Cognitive Frames for Sustainability: A Bilateral Concept?

An Application to the German Agriculture Sector

Uppsala University Campus Gotland
Department of Business Studies

Johanna Kobilke
Leoni Litterst

Supervisor: Fredrik Sjöstrand
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Abstract

Throughout the past decades, global institutions and private actors have stepped into action in order to determine how a more sustainable development can be achieved in the future. The role of private organizations in this process, is still subject to ongoing debate in both research and practice. How individual managers perceive and integrate sustainability into their business, can be assessed with cognition theory. It is assumed that cognitive frames play a role, when dealing with this complex topic. One approach to evaluate such frames is to develop several characteristics that define the way these frames are shaped. Those indicate whether someone perceives sustainability as a mere business case or rather as a more complex, paradox issue that needs to integrate several, often conflicting demands.

The aim of this thesis is to develop a better understanding for how specific cognitive frames are present in the perception of social, environmental and economic sustainability demands and their relation to the respective organization by individual managers. Through a quantitative study a theoretical framework, which is differentiating managers along the typology of the ‘Business Case Frame’ and opposed to that the ‘Paradoxical Frame’, is tested and analyzed. The study is conducted in the agricultural sector in Germany. Finally, it is suggested to extend the existing framework by two additional cognitive frames to contribute to the ongoing debate around business sustainability. Consequently, a differentiated understanding of the role of cognitive frames for sustainability in practice is encouraged.

Keywords: Cognitive Frames for Sustainability, Business Case, Paradoxical Studies
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List of Abbreviations

SDGs       Sustainable Development Goals
i.e.       id est (lat.) – that is
UN         United Nations

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1. Introduction

During the past decades, businesses, societies, and public institutions have faced the increasing challenge of adapting practices to the consequences of climate change, a constantly growing population and constraints in resource availability. Countries around the world have stepped into action by defining 17 Sustainable Development Goals (SDGs) in order to "end poverty, protect the planet and ensure prosperity for all" (United Nations, 2018). Thus, companies are increasingly incorporating sustainability goals in their business strategy in order to remain competitive in their markets (Rushton, 2002). Consequently, the sustainability discourse is approached on the macro-level through highlighting the role of the economy, society and public institutions (Dyllick/Muff, 2016). On the micro-level, the focus lies on individual businesses that need to position themselves towards achieving a more sustainable development (Dyllick/Muff, 2016). Therefore, different economic sectors are claimed upon aligning their operations with various public and private requirements for an agenda that fosters the achievement of the prior mentioned SDGs.

Gaining a more detailed insight into individual differences in perceiving sustainability and its implications for business has been researched with regard to cognition theory. "Cognition theories are grounded in the observation that everything people think, say, and do is influenced by mental processes, that is, by the cognitive mechanisms by which humans perceive the world, acquire information, and then process that information to accomplish a wide range of tasks" (Bryant, 2012, p. 70). Hereby the role of so called ‘cognitive frames’ has been part of a growing body of literature in management theory and more specifically in the debate around business sustainability (Hahn et al., 2014). However, the various business sectors presumably differ in their perception of the meaning of sustainability and its implications for their businesses. Thus, this paper focuses on embedding the sustainability discourse on the micro-level into the agricultural sector. This was chosen as the macro-level targets, such as the SDGs, emphasize the role of agriculture for sustainability (United Nations, 2018). Hence, an understanding of the agricultural management perspective has important implications and supports an understanding of the micro-level perspective.

Initially, the following paper will display the development and literature context around two potential cognitive frames for sustainability, which serve as the theoretical framework for the
empirical study. The agriculture sector has been identified as an appropriate case example for testing the theory in practice. Therefore, a short introduction of this sector and its position towards sustainability will be given hereafter. Furthermore, the research process and its implications for testing the theory are delineated. After that, the findings of the quantitative study that was conducted for this paper, are shown and discussed with regard to the theoretical background. To summarize the findings and enlarge the current debate on cognitive frames for sustainability, implications and some additional findings for further theory development are illustrated. Eventually, the paper is concluded with limitations as well as suggestions for future research.

1.1 Research Background and Problem Formulation

In order to engage in the discourse around sustainability, an explicit definition of the term is needed, as there is no officially recognized identification of what sustainability exactly means so far. In general, the term is commonly linked to the interaction of biological systems and human organizational approaches (Demartini et al., 2011). With public institutions stepping into fostering sustainability, the term nowadays is often used interchangeably with sustainable development to emphasize the process that is needed to achieve sustainability. For this, the Norwegian politician Brundtland shaped a common understanding by delivering one of the most valued definitions: Sustainable development is able "to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987, n.p.). Within this, business sustainability is one of the topics that is still focus of an ongoing debate. In fact, a considerable amount of research on how to incorporate sustainability into businesses has been published recently (e.g. Margolis/Walsh, 2003; Porter/Kramer, 2011). Opinions around how to view this relation are still divergent and call for further assessment.

In this regard, two broad literature streams have been categorized as opposing extremes of viewing the relation between the threefold attributes of social, environmental and economic concerns. These are defined as either viewing sustainability as a mere business case or a more complex, paradoxical issue that requires profound integration of various demands simultaneously (Carroll/Shabana, 2010; Smith/Lewis, 2011).
With regard to cognition theory, these differing views are most likely integrated into cognitive mechanisms that frame sustainability input in a specific way. Therefore, this thesis examines the question: *Through which cognitive frames for sustainability do managers perceive the relation between social, environmental and economic demands for their business?*

1.2 Research Aim
The aim of the study is to assess whether the model of cognitive frames for sustainability by Hahn et al. (2014) is applicable in practice. As sector specific differences are expected, it is chosen to solely focus on the agriculture sector due to its importance for Sustainable Development. This implies, that the terms ‘farmer’ and ‘manager’ will be used interchangeably throughout this thesis.

A quantitative study will assess, if managers can be categorized into the two suggested frames. Through investigating various aspects of understanding the role of sustainability for business, it will be determined how farmers respond to them. Within that, a comparative analysis aims to give insight on how the mindsets of managers in the respective sector may differ.

Overall, this study will contribute to the sustainability discourse in two ways. Firstly, the approach of testing the applicability of the theory to practice is guided by an explorative character. By that, this study will add to the discourse around business sustainability. Secondly, the more detailed insight into agricultural managers and the perceived sustainability demands for their businesses serves as a descriptive and comparative outcome. Thereby, implications for the peculiarities of sustainability in the respective sector will be given.
2. Theoretical Framework

In the following section the research problem will be put in context with corresponding theoretical background. Hereby, the main framework, that the empirical study is built upon, will be introduced.

2.1 Sustainability

In recent years, the term sustainability has been widely discussed. On the macro-level, the introduction of the Sustainable Development Goals through the Agenda 2030 of the United Nations, has provided a better understanding of what exactly achieving a more sustainable future includes (United Nations, 2018). However, when it comes to the micro-level and the role of businesses and their corporate sustainability, the picture is less clear in both research and practice (Dyllick/Muff, 2016). The different approaches to business sustainability, that are mainly focused on increasing economic value, have led to a "big disconnect" between the sustainability agenda on the organizational and the global level (Dyllick/Muff, 2016, p.157). This is linked to the framework of Planetary Boundaries, that was introduced by several researchers in order to establish a common understanding of the impact of human actions on the planet’s capabilities to sustain in the long-term (Rockström et al., 2009). Among others, boundaries for global freshwater use, change in land use and climate change have been identified, and can be seen as closely linked to the researched sector of this thesis.

A common concept that links the three dimensions that are relevant for business sustainability with respect to achieving sustainability on the macro-level is the Triple Bottom Line, by John Elkington (1998). Elkington (1998) investigated dimensions that are crucial for sustainability and thus argues that companies must incorporate not only economic, but also social and environmental aspects simultaneously.

The following two sections aim to provide an overview of different organizational logics of viewing sustainability in the business context. By this, the foundation for the theoretical framework is provided and positioned within the research body.
2.2 The Business Case for Sustainability - An Instrumental Perspective

It is often referred to the so called "business case" for sustainability, that focuses on the opportunities to gain competitive advantage through sustainability for companies (Hockerts, 2015). These are multifaceted and may take the form of risk reduction, efficiency gains, brand management or new product development (Hockerts, 2015). The underlying logic of this approach can be related to an instrumental perspective of sustainability for an organization (Gao/Bansal, 2013). This understanding focuses on the cost or benefit of including environmental and social concerns within the business strategy. Thereby, an emphasis on financial outcome that can be achieved by sustainability practices is fostered (Gao/Bansal, 2013). In fact, there is a number of literature that provides evidence that there is a positive relation between a firm's engagement in responsible activities and their economic, i.e. financial performance (Margolis et al., 2009; Du et al., 2007).

Another associated lens on business sustainability is a win-win logic, which stresses the alignment of the three sustainability dimensions in order to achieve an equal improvement within the dimensions. As a consequence, if a trade-off decision is necessary instead, the financial performance will be prioritized (Van der Byl/Slawinski, 2015).

In sum, research around the relation between business, society and the environment has been predominantly characterized by evaluating the business case of sustainability in the last decades (Carroll/Shabana, 2010). It is inherent in a business case perspective on corporate sustainability that these actions are justified by the benefits for the company, that are associated with them (Carroll/Shabana, 2010).

2.3 The Paradox of Sustainability - Emerging from an Integrative Perspective

Another perspective calls for taking the various demands of business, society and the environment into account simultaneously and accepts the paradox that comes with engaging towards achieving a more sustainable development (Hahn et al., 2014). Analogue to debates around the business case of sustainability, there is various literature that highlights aspects and management implications of paradox studies. These are attempting to comprehend how organizations can comply with different demands at the same time (Smith/Lewis, 2011). Understanding these competing internal and external expectations towards organizations is
enabled by paradox studies (Smith/Lewis, 2011). There are different situations and aspects of organizational practices that inhere paradoxes as well as divergent ways of managers to deal with them (Smith/Lewis, 2011). When mentioning ‘paradox’ within business sustainability, it is referred to "elements that seem logical in isolation but absurd and irrational when appearing simultaneously" (Lewis, 2000, p. 760). It is an underlying assumption of the paradox theory that even though electing between opposing demands might support performance in the short-term, the integration of sustainability in the long-term can only succeed through meeting a variety of requirements (Smith/Lewis, 2011).

This is related to the growing array of literature, that underlines the importance of an integrative logic of business sustainability, which is more closely linked to the idea of the Triple Bottom Line (Elkington, 1998). Consequently, deciding on one of the three pillars, necessarily integrates as well as influences the other two (Gao/Bansal, 2013). This is emphasized by postulating the establishment of both a natural and a societal case for corporate sustainability instead of focusing solely on the business case for corporate sustainability (Dyllick/Hockerts, 2002).

Although the integrative and paradox view of corporate sustainability are based on a similar logic, it is often differentiated between them. The idea of paradox studies is to present ways in which corporations can manage to work through sustainability complexities and tensions. Opposed to that, the integrative view approaches the treatment of tensions through focusing on a balanced relation between the three sustainability pillars (Gao/Bansal, 2013; Van der Byl/Slawinski, 2014).

