddin, M. B., Tarique, K. M., & Hassan, M. (2008). Three dimensional aspects of corporate social responsibility. *Daffodil International University Journal of Business and Economics, 3*(1), 199-212.

UTS. (2015) What Will a Circular Economy Look like in Australia. Retrieved from http://www.uts.edu.au/research-and-teaching/our-research/institute-sustainable-futures/news/what-will-circular-economy

Van den Berg, M., Voordijk, H., & Adriaanse, A. (2020). Recovering building elements for reuse (or not)–Ethnographic insights into selective demolition practices. *Journal of cleaner production*, *256*, 120332.

Van Marrewijk, M. (2003). Concepts and definitions of CSR and corporate sustainability: Between agency and communion. *Journal of business ethics*, *44*(2-3), 95-105.

Wang, J., Qin, S., & Cui, Y. (2010). Problems and prospects of CSR system development in China. *International Journal of Business and Management*, *5*(12), 128.

Werther Jr, W. B., & Chandler, D. (2005). Strategic corporate social responsibility as global brand insurance. *Business Horizons, 48*(4), 317-324.

Xia, B., Olanipekun, A., Chen, Q., Xie, L., & Liu, Y. (2018). Conceptualizing the state of the art of corporate social responsibility (CSR) in the construction industry and its nexus to sustainable development. *Journal of Cleaner Production, 195*, 340-353.

Xue, B., Chen, X. P., Geng, Y., Guo, X. J., Lu, C. P., Zhang, Z. L., & Lu, C. Y. (2010). Survey of officials' awareness on circular economy development in China: Based on municipal and county level. *Resources, Conservation and Recycling*, *54*(12), 1296-1302.

Yin, R.K. (1994) *Case study research: design and methods (*2nd edition). Sage.

Yin, R. K. (2003). *Case study research: design and methods* (3rd edition). Thousand Oaks, CA: Sage.

Yuan, Z., Bi, J., & Moriguichi, Y. (2006). The circular economy: A new development strategy in China. *Journal of Industrial Ecology*, *10*(1-2), 4-8.

Zhang, Q., Oo, B. L., & Lim, B. T. H. (2019). Drivers, motivations, and barriers to the implementation of corporate social responsibility practices by construction enterprises: A review. *Journal of cleaner production*, *210*(3), 563-584.

8. APPENDICES

8.1 Appendix A

Circular Economic activities

1. Are you familiar with the concept of 'Circular Economic activities'?

   - If not: provide with definition

2. Has your firm implemented Circular Economic activities in its business activities?

   - If not: Are you planning on implementing this to some extent in the future?

3. If yes: Can you tell me about these activities? Why are they important?
4. If yes: Can you tell me why you developed CE activities? And how did you do this?
5. If yes: Can you tell me how and when you implemented these activities?

Social Responsibility

6. What are the values and ideals driving your firm?
7. Has your firm a strategy or policy regarding social responsibility?

   - If yes: Can you tell me the most important ideas of this?
   - If yes *and yes on question **2**:* What is the relation between this policy and the Circular Economic activities of your firm?

8. To what extent do you think social responsibility is important when doing business?
9. Do you have future plans, or do you see future possibilities for your firm regarding Social Responsibility? (Are you planning on becoming more socially responsible?)
   - If yes: What are those?

Motivations for implementation

10. What are your motivations to implement CE activities (now or in the future)?
11. How do you think CE activities contribute towards the Social Responsibility of a/your firm?
12. What are advantages and what are disadvantages for your company to implement CE activities?

8.2 Appendix B
Table 4. Category labels and codes

Category labels	***Codes***
CE familarity and application	Familarity with CE Application of CE activities
CE-activities	CE-activities Implementation of CE-activities
Firms' stratey	General strategy of the company Customer type Strategy (with regard to CE and SR)
Mission and vision	Ideal Mission Vision Values Mindset towards CE Mindset / motivation Driver of director
SR strategy	SR-practice Future SR-practice plans SR application Importance of SR Reason for SR Saying is doing
CE disadvantages	Barriers for CE-activities Risk of CE Disadvantage of CE-activities
Motivations for CE	Motivation for CE Reason of importance of CE Advantage of CE-activities
The future of CE	Ideal for CE-activities Idea/hope for making CE easier
CE in relation with SR	SR in relation with CE
Stakeholders and CE	Government and CE (Reaction on) suppliers and CE Employees and CE Mindset of employees