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ICT in Business and the Public Sector

Implementing Holacracy™:
Exploratory research into practicing and
implementing Holacracy™ in organizations
and its effect on the organizations' IT and security

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MASTER'S THESIS

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Preface

In 2012, within weeks of receiving a bachelor's degree in Business Informatics, I started a new educational adventure as a part-time student at the Master ICT in Business of Leiden University while working full-time. Most of the courses of the study were facilitated by CAI Opleidingen who made it possible to attend courses in late afternoons and evenings. This thesis is the final contribution of the study.

The past few years of studying were not easy, but I believe people who work and study simultaneously while raising one or more children have been in this same position.
I grew accustomed to working long days with fewer holidays and experienced the normality of very long nights of studying and writing. It's good to take a moment to reflect and acknowledge all the effort and sacrifices that were brought during these years.

In completing the thesis, several people have contributed directly or indirectly who I would like to acknowledge and thank:

- Hans Le Fever, the first supervisor, for his encouragement to always seek information and meaning about the formulation of subjects. His critical reviews during progress sessions which we held on a variety of locations were also very welcome as they provided me with more insight on the subject. An inspiring moment for me was our brainstorm session on a rainy afternoon in Wassenaar that kickstarted the research.
- Steve Foster, as second supervisor, for his view on the research and the insight he provided on a variety of subjects of the research which include data analysis methods and management models. Steve's contributions to the data and his encouragement to keep searching for patterns were very helpful.

Jeffrey van Horn, for reflecting on the progress and giving valuable reviews that were used in the structure and layout of the thesis.

I also thank all the participants of the research for their time and for being so helpful[1]. Most were genuinely interested in the research and in my motivation to research Holacracy. Their valuable information and opinions were the building blocks to the qualitative results in this research.

Most importantly, I could not have finished the thesis without the support of my family.
I thank my parents for their time and their help to watch over my daughter, so I could study and do research. Their spare bedroom was often a refuge for me to research and write in silence.
I thank Edith for her time, endless patience and continued support throughout the Master study.
And finally, I thank my lovely daughter Amber for her patience as I missed out on holidays and weekends in order to study, write and research.

The final comments are about the main subject of the thesis: Holacracy, a practice that can turn organizations to become purpose-driven and self-organizing. Although the research on the subject might be perceived as critical to some, my intensions are to start a discussion about the findings that can contribute to improve Holacracy and the self-organizing organizations that are using it.

I hope to stimulate readers of the research to show interest in exploring the possibilities of using self-organization in your organization, but above all; to inspire and encourage you to create unique, identifiable purpose-driven organizations were people continue to enjoy working.

Kevin (Vin) Fowler

Maasland, the Netherlands. May the 27th, 2018.

[1] See Chapter: Acknowledgements.

“A person who never made a mistake never tried anything new.”
Albert Einstein (1879-1955)

“If you choose not to decide, you still have made a choice.”
René Descartes (1596-1650)

Abstract

Holacracy™ is a self-organizing practice for organizations that distributes authority and accountability to all organizational members by using roles. Organizations that practise Holacracy transform their traditional hierarchical management system using defined organizational structures, processes and ruleset. Despite the growing number of organizations that practise and implemented Holacracy in their management system, little research has been done on the practice itself and how organizations are using and implementing it.

The research not only investigates the practice and implementation of Holacracy in organizations, but also focuses on the effect that is expected when organizations work with roles and are using application software including Role-based software and Identity & Access Management.
By using a literature review, a quantitative and a qualitative study, the research answers **what the effect is on organizations' application software, including role-based software and Identity & Access Management software when organizations start to practise Holacracy**.

After an extensive search that include personal meetings, telephone conferences, video conferences and an online questionnaire, 67 participants from various types of organizations in 13 countries worldwide applied. Their answers resulted in these findings:

- Practicing and implementing Holacracy in organizations changes the structures, processes and rules of the organizations. It forces organizations to evaluate their existing structures, processes and rules which leads to an above average chance (51%) for organizations to add new application software and a below average chance (32%) for organizations to modify their new or existing application software.
- Organizations' Holacracy implementation status can be in one of three defined Stages.
- The majority of the organizations use a Holacracy Coach to help them to practise and implement Holacracy as they experienced that this practice is difficult and complex. Organizations do find the Holacracy Coaches expensive.
- Working with roles does lead to role-related issues in organizations that practise Holacracy. However, the majority indicate they did not encounter role-related issues with their application software and specifically not with Role-based application software.
- The discipline Identity & Access Management is used in more than half of the organizations and even before Holacracy was implemented. Most participants indicate they did not encounter issues with their application software that were related to Identity & Access Management.

From the findings of the quantitative and qualitative study can be concluded that by practicing Holacracy as recommended in the whole organization, the practice can be implemented into the organizational management system of the organization but requires changes in existing structures, processes and rules. Organizations also need governance software for administering and monitoring these changes. Frequent changes of roles are not perceived as a problem in organizations as long as roles are updated directly in the organizations' Role-based software.
Organizations are not required to use the discipline of Identity & Access Management and its related software when they practise Holacracy, but more than half of the organizations have implemented it.

Organizations that would like to practise and implement Holacracy are recommended to use a Holacracy Coach, as advised by HolacracyOne[2] and specifically if the organization has more than 10 members.
By involving a Holacracy Coach before the implementation, organizations can save time and create transparency.
If organizations are not using Identity & Access management, they should implement this discipline and its related application software as it provides organizations, just like Holacracy, with clear structures, processes and rules. Organizations should be prepared to add new application software and modify existing and even new application software. Use of Role-based governance software such as Glassfrog, holaSpirit or Nestr is recommended to monitor their organizational structures, including circles, roles and tasks.

[2] HolacracyOne LLC is the limited liability company of Holacracy co-creator Brian Robertson.

It is further recommended that users of Holacracy should get involved in updating the Holacracy Constitution in line with its dynamic and self-organizing principle. Adding and discarding management ideas, frameworks and principles in Holacracy will substantiate its evolutionary features.

Keywords: Holacracy, practice, implementation, self-organizing, management system, roles, role-based application software, Identity & Access management.

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1. Introduction

The subject of the research is ‘Holacracy’; a practice used by organizations to become self-organized by creating autonomous teams through distributed authority. It is not a common practice since Holacracy is not widely used by organizations and very little research[3] has been done since its official release in 2007 (Robertson, 2007).
However, the last few years, more is written about Holacracy in books (Janse & Bogers, 2013. Laloux, 2014. Robertson, 2015) and in articles (Birkinshaw, 2014. Ryder, 2014. Denning, 2014 & 2015. Romme, 2015. Bernstein et. al, 2016). As Holacracy provides an alternative way to manage organizations that differs from the traditional view of how organizations are managed, and the fact that little research has been done on this practice, shows that researching the subject is original and contributes to the existing knowledge on the subject.

In this chapter, the background of Holacracy and the motivation to research it are included along with the problems, importance and relevance. It also includes the objective, research- and sub questions, scope, limitations and conditions. A conceptual model that visualizes the research structure is provided in addition to this chapter. For definitions to the necessary terminology throughout this and other chapters, a Glossary is included.

1.1 Motivation

The motivation to research Holacracy originated reading the autobiography ‘Delivering Happiness’ (Hsieh, 2010) in which Hsieh talks about using continuous evolvement in his organization Zappos; an online retailer owned by Amazon. Hsieh started to practise Holacracy at Zappos in 2014 (Groth, 2013) and this resulted in positive and negative publicity for Holacracy. It sparked a debate in articles if Zappos should stop using Holacracy (Bernstein, 2014) and whether Holacracy should even be used in organizations (Denning, 2014).
The opinions, the factual and non-factual information of the articles about what Holacracy is and what it does, provided the starting point to research this practice and the organizations worldwide that are using it. It fits the curriculum of the Master ICT in business since the research is focused on examining a practice that questions the traditional management system of organizations while also researching the ICT aspect of the organizations that practise Holacracy.

1.2 Background

Holacracy is presented as a new management system for governing and operating an organization and is defined by a set of core rules (Robertson, 2015). It is a system that can be used for existing or new organizations that want to become self-organizing, and in doing so, discard their traditional hierarchy management system. Holacracy founder, Brian Robertson, promises organizations[4] the following changes when they implement Holacracy in their organization:

- **An evolving organizational structure**
  The structure of organizations that use Holacracy constantly evolves due to its dynamic governance system.
- **Local and distributed organizational design**
  The dynamic governance system offers teams and members[5] to interact with each other throughout the organization.
- **Clear structure for distributed decision making**
  With clear and defined roles, managed by using governance software, the organization’s authority and decision-making is distributed throughout the whole organization.
- **Focused and coherent meetings**
  A structured and strict facilitation of meetings provides focus and clear action-oriented output.

[3] Source: http://www.catalogue.leidenuniv.nl and https://scholar.google.com/.
[4] Source: Robertson, B. (2015). Holacracy: A New Management System for a Rapidly-Changing World.
[5] Throughout the research, the people that work in organizations are neutrally referred to as “organization members” since the organizations that participated in the research use different terms to identify them.