In sum, the literature on these two different logics of perceiving the relation between business and sustainability is dominated by the business case thinking. This implies a rather instrumental perspective between the connection of economic, environmental and social aspects of sustainability and corporate practices.
2.4 Cognitive Frames for Sustainability

Understanding how individuals view certain external influences and relate it to what they already know can be linked to understanding the cognitive frames, that are active during these processes. Throughout their lives, individuals find themselves confronted with a vast amount of complex information. These often contain ambiguous aspects concerning issues, problems or opportunities that individuals need to assess, process and share (Mervis/Rosch, 1981). Thereby, every individual has a specific and stable lens (Lin/McDonough, 2014) that shapes how the information is understood (Smith/Tushman, 2005). Furthermore, this lens shapes the focus on features within the environment that are considered the most relevant, which then allows an interpretation in context, that leads to decisions as well as actions (Lin/McDonough, 2014). According to the cognitive categorization theory, this mainly succeeds through knowledge structures that establish cognitive frames (Walsh, 1995). These frames can be described as intrinsic mental patterns that help to understand given circumstances (Lin/McDonough, 2014). The academic literature provides the definition of cognitive frames being a "mental template that individuals impose on an information environment to give it form and meaning" (Walsh, 1995, p.281)

The ubiquity of such cognitive frames in the literature ensures their presence also in the business sphere. The fact, that every player within an organization brings their own cognitive mindset can become a challenge as situations are understood differently (Kaplan, 2004). But cognitive frames do not only influence the perception of people, they shape the way that reactions are shown as well as decisions are made. Therefore, such frames often appear in the field of academic studies as well. For instance, the opposition to change or the decision making of managing authorities is subject of these cognitive studies (Andersson/Bateman, 2000; Kaplan, 2004). The latter is especially put into focus when it comes to important decisions that shape an organization's strategy or even the whole business model. In those cases, cognitive frames massively influence how consequences and alternatives are assessed and eventually the decision is made (Kaplan, 2004). Kaplan (2004) argues that cognitive frames then allow a simplification of an information environment. Cognition, in those cases, is influencing managerial decision making (Kaplan, 2004). Effectively, managers succeed in reducing complexity as well as ambiguity through cognitive frames and are therefore able to selectively organize and interpret signals from the organizational context (Dutton/Jackson, 1987).
2.5 The Business Case and Paradoxical Frame for Sustainability

Drawing from the prior elaborated insights on cognitive frames and the variety of sustainability issues that managers are facing, there is the need for a deeper understanding of how such cognitive frames for sustainability supposedly look like.

Considering the tensions that managers, who are confronted with sustainability issues, face, these different ways of viewing concerns for the environment, social welfare and economic prosperity play a vital role. As previously stressed, individuals often use cognitive frames and cues when they encounter complex situations or demands. Therefore, a model of different cognitive frames of understanding sustainability in an organizational context needs to be introduced to gain a clearer understanding of individual corporate sustainability perspectives (Hahn et al., 2014).

Based upon the discourse around the business case and paradoxes of sustainability Hahn et al. (2014) distinguish between the Business Case Frame and the Paradoxical Frame for an individual’s attitude towards dealing with the complex surroundings of sustainability.

In the following, different frame characteristics and their relevance in the research context are presented. These were categorized and summarized by drawing from the development of the two frames by Hahn et al. (2014). It is important to recognize that the two frames were developed to classify managers as two ideal types that make up the ends of a continuum (Doty/Glick, 1994). Consequently, it is most likely, that actual managers’ cognitive frames are settled between these two, due to variations in the different frame characteristics that are described in the following (Hahn et al., 2014; Doty/Glick, 1994).
2.5.1 Content & Integration

With regard to the content of the two frames, Figure 1 shows that both can be categorized along the two axes of the degree of integration and the degree of differentiation, both ranging from low to high.

The degree of differentiation refers to the amount of attributes that an individual is making use of in order to understand sustainability in the business context (Hahn et al., 2014). Consequently, someone with a business case frame only uses few, mostly business related attributes. The degree of integration refers to the way individuals are relating and combining different attributes. Subsequently, a Business Case Frame manager is also not willing or able to connect different, possibly conflicting, economic, social and environmental attributes with each other. Furthermore, individuals, who have a rather business case cognition, tend to aim for aligning the social and environmental aspects of their activities with their business' economic performance (Hahn et al., 2014). A Business Case Frame clearly prioritizes economic attributes over environmental or social issues. This results in thinking in terms of costs and benefits for the financial performance and neglecting any demands that are of a conflicting nature (Gao/Bansal, 2013).

![Figure 1: Opposition of Frames](Own illustration based on the framework by Hahn et al. (2014))

Opposed to that, the Paradoxical Frame is characterized by the ability to juxtapose different attributes from economic and social as well as environmental sides within the understanding
of sustainability (Hahn et al., 2014). Even if underlying rationales diverge, the manager with a paradoxical frame is taking different attributes into account and is going to integrate them to a high degree in his understanding. This consequently results in the ability to accept the multifaceted nature of the relation between all three dimensions, that can be either reinforcing, neutral or contrary to each other (Hahn et al., 2014).

In sum, the clear differentiation between these two extremes indicates, that the more diverse the relevant attributes and the more complex their interrelations are, the more a business case frame changes towards a paradoxical frame (Hahn et al., 2014).

2.5.2 Company Goals

It has become more and more prominent to integrate specific goals into a company’s strategy when engaging in sustainability (Palmer/Flanagan, 2016). Addressing sustainability does require companies to incorporate various demands at different levels into their actions (Hahn et al., 2015). Furthermore, it has been stressed that the achievement of a more sustainable development should result in favourable outcomes across organizational boundaries (Hahn et al., 2015). The previously mentioned disconnect between the micro-level of the firm and macro-level of necessary sustainability improvement at the environmental and social level supports this imperative (Dyllick/Muff, 2016). Additionally, it has been underlined by Whiteman et al. (2013), that current research and practice endeavors are mainly focused on the firm and at most the industry level. This is showing a lack of systems thinking of the planetary boundaries the world is facing (Rockström et al, 2009). This is problematic, since corporate sustainability actions that are solely based at the company-level are not estimated to be sufficient for reaching the macro-level goals (Whiteman et al., 2013).

This problem is also addressed by the cognitive frames for sustainability, as the two extremes are characterized by different implicit goals they are referring to (Hahn et al., 2014). More specifically, an individual with a Business Case Frame, solely focuses on the improvement of the company’s economic performance, while working towards environmental and social matters is driven by economic objectives (Hahn et al., 2014). Thus, companies fail to integrate the macro-level perspective into the organizational micro-level, thereby reinforcing the sustainability disconnect (Dyllick/Muff, 2016).
On the contrary, the Paradoxical Frame is defined by the goal of addressing the threefold demands of sustainability at both the company as well as the societal level despite the fact, that this might lead to contradictions (Hahn et al., 2014). This logic is more in line with the quest for a dual focus on both the firm and the earth system, thereby overcoming the disconnect between these two (Whiteman et al., 2013). As a consequence, an instrumental hierarchy of the different demands can be overcome and change towards sustainability on different levels becomes more feasible (Hahn et al., 2015).

2.5.3 Treatment of Tensions
According to Lewis (2000), who has provided a comprehensive overview of understanding paradox, tensions within business practices are what fosters the impression of paradox. Often, managers may find themselves within reinforcing cycles when they face these tensions, and try to overcome them (Lewis, 2000). Tensions can arise due to different understandings of sustainability by different actors, the diverging views of how to change organizations towards sustainability or the inclusion of temporal and spatial aspects (Hahn et al., 2015). However, the literature on managing these paradox situations stresses their opportunities for business. Different strategies of managing tensions include acceptance, resolution or confrontation (Hahn et al., 2015; Lewis, 2000).

The management of tensions with a Business Case Frame is characterized by circumvention or elimination of the diverging demands managers are facing (Hahn et al., 2014). In contrast, it is assumed that by viewing these tensions through a paradoxical lens, an acceptance strategy, that recognizes the complex interrelations between various demands, is adopted by managers (Gao/Bansal, 2013). This results in tolerating different underlying rationales that are then incorporated into corporate practices (Hahn et al., 2014). A meta study of literature around the paradox of addressing demands of the three pillars simultaneously, gives an overview of typical approaches to tensions within the research body (Van der Byl/Slawinski, 2015). A win-win (business case) or trade-off approach with an instrumental logic, that leads to an avoidance of tensions, has been shown to make up the majority of the investigated body of literature. This is compared to a particularly smaller amount of articles referring to an integrative view, suggesting a shift of tensions. Finally, only a small proportion of articles
address the problem with a paradox lens that applies an acceptance strategy instead (Van der Byl/Slawinski, 2015).

Table 1 gives a summarized overview of the different categories as characterized for each of the two frames proposed by Hahn et al. (2014).

<table>
<thead>
<tr>
<th>Frame Typology</th>
<th>Content &amp; Integration</th>
<th>Company Goals</th>
<th>Treatment of Tensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business-Case Frame</td>
<td>Focus on economic attributes</td>
<td>Goals within company reach with focus on financial attributes</td>
<td>Eliminating Tensions</td>
</tr>
<tr>
<td>Paradoxical Frame</td>
<td>Equal importance of three dimensions</td>
<td>Addressing three dimensions within and beyond the company reach</td>
<td>Embracing Tensions</td>
</tr>
</tbody>
</table>

*Table 1: The Business Case and Paradoxical Frame*

Own illustration according to the framework by Hahn et al. (2014)

2.5.4 Limitations of the Framework

After the context and characteristics of the cognitive frames for sustainability have been introduced, it is important to refer to the limitations of the framework. The fact that the frames are described as two contrasting types of the same underlying issue, characterizes them as a typology (Doty/Glick, 1994). The various aspects that make up the frames lead to complexity, which is one disadvantage of such theories. Thereby, the framework is lacking in specifying different aspects, for instance what is meant exactly with the attributes of each sustainability dimensions. Especially, when transferring the framework into practice, such attributes presumable differ between branches, and company or industry specifics need to be considered. Another limitation that results from the typology by Hahn et al. (2014) is that it is not able to account for variations within or apart from the introduced cognitive frames.

In a recent study, Hockerts (2015) has investigated different cognitive perspectives on the business case frame, with special respect to their sustainability performance. As a result, it has been shown that even within business case thinking, managers apply various mental maps that differ in their degree of differentiation and integration from each other, depending on how well they perceive their company's sustainability performance (Hockerts, 2015). On the contrary, the clear differentiation between business case and paradoxical frame does not allow to investigate shades or a more detailed differentiation within the complex issue of understanding sustainability.
In relation to that, another concern that has been raised is that research around framing needs to develop further than "naming frames" (Cornelissen/Werner, 2014, p. 49) towards a more dynamic perspective on frames as ways of understanding the meaning of complex issues. In correspondence, Sharma and Jaiswal (2018) have applied the framework by Hahn et al. (2014) in the investigation of a bottom of the pyramid (BOP) setting within a period of 5 years. This has shown that the development and interrelation of these cognitive frames over time actually matters and the theoretical construct does not account for such more process oriented, fluent integrations of both business case and paradoxical frame. Apart from accounting for dynamic development over time, the frames are also not characterized by a differentiation between short- and long-term focus, even though this ‘time paradox’ with regard to sustainability, makes up an important part of the respective literature as well (Gao/Bansal, 2013; Cornelissen/Werner, 2014). However, the framework allows for an understanding of individual cognition around sustainability, and is therefore chosen as an important starting point for presenting implications for the continuously ongoing sustainability discourse (Hahn et al., 2014).
3. The Agricultural Sector

Producing food while simultaneously maintaining biodiversity and ecosystem services is one of the greatest challenges that the earth’s population and especially agriculture businesses face today (Millennium Ecosystem Assessment, 2005). Firstly, this chapter will highlight the relevance of the agricultural sector for sustainability on a macro-level. Followed by that, insights on how to understand sustainability from an agricultural business perspective will be given. Lastly, the agricultural sector in Germany will be presented.

3.1 The Agricultural Sector for Sustainability

In recent years, due to the growing world population the agricultural sector is facing more challenges than ever before. The accompanying consumption growth results in a vast increase of the demand for food on a global level (Charles et al., 2010). To be more precise, the Food and Agriculture Organization of the United Nations (FAO) expects “a 70 percent increase in global demand for agricultural production” (FAO, 2011, p.7) by the year 2050. Charles et al. (2010) argue that besides, a competition for resources such as land, water, and energy will emerge and require a reduction of caused impacts on the environment by the food industry (Charles et al., 2010). It is argued that one initiating step is to balance sustainable agriculture with the predominant rural development (FAO, 2011). Furthermore, the challenges arising while protecting resources are elements that shape the existence and development of the agricultural sector (Deutscher Bauernverband, 2017). Thus, changes in the predominant agriculture practices are vital. Existing business practices have to be aligned with strategies that are oriented towards a more sustainable development. Eventually, this only succeeds through investment as well as new economic and trade policies. Therefore, the public and private sector need to be more proactive and engaging towards the adoption of more sustainable land management practices (FAO, 2011). Besides a variety of governmental regulations, the 17 United Nations SDGs are one political initiative, created on a macro-level, that aim to “stimulate action […] in areas of critical importance for humanity and the planet” (UN, 2018, n.p.). Within that, especially SDG number two, which embodies to “end hunger, achieve food security and improved nutrition and promote sustainable agriculture” (UN, 2018, n.p.), must be put into focus.

However, agriculture is linked to more than only SDG number two: among others, agriculture must be associated with the SDGs on water usage (#6) and climate change (#13). Currently,
the sector can be held accountable for 70 percent of the worldwide water usage as well as a major part of greenhouse gas emissions (Janus/Holzapfel, 2016). Thus, only a development towards more sustainable practices as well as “a vibrant, resilient and productive agricultural sector” (Kanter et al., 2018, p.1) will ensure to achieve the set targets. Besides the SDGs on a global level, a variety of governmental restrictions exist that apply for economic and political unions or individually for a country.

In conclusion, the agricultural sector plays a vital role for the world, as it is today’s most important food source. In order to fulfil this role, a change to more sustainable production methods is necessary in order to tackle such problems as food security and climate change. Therefore, the agricultural sector is challenged to maximize product quantity and quality, while simultaneously preventing the exploitation of the nature by making use of resources in a renewable manner.

3.2 Sustainability in the Agricultural Sector

After gaining some insight into the importance of the agricultural sector for the fulfilment of the SDGs on a macro-level, it is now important to change the perspective: How is sustainability understood from an agricultural perspective? It is indisputable that agricultural businesses contribute massively to the global sustainable development. Thus, it is vital to understand how the individual businesses, on a micro-level, position themselves towards the topic. How is such a complex issue approached while working with the production and distribution of food on a daily basis?

On the one hand, agricultural businesses are internally facing the demands of adapting their practices to climate change every day. On the other hand, there exist various external tensions such as different political obligations and programmes that influence each farmer’s perception (Pierce, 1993). Besides, there is a growing demand from consumers who are willing to pay a higher price for products that are in line with more sustainable production methods (Grover/Gruver, 2017). Research on the motives and influencing factors of more environmental-friendly farming and organic agriculture has identified several aspects: The individual risk perception and contextual factors, such as structures, regulations, labor aspects as well as moral and social concerns of farmers have been identified to impact the relation
between these businesses and sustainability (Macholdt/Honermeier, 2017; Grover/Gruver, 2017; Mzoughi, 2011). Furthermore, Marta-Costa and Silva (2014) argue that food sufficiency and environmental preservation play a vital role for a farmer’s perception of sustainable agriculture. The researchers Sydorovych and Wossink (2008) go even further and present a clear classification of aspects into three pillars that influence sustainability in the agricultural sector: Firstly, the authors highlight economic aspects that mainly focus on the preservation of the business itself such as profitability, productivity and the continuous adaption to governmental regulations (Sydorovych/Wossink, 2008). Secondly, there are social components that generally address aspects concerning employees of the agricultural business as well as consumers and further external stakeholders. This section beholds health risks, fair wages and job security for instance (Sydorovych/Wossink, 2008).

Lastly, the environmental section describes aspects that are “relevant to the impacts of production on ecosystem health” (Sydorovych/Wossink, 2008, p. 13) such as water usage or waste management. Nevertheless, how the individual manager perceives sustainability varies tremendously. Additionally, the factors differ among countries and even smaller national regions, which highlights the importance of narrowing down the focus of the chosen research area. Therefore, the following section will give an overview of crop-land agriculture businesses in Germany.

### 3.3 The Agricultural Sector in Germany

In Germany around half of the country’s total area is used for agricultural production by around 270,000 businesses (Deutscher Bauernverband, 2017). Although the sector only generates 0.7 percent of the gross domestic product (Statistisches Bundesamt Deutschland, 2018), it is one of the oldest branches and vital for the sustainable development of the country. In fact, over 30 percent of all businesses in the sector solely focus on crop-land farming agriculture (Deutscher Bauernverband, 2017). Furthermore, a look at the demographic distribution shows that over 34 percent of all employees in the agricultural sector are over 55 years old (Deutscher Bauernverband, 2017).

As Table 2 shows, within those, the businesses that cultivate up to 50 hectares represent the majority (69% of all agriculture businesses). Thus, they are put into focus within this thesis (Deutscher Bauernverband, 2017).
These numbers show that a transformation to a more sustainable agricultural sector in Germany is highly dependent on the development of the businesses owning between 1 and 50 hectares.

<table>
<thead>
<tr>
<th>Hectares Owned by Business</th>
<th>Number of Businesses (2016)</th>
<th>Percentage Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10</td>
<td>67.800</td>
<td>69.4%</td>
</tr>
<tr>
<td>10-20</td>
<td>56.000</td>
<td></td>
</tr>
<tr>
<td>20-50</td>
<td>66.700</td>
<td></td>
</tr>
<tr>
<td>50-100</td>
<td>47.700</td>
<td>30.6%</td>
</tr>
<tr>
<td>100-200</td>
<td>24.300</td>
<td></td>
</tr>
<tr>
<td>200-500</td>
<td>8.500</td>
<td></td>
</tr>
<tr>
<td>&gt;500</td>
<td>3.800</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>275.400</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Table 2: Structure of the Agricultural Sector in Germany*

Hence, this paper aims to analyze how individual managers in this specific industry understand and make sense of the term sustainability with regard to their cognitive framing. It is assumed that the assessment of sustainability as either a business case or a paradoxical issue will have crucial influence on how the businesses perform and develop (Witt, 2000).
4. Research Process

This section presents an overview of the research process. Firstly, the research approach and philosophy are illustrated. This is followed by an outline of the data collection and sampling as well as the presentation of the questionnaire design. Furthermore, implications for the data analysis are given. Lastly, some limitations and ethical considerations are highlighted.

4.1 Research Approach and Research Philosophy

In order to understand the research phenomenon and to be able to draw valid conclusions, the following analysis did make use of a mono-method quantitative research design (Saunders et al., 2016). The assumptions of managerial use of cognitive frames towards sustainability call for a quantitative examination of their applicability in practice, which is aligned with the inherent nature of quantitative research (Jonker/Pennink, 2010). Consequently, a deductive approach is most consistent (Saunders et al., 2016).

Each research paradigm is defined by specific ontological, epistemological and methodological perspectives. Burrell and Morgan (1979) have defined certain paradigms for this respective field of study, of which the approach of this research can be assigned as functionalist. This is aligned with a positivist epistemology aiming to describe the social world through causal relationships, which the respective empirical investigation was detecting (Burrell/Morgan, 1979).

Furthermore, the ontological understanding of this study can be described as realistic, as the authors presumed to provide an insight into structures of reality (Burrell/Morgan, 1979). Thus, the approach calls for objectivity of the researcher towards the object of study. This has been ensured through physical and personal distance of the researchers and the studied individuals (Guba/Lincoln, 1994). Nevertheless, the fact that every study process contains subjectivity to some extent was acknowledged and accepted by the authors (Johnson/Onwuegbuzie, 2004; Jonker/Pennink, 2010).

The overall aim of this research approach was to depict an insight into the cognitive frames for sustainability in a respective sample, which is then presented as a base for being put to use and applied as a practical solution. This is aligned with what is at heart of each functionalist
research approach and served as guidance throughout the entire process of this study (Burrell/Morgan, 1979).

4.2 Data Collection
In academic research there are many different ways of collecting data, such as observation or surveys (Saunders et al., 2016). The latter is used within this thesis, in the form of conducting a questionnaire. This arises the question on what a questionnaire exactly is. Questionnaires are a widely used research method and can be defined as an action, during which the respondents answer the same questions in the same order (deVaus, 2002). Furthermore, from the resulting data conclusions and inferences on how a group as a whole acts can be made (Kelley et al., 2003). There are several reasons, that were crucial for the decision of choosing a self-administered online questionnaire as a data collection method. Firstly, it enables researchers to collect a vast sample size with a low time and cost effort. In various online tools, questionnaires can be created at no charge. Besides, this data collection method is geographically independent through the distribution of an internet link to the survey and can therefore be conducted without personally meeting the participant. This is another factor, that lets the research costs remain low (Saunders et al., 2016). Lastly, a predetermined questionnaire will ensure that all the participants answer the same set of questions in the exact same order. Through that, concerns such as positive or negative imprinting from the authors or the emphases of individual aspects are eliminated (Saunders et. al., 2016).

A pilot study with multiple participants was conducted to ensure the comprehensibility and the statistical interpretability of the questionnaire. The actual research was conducted with a cross-sectional time horizon. This can be drawn back to the fact that investigating a development or process of cognitive frames was not suitable for this research. Therefore, this paper’s questionnaire was not time constrained but rather showed the relation of different factors (Saunders et al., 2016). The time frame for the data collection was planned to be two weeks. Initially, the potential participants were contacted via Governmental departments as well as via various groups on the social media platform Facebook. However, after the questionnaire was open for more than seven days, the number of responses was insufficient and conventional farmers made up the majority of the respondents. Therefore, it was decided to further focus on addressing organic farms. This succeeded through finding them through
Demeter, which is one of the biggest German umbrella organizations for organic agriculture. Over 200 farms were randomly picked and contacted personally via email. This led to a more than twofold increase of the number of respondents.

4.3 Sampling
In most research projects, the necessary data cannot be collected from the entire concerned population. Therefore, sampling represents a possibility to only investigate a representative part of the population and, resulting from that, to draw conclusions for the entire population. As illustrated in chapter 3, agricultural businesses with a size between 1 and 50 hectares of land in Germany are put into focus.

There are two main types of samplings, which are probability sampling and non-probability sampling (Saunders et al., 2016). Probability sampling is also known as representative sampling and commonly used when the entire population is known, which is not the case in the non-probability sampling (Saunders et al., 2016). Although the exact number of farmers in Germany can be found through various statistics, there are two main reasons why this thesis uses non-probability sampling: Firstly, there was no access to contact all farmers due to the lack of existing address lists. Secondly, it was not possible to assess whether the individuals actually fit the target group through the chosen channels. Still, internet communities such as Facebook groups must be considered a valid possibility to reach individuals with the same interests as well as it beholds the possibility to access respondents that could not be reached otherwise (Valck, 2005).