If organizations want to start practising Holacracy, they are strongly recommended by HolacracyOne LLC, the limited liability company of Holacracy co-creator Brian Robertson, to hire a certified Holacracy Coach. The Coach helps organizations to gain knowledge, experience and to use the ruleset of the Holacracy Constitution[6] to actively find out what the real work is that the organization members are doing as opposed to what is listed in their job descriptions. By finding and merging all work, dividing them in tasks and labelling them with a role, members can take one or more roles that fit their knowledge or personal needs.
After a quick governance election process by distributing the roles, all organization members have full responsibility in their roles and are required to actively perform the tasks of the roles they are assigned to. Based on their roles, the members are divided in autonomous teams called “circles” and help to define their own circle’s purpose in order to complement the organization’s purpose. To manage the roles, tasks, work and circles, structured Governance and Tactical meetings are used.

The core process of practising Holacracy in organizations is to encourage members to tell about their problems and solutions. These are called “tensions” in Holacracy terminology and are dealt with by using the “Dynamic Steering” process (Robertson, 2007, 2015). In this process, each problem and solution is acknowledged and assigned to one or more members based on their roles and tasks.

1.3 Problem, importance and relevance

When organizations start to practise Holacracy, it leads to three organizational changes (Robertson, 2015). These changes are: 1) Structured meetings; 2) An altered organizational structure; and 3) The creation of roles to distribute work. The Harvard Business Review article “Beyond the Holacracy Hype” (Bernstein, Bunch, Canner & Lee, 2016) emphasises these changes in organizations that practise Holacracy.
These changes lead to effective meeting structures, the disappearance of job titles and the distribution of authority. It affects the members of the organizations from having none, limited or full responsibility in their work to only having full responsibility in their roles.
While from an organizational point of view, these changes affect the structures, processes, ruleset of the organizations, little research and data can confirm that Holacracy changes this when it is used and implemented[7] it in organizations. Additionally, no research or data is found if these organizational changes are affecting the organizations’ technology, such as the use of application software.

The following four arguments explain both problems, why they are important and how relevant they are to research. The **first** argument to research the organizational changes in organizations that practise and implement Holacracy is to verify its effect. Although HolacracyOne may have data on how their practice impacts organizations by changing structures, processes and ruleset, little research is found that can verify this. For organizations that aspire to practise Holacracy and implement it in their management system, it is important to provide them with facts about the practice in order for them to make conscious decisions.

For the **second** argument to research organizational changes, the problem is the unresearched support of technology in organizations that practise and implement Holacracy.
In the documents Holacracy Quick Start Guide[8] and the Holacracy Constitution that form the basis for the Holacracy practice, technology is referred to as a solution to “set up a shared system for governance records”. The Quick Start Guide also mentions that it is mandatory for organizations to set up a shared system for governance records because if they do not set this up “the entire system will be undermined if the governance records are not clear and easy for everyone to access.”.
Application software[9], and more specifically governance software, is the technology that is used with Holacracy to set up a shared system to structure and maintain the organizational processes. Since no research was found how this technology is used in organizations and how it supports Holacracy, it is important to research its effect.

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[6] Source: https://github.com/holacracyone/Holacracy-Constitution.
[7] The distinguish between practicing and implementing Holacracy is discussed in Chapter 2.2: What is Holacracy.
[8] Source: Holacracy Quick Start Guide. Version 2.3. (2014).
[9] Source : https://en.oxforddictionaries.com/definition/application.

The **third** argument to research organizational changes is aimed at the use of roles and application software in organizations that practise and implement Holacracy.
When organizations start to practise Holacracy, roles are frequently added, deleted, modified and switched during the Governance and Tactical meetings (Robertson, 2015). The changes of each role are managed in a shared system for governance records, preferably set up with governance software.
But the frequent changing of roles may be a problem when members in organizations are using Role-based application software. This can affect members with having access-related issues like login failures and integrity breaches.
Since the compatibility of Role-based application software in combination with the practice of Holacracy has not been researched, it is important to find how the frequent change of roles affects the organizations' Role-based application software.

The **fourth** and final argument to research organizational changes is focused on how roles are used in combination with Identity & Access management in organizations that practise and implement Holacracy. Like the third argument, the frequent change of roles may result in the inability of members to get permission to access, alter or delete information (Sandu .et. al, 1995) as a result of an unvalidated role.
Members can even be excluded from using application software based on an unvalidated role and this in turn can result in the exclusion to access organizational systems and networks. Identical to how the frequent change of roles may affect organizations' Role-based application software, the combination of practising Holacracy and Identity & Access management has not been researched in organizations.

Each of the four problems are explored and researched in this thesis.
The findings of each of these problems are used as a verification, to contribute to the current knowledge on Holacracy and even to create new knowledge on the subject. It is contradictory that since Holacracy was presented in 2007 and mentioned in many articles and in best-selling books like Getting Teams Done (Janse & Bogers, 2013) and Reinventing Organizations (Laloux, 2014), little research was done.

The audiences that will benefit most from the findings of this research are the organizations that are currently practising Holacracy, the organizations that aspire to use Holacracy and finally the Holacracy Coaches who are teaching organizations how to practise and implement Holacracy.
HolacracyOne, as the legal owner of Holacracy, can benefit from this research to find out how organizations are practicing and implementing Holacracy, setting up their shared system for governance records and how they use roles, Role-based application software and Identity & Access management.

1.4 Objective and questions

The objective of the research is to find as many organizations that practise or have practised and implemented Holacracy and ask one of their members a defined set of questions in order to answer the main research question:

What effect does practising and implementing Holacracy have on organizations
and **how does it affect their application software and Identity & Access Management?**

To answer the research question elaborately, the following sub questions need to be answered first as they each answer a part of the main research question:

1. **What is Holacracy and how is it practised and implemented in organizations?**
2. **How is application software used in organizations that practise and implemented Holacracy?**
3. **How is application software used in combination with the roles in organizations that practise and implemented Holacracy?**
4. **How is Identity & Access Management used in organizations that practise and implemented Holacracy?**

1.5 Scope and limitations

The scope of the research are all the organizations worldwide that practise or have practised and implemented Holacracy. To research how these organizations are using application software, this

subject is intentionally scoped broad to get the most information on the organizations' use of application software.
The limitations of the research are the interpretations of the questions that were presented to the participants in a questionnaire. The subjects used in the questionnaire, such as application software, governance software, Role-based software and the discipline of Identity & Access Management and its related software may be unknown to the participants. How this risk is reduced is explained in Chapter 3: Research Methodology.

1.6 Conditions

The organizations that contributed to the research, by having one of their member's participating, had to meet the following conditions:

- The organization[10] had a minimum of three members with no maximum number of organization members.
- The organization was either in the process of starting to practise Holacracy, already practised Holacracy but not as defined by Robertson (2007, 2015) or practised and implemented Holacracy in their organization's management system as defined by Robertson[11].
- The organization member had knowledge of the organization's application software, including governance software, Role-based software and Identity & Access Management software.
- The organization member had knowledge of the discipline Identity & Access Management.
- The member experienced the transition from not practising Holacracy to practising Holacracy in the organization.

1.7 Research Methodology

The research methodology contains a conceptual model based on Jonker & Pennink's model (2004). It is used to visualize the process of deduction and includes the subjects of the research. The model uses a Literature review to inform about the subjects, reflect on the information and summarize insights. Each subject is comprehensively covered including how the subject relates to the research- and sub questions, how the information is reflected by the author and finally, which key insights were used in the summary.

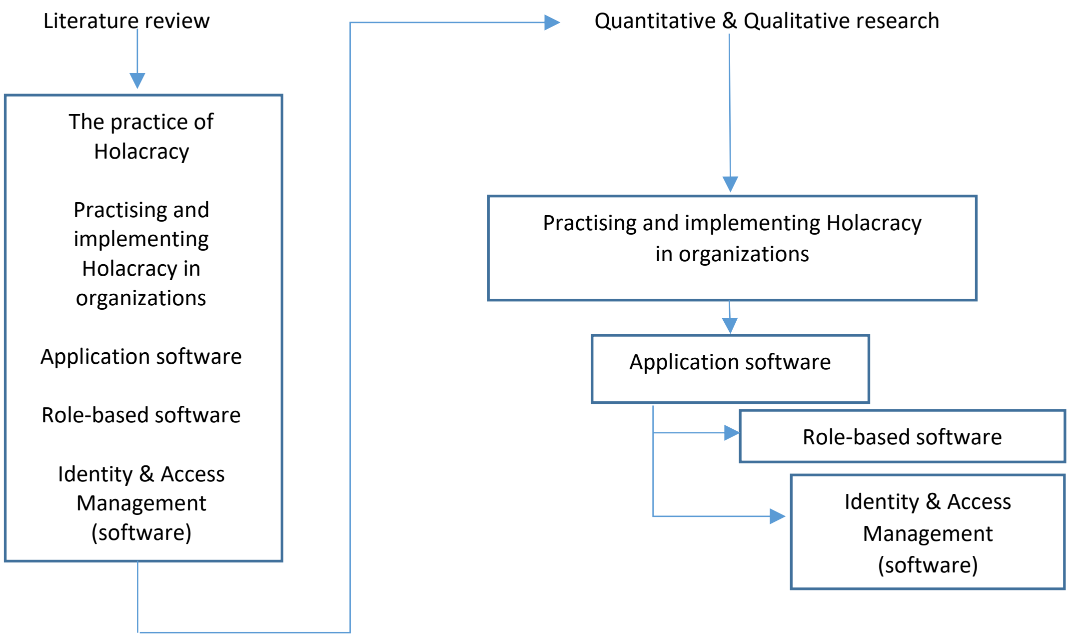

Figure 1: Conceptual model based on Jonker & Pennink, 2004 (Fowler, 2017).

[10] Source : https://en.oxforddictionaries.com/definition/organization.
[11] Substantiated in Chapter 2.2: What is Holacracy.

The subjects of the Literature review that are discussed are:

- The practice of Holacracy
- Practising and implementing Holacracy in organizations
- Application software
  - Role-based software
  - Identity & Access Management (software)

By including both a Quantitative and a Qualitative research in the conceptual model ensures a more complete view of the subjects in order to answer the research- and sub questions.
The Quantitative research uses the subjects of the Literature study's summary to form a set of questions for a questionnaire. The Qualitative research differs from this approach and consists of non-scripted conversations that the author had with organization members.

The strength of the conceptual model is that it consists of specific and complete information on pre-defined subjects (Literature study), includes the questions and answers from a questionnaire (Quantitative research) and brings additional information from interviews (Qualitative research).

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2. Literature review on Holacracy

The purpose of this chapter is to research the subjects 'Holacracy', 'Application software' and 'Identity & Access Management' using a deductive approach. This approach is used to inform what the subjects are about, how they are used and implemented and what its advantages and disadvantages are. Each sub chapter includes a reflection on the information to provide perspective and is used in the summary of the literature review. At the basis of the literature review are the literature types described by Sharp et al. (2002) and Saunders et al. (2009) that consist of articles in academic and professional journals, books, white papers and websites. Using a variety of literature types contributes to finding more relevant sources with information on each subject despite the limited availability of literature on Holacracy.

2.1 Origin of Holacracy

In 2001, Brian Robertson founded a start-up application software company called Ternary Software that offered organizations "to bring their software to market using highly-effective "lean" processes" (Robertson, 2015).
In 2003, the company grew bigger and faced the structural challenges in its processes and decision-making. From his perspective as a CEO and a leader, Robertson had questions about the way people worked together and wondered how they could perform in the most effective and efficient way possible. To tackle these challenges, Robertson used different trial and error approaches for the members in the organization, turning his organization into a laboratory for testing organizational and cultural changes.
Among the first changes that were incorporated in his organization were the principles and the practices of Agile software development (Beck et. al, 2001), Lean (Poppendieck & Poppendieck, 2003) and Sociocracy (Endenburg, 2002). These changes ensured Robertson that every member in the organization provided their colleagues with valuable feedback, which evolved the organization in the areas of autonomy, purpose-orientation and rapid decision-making. By including autonomy, purpose-orientation and rapid decision-making in the organization's structure, processes and rules, Robertson created his first management system that he called "The Ternary Way".

In 2006, after abandoning parts of the management system of Sociocracy, Robertson renamed his new management system 'Holacracy'.
'Holacracy' is derived from the word 'holarchy' which is the organizational structure that is created in organizations that implement the structures, processes and rules of the Holacracy practice.
Robertson (2015) mentions that the term 'holarchy' originated from the book 'The ghost in the machine' by Arthur Koestler (1967). In this book, Koestler described a 'Holon' as "a whole that is a part of a larger whole" and a 'holarchy' as "the connection between halons".

In 2007, Robertson, his wife Alexia Bowers and serial entrepreneur Tom Thomison formed a new organization and called it 'HolacracyOne LLC' (Limited Liability Company). Their goal was to further develop and package Holacracy as a new management system for organizations.
To bring Holacracy to the attention of organizations, Robertson published the whitepaper 'Organization at the Leading Edge: Introducing Holacracy' (Robertson, 2007) that focused on what Holacracy is and how organizations can benefit from it.
With the whitepaper and the challenges Thomison provided him to get clearer on the rules and processes of Holacracy, Robertson left Ternary Software at the end of 2007. The help from Thomison gave him the insight to see Holacracy objectively enough, which resulted in the formation of the Holacracy Constitution in 2009. In the following years, version 2.0, 2.1, 3.0, and the current version 4.0 were formed. The Holacracy Constitution was now tangible, allowing the Holacracy management system to be used and tested, making it easier to evolve the management system further.
Robertson and his co-creators made the Holacracy Constitution available on the HolacracyOne website under the open-source Creative Commons Attribution-Share Alike 4.0 International License. Although Holacracy was now trademarked, using the practice was free to use and available for everyone.
On the HolacracyOne website, a community was created to answer questions and to provide feedback by logging on with your username and password. Through the community, the feedback provided by the users helps to dynamically evolve the Holacracy Constitution with successive versions.

In the following years, Robertson and his co-creators increased the visibility of Holacracy and HolacracyOne by offering a variety of services. One of the services was setting up the Holacracy Licensing & Certification program. In the Certification program, there are four certification levels available beginning with Practitioner, then Facilitator, Coach and ultimately Master Coach. People who are certified as Coach or Master Coach are the only ones that are approved to implement the Holacracy management system in organizations due to their experience.
In the Licensing program, people who are Certified Holacracy Facilitators and interested in providing Holacracy workshops or services to individuals or organizations, can opt for an Agent License. The Provider license is for organizations that have experience with implementing the Holacracy management system in organizations using the Agent license and program.
Another service from HolacracyOne came in 2011, when it launched Glassfrog. This specific web-based governance software is used by Holacracy organizations to manage the different roles, tasks and circles. As of January 2017, Glassfrog offers a free version and a Premium version that contains more options.

The Holacracy App Store is a feature on the website of HolacracyOne that contains solutions to organizational processes from organizations that already work with Holacracy. These solutions are called 'governance proposals' and are free to download. Although there are a few governance proposals, most proposals are for talent management, reviewing- and compensating organization members.
HolacracyOne is also known for providing a multitude of national and international events. Robertson, because of his role of Holacracy Spokesperson uses public speaking at conferences, webinars, introductory workshops (that are called 'Taster workshops') and certification programs to increase the publicity of Holacracy.

In June 2015, Robertson launched a book that explains what Holacracy is and how it is used. The book is published with two different covers that include different titles. The titles of these books are:

- Holacracy: The New Management System for a Rapidly Changing World[12];
- Holacracy: The Revolutionary Management System that Abolishes Hierarchy[13].

There is no information available why two different covers and titles have been used. The common option used by publishers to present two or more covers and titles is to present the book in different markets and/or countries.

Over the past years, more organizations have implemented and used Holacracy as their new management system. The organizations that have adopted Holacracy include well-known organizations like the David Allen Company of the Getting things Done method (Allen, 2001) in 2011, Medium in 2012 and Zappos in 2014.
According to the HolacracyOne website[14], the number of organizations that use Holacracy worldwide is estimated to be more than a 1000. Unfortunately, there is no exact data on the actual number of organizations that use Holacracy since the number is based on the organizations that are using or have used a free or paid version of HolacracyOne's governance software Glassfrog.

Reflections on 'Origin of Holacracy'
As all organizations change, so do organizations that use Holacracy. Medium[15] stopped to use Holacracy because of its rules and Zappos uses it to become a TEAL organization[16]. Since there is no exact data on the number of organizations that use or used Holacracy, there may be more organizations that have dismissed Holacracy but there could also be more organizations that have implemented Holacracy as their management system.

The origin of Holacracy still holds questions that can be used during the research to gain the necessary insight to answer the research and sub questions. The first question is: "Why haven't more organizations used the Holacracy App Store to submit their governance proposals and help other organizations". There are only five proposals in the App Store and that number has not increased. The second question

[12] Source : https://www.amazon.co.uk/Holacracy-Revolutionary-Management-Abolishes-Hierarchy/dp/0241205859.
[13] Source : https://www.amazon.com/Holacracy-Management-System-Rapidly-Changing/dp/B01L985542.
[14] Source : https://www.holacracy.org.
[15] Source : https://blog.medium.com/management-and-organization-at-medium-2228cc9d93e9.
[16] Organizational form described in Reinventing Organizations (Laloux, 2014).

is: “Why there isn’t an actual number of organizations that are currently using Holacracy and of organizations that have dismissed Holacracy as their management system”. No actual and consistent data has been found.