Another vital aspect within the sampling method is to find the right sample size. Although there is no exact generalization for a whole population possible, the chosen sample must be big enough to allow statistically accurate results (Gratton/Jones, 2004). Therefore, a minimum of 100 respondents was aspired for this thesis.

The next step was to decide on the right sampling technique within the non-probability sampling. This thesis used two different techniques: Firstly, the self-selection sampling allows “each [...] individual to identify their desire to take part in the research” (Saunders et al., 2016, p. 222). This was conducted through distributing the questionnaire link as well as an explanation, which enabled the individuals to decide whether to take part in the research.
Secondly, when it is difficult to reach all members of the desired population the technique of snowball sampling is recommended as well (Saunders et al., 2016). Like this, the individuals could share the link with other people that might not have been reached otherwise, but still fit the target group of this work.

4.4 Questionnaire Design
The choice of a quantitative method was supported by the authors of the theoretical framework themselves, as they suggested a quantitative test for their framework of cognitive frames (Hahn et al., 2014). In order to do so, the framework was translated into measurable scales, which this thesis applied with its conducted questionnaire. The questionnaire was based on an overall number of nineteen questions, which were divided into two main sections: Firstly, a demographic enquiry analysed the respondents age, gender and type of cropland agriculture. The second section concentrated on the framework by Hahn et al. (2014) directly. This section consisted out of fixed choice questions, which are characterized through the fact that the participants chose from an already given set of answers (Saunders et al., 2016). More precisely, sixteen rating questions on a Likert scale from 1-7 were answered. With this question type only the end categories were labelled, which is also referred to as “self-anchoring rating scale” (Saunders et al., 2016). The participants were asked for ratings of agreement, amounts as well as likelihood. According to Saunders et al. (2016), the chosen Likert scale is commonly used in order to assess attitudes or the extend of agreement, which both fit in the case of this thesis. Besides, it avoids to be bound too strictly to a yes or no answer, which leads to a bigger variety of answers, that can be considered more realistic (Gratton/Jones, 2005). In general, the goal was to represent the two frames as two extremes of the Likert scale ranging from low to high. Thus, the lowest score of this thesis’ Likert scale represented the Business Case Frame, whereas the highest score was translated into the Paradoxical Frame.

Generally, the questions were formulated with regard to the authors’ overview of characteristics of the Business Case and Paradoxical Frame for Sustainability (Hahn et al., 2014). As Table 1 presents, the questions were divided in the three previously introduced categories of Content & Integration, Goals and lastly Treatment of Tensions. The content of the questions will be discussed in more detail in chapter 5.2.1 – 5.2.3.
Due to the research location, the questionnaire was translated into German using the method of parallel translation: The English source questionnaire was translated by both authors of this thesis into a German target questionnaire (Saunders et al., 2016). Subsequently, after a comparison of the results, the final version was created. The translation was as close as possible to the English version, but a few changes secured the comprehensibility for German managers.

The website “Umfrage Online” served as the tool to conduct the research and was chosen due to its simple design and the possibility to integrate the needed amount of questions as well as the favored Likert scale. Furthermore, the tool was especially user-friendly as it could be shared through an online link and the collected data could be exported directly for the analysis. The complete conducted questionnaire can be found in Appendix I of this thesis.

### 4.5 Data Analysis

The data outcome of the survey mainly took the form of numerical data as it measured each question concerning an individual’s cognitive frame on a numerical scale. Apart from that, the demographic data, that allows a more in depth understanding of certain background information, was presented as categorical data (Saunders et al., 2016).

Since the questions regarding respondents’ cognitive frames for sustainability were answered on a 7-point Likert scale, they fall under the category of ordinal variables, as level of agreement can only be interpreted as ranking from low to high. However, as the questions were symmetrically articulated and the questions together serve to present the overall construct of an individual’s cognitive frame, it was chosen to analyze them as interval data (UZH, 2014).

It was the main goal to test the existing theory in a business sector, that plays an important part for sustainable development. Therefore, one major outcome of the study was to state whether the framework, that was conceived by Hahn et al. (2014) holds towards a translation of their theoretical construct into a quantitatively measurable study. This was achieved by
firstly using a descriptive type of study and presenting the main outcomes of the survey accordingly (Punch, 2012).

In order to provide an overview of all perceived data, the mean was used as a measure of central tendency (Saunders et al., 2016). Through using each individual’s average overall frame score, the authors drew conclusions about its position within the two extremes (Punch, 2012). As the framework was developed for understanding managers' cognitive frames towards sustainability in general, an average score of all respondents in the agriculture sector, led to an understanding of their mindset. In order to understand the respondents’ tendency for each of the questions, the mean score for every question was also calculated accordingly.

Furthermore, the following hypotheses, that were developed through assumptions about differences between respondents with regard to the type of agriculture they are practicing, were tested.

$H_1$: There is a significant difference between organic and conventional farmers in their individual overall frame scores.

$H_2$: There is a significant difference between organic and conventional farmers in their individual Content & Integration scores.

$H_3$: There is a significant difference between organic and conventional farmers in their individual Goals scores.

$H_4$: There is a significant difference between organic and conventional farmers in their individual Treatment of Tensions scores.
The conceptualization of the hypotheses is visualized in Figure 2. By statistically testing them, the descriptive results around the applicability of the frame model were extended by further explanatory analyses.

By means of several two-sample t-tests assuming unequal variances, the study outcomes for both sample groups were assessed with respect to their statistical significance (Saunders et al., 2016). Even though a t-test is opted for normally distributed variables, this can be neglected for this study, especially as both groups of the two-sample t-test consisted of more than 30 individuals and were similarly sized (Saunders et al., 2016).

4.6 Research Reliability and Research Validity

When assessing the quality of a research outcome it is inevitable to assess its reliability as well as validity (Saunders et al., 2016).

Measuring the cognitive frames of managers towards sustainability can be considered a latent concept. This made it specifically important that the questions, that were used to measure the frames indirectly, were valid (Muijs, 2004). The fact that there was no comparable quantitative study of the concept available, made it difficult to assess the content validity of the used survey. Criterion validity was achieved through carefully studying the underlying theoretical construct and creating reasonable questions that took the advice of several experienced researchers into account (Muijs, 2004). Lastly, construct validity was tested through sending out the survey to several managers that could relate to the topic and interviewing them about how they understood the questions they were asked (Muijs, 2004).
Furthermore, the authors drew from the statistics of the retrieved data, whether the outcome of the study was sufficiently reliable. This relates to the acknowledgement of the fact that measurement errors can occur and it is thus required to test how much error the obtained data contains (Muijs, 2004). Aligned with the objectivist approach to research, the use of a self-administered questionnaire was the first step towards eliminating potential biases on the part of the researchers (Maruyama/Ryan, 2014).

Nevertheless, the authors calculated the reliability of the survey results quantitatively by making use of coefficient alpha to show how well the questions were able to measure the cognitive frame characteristics (Muijs, 2004). As it was most likely that the answers diverged respectively with the different questions, the coefficient alpha was calculated for each assessment category to reduce the potential errors and be able to draw valuable conclusions about the research outcome (Maruyama/Ryan, 2014).

4.7 Research Limitations
The proposed research design faces several limitations. As the study chose a non-probability sampling to target its respondents, the generalizability of the outcome is not given and it cannot be stated with certain probabilities how the findings relate to the overall population that has been investigated (Muijs, 2004). However, by comparing the demographic data of the survey to official statistics about agricultural businesses some contextual information could be provided. Still, this cannot completely eliminate the potential coverage error, that occurs when the outcome fails to cover certain parts of the target group (Maruyama/Ryan, 2014).

Another limitation that could not be eliminated is the fact that respondents may have had different response styles when answering the survey questions (Maruyama/Ryan, 2014). Therefore, the understanding of the questions might have varied among the respondents. Furthermore, the cross-sectional time horizon was only able to picture a status quo and therefore neglected the importance of grasping a dynamic factor in the understanding of sustainability (Saunders et al., 2016).
4.8 Research Ethics

As Bell and Bryman (2007) suggest, the empirical study was guided by an understanding of ethics as being a substantial part of research independently of the sensitivity of the investigated issue.

Furthermore, as respondents in business studies are most likely not exposed to direct harm, other aspects of ethical considerations played an important role for this study (Bell/Bryman, 2007). Firstly, in line with what Immanuel Kant proposed as the practical imperative, the respondents weren’t solely treated as instruments towards achieving the researchers’ purpose. Instead they were seen with respect to their inherent purpose (Kant, 1785). This corresponds to viewing research from a deontological perspective (Saunders et al., 2016). Additionally, dignity, confidentiality, anonymity and transparency were preserved by the researchers throughout the conduction of the study (Bell/Bryman, 2007).

Lastly, the aspect of reciprocity, which is a rather recent idea promoted by several ethics codes, played an important role for conducting this investigation (Bell/Bryman, 2007). This refers to the notion that research should benefit both the scholars and the studied individuals. This is emphasized through interpreting the results in a way that promotes a better understanding of the specifics of agricultural managers (Bell/Bryman, 2007).
5. Findings

In the following the questionnaire findings will be presented in detail. Firstly, the characteristics of the sample will be illustrated. Then, the data concerning the cognitive frame model will be presented, structured in the three categories of Content & Integration, Goals, and Treatment of Tensions. This is followed by testing four hypotheses, that account for differences between two groups in this sample. Lastly, a critical assessment of the applicability of the theoretical framework with this study is shown accordingly.

5.1 Findings Characteristics of the Sample

In total, 105 managers from crop-land farming agriculture businesses answered the questionnaire fully. As Figure 3 shows, the majority of respondents, with 45 percent, were managers from conventional businesses. In contrast to that, 37 percent practice organic crop-land farming. Besides, 14 percent of the respondents chose the option “other” and 4 percent of the respondents did not give a statement about their type of agriculture.

In terms of gender distribution among the respondents, with 83 percent, the majority were male managers. Only 12 percent were female managers and 5 percent did not give a statement concerning their gender. Furthermore, the average age of the respondents was 42 years. A closer look, in Figure 4, further highlights that 36 percent of the respondents were younger than 35 years, 26 percent were between 35 and 45 years, 24 percent were between 45 and 55 years and only 14 percent of the respondents were older than 55 years.

Figure 3: Overview Type of Agriculture
In sum, the analysis of the characteristics of the sample overall showed a great variety of different age groups. The majority of the respondents were male managers from conventional crop-land farming businesses made up the highest percentage. Over half of the respondents were older than 40 years.

5.2 Empirical Findings Cognitive Frame Model
In the following, the empirical findings with regard to each of the prior identified categories of frame characteristics according to Hahn et al. (2014) are shortly presented. For an easier understanding, the content of the survey questions is presented in Table 3-5 for each respective question category.

For all three categories the overall score per question has been calculated as the mean of all responses. The questions have been asked in a way that represents the Business Case and Paradoxical Frame by Hahn et al. (2014) along two extremes of a scale from one to seven. This allows for an easy interpretation of the mean scores presented below, as either tending to one or the other frame, for each of the investigated questions.

5.2.1 Findings Content & Integration
The aim of the questions within this category was to account for the content of managers’ cognitive frames with regard to sustainability. This was tested by asking them to indicate how important the three dimensions of sustainability are for them as well as which role stakeholder demands of different interest groups play for their business activities. Furthermore, the degree of integration has been tested, differentiating between integrating
economic and environmental as well as economic and social attributes within a company’s business practice. As it can be seen in Table 3, the mean score that the respondents indicated for the degree of integration between economic and environmental practices is the highest within this category. This shows a strong tendency towards the paradoxical side of the frame typology. Another aspect that stands out is the relatively low score (3.2) for Question 7, which shows that most respondents agreed that they view sustainability as a tool, that is directly linked to their financial performance.

Overall, the category score for Content & Integration was the highest of all three categories with an average of 4.6, showing that for these aspects of cognitive frames the respondents had the highest tendency towards a paradoxical lens of understanding sustainability.

<table>
<thead>
<tr>
<th>Question</th>
<th>Subject</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Integration: Economic and environmental</td>
<td>5.4</td>
</tr>
<tr>
<td>2</td>
<td>Integration: Economic and social</td>
<td>5.0</td>
</tr>
<tr>
<td>3</td>
<td>Importance: Environmental and social</td>
<td>4.7</td>
</tr>
<tr>
<td>4</td>
<td>Importance: Economic</td>
<td>4.2</td>
</tr>
<tr>
<td>5</td>
<td>Integration of Stakeholder Demands</td>
<td>4.3</td>
</tr>
<tr>
<td>6</td>
<td>Importance Stakeholders</td>
<td>5.2</td>
</tr>
<tr>
<td>7</td>
<td>Tool Sustainability</td>
<td>3.2</td>
</tr>
<tr>
<td>Category Score</td>
<td></td>
<td>4.6</td>
</tr>
</tbody>
</table>

Table 4: Questions in the Category Content & Integration

5.2.2 Findings Goals
Following the main characteristics of cognitive frames with regard to sustainability by Hahn et al. (2014), the next category concerns the underlying goals of the company. More specifically, it was tested where respondents position the scope of their business practices and company goals (Question 8 and 9). Furthermore, the survey introduced two hypothetical situations that were characterized by a potential misfit between environmental or social demands and the respondent’s financial performance (Question 10 and 11). The scores capture their indicated likelihood of still approaching such a situation.

As it can be seen in Table 4, the outreach of the individuals’ business practices makes up for the highest score within this category. This highlights that the respondents aim to reach
environmental, social and economic demands across the border of their company to a medium extent. Compared to the previous category, the overall category score concerning Goals is comparatively lower with an average of 4.1, which shows that hereby respondents are closer to the Business Case Frame for sustainability.

<table>
<thead>
<tr>
<th>Question</th>
<th>Subject</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Reach Business Practices</td>
<td>4.3</td>
</tr>
<tr>
<td>9</td>
<td>Reach Goals</td>
<td>4.0</td>
</tr>
<tr>
<td>10</td>
<td>Alignment: Economic and environmental</td>
<td>4.0</td>
</tr>
<tr>
<td>11</td>
<td>Alignment: Economic and social</td>
<td>4.1</td>
</tr>
<tr>
<td>Category Score</td>
<td></td>
<td>4.1</td>
</tr>
</tbody>
</table>

*Table 5: Questions in the Category Goals*

5.2.3 Findings Treatment of Tensions

As tensions have been identified as a vital aspect for differentiating between the Business Case and the Paradoxical Frame (Hahn et al., 2014) the last category covered different features of such. Question 12 and 13 measured the degree of discomfort a manager feels, when facing discrepancies between the economic and both social and environmental dimensions of their practices. A higher score of these questions means that there is no particular discomfort. This is the case for the scores of these two questions, as they have a relative tendency towards the paradoxical side. This accounts almost equally for the social and environmental dimension.

However, the rather low overall category score, especially compared to the first category, can be explained through the low mean scores of Questions 14-16. With these questions the respondents were asked to indicate their level of agreement with the statement that they rather “accept tensions than trying to eliminate them” when facing them between the different sustainability dimensions. The poorer scores show that their level of acceptance was fairly low which translates into a tendency towards the business case side of the two frame types, that were measured.
In sum, the average score per question varied respectively for certain question types. However, the overall category scores reflected that there is no two-dimensional categorization along the two extremes possible, but rather a scattering around the middle with a tendency towards the Paradoxical Frame.

### 5.3 Findings Hypotheses Testing

The previous sections have mainly focused on different aspects of cognitive frames that were measured as well as the applicability of this model to practice. However, the outcome of the data collection also allows a comparative analysis of the survey results. Therefore, it was chosen to test differences in groups within the sample with regard to the cognitive frames they were showing.

Firstly, it has been evaluated whether the age of the respondents was significantly correlated with the respondents’ overall frame score. However, since no differences in that sense occurred, it was refrained from further testing the hypothesis that farmers of different age groups diverge in their tendency towards a certain cognitive frame.

Secondly, as this study was conducted in the agricultural sector with managers from both conventional as well as organic farms as part of the sample, it was chosen to compare these two groups with regard to their cognitive frames towards sustainability. It was assumed, that organic farms generally work with more sustainable practices than conventional farms. Therefore, understanding whether this manifests in their cognitive frames of sustainability has important implications for this study. In the following, different hypotheses, that account for the individual’s overall frame score and are also further subdivided along the three question...
categories, are presented. For a more detailed understanding, an overview of the statistical outcome of all four hypotheses can be found in Appendix II.

<table>
<thead>
<tr>
<th>Hypothesis 1</th>
<th>There is a significant difference between organic and conventional farmers in their individual frame scores.</th>
</tr>
</thead>
</table>

Firstly, Hypothesis 1 aimed to understand whether the two groups of organic and conventional farmers varied in their overall frame score. In order to statistically test for the significance with which these groups differ from each other, a two-sample t-test assuming unequal variances was conducted. Sample 1 consisted of the organic farmers with \( n = 39 \) while conventional farmers made up for sample 2 with \( n = 47 \). Since the hypothesis did not point towards a direction in which the two groups differ, a two-tailed hypothesis test was chosen for the analysis. The test was performed with \( H_0: \mu_{\text{organic}} - \mu_{\text{conventional}} = 0 \) and a significance level \( \alpha = 0.05 \). As the two-tailed p-value of 0.0012 was smaller than \( \alpha \) the null hypothesis needed to be rejected and Hypothesis 1 was accepted.

<table>
<thead>
<tr>
<th>Hypothesis 2</th>
<th>There is a significant difference between organic and conventional farmers in their individual Content &amp; Integration score.</th>
</tr>
</thead>
</table>

As the first hypothesis was confirmed, further analysis was put into the different sub-categories, that were identified, in order to see whether the two groups diverge in each of them consequently. The samples were kept the same and a two-tailed test was chosen accordingly. Testing the second hypothesis was conducted with \( H_0: \mu_{\text{content}_\text{organic}} - \mu_{\text{content}_\text{conventional}} = 0 \) and a significance level \( \alpha = 0.05 \). With a p-value of 7.50E-0.5 the null hypothesis was rejected and Hypothesis 2 was accepted.

<table>
<thead>
<tr>
<th>Hypothesis 3</th>
<th>There is a significant difference between organic and conventional farmers in their individual Goals score.</th>
</tr>
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</table>

Hypothesis 3 was tested with the same two-sample t-test as before with \( H_0: \mu_{\text{goals}_\text{organic}} - \mu_{\text{goals}_\text{conventional}} = 0 \) and \( \alpha = 0.05 \). The two-tailed p-value of 0.002 resulted in the rejection of \( H_0 \) and therefore the acceptance of Hypothesis 3.
Hypothesis 4 | There is a significant difference between organic and conventional farmers in their individual *Treatment of Tensions* score.

Lastly, the fourth hypothesis, concerning the tension category of questions was tested as the above ones with $H_0: \mu_{tensions_{organic}} - \mu_{tensions_{conventional}} = 0$ and $\alpha = 0.05$. The p-value of 0.41 which was respectively larger than the chosen significance level, indicated that $H_0$ could not be rejected and Hypothesis 4 was consequently not accepted.

In sum, even though the overall individual frame score was significantly different for the two sample groups, the conventional and organic farmers did only differ in the subcategories *Content & Integration* and *Goals*, whereas the difference in individual *Treatment of Tensions* score was not remarkable enough.

5.4 Findings Applicability of the Model

After the content of the frame model as well as sector specific findings have been presented, this chapter focuses on assessing the applicability of the model as a holistic theoretical construct in praxis. The findings will be presented divided into the elements of reliability and correlations.

In order to test the applicability of the model presented by Hahn et al. (2014) and to secure the coherence of the conducted questionnaire, the reliability was tested. Therefore, the statistical calculation of Cronbach’s alpha was used, as it is “a commonly used test of internal reliability” (Bryman/Bell, 2011, p. 159). The overall value for all questions was $\alpha = 0.7$. Furthermore, the alpha was calculated for the different question categories. The category *Content & Integration* measured a value of $\alpha = 0.65$, *Goals* had a value of $\alpha = 0.53$ and lastly, the category *Treatment of Tensions* resulted in a value of $\alpha = 0.62$. In general, values of Cronbach’s alpha that are equal or over $\alpha = 0.6$ are considered acceptable. Thus, only the alpha of the category *Goals* must be considered too low to show a valuable reliability.

Additionally, it was assumed, that some questions stand in relation to each other as they covered similar aspects of one topic or one dimension of sustainability. Therefore, in order to assess the statistical degree of the relation between two particular variables the Pearson correlation coefficient ($r$) was calculated. Although the questions included ranked categorical
data, the decision to base the results on Pearson’s correlation was made (Saunders et al., 2009). This is justified as “Pearson’s r is a method for examining relationships between interval/ratio variables” (Bryman/Bell, 2011, p. 347) and data was only measured in a predetermined interval. Furthermore, it was aimed to categorize the resulting data itself into intervals. In sum, six correlations were tested.

<table>
<thead>
<tr>
<th>Correlation A</th>
<th>Question 1</th>
<th>Integration: Economic and environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Question 2</td>
<td>Integration: Economic and social</td>
</tr>
</tbody>
</table>

Correlation A tested, whether managers who indicated to integrate economic and environmental also integrated social aspects into their businesses. The results showed a value of $r = 0.72$ which can be considered a rather strong positive correlation (Bryman/Bell, 2011).

<table>
<thead>
<tr>
<th>Correlation B</th>
<th>Question 3</th>
<th>Importance: Environmental and social</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Question 4</td>
<td>Importance: Economic</td>
</tr>
</tbody>
</table>

Correlation B aimed to investigate, whether a manager who indicated an equal importance of all three dimensions of sustainability consequently disagreed that economic aspects are more important. The result showed a moderate positive correlation with the value $r = 0.52$ (Bryman/Bell, 2011).

<table>
<thead>
<tr>
<th>Correlation C</th>
<th>Question 10</th>
<th>Non-Alignment: Economic and environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Question 12</td>
<td>Discomfort: Economic and environmental</td>
</tr>
</tbody>
</table>

Correlation C assessed if a manager who is likely to approach situations with a misfit of economic and environmental aspects also feels less uncomfortable with the discrepancy between these aspects. Pearson’s r measured a correlation of $r = 0.15$ in that context.
Correlation D measured the same idea in the context of the economic and social dimension. Also in that case, the result with a value of $r = 0.07$ showed that there is no statistical correlation (Bryman/Bell, 2011).

<table>
<thead>
<tr>
<th>Correlation E</th>
<th>Question 1</th>
<th>Integration: economic and environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Question 14</td>
<td>Tensions: economic and environmental</td>
</tr>
</tbody>
</table>

Correlation E investigated if managers who are integrating economic and environmental aspects to a high extent, simultaneously tend to accept tensions within the economic and environmental dimension more likely. The resulting value of $r = 0.01$ showed that there is no such correlation.

<table>
<thead>
<tr>
<th>Correlation F</th>
<th>Question 2</th>
<th>Integration: economic and social</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Question 15</td>
<td>Tensions: economic and social</td>
</tr>
</tbody>
</table>

Correlation F measured the same potential connection in the context of the economic and social dimension with a result of $r = -0.07$ that indicates the same lack of a statistical correlation.
6. Discussion

In the following, the collected data of the questionnaire will be compared to the literature findings in Chapter 2. Firstly, the focus is set on the characteristics of the sample followed by a detailed discussion regarding the presented question categories. Furthermore, the applicability of the model as well as the tested hypotheses will be discussed.

6.1 Discussion Characteristics of the Sample

The discussion of the characteristics of this thesis’ sample will be conducted divided into the aspects of age, gender and type of agriculture.

The research findings are not aligned with current official statistics of the agricultural sector in Germany: According to official documents, farmers that are older than 55 years share the biggest percentage, followed by the group of 45 to 55-year-old farmers (Deutscher Bauernverband, 2017). In contrast to that, these groups represent the smallest percentage in this thesis’ findings. This applies also vice versa, as the biggest group of respondents were managers up to the age of 35, whereas this group is only represented with 7.4 percent in official statistics of the German agricultural sector (Deutscher Bauernverband, 2017). This can be drawn back to the fact, that the questionnaire was conducted online, as the distribution via e-mail as well as Facebook required certain online communication and social media affinity. On average the range of German Facebook users lies between the age of 14 to 49 years, which explains why the age group of farmers between over 55 years that is dominant within the overall distribution of German farmers was addressed to a lower extent with this paper’s research technique (Tippelt/Kupferschmitt, 2015). This is also aligned with the fact that especially the younger respondents, e.g. in the Facebook group “Arbeitskreis junger Landwirte” (translated: Work Group of Young Farmers) showed interest in the questionnaires topic and helped to distribute it by sharing the link on their Facebook page.

In terms of the gender distribution, the findings showed that with 83 percent, male managers are particularly dominant among the respondents from crop-land farming businesses. The existence of this domination is also highlighted by official statistics of Germany, that show that male employees in the agricultural sector make up more than 68 percent and therefore are more than twice as present as the female counterpart (Deutscher Bauernverband, 2017). This
finding has led to the decision to not further analyze the differences in cognitive frames among female and male respondents.

The similar distribution of the amount of conventional and organic farmers does not represent their actual distribution in Germany. Only 15 percent of Germany’s crop-land farms are operated within the principles of organic farming (Deutscher Bauernverband, 2017). Therefore, the research results clearly do not represent the current distribution of the country’s agricultural sector. Still, the results are valuable as it was not expected and aimed to display the asymmetrical partition of agricultural businesses. Actually there was a need of two similarly sized groups, in order to assess the different perceptions and the degree of integration of sustainability of conventional and organic farmers. Only with that, a statistically valuable comparison succeeded in the following.

6.2 Discussion Cognitive Frames
As the main findings of the empirical study on cognitive frames for sustainability of agricultural managers have been introduced before, the following analysis will put them in context of sector-specific surroundings and link them back to what was introduced in the literature review on the Business Case and Paradoxical Frame for sustainability. Figuring out the role of businesses to reach a more sustainable development on the macro-level, is crucial for succeeding in that regard (Dyllick/Muff, 2016). The relevance of the agricultural sector for this has been clearly stated, and the overall findings of this study showed that respective businesses have moved away from the bare focus on financial outcomes and business performance as the only factors of success. In their overall frame score the managers are positioned around the middle with a tendency towards the Paradoxical Frame. However, as the framework by Hahn et al. (2014) includes many different aspects, it is chosen to present the three subcategories with their findings separately in order to provide a more in depth, differentiated picture of the analysis.

6.2.1 Discussion of Content & Integration
The integration of different attributes has been shown to be one of the most important characteristics of the cognitive frame structure (Walsh, 1995; Hahn et al., 2014). Therefore, important conclusions can be drawn from the outcome of this study.
Firstly, the farmers overall score for integrating environmental and economic concerns was respectively higher than the score for integrating social concerns. One reason for that could be that natural resources are at heart of agricultural practices and therefore, especially cropland farmers are highly dependent on them and permanently confronted with them. This is supported by findings about agricultural sustainability attributes, that point out inter alia soil quality, groundwater quality or air quality as such, and thereby stress the interdependency between the environment and agricultural practices (Sydorovych/Wossink, 2008). Furthermore, even though the degree of integration of all three attributes yielded relatively high scores, the second most outstanding finding was that the overall score for viewing sustainability as a tool to improve one’s financial performance was rather low. This is indicating that managers tend to business case thinking in that regard, and might see these other attributes as mainly carrying financial merits for their business (Gao/Bansal, 2013). These outcomes show that the prior introduced debate around instrumental and integrative approaches to business sustainability is not clearly separable and the results allow the conclusion that both an instrumental logic and a high degree of integration can be present among the respondents of this study (Gao/Bansal, 2013).

6.2.2 Discussion Goals
The second category of questions is set up around the goals of the manager’s company. As it has been shown before, the overall score for respondents in this category was rather medium and indicated no clear tendency towards one of the two extremes of cognitive frames. The highest score accounts for the reach of business practices, showing that respondents do think of the outreach of their activities across the borders of their company. Furthermore, the fact that there was no clear tendency towards the Business Case Frame when it came to approaching situations that might not lead to an alignment of economic and environmental or social attributes does showed that farmers have particular concerns for their environment. However, the scores indicate that the investigated businesses do not yet show a strategy that is aimed towards an outside-in approach that views enacting with sustainability challenges as one of their main goals (Dyllick/Muff, 2014).
6.2.3 Discussion: Treatment of Tensions

The treatment of tensions has been identified as one of the crucial factors of viewing business sustainability with a paradoxical frame (Hahn et al., 2014). In this study, the respondents were asked to which extent they feel discomfort when facing tensions between different sustainability attributes. This works around the deficiency of the literature stream positioned around an instrumental logic, which solely focuses on financial gains that can be achieved through sustainability practices. By that, it fails to account for situations where tensions through a non-alignment of social and environmental attributes and financial performance occur (Hahn et al., 2015). The findings show, that the farmers in this study did not feel uncomfortable to a large extent when confronting such tensions, which implicates they are able to face them and account for their existence. However, the literature on managing tensions posits the acceptance and even the embracement of sustainability tensions as one of the main characteristics of a paradox lens (Lüscher/Lewis, 2008; Hahn et al., 2015). When testing whether farmers are able to accept tensions instead of aiming for their elimination the result of the study show different outcomes. Accordingly, with regard to this frame characteristic, respondents have a tendency towards the Business Case Frame. Consequently, the treatment of tensions through eliminating them can be identified as following a more instrumental logic when facing contradicting demands from different sustainability dimensions (Lüscher/Lewis, 2008). However, it might be the case that respondents understood “eliminating” tensions not as choosing one dimension over another, but instead as “working through” them and therefore reaching different demands simultaneously (Hahn et al., 2018). This would explain why apparently farmers do not feel a lot of discomfort when facing tensions, but are also not indicating to accept tensions accordingly.

6.3 Discussion: Hypotheses

In the following, several implications and explanations of testing the hypotheses, that accounted for differences between organic and conventional farmers with regard to their cognitive frames for sustainability are presented in context. This analysis aligns with earlier findings that support the assumption that on-farm decision making and the choice of more sustainable agricultural practices are actually dependent on a farmer’s surroundings (Grover/Gruver, 2017). By assessing different farmers with regard to their choice of
agriculture this study adds to this, by accounting for differences in cognitive frames of these groups.

6.3.1 Discussion Hypothesis 1

Overall managers of organic farms have been shown to have a higher overall frame score as conventional farmers. The outcome is in line with the assumption that organic farmers are facing the complex issue of sustainability more regularly than conventional farmers, and therefore view it as a more integrated part of their business practices. This is supported by the definition of organic agriculture by the International Federation of Organic Agriculture Movements (2018): “Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved”. Furthermore, it has been assessed that organic agriculture practices generally perform better with regards to key environmental indicators as compared to conventional practices (Gomiero et al., 2011). A more detailed explanation of this outcome is presented in the following as it accounts for the constitution of different cognitive frame attributes to this overall result.

6.3.2 Discussion Hypothesis 2

For a better understanding of the outcome of the hypotheses testing, the average means per question have been calculated for each of the two sample groups accordingly. This detailed overview can be found in Appendix III. It has been shown that organic and conventional farmers vary significantly in their frame content and the degree of integration of different attributes. In fact, the mean score for the questions about integrating social and environmental with economic attributes are respectively higher for organic farmers. Furthermore, a large difference can be seen with regard to the equal importance of the triple bottom line aspects for the business between both groups. This is supported with findings by Mzoughi (2011), which state that the decision to produce environmental-friendly agricultural products is strongly dependent on social and moral concerns besides economic ones. More specifically, one reasons for the vegetable producers, who were objects of the same study, to produce more sustainably was to show their commitment to their social surroundings
(Mzoughi, 2011). The higher degree of integration of social demands by organic farmers of the present study offers similar possible interpretations.

However, even though these results all point towards the assumption that organic farmers view sustainability more paradoxically than conventional farmers, one important outcome needs to be further assessed. As it has been shown in the Chapter 5.2.1 on Content & Integration, the mean score for the last question in that category indicated the predominance of an instrumental logic among all respondents. This is also the case when accounting for the mean scores of that question for the two different groups of farmers. Consequently, even though they differ significantly in the content and integration of threefold sustainability attributes within their cognitive frames, they have the instrumental logic of sustainability as a tool that supports their financial performance in common (Gao/Bansal, 2013). This finding is aligned with a study by Grover and Gruver (2017) on different influencing factors of farmers’ decision making. More precisely, they state that even though farming might be perceived as a profession based on lifestyle factors, that are rather non-economic, it cannot be viewed disconnected from economic objectives and they need to be profitable (Grover/Gruver, 2017).

6.3.3 Discussion Hypothesis 3

Hypothesis 3 has tested, whether the chosen sample groups also differ in their cognitive frames with regard to the approach of their company goals. It can be seen from the calculation of the average score per question of each of the two groups that especially the reach of business practices and the reach of company goals differs between the groups and accounts for the outcome of the hypothesis test. A company’s goals make up a frequently discussed aspect of capitalism theory (Jordi, 2010). The fact that organic farmers position the reach of their company practices with a larger tendency towards their outside surroundings, yields in the assumption that they view their farms as an integral part of the society and environment they live in, instead of a simple economic mechanism that produces profitable outcome (Jordi, 2010). This is supported by information about several organic farms that were approached for this study, which state that there are many ongoing projects to engage with society, like offering workshops for school classes or consumers, who are interested to see where their food comes from in a transparent way (Demeter, 2018). The same is the case for the outreach of such organic farms’ practices towards their ecological environment, as many of them stress their efforts to ensure biodiversity as well as their embeddedness into the nature around them.
Such guiding principles and ideas are not reflected to the same extent in conventional business practices which could be a reason why this group is significantly different in viewing the goals and reach of their businesses and therefore lies closer to the business case frame in that sense.

6.3.4 Discussion Hypothesis 4
Lastly, it has been shown that, in contrast to both others, the farmers from the two groups do not differ in their view of tensions between sustainability attributes. In fact, with regard to the acceptance of tensions, conventional farmers show an overall higher, i.e. more paradoxical, score than organic farmers. This finding is in line with the assumption that was made in chapter 6.1.3, that questions whether respondents did understand the meaning of accepting tensions as superior to trying to eliminate them. However, since the body on literature around tensions and how to manage them is currently emerging, the fact that this characteristic of cognitive frames leaded to the most contradictory results calls for a further assessment of such in the context of managers’ perception of sustainability (Hahn et al., 2018). The finding that these two groups do not differ in this regard, even though all other characteristics of cognitive frames pointed towards a more paradoxical frame for organic than for conventional farmers, can only partly be explained, as there is a lack of understanding the actual content of such perceived tensions respectively. This is supported by the outcome of a literature review by Van der Byl and Slawinski (2015), who point out that “conceptual clarity is lacking in research on sustainability tensions” (p.57). One potential interpretation of this contradictory outcome therefore could be, that the questions with regard to tensions were not clear enough, so that respondents could position themselves accordingly.

6.4 Discussion Applicability of the Model
After the content of the frame model as well as sector specific findings have been discussed, this chapter focuses on elaborating the applicability of the model as a holistic theoretical construct in praxis. Firstly, the reliability of the model by Hahn et al. (2014) will be interpreted, followed by the discussion of individual connections of particular questions of the conducted questionnaire.

In order to show that the measured data does not only show coincidental values, the Cronbach’s alpha should be as close to the value 1 as possible (Bryman/Bell, 2011). Although
the overall measured value of \( \alpha = 0.69 \) is considered acceptable, one cannot speak of a full reliability. According to Muijs (2004) this in turn explains that the obtained data indeed contains a moderate measurement error. However, considering the chosen research topic of cognitive frames of sustainability as well as the categorization of the questions into three categories, the result can be explained.

To carry out research in the field of sustainability contains multiple challenges. One, if not the biggest, is the immense complexity of the field. This is already shown by the existence of various definitions and attempts to integrate sustainability into businesses. Considering that sustainability consists of the three different dimensions of the Triple Bottom Line this complexity is exemplified: The content of each dimension must be considered vital in order to reach sustainable business practices. Still, the aspects of each dimension do not necessarily have to be interlinked.

According to the literature, Cronbach’s alpha can only be used when all existing items are complementary and therefore measure the same construct (Leiner, 2016). As stated in Chapter 5.2. the possible answers of each questions are oriented on two extremes. Hence, a score of 1 always represented the Business Case Frame while a score of 7 always stood for the Paradoxical Frame. Therefore, according to Hahn et al. (2014) a manager with a paradoxical lens would have a score of 7 throughout all questions. But in fact, every question must be seen as an individual construct that cannot correlate too much with the other individual questions in order to be able to measure precisely how the cognitive frames differ within the frame characteristics.

In conclusion, in case of a Cronbach’s alpha with the value 1, the answers would correlate so strongly, that only a frame score of 1 (Business Case) or 7 (Paradoxical Frame) would have been possible. This was not expected in practice as Hahn et al. (2014) solely present two abstract theoretical extremes. This is further supported and lastly confirmed by the fact that the overall average frame score with 4.3 lies in the middle of the 1 to 7 Likert scale.

Hereafter, the applicability of the model is further tested through discussing the conducted correlation tests of the questions. The strong positive Correlation A explains that managers who tend to include economic and environmental aspects are very likely to also integrate social aspects simultaneously into their business practices. This is also verified by the rather
high mean score of Question 3 (4.7) that underlines the equal importance of environmental and social aspects. Therefore, in the case of Correlation A the tendency of both questions to the Paradoxical Frame seem to fit the model of Hahn et al. (2014). That is further supported by Correlation B. Although it is rather moderately positive, it becomes clear, that managers who perceive environmental and social aspects as equally important also simultaneously disclaim that financial aspects play a more important role in their businesses. This was the expected result as the two questions mutually condition themselves.

When overviewing Correlation A and B the theoretical framework by Hahn et al. (2014) seems to be applicable in praxis as the questions are all positively correlated. In sum, this is aligned with the finding that Questions 1 to 4 all have a high tendency towards a paradoxical lens that was already presented in chapter 5.1.1.

The low score of Correlation C showed that there is no statistical relation between the likelihood to approach situations with a misfit of economic and environmental aspects and the discomfort with such discrepancies. Thus, the first hint that the model is not entirely applicable in practice is provided. This is further supported by the low Correlation D, which measured the same content in the economic and social dimension. Consequently, the classification of managers into one ideal type with overall high or low frame scores as suggested by Hahn et al. (2014) is not possible. Additionally, Correlation C and D provide the insight that the approach of situations with a misfit and the discomfort with discrepancies are not dependent on the dimension of sustainability.

The non-existent connection of Correlation E demonstrates that managers who are integrating economic and environmental aspects to a high extent do not simultaneously tend to accept tensions within the economic and environmental dimension. This result is also shown in Correlation F, which measured the same idea in the economic and social dimension. Again, these missing correlations show that the model of Hahn et al. (2014) has difficulties to persist in practical applicability. According to Hahn et al. (2014) a high score of the integration of one dimension requires the manager to accept tensions among these dimensions to be categorized as paradox. The questionnaire in contrast showed that although the integration tends to be high, which symbolizes a Paradoxical Frame, the treatment of tensions received
low scores, which fits the Business Case Frame (Hahn et al., 2014). This lead to the conclusion that managers can perceive sustainability with different frames in different categories.

In conclusion, after analyzing the content of the different categories, these correlations now clarified that managers from crop-land farming businesses cannot be classified according to neither a holistic perception of sustainability with the Business Case Frame nor according to approaching sustainability with a Paradoxical Frame. The fact that farmers rather lie in the middle of these two extremes, is align with what the authors of the framework suggested (Hahn et al., 2014). However, the insufficient correlations between the questions showed that a quantitative application of the theoretical model fails in practice without adjustment.
7. Extension of the Model in Context

The discussion of the findings resulted in clear limitations that require an extension of the original model introduced by Hahn et al. (2014). Especially, the categorization of a manager’s cognitive frame of sustainability into two extremes could not be drawn from the findings in the respective sector. In order to account for a more suitable framework, two further possible cognitive frames had to be included.

As the sample’s individuals showed both integrative and instrumental logics in their answers, it became clear, that the construct of dividing individuals in either the Business Case Frame or the Paradoxical Frame as presented by Hahn et al. (2014) does not work in praxis. As expected the research findings showed that the managers of crop-land agriculture businesses must be situated in between the two extremes. Consequently, the first of two major findings of this thesis emphasizes the need for the integration of further frames. With this, the finer shades of how sustainability was perceived can be illustrated accordingly. Thus, Table 7 introduces the Business Case 2.0 Frame as well as the Semi-Paradoxical Frame, which are analogously characterized along the three categories that were used throughout the thesis and represent the outcome of the study more accurately. The overview of frame typology is an adaption from Dyllick and Muff (2016) who used a similar structure to characterize a ‘Business Sustainability Typology’. Their attempt to navigate through the debate around underlying logics of business sustainability is closely related to the overview of frame typologies that is depicted in Table 7. An assumption of which frame scores represented each frame in the findings of this study, can be found on the left side of the table.

<table>
<thead>
<tr>
<th>Frame Score</th>
<th>Frame Typology</th>
<th>Content &amp; Integration</th>
<th>Company Goals</th>
<th>Treatment of Tensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 - 2.5</td>
<td>Business-Case Frame</td>
<td>Focus on economic attributes</td>
<td>Goals within company reach with focus on financial attributes</td>
<td>Eliminating Tensions</td>
</tr>
<tr>
<td>&lt; 2.5 – 4.0</td>
<td>Business-Case 2.0 Frame</td>
<td>Partly integrating three dimensions</td>
<td>Addressing three dimensions within company reach</td>
<td>Eliminating Tensions</td>
</tr>
<tr>
<td>&lt; 4.0 – 5.5</td>
<td>Semi-Paradoxical Frame</td>
<td>Fully integrating three dimensions</td>
<td>Addressing three dimensions within and partly beyond company reach</td>
<td>Tolerating Tensions with discomfort</td>
</tr>
<tr>
<td>&lt; 5.5 - 7.0</td>
<td>Paradoxical Frame</td>
<td>Equal importance of three dimensions</td>
<td>Addressing three dimensions within and beyond company reach</td>
<td>Embracing Tensions</td>
</tr>
</tbody>
</table>

*Table 7: Overview of Different Frame Typologies*
The Business Case 2.0 Frame is characterized by a beginning integration of aspects of all three dimensions of sustainability into a manager’s business practices as well as the expansion of the company goals, overarching all dimensions. However, the treatment of tensions is still dominated by the attempt to eliminate tensions. In sum, this additional frame indicates that an individual started to integrate the triple bottom line demands within the borders of the own business.

The Semi-Paradoxical Frame on the other hand, can be described through fully incorporating the Triple Bottom Line aspects of sustainability. Furthermore, the reach of the company goals is expanded beyond the own organization and a tendency to tolerate tensions is shown. Consequently, managers with this frame have broadened the reach of their sustainability efforts and show several characteristics of understanding the paradox inherent in sustainability.

Nevertheless, even after introducing these additional two frames it is vital to acknowledge that a manager will most likely not just have one single cognitive frame throughout all of the presented categories. In praxis, it is possible that an individual obtains different frames depending on which category is put into focus. Therefore, one might for instance foster a high integration between sustainability attributes with a Paradoxical Frame but simultaneously approaches goals and tensions with a logic that is analogous to the Business Case 2.0 Frame instead. This leads to the second major finding of this work: The way sustainability is perceived must not be seen as a status quo but rather a dynamic process that can develop back and forth depending on the current business situation an individual finds itself in. Further research implications for this finding will be given in Chapter 9.2.
8. Conclusion

The present study has shown, that the perception of corporate sustainability and its role towards achieving the overall goal of a more sustainable development globally is still manifold. The discourse around the way businesses could incorporate the Triple Bottom Line into their practices, was investigated through a cognitive frame perspective. However, it has been shown, that opposing the two main literature streams and business logics around corporate sustainability, could not been aligned with the multidimensional perceptions in the investigated sample.

Especially in the agricultural sector the topic is important due to its vital role as nutrition source for humanity and its importance for the reach of the SDGs worldwide. To understand how sustainability is perceived in the agricultural sector is the first step to gain insights to the current status quo that can be used to support development towards a higher integration of sustainability into daily business practices eventually.

The replication of the model within this thesis showed that it could not persist in practice in the agricultural sector. Consequentlly, two major findings resulted from this thesis’ research: On the one hand, there is a need for further frames in order to grasp finer shades of how sustainability is understood. On the other hand, it must be recognized that how sustainability is perceived as well as integrated cannot be observed as a mere status quo but calls for a more dynamic approach that includes the development of understanding sustainability.

Given the continuously ongoing debate around business sustainability, here expressed by the opposing logics of either a business case or paradoxical thinking, understanding the role of individual perception in that matter offers important outcomes for research and praxis. This study has shown that in fact different business logics can be present in one individual’s cognition simultaneously. The bilateral framework, that supported the assessment of cognitive frames for sustainability in this thesis, has been shown to be insufficient to wholly account for the empirical findings. Consequently, a rather multilateral concept was developed to offer a more detailed and broader approach towards understanding cognitive frames. In sum, it is inevitable to open up the two-sided view on business sustainability to a more dynamic perception for a profound assessment of this important topic in future.
9. Limitations and Research Implications

This chapter will illustrate limitations of the conducted study. Besides, in line with the concluding remarks, several research implications are identified for a further investigation of the topic. Thus, both implications for a dynamic approach of the extended frame model, followed by several other thoughts that serve as an outlook for future research, are presented.

9.1 Limitations

After the displayed limitations of the chosen framework by Hahn et al. (2014) in chapter 2.5.4 and the limitations of the research process in chapter 4.7, this section will give some final remarks on limitations of this paper.

Firstly, the lack of qualitative data to support the quantitative findings needs to be emphasized. Due to this, the interpretation of cognitive frames of managers is limited to the findings that could be drawn directly from testing the framework. Thus, the underlying reasons for the presence of the specific cognitive frames could not be assessed.

Secondly, the generalizability of the research findings can be questioned. Although the used sample was sufficient in order to investigate the statistical applicability of the model, the findings regarding the individual manager do not allow conclusions about the entire target population. Especially, in order to encourage the debate about achieving more sustainability in the agricultural sector, the findings can only serve as a starting point for further exploration.

Lastly, the underrepresentation of female respondents hindered to draw conclusions about gender specific differences in the cognitive frames for sustainability. This is aligned with earlier stated limitations as it could be another variable that fosters the understanding why cognitive frames of managers might differ.
9.2 Implications for a Dynamic Approach

The fact that both major findings of this thesis are equally relevant, calls for a more dynamic approach to cognitive frames, that is presented exemplary for this specific research outcome in the following. This is in line with what Cornelissen and Werner (2014) stated about the need to move beyond just identifying frames and to establish a more dynamic view instead. By expanding the research outcome through introducing potential shifts between the frames, the lack of a more fluctuate outcome is addressed. Table 8 shows the assumption that a manager goes through three key shifts in order to move from a Business Case to a Paradoxical Frame.

<table>
<thead>
<tr>
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<td>&lt; 2.5 – 4.0</td>
<td>Business-Case 2.0 Frame</td>
<td>Partly integrating three dimensions</td>
<td>Addressing three dimensions within company reach</td>
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</tr>
<tr>
<td>&lt; 4.0 – 5.5</td>
<td>Semi-Paradoxical Frame</td>
<td>Fully integrating three dimensions</td>
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</tr>
</tbody>
</table>

Table 8: A Dynamic Model of Frame Typologies

The first shift is situated within the category of Content & Integration and deals with the integration of economic, environmental as well as social aspects. This is followed by a shift in the category of Goals: The reach of the company goals is enlarged from only within the own organization to goals that have an effect equally within and beyond the own business. Lastly, the final shift takes place in the category of Treatment of Tensions. The literature as well as the questionnaire findings show that the treatment of tensions is the most critical element of perceiving sustainability as paradoxical (Hahn et al., 2015). Therefore, in order to eventually transform to a holistic paradoxical lens, tensions must be embraced instead of eliminated. The fact that the third shift in this theoretical model concerns the treatment of tensions, is justified
by the finding that literature promoting the relevance of embracing and accepting tensions for organizational theory is still in its infancy (Van der Byl/Slawinski, 2014). In line with these extensions, further research on this or another dynamic approach to the perception of sustainability, explained by cognition theory, is suggested.

9.3 Other Research Implications
The term ‘paradox’ has been applied in various contexts. Still, one of the major problems is that conceptual clarity is missing regarding the exact meaning of paradox (Lewis, 2000). This especially applies for understanding the underlying reasons for perceiving sustainability as paradox. This has been also acknowledged by Hahn et al. (2014), who differentiate between exploring ‘paradox’ in either a normative, descriptive or instrumental manner. The presented research is mainly descriptive as it explained how and if paradox is perceived by individuals. However, there is a lack of an instrumental perspective, that would help to understand the specific connections between paradox and business. Thus, it is suggested to investigate the underlying reasons for experiencing tensions and paradoxical notions through a qualitative study.

Furthermore, a qualitative approach would be suitable in order to assess why different attributes of sustainability are perceived in a certain way. This might lead to a more in-depth understanding of how cognitive frames of individual managers are structured. Besides, such a qualitative study allows the identification of the precise content of the different frame characteristics.

Lastly, the authors narrowed down the research to the agriculture sector, due to expected sector specific differences within the cognitive frames for sustainability. Thus, understanding the cognitive perception of sustainability by managers in other private or public sectors serves as another opening for additional research.
References


Appendix I: Conducted Questionnaire, English Version

I. Demographic Data

Please state your age

Answer: _____________________

Please choose one of the following options.

<table>
<thead>
<tr>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
</tr>
<tr>
<td>No Statement</td>
</tr>
</tbody>
</table>

Please choose one of the following options.

<table>
<thead>
<tr>
<th>Conventional Agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic Agriculture</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>No Statement</td>
</tr>
</tbody>
</table>

II. Understanding Sustainability

1. To what extent do you integrate economic and environmental attributes within your business practices?

<table>
<thead>
<tr>
<th>To a very low extent</th>
<th>To a very high extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>
2. To what extent do you integrate economic and social attributes within your business practices?

<table>
<thead>
<tr>
<th>To a very low extent</th>
<th>To a very high extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
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<td>4</td>
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<tr>
<td>5</td>
<td>6</td>
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<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

3. To what extent do social and environmental attributes have equal importance as economic attributes within your business practices?

<table>
<thead>
<tr>
<th>To a very low extent</th>
<th>To a very high extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
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<tr>
<td>5</td>
<td>6</td>
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<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

4. Please indicate your level of agreement with the following statement: Economic attributes are more important than environmental and social attributes within my business practices.

<table>
<thead>
<tr>
<th>I totally agree</th>
<th>I do not agree at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
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<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

5. Imagine yourself in a daily business situation where you have to integrate social, environmental and economic demands from different stakeholders. How likely is it that you are going to be able to integrate all these demands within your business actions?

<table>
<thead>
<tr>
<th>Not likely at all</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
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<tr>
<td>3</td>
<td>4</td>
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<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>
6. Please indicate your level of agreement with the following statement:
I exclusively integrate social and environmental aspects to satisfy my main stakeholders.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

7. Please indicate your level of agreement with the following statement:
I think of sustainability as a tool that is directly linked to the improvement of my financial performance.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

8. Please indicate the extent to which you aim to address economic, social and environmental concerns beyond your own organizational level on the scale below.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

9. Where do you position the reach of your company goals?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>
10. How likely are you going to approach situations where potential outcomes might not lead to an alignment of environmental concerns with your financial performance?

<table>
<thead>
<tr>
<th>Not likely at all</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

11. How likely are you going to approach situations where potential outcomes might not lead to an alignment of social concerns with your financial performance?

<table>
<thead>
<tr>
<th>Not likely at all</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

12. Please indicate your level of agreement with the following statement: I feel very uncomfortable with the discrepancies between the economic and environmental dimension of my business activities.

<table>
<thead>
<tr>
<th>I totally agree</th>
<th>I do not agree at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

13. Please indicate your level of agreement with the following statement: I feel very uncomfortable with the discrepancies between the economic and social dimension of my business activities.

<table>
<thead>
<tr>
<th>I totally agree</th>
<th>I do not agree at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>
14. Please indicate your level of agreement with the following statement: When facing tensions between different economic and environmental demands, I approach them with acceptance rather than elimination.

<table>
<thead>
<tr>
<th>I totally agree</th>
<th>I do not agree at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

15. Please indicate your level of agreement with the following statement: When facing tensions between different economic and social demands, I approach them with acceptance rather than elimination.

<table>
<thead>
<tr>
<th>I totally agree</th>
<th>I do not agree at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

16. Please indicate your level of agreement with the following statement: When facing tensions between different environmental and social demands, I approach them with acceptance rather than elimination.

<table>
<thead>
<tr>
<th>I totally agree</th>
<th>I do not agree at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
### Appendix II: Hypotheses Tests

#### t-Test: Two-Sample Assuming Unequal Variances - Overall Frame Score

<table>
<thead>
<tr>
<th></th>
<th>Frame Score Organic</th>
<th>Frame Score Conventional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>4,589423077</td>
<td>4,095744681</td>
</tr>
<tr>
<td>Variance</td>
<td>0,332142586</td>
<td>0,616068455</td>
</tr>
<tr>
<td>Observations</td>
<td>39</td>
<td>47</td>
</tr>
</tbody>
</table>

| Hypothesized Mean Difference | 0 |                      |
| df                           | 83 |                      |
| t Stat                       | 3,3571669 |                  |
| P(T<=t) one-tail             | 0,00059511 |                 |
| t Critical one-tail          | 1,663420175 |              |
| P(T<=t) two-tail             | 0,0012 |                |
| t Critical two-tail          | 1,98895978 |              |

#### t-Test: Two-Sample Assuming Unequal Variances – Content & Integration

<table>
<thead>
<tr>
<th></th>
<th>Score Organic</th>
<th>Score Conventional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>5,013919414</td>
<td>4,19787234</td>
</tr>
<tr>
<td>Variance</td>
<td>0,851261946</td>
<td>0,766299722</td>
</tr>
<tr>
<td>Observations</td>
<td>39</td>
<td>47</td>
</tr>
</tbody>
</table>

| Hypothesized Mean Difference | 0 |                      |
| df                           | 79 |                      |
| t Stat                       | 4,17900978 |                  |
| P(T<=t) one-tail             | 3,75015E-05 |                 |
| t Critical one-tail          | 1,664371409 |              |
| P(T<=t) two-tail             | 7,50E-05 |                |
| t Critical two-tail          | 1,99045021 |              |
### t-Test: Two-Sample Assuming Unequal Variances - Goals

<table>
<thead>
<tr>
<th></th>
<th>Score Organic</th>
<th>Score Conventional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>4,584615385</td>
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</tr>
<tr>
<td>Variance</td>
<td>1,183178138</td>
<td>1,37053654</td>
</tr>
<tr>
<td>Observations</td>
<td>39</td>
<td>47</td>
</tr>
</tbody>
</table>

- Hypothesized Mean Difference: 0
- df: 83
- t Stat: 3.260270108
- P(T<=t) one-tail: 0.000807612
- t Critical one-tail: 1.663420175
- P(T<=t) two-tail: 0.002
- t Critical two-tail: 1.98895978

### t-Test: Two-Sample Assuming Unequal Variances - Treatment of Tensions

<table>
<thead>
<tr>
<th></th>
<th>Score Organic</th>
<th>Score Conventional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>4,015384615</td>
<td>4,204255319</td>
</tr>
<tr>
<td>Variance</td>
<td>0.887125506</td>
<td>1.38693802</td>
</tr>
<tr>
<td>Observations</td>
<td>39</td>
<td>47</td>
</tr>
</tbody>
</table>

- Hypothesized Mean Difference: 0
- df: 84
- t Stat: -0.82622054
- P(T<=t) one-tail: 0.205509812
- t Critical one-tail: 1.663196679
- P(T<=t) two-tail: 0.411019625
- t Critical two-tail: 1.988609667
### Appendix III: Questions Organic vs. Conventional Farmers

Mean Scores per Question for Conventional and Organic Farmers

<table>
<thead>
<tr>
<th>Questions</th>
<th>Conventional Farmers</th>
<th>Category Mean</th>
<th>Organic Farmers</th>
<th>Category Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4,7</td>
<td></td>
<td>4,8</td>
<td>5,0</td>
</tr>
<tr>
<td>3</td>
<td>3,9</td>
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<td>5</td>
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</tr>
<tr>
<td>4</td>
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<td>4,8</td>
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