2.1.1 Influences

Holacracy is a dynamic and evolutionary management system comprised of many management ideas, frameworks, methods and principles. It is the successor of the first management system that Brian Robertson created when he was a CEO at Ternary Software. He called the system “The Ternary Way”. The first method that he used different parts from to create that management system was Agile software development. He used the part of creating teams had the power to work together and make their own decisions. Robertson also used Agile’s adaptive planning, responding to changes, the transparency of giving and receiving information and using the same visualization that Agile uses for its project boards by collecting project data. Finally, he used Agile’s evolutionary approach to give and receive feedback to deliver a valued service for customers.
When Robertson applied parts of Agile and Lean principles to new management system, he tells the influences came from Kent Beck, Ken Schwaber, Jeff Sutherland, Mike Cohn and Mary Poppendieck without specifics on their work or theories. From David Allen, he used his Getting Things Done (GTD) method (Allen, 2001). Robertson tells that the principles of Lean were overlapping those of Agile and he especially praised the discipline and clarity of Agile and David Allen’s GTD method.
Other influences in this stage to create his management system, without being specific, originated from the work and ideas of Jim Collins, Peter Senge, Barry Oshry, Patrick Lencioni[17], Susanne Cook-Greuter[18] and Linda Berens’ Integral Type[19]

In the next version of The Ternary Way, Sociocracy (Endenburg, 2002) was used to incorporate collaborative decision-making methods, adaptive steering and the use of self-organizing teams. Robertson admits that some of the ideas and methods of Sociocracy already overlapped with Agile’s principles.
The principle of getting consent and the idea of an elected representative (rep) link that would take part in the meetings of the broader circles in the organization are also derived from Sociocracy (the rep link role is still used in Holacracy).
Also, in creating the integrative decision-making process (still used in the current Holacracy Constitution), the Facilitator’s Guide to Participatory Decision-Making (Kaner, 2014) is used, along with Agile principles and distinctions from the Fifth Discipline (Senge, 2006).

The management system evolved further when Robertson and his co-creators formed HolacracyOne. To create a pattern for a solid and clear organizational structure, he was influenced by a variety of models that include Ken Wilber’s integral theory (Wilber, 1995) for explaining natural holarchies and Elliott Jaques’ organization model (Jaques, 1997) that contained types of expectations and structures in organizations. Robertson and his co-creators turned to Sociocracy once more and it resulted in using the rules of one-tension-at-a-time, the distinction of governance as opposed to the operational (tactical) outputs and to find out what tensions (also known as issues) and objections are relevant to use in the organization right now. The management system was now known as “Holacracy”.
Other influencers for the Holacracy management system were Patrick Lencioni (Lencioni, 2004), who inspired Holacracy’s meeting structure and its core rules. Eric Beinhocker (2006) and Nassim Nicholas Taleb’s work (Taleb, 2001, 2007, 2010 and 2012) deepened Robertson’s understanding of Holacracy as a management system. After version 1.0 of the Holacracy Constitution[20], every change to the practice of Holacracy was saved in this document. As an example, David Allen’s GTD method was fully integrated in the Holacracy Constitution version 3.0 using its operational concepts and insights to form Holacracy’s authority structure.

[17] Source : https://blog.holacracy.org/history-of-holacracy-c7a8489f8eca.
[18] Source: Organization at the Leading Edge: Introducing Holacracy™ (Robertson, 2007); Postautonomous ego development: A study of its nature and measurement. (Cook-Greuter, 2010).
[19] Integral Type is part of Berens CORE™ Approach, which is consistent with Ken Wilber’s Integral Theory (Berens, 2013).
[20] Source : https://www.holacracy.org/constitution.

Reflections on 'Influences'
Holacracy is described as a dynamic evolutionary management system. It does so by using parts of principles, methods, and frameworks and including them in the Holacracy Constitution.
The version of the Holacracy Constitution that is used in this research is 4.1 (June 2015) as it was the most current version at the time.
Everyone who wants to participate and influence Holacracy can sign up on the open source platform GitHub[21] to deliver their ideas, spot differences or report bugs about the Holacracy Constitution. On the other hand, the only one who is implementing the suggested ideas or bugs in the Holacracy Constitution is HolacracyOne's CEO. By using a single 'closed' factor to implement changes, it limits the evolutionary aspect which makes it less dynamic. The argument is partly used by Ter Steege as well (Ter Steege, 2015). Although version five of the Holacracy Constitution should be 'completely open-source and written with simpler language'[22], the announcement was more than two years ago, and the current version of the Holacracy Constitution is still 4.1 since June 2015.
Another argument is that the changes to the Holacracy Constitution are more focused on textual changes than implementing new management ideas, frameworks and principles or discarding old ideas, frameworks and principles from the current Holacracy Constitution. Contributors are helping by suggesting typos, providing clear definitions for a variety of subjects and for pieces of text and to translate the Holacracy Constitution in different languages. The last update was the integration of David Allen's GTD method in the Holacracy Constitution 3.0 and 4.0, which is dated March 2013[23].
Management ideas such as The Golden Circle (Sinek, 2009), principles like The Art of Work (Goins, 2015) or methods like creating a Growth Mindset (Dweck, 2007) are examples of still actual and influential purpose-driven additions that could contribute to the Holacracy management system. As it is discussed more in the next sub chapter, Holacracy proclaims to be a purpose-driven management system. Yet, without discarding old or adding new management and/or purpose-driven ideas, methods or principles, the management system seems less dynamic and evolutionary.

2.2 What is Holacracy

From the first presentation of Holacracy in a whitepaper (Robertson, 2007) to the book 'Holacracy: A New Management System for a Rapidly-Changing World' (Robertson, 2015) there have been numerous definitions to explain what Holacracy is. In Robertson's book, Holacracy is defined as:

- An operating system.
- A new management system.
- A social innovative technology.
- A self-organizing system.

In the documents that are needed to implement Holacracy in organizations, the definitions of Holacracy are also different. In the Holacracy Quick Start Guide v2.3, Holacracy is called a 'practice' while the Holacracy Constitution v4.1 tells that Holacracy is an 'operating system'.
Different definitions are also found in books that contain information about Holacracy. The book 'Getting Teams Done' (Janse & Bogers, 2013), presents Holacracy as a method to increase team productivity while the book 'Reinventing Organizations' (Laloux, 2014) defines Holacracy as an organizational operating model.
Since there are many definitions of what Holacracy is, it can be confusing for people who want to know what Holacracy exactly is. While finding this out, the aim is not to judge all the definitions but to provide the most accurate definition of what Holacracy is.
Comparing all the definitions of Holacracy, the one that best describes what Holacracy is originates from Robertson's original whitepaper on Holacracy:

"Holacracy is not a model, idea, or theory. Holacracy is a **practice**." (Robertson, 2007).

This definition explains Holacracy and how it originally was intended to be used in the first whitepaper on Holacracy. From an organizational point of view, Holacracy is also a practice because it needs to be practised in organizations to experience how it works. Even the definition of the word 'practice'[24]

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[21] Source : https://github.com/holacracyone/Holacracy-Constitution/issues.
[22] Source: https://www.holacracy.org/v5-launch and https://www.holacracy.org/open-source.
[23] Source : https://www.holacracy.org/constitution40.
[24] Source : https://en.oxforddictionaries.com/definition/practice.

acknowledges this as: "The actual application or use of an idea, belief, or method, as opposed to theories relating to it."
The question remains how Holacracy as a practice relates to the Holacracy management system. The Holacracy management system is the preferred organization form for organizations that applied the ruleset, structures and processes of the practice throughout the whole organization (Robertson, 2007, 2015). However, by acknowledging the Holacracy management system, there are still stages in organizations written about in the literature and articles of the research that do not apply to this preferred organization form. Based on all the organizations found in the literature and articles in the References of this research, the following three stages[25] were created to define where the organizations that use Holacracy can be fitted:

Stage 1
This stage characterizes the organizations that just started with the practice of Holacracy. They may or may not use a Holacracy Coach to help them to understand Holacracy and they follow the Holacracy Quick Start Guide as well as the Holacracy Constitution to practise Holacracy.

Stage 2
The definition of this stage is very broad. Basically, it is the stage after an organization's initial start to use Holacracy by implementing some of the ruleset, structures and processes described in the Holacracy Quick Start Guide and the Holacracy Constitution. These organizations may be in the process to implement all set of rules, structures and processes in the whole organization to embed Holacracy in their organizational management system. But organizations in this stage can also have decided that one or more of Holacracy's ruleset, structures and processes are limiting their organization and therefore are choosing not to use one or more of them.

Stage 3
This stage characterizes the organizations that have implemented the practice of Holacracy into their organizational management system as initially preferred by Robertson's whitepaper and book. These organizations implemented all of Holacracy's ruleset, structures and processes and are still using the Holacracy Constitution as a back-up and reference document.

Even though there are different stages for organizations to be in, the practice of Holacracy is exercised in each organization that uses Holacracy. Including the distinctions between Holacracy as a practice and the Holacracy management system contributes to clear description of what Holacracy is.

Reflections on 'What is Holacracy'
To transform an organizations' management system to become a Holacracy management system, it is mandatory that all members in the organization are using the Holacracy practice. If this is not the case, the organization does not benefit from all the changes Holacracy brings because it creates separate cultures in the organization. These separate cultures do not benefit the organization since they don't unify the organization's culture but rather split it by using different work ethics, responsibilities, meetings and above all, a different purpose.
In the literature for this chapter, there is a fundamental error in the title of Robertson's book "Holacracy: The Revolutionary Management System that Abolishes Hierarchy". Although Holacracy uses a structure that flattens organizations and leads to less hierarchy, organizations still have a hierarchy structure[26]. Since the title leads to an incorrect interpretation of what Holacracy offers organizations, this may be the answer why the book is available with two different covers, although the true answer remains unknown.

2.2.1 Holacracy and other management systems

Holacracy is not the only management system that provides distribution of authority using self-organizing teams to become a self-organizing organization. Richard Semler's management principles, incorporated in the management system of his Brazilian organization Semco, resulted in higher profits

[25] The stages can be used as a guideline but are not used to categorize organizations in this research, since the insight occurred after the qualitative and quantitative results and during rewriting of the Literature review on Holacracy.
[26] Source: Organization at the Leading Edge: Introducing Holacracy™ (Robertson, 2007).

and engaged members in the organization (Semler, 1995). Semco's unique organizational management system is focused on its organization members, providing them more authority to decide on the daily business in the organization which results in more autonomy of its members.
Semco's management system differs with the Holacracy management system on two fundamental points:

- The Holacracy management is focused on getting work done by providing problem-solving structures were Semco's management system is focused on engaging its members.
- Semco's management system provides democracy, which means that the decisions of most of the organizations' members are used to formulate an answer when facing a big decision. In Holacracy management systems, each problem that a member encounters that prohibits him/her to do their work is processed and solved in team meetings.

Morningstar is another unique organization that drives on a different management system. Described in books (Laloux, 2014) and articles (Hamel, 2011; Bernstein, et. al, 2016), Morningstar is an American self-organized food processing organization were each organization member writes a colleague letter of understanding (CLOU) to offer their expectations of themselves and how they will work with their colleagues.
The differences between Morningstar's organizational management system and the Holacracy management system are:

- The work at Morningstar revolves around what kind of agreements the members make with themselves and each other (using a CLOU). The Holacracy management system resolves around what kind of work is available.
- At Morningstar, organization members negotiate their responsibilities with their colleagues. In organizations that work with the Holacracy management system, their members have set responsibilities based on their roles. The members are always allowed to give their roles back to the Lead link of a Circle (team) or bring up the responsibility of one of their tasks (that is part of a role) during a Governance or Tactical meeting.

Looking at the differences of the management systems, Morningstar and Semco are both using a people-centric approach as opposed to the Holacracy management system that uses a work-based approach. When looking at the management systems of the two organizations, Semco has used its management system to create a management style that organizations can adopt, where the practice of Morningstar's management system has been made available through Hamel's article (2011) but it is unknow if organizations have adopted Morningstar's practice.

A term that is also used frequently when referring to self-organizing organizations is TEAL. The term is described by Frederic Laloux in his book Reinventing Organizations (2014) as a conscious organization structure. Laloux found and researched 12 organizations that fit the organizational structure of TEAL and includes the organizations HolacracyOne and Morningstar. What all the current and future TEAL organizations must have in common, as part of their characteristics, is they use:

- Self-organization; using decentralized structures with little or no hierarchy;
- Wholeness; All members of the organization are equals and accepted despite their vulnerabilities;
- Evolutionary purpose; All members can help to achieve the organization's adapting purpose since TEAL organizations see themselves as a living, adaptive and complex system.

TEAL is an organizational structure based on a set of characteristics and cannot be compared with Holacracy; a practice that is used to transform the organizations management system to a Holacracy Management system. Both are complete different entities. However, it is possible to use Holacracy in organizations to become a TEAL organization. Zappos and holaSpirit are two organizations that use that strategy.

To complete searching the differences between Holacracy and other self-organizing management systems, it is of importance to also compare the Holacracy management system with the most commonly used traditional hierarchy management system.
The traditional hierarchy management system is based on principles from Taylorism (Taylor, 1911) and Fordism (Gramsci, 1934) and is characterized by using efficiency processes with the aim to produce more and which in turn would benefit the economy. The movement was criticized by Drucker (2001)

who was more interested in managing organizations but more specifically managing and educating the people in organizations. Kotter (1996) acknowledged the urgency of organizations to adapt to the needs of the consumers and markets. The change of organizations and their structures is described by Mintzberg (1983) who challenged the currently used organizational structures and newly designed structures and management models that would fit in most organizations.
Over the years, the organizational structure of the organizations with a traditional hierarchy management system changed and varied from bureaucratic, functional or divisional to a matrix structure. Still, the organizational structures are based on a manageable and accountable one using the same traditional hierarchy management system.
To show the differences between the traditional hierarchy management system and the Holacracy management system, the following figure is provided as a visual aid:

Organizations with a traditional hierarchy management system	Organizations with the Holacracy management system
Authority delegated • Managers delegate authority top-down. • Control is often applied top-down. • The wielder of authority is often still responsible for delegated tasks.	**Authority distributed** • Authority is distributed to self-organizing teams and roles. • The retainer of a role has full authority within their domain.
Centralized decision-making • Decisions from managers trump people top-down.	**Decentralized decision-making** • Decisions are made locally in teams. • Decisions can trump others if they don't interfere with other roles in daily work.
Job titles • People have one job in organizations often have no or a few roles. • The descriptions of the job tasks and job titles are not accurate and rarely updated.	**Roles** • Roles are created to fit tasks and are updated, if needed, in Governance meetings. • The tasks of each role are updated, if needed, in Tactical meetings. • People fill several roles and roles are transferable.
Slow reorganizations • Reorganizations are pushed top-down. • The length of reorganizing takes months and sometimes years.	**Quick reorganizations** • Big and/or small changes are performed frequently and iteratively during Governance meetings. • Reorganizing is part of the Holacracy practice to make the organization better and to move it forward.
Politics • Meetings are often long since everyone wants to give their opinion. They often lack a clear structure. • Managers are not always bound or held accountable to the same rules as their employees.	**Rules and transparency** • Strict meeting structure that is without back talk and opinions. • Everyone is bound by the same rules. Even the owner/CEO. • All rules are available in the governance records, are transparent and don't have exceptions.
No, average or full responsibility • Based on tasks and job titles, people have no, average or full responsibility.	**Always full responsibility** • The retainer of each role has always full responsibility.

Figure 2: Comparing a traditional hierarchy management system with the Holacracy management system.

While the examples in this sub chapter point out the differences between the management systems of organizations and the Holacracy management system, it is important to acknowledge that there are more organizations that have different management systems. The inclusion of the organizations in the example are all because of their familiarity in books, articles and other media.

Reflections on 'Holacracy and other management systems'
The organizations in the sub chapter are the most mentioned organizations, based on the books and articles in the References of the research. That does not mean that these organizations are the only self-organizing organizations that exist.
The management systems of these organizations can in theory be copied and used in other organizations. However, only the practice of Holacracy that can be used to create a Holacracy management system has proven that it can be implemented fully by providing the attributes needed

such as documents (the Holacracy Constitution and Holacracy Quick Start Guide), Holacracy Coaches and Holacracy Certification programs. Semler's management principles have been transferred and incorporated in programs at Semco Style Institute. It still means that you must use and incorporate the management principles in your own organizations, with or without the help from consultants of the Semco Style Institute.
Another point is the time it takes an organisation to turn their existing management system into a self-organized management system. In books about Morningstar, Semco and other self-organizing organisations, it took them years to perfect their organization's management system (Laloux, 2014; Semler, 1995). If organizations want to switch their management system, it would benefit their organization members and business if they could do it more quickly. Using the practice of Holacracy in combination with their attributes and Holacracy Coaches is a quick way for organizations to become self-organizing.

2.3 Practicing and implementing Holacracy

The second part of the first sub question of the research is focused on how Holacracy is practised and implemented in organizations. To implement Holacracy in any organization, either with or without a Holacracy Coach or Master Coach, the two official attributes are needed: The Holacracy Quick Start Guide and the Holacracy Constitution.

Attributes

The Holacracy Quick Start Guide is created to start with Holacracy. The document is comprised of seven steps that organizations need to follow to use Holacracy for the first time.
The Holacracy Constitution is a document that consists of the rules, the structures and the processes that are needed to practise Holacracy. The Constitution, also dubbed as a 'rule book' by some, is quite thorough and is needed very often to use as a reference when there are questions about the structures and processes. So not only is it needed during the first practices with Holacracy but also when Holacracy is implemented in the organization's management system. The Holacracy Constitution uses articles instead of chapters which appears to make it more official like a law book. The articles relate to five subjects; Energizing Roles, Circle Structure, Governance Process, Operational Process, Adoption matters and concludes with an appendix that defines the core roles of Holacracy and a copy of a constitution adoption declaration. Each subject contains specific elements such as 'circles' and describe what a circle is and how it should be used. As mentioned by Robertson (2015), the Holacracy Constitution is only used as a reference, since 'learning Holacracy is like a game'.

To start with practising Holacracy, organizations need to take the following seven steps of the Holacracy Quick Start Guide[27]:

1. Determine if You Truly Have an Organization
2. Formally Adopt the Holacracy® Constitution
3. Set up a Shared System for Governance Records
4. Determine an Initial Structure
5. Hold First Governance Meetings & Run Elections
6. Set up a Shared "Corkboard" for Operational Items
7. Schedule Governance and Tactical Meetings

The first step is to see if an organization meets Holacracy's definition of an organization. A step not to be taken lightly since it requires to think of the organization's purpose. The second step is to symbolically adopt Holacracy by letting the owner or CEO of the organization to sign a copy of the constitution adoption declaration (available in the appendix of a Holacracy Constitution). With the declaration, which has no legal statement, the owner or CEO distributes his/her authority to the Holacracy processes.

In Step 3, what the guide means by a shared system for governance records is that governance software is needed to record and manage the organization's structure which include circles (teams) and roles. The most well-known governance software now is HolacracyOne's Glassfrog (see Figure 3), holaSpirit or Nestr. The governance software is also needed in the next step to determine and set up a structure.

[27] Source: Holacracy Quick Start Guide V2.3 (2014). https://www.holacracy.org/quickstart-guide.

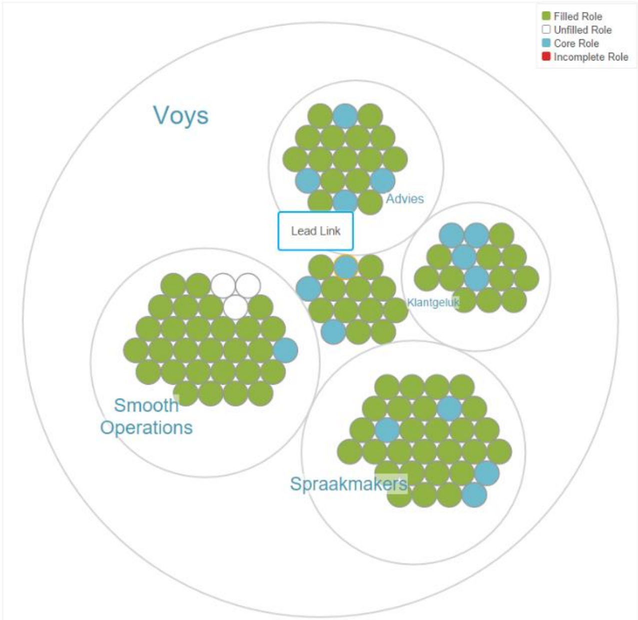

Figure 3: Example of governance software Glassfrog showing an organizational structure (Voys, 2015).
Source : https://www.voys.nl/weblog/voys-als-eerste-ter-wereld-volledig-zelfsturend/.

As Figure 3 shows, the organization starts with setting up an anchor circle which incorporates the whole organization and then defines one or more sub circles that binds the roles to working in the sub circles to achieve or maintain the circle's purpose.
The next step for organizations is to hold the first Governance meeting and run elections for the roles in the sub circles. Holacracy Coaches usually take more time with this step by letting all members of an organization write their daily tasks on Post-its and use them to create the roles first before running elections.

After the initial setup that created roles and transferred them to the members through elections, the need for a 'corkboard' of each sub circle is discussed. A corkboard can be digitally and/or physically and consists of metrics, checklists and projects that are assigned to one or more roles in a sub circle (see Figure 4).

The final step of the Holacracy Quick Start Guide is to schedule the Governance and Tactical meetings and the frequency of these meetings. The frequency differs in each organization, but since Tactical meetings are operational meetings, these tend to be held more frequent (every one or two weeks).

Continuous actions
Next to using the attributes and taking the seven steps to start and practise Holacracy, the following actions need to be taken continuously as a part to implement Holacracy in the organization's management system:

- Update roles and accountabilities
- Use the process of tensions
- Plan regular Tactical and Governance Meetings
- Updating Governance Records

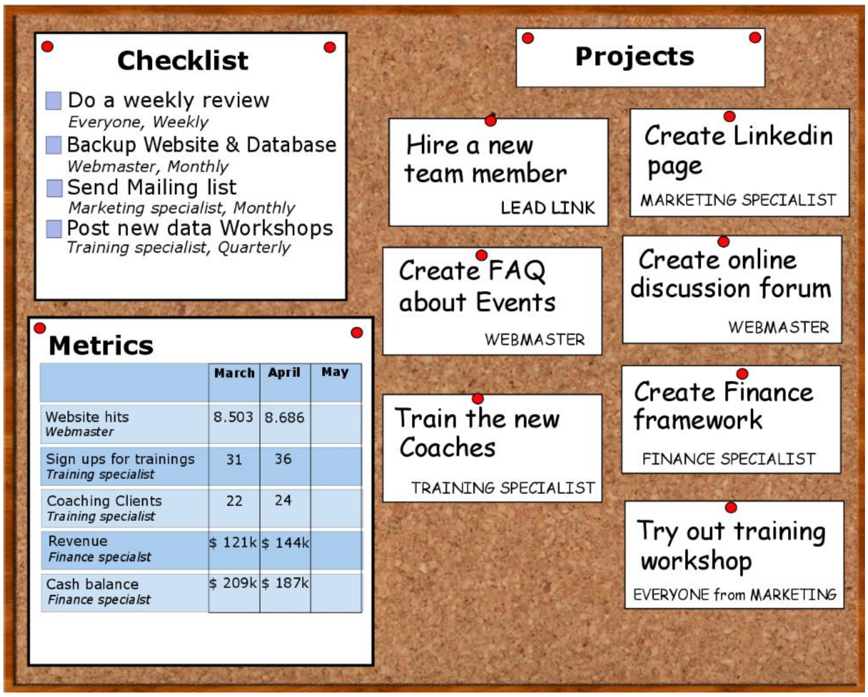

Figure 4: Example of a corkboard used for operational items. Based on the metrics from the corkboard of the Holacracy Quick Start Guide, version 2.3 (2014).

Update roles and accountabilities

The people in organizations that practise Holacracy work with roles. These roles contain one or more tasks and reflect the available work in the organization. In the sample role of Figure 5, the recurring parts of a role are the name, the purpose and the accountabilities.

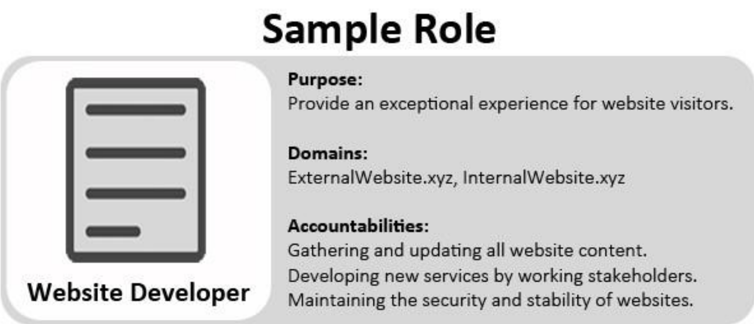

Figure 5: A sample role of an organization that practises Holacracy.
Source : http://www.govtech.com/state/What-if-Government-Embraced-Holacracy.html?page=2.

The domains of a role are not always defined and shows the area where it is accountable for. By defining, using and updating roles and accountabilities, everyone in the organization knows what to expect from each role and from the person who is assigned to a role. By regularly updating and even transferring roles to others in Governance and Tactical meetings, organizations are using the process of roles as intended.

Use the process of tensions

The word 'tension' is frequently used Holacracy terminology and means: 'a specific gap between current reality and a sensed potential' (Robertson, 2015). What this word translates to in the daily business of organizations that practise Holacracy is that a tension is either a problem that is holding you back in your work or it is an opportunity that helps the organization forward (note that the opportunity is not limited to your own work).

The process to deal with tensions are a part of what makes Holacracy a work-oriented practice that uses problems and opportunities to help organizations to move forward.

Figure 6 shows how HolacracyOne sees tensions as an integral part of using Holacracy and points out that tensions are dealt with in Tactical and/or Governance meetings. The process of tensions ensures that problems and opportunities are known and are dealt with using the structures of Tactical and Governance meetings.

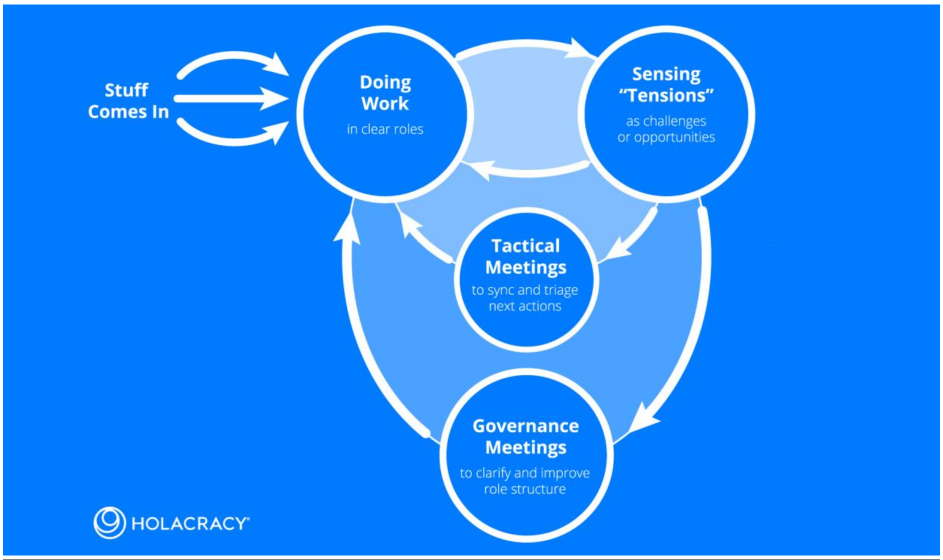

Figure 6: How Holacracy works in processing tensions (Source: HolacracyOne, 2014).

Plan regular Tactical and Governance Meetings

The Tactical[28] and Governance[29] meetings are the main types of meetings in organizations that practise Holacracy. Both meetings use a set structure that is characterized by its formality and strictness. An example to reflect the strict rules of these meetings are included in appendix A6; Governance meeting process and A7; Tactical meeting process.

Tactical meetings are operational, often fast-paced and focus on solving the team's (sub circle) problems and opportunities. The frequency of a Tactical meeting is weekly according to HolacracyOne's website, but Robertson (2015) informs that it depends on the need of an organization.

Governance meetings are structural, often slow-paced and concentrate on the structure of a sub circle since they are used to create, remove or modify roles, policies and domains. Holding elections are also possible during these meetings and offers people to take on, switch or delete roles. The frequency of governance meetings are preferably every two weeks according to Robertson (2015) but it also depends on the organizations' need.

Updating Governance Records

The final continuous action is to keep updating the governance records. It means that all the changes to roles, accountabilities, purpose, domains, circles etc. should be recorded in the organization's governance software. To practise Holacracy, transparency is important since all the members of these organizations rely and trust on the information that is available in governance software. They rely on the information because the whole organization works self-organized using self-organizing teams.

If teams can't rely on each other's information, organizations will find it very difficult to work self-organized.

Reflections on 'Practicing and implementing Holacracy'

The Holacracy Quick Start Guide raises questions about using the Holacracy practice. The guide is to assist the organization, department or team to 'bootstrap' Holacracy. It means there is room to use the practice of Holacracy in just a part of the organization which contradicts with the steps of the documents, which is to 'formally' adopt the practice of Holacracy in the whole organization.

The information on the other attribute, the Holacracy Constitution sends conflicting messages. On the one hand, Robertson (2015) tells that the Constitution should only be used as a reference or rule book

[28] Source : https://www.holacracy.org/tactical-meetings.

[29] Source : https://www.holacracy.org/governance-meetings.

since practising Holacracy is seen as learning and playing a new game. On the other hand, how can organizations find out if they 'mastered' the game?
Another discussion is about the format of the Holacracy Constitution. It looks more than a law book by using articles instead of chapters. The formal and strict format of plain text with no visuals dampens the intention of learning to use the practice of Holacracy.

There is still little known about Holacracy's implementation process and duration. Other than in Robertson's book (2015) there is no actual research data on how long it takes to implement the practice of Holacracy and if there are common factors that slow down the implementation or even prevent organizations from fully implementing it. Since Holacracy is a new practice that differs greatly from organizations with a traditional hierarchy management system (see Figure 2), the organizations that implement the practice of Holacracy benefit from a research that focuses on implementation problems. It may also lead to answers why organizations choose to abandon Holacracy during or after the implementation process.

2.3.1 Working with roles

Working with roles, as spoken briefly about in the previous chapter, is mandatory when implementing the practice of Holacracy since it is created as the way to get work done. Roles can be created, deleted or modified and are transferable to members within an organization. The only exception is that some of the core roles cannot be assigned to members while they already have a core role. It is one of the rules from the Holacracy Constitution and is not described why. The core roles that are used in each circle (team) of organizations that practise Holacracy are:

Lead Link	The role is assigned to hold the purpose of the circle. The member that holds the Lead Link role is also responsible for allocating resources and assigning members to other roles that have been created in Governance meetings and defines priorities, strategies and the metrics within the circle. If a role is unfilled in the circle, the Lead link is considered to fill that role.
Rep Link	The Rep Link role is the beneficiary of a sub circle and represents the circle in meetings with a bigger circle (super circle). To visualize, see Figure 7: Holacracy management system's circular structure. The Rep Link role takes tensions (problems and opportunities) from the sub circle to be processed by the members who have the authority to do so in the super circle.
Facilitator	The role of Facilitator is to facilitate the Governance and Tactical meetings of a circle using the rules of the Constitution. It is the hardest role to fill since members but be very acquainted with not only the structure and process of these meetings but also to apply the rules and structure to the meetings.
Secretary	Last of the core roles is the role of Secretary. The role is to align the 'governance' (written set of rules and expectations of all the organization's circles) with the operations of a circle during Governance and Tactical meetings. The Secretary and Facilitator work actively during these meetings by updating the records of the circle as quickly as possible (preferably in real time during the meetings).

According to the Holacracy Constitution, the roles that can't be held simultaneous by one member are the Secretary and Facilitator roles, the Lead link and Rep link roles and the Facilitator and Lead link roles. Other than these exceptions, using roles provide organizations with more flexibility than with job titles since they can be transferred and modified in Governance and Tactical meetings.

Reflections on 'Working with roles'

The roles within organizations that use the practice of Holacracy appear to adapt the increase and decrease of work in organizations. The members of organizations are free to expand their role by searching the possibility of adding accountabilities. For example, the role of Social Media Distributor may choose to include distributing publications of the organization to Snap Chat and Instagram as opposed to Facebook and LinkedIn.
The roles also provide insight to the myth of not having a hierarchy in organizations that use the Holacracy management system. There is still a hierarchy as Figure 7 visualizes based on the sub circles that are incorporated by the super circles.

The difference with organizations that use a traditional organizational hierarchy system, is that each sub circle is self-organized and has its own purpose that contributes to the organization's goal and purpose.

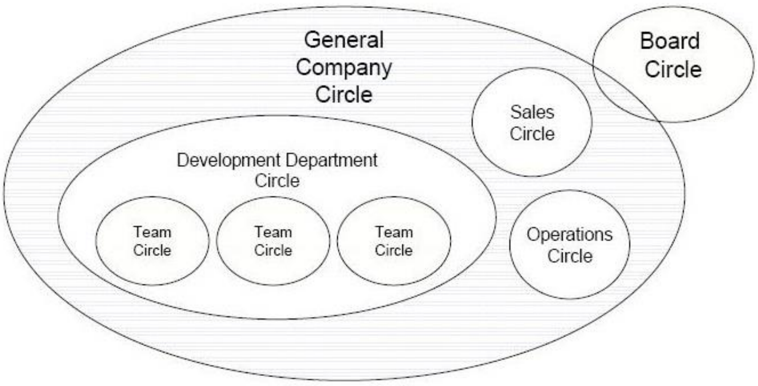

Figure 7: Holacracy management system's circular structure. Source: Organization at the Leading Edge: Introducing Holacracy™ (Robertson, 2007).

Using roles also has a down side since it is not yet a legal entity in most countries or states. It can cause organizations serious legal problems when hiring or firing members or dividing the organizations' profits and losses through dividends and/or stocks. An organization that focuses on all these legal parts of organizations that use Holacracy is the Limited Liability Company, Encode[30]. The organization is created by Holacracy co-founder Tom Thomison who acknowledged the gaps Holacracy left in organizations when they implemented Holacracy.

2.3.1.1 Role-based software

The second sub question of the research is focused on how application software is used in organizations that have implemented Holacracy in their management system. Since there is no research and very few whitepapers and articles available on the subject, the question is examined using the survey and interview strategy in chapter 4: Quantitative Results and Chapter 5: Qualitative Results. For the third sub question, how is application software used in combination with the roles in organizations that implement Holacracy, there is no research data available.

The application software however, that is specifically focused on working with roles, is called role-based software. Role-based software is a software type that uses Role-based Access Control (RBAC). The RBAC uses "...permissions that are associated with roles, and users are assigned to appropriate roles. It greatly simplifies management of permissions." (Sandu .et. al, 1995). What role-based software does, is it connects the members of organizations to one or more roles, that has one or more permissions. These permissions are used to grant or deny a role access to a system, a software type or a data source. Role-based software is distributed by organizations that include IBM, Microsoft, Siemens, Oracle, Sybase, RSA, Novell, Symantec and Cisco.

Since the organizations that work with the practice of Holacracy are using a variety of changing roles instead of job titles, a question that is focused on how the combination of these roles work with application software could tell if role-based software provides challenges for organizations since changing roles would also mean that their permissions would have to change.
When most roles in organizations are susceptible to frequent change in the form of transference, modification, creation and discarding of roles, how does it affect the organization if they use role-based software?

Reflections on 'Role-based software'
The way Holacracy is practised should provide problems for organizations because of the possibility of the frequent changing of the roles. The size of organizations may also be a factor of how often changes are applied to roles. More members could equal more changes to roles.

[30] Source : https://encode.org/.

Interestingly, all governance software are also examples of role-based software. In HolacracyOne's governance software Glassfrog but also in holaSpirit and Nestr, permissions can be applied or denied based on a role.

2.3.2 Identity & Access Management

The last of the sub questions used to answer the main research question is aimed at finding out how application software is used in combination with Identity & Access Management in organizations that implement Holacracy. As with the previous sub questions that focused on application software and application software in combination with the roles in organizations that implement Holacracy, there is no research data available on the subject.
Identity & Access Management is used in organizations to provide the members of the organization with an identity to access information. The definition from research and advisory company Gartner tells that: "Identity and Access Management (IAM) is the security discipline that enables the right individuals to access the right resources at the right times for the right reasons" (Gartner, 2017).

Just as the argument of the previous sub question focused on if changing roles work with role-based software, the same argument can also be used to find out how Identity & Access Management works in combination with the changing roles. The question does differ slightly from the previous sub question as role-based software is focused on permission were Identity & Access management is aimed at an identity.
To answer both questions, these questions have been added to the questionnaire that is used as part of the survey strategy in Chapter 4: Quantitative Results.

2.3.2.1 Identity & Access Management software

Identity & Access Management software is specific application software that provides solutions to use the discipline of Identity & Access Management. The software may consist of managing the identities of organization members or controlling the access of individuals to (operating) systems, application software or networks.

Like the discipline of Identity & Access Management, there is no empiric evidence to see if organizations that use the practice of Holacracy are using Identity & Access Management software, why are they using it and finally to see which type of software they are using. Regarding the last sub question of the research that is positioned as how application software is used in combination with Identity & Access Management in organizations that implemented Holacracy, the research is focused specifically on the Identity & Access Management application software.

Reflections on 'Identity & Access Management software'

The Identity & Access Management application software, like role-based software may also cause problems for organizations that use Holacracy if the roles of the organizations' members are frequently changing. It means that the application software that are used for roles (role-based software) and the application software that are used for managing the identities must work together for members of the organization to access systems, application software and networks due to their roles.

2.4 Summary of the Literature review on Holacracy

A summary of the reflections in the previous sub chapters of the Literature review on Holacracy is included to highlight the findings.

- **No actual and consistent number of organizations have been found that use Holacracy or have used Holacracy as their organizational management system.**
- **The Holacracy App store contains a few proposals that have not increased over the past years.**
- **The evolutionary feature of Holacracy is questionable because of two factors:**
    - **The approval of changes to the Holacracy Constitution is done only by HolacracyOne's CEO;**
    - **No new management ideas, frameworks and principles have been added or discarded from the Holacracy Constitution since March 2013. It makes Holacracy less dynamic and evolutionary.**
- **Organizations that use the practice of Holacracy can be in one of the three stages: Stage 1, Stage 2 or Stage 3.**
- **There are more self-organizing organizations worldwide than mentioned in the research.**
- **The practice of Holacracy can provide organizations with a structure to become self-organized within a set time depending on the implementation of each organization.**
- **The attributes used to assist organizations that start with practising Holacracy raise questions based on their content and usage.**
- **No global research data has been found on Holacracy's implementation process and the duration of this process.**
- **Role-based software should be incompatible with Holacracy because of the frequent changes to the roles and the transferability of the roles. It means that permissions based on a role need to change as often as roles are changed.**
- **Identity & Access Management software should also pose a threat to Holacracy because the frequent changes to roles and the transferability of the roles means that the access to information and/or software access needs to be adjusted to an organizational member's identity.**

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3. Research Methodology

In this chapter the how and why of the research is presented including the way it is designed and which tactics were used to select, collect and process the data to answer the research- and sub questions. The Research Methodology model, based on the model of Tu Quyen (2013) for its simple yet effective view, shows the structure of the chapter and can be used as a visual aid.

Research Methodology

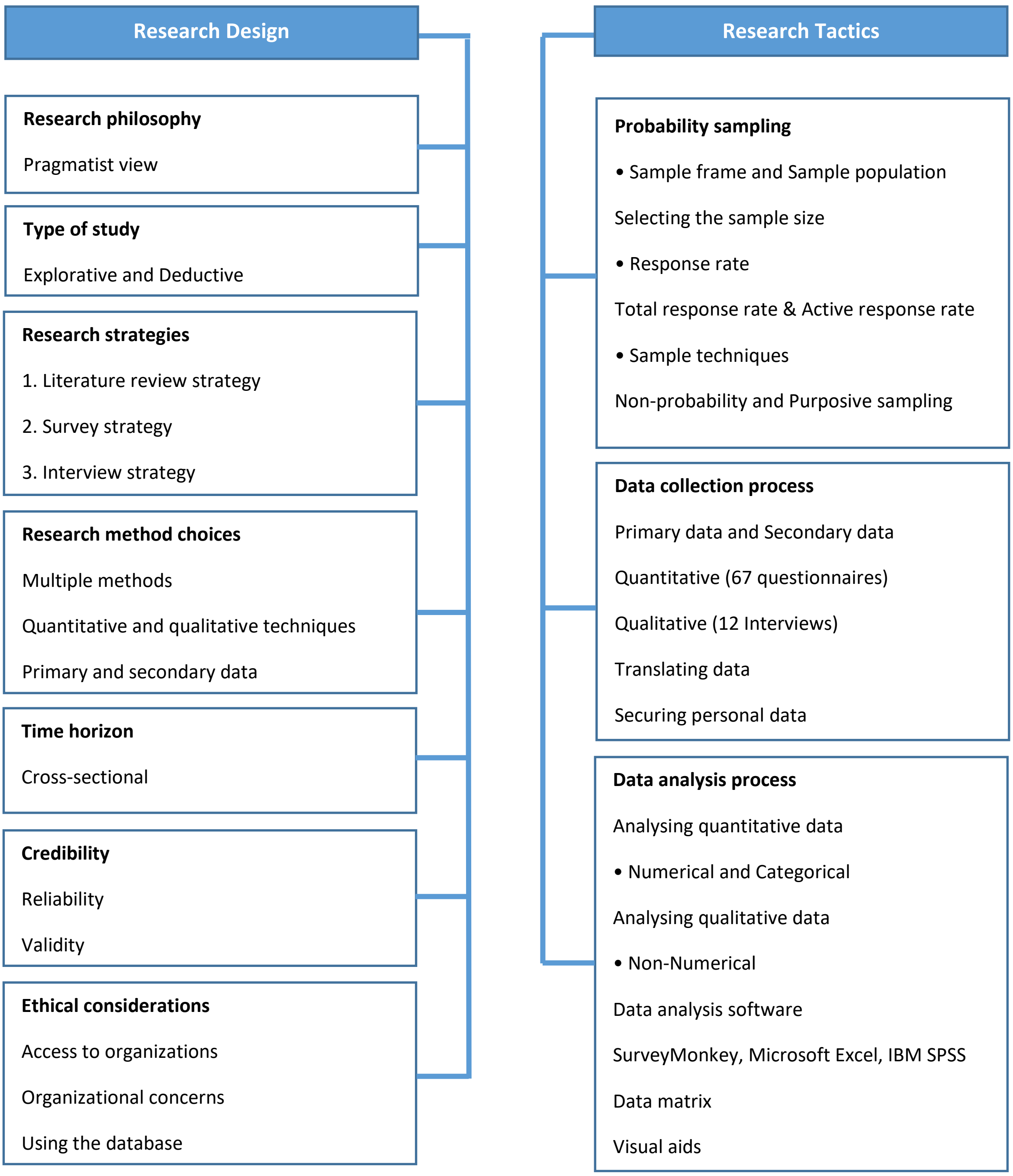


Figure 8: Research Methodology model (Fowler, 2017).

3.1 Research design

The design of the research is based on the work of Saunders et al. (2009). It includes the work of Saunders et. al and the research and theories they applied from other authors. The thoroughness and extensiveness of their work stands out and provides a solid basis to design and conduct the research. Whenever possible, the works and theories of other authors are used as a reference to uphold the credibility of the research.

3.1.1 Research philosophy

The **research philosophy** is best described by the work of Johnson & Clark (2006). They argue that "... the important issue is not so much whether our research should be philosophically informed, but it is how well we are able to reflect upon our philosophical choices and defend them in relation to the alternatives we could have adopted.". This view is a **pragmatist** point of view that delivers both qualitative and quantitative methods for the research.
The importance of using a research philosophy is to show how the origin of the knowledge in the research is developed and to address on which assumptions it is based.

3.1.2 Type of study

The type of study in the research is an explorative and descriptive approach. **Explorative** studies are aimed at asking 'what' is happening and finding out by asking questions. These studies are in search of the causal relationships between one or more variables by researching problems or phenomena.
It is the exact approach that is needed for the research because little research has been done on the subject (Holacracy) of the research.
In an explorative study, the 'what' is researched while the **deductive** approach answers 'how' it is researched. During the research, theories and hypotheses are used to test and support the research design as well as the research tactics. The deductive approach is structured in its form to get a transparent and clear overview which also helps the reproducibility of the research.

3.1.3 Research strategies

The following three strategies were used in the research:

- Literature review strategy
- Survey strategy
- Interview strategy

The literature review strategy is used to gain knowledge about Holacracy that is needed to interpret the answers to the research and sub questions. Saunders et al. (2009) uses interviews and questionnaires as a part of the Survey strategy. Because the answers of the questionnaire are quantitative data and information from the interviews is qualitative data, the interview strategy is positioned as a self-contained strategy.
To clarify, the survey strategy includes only the answers from the participants to the questions of the questionnaire and the interview strategy includes the information from the participants before and after they finished the questionnaire.
By using the interview strategy, the extra information from the participants can be used in the research providing more extensive background information on the participant, the organization and the questions. The information, in combination with the answers from the questionnaire provides a more reliable and accurate view of the findings. The three research strategies are explained more in detail in the following sub chapters.

3.1.3.1 Literature review strategy

To know in detail what Holacracy is, the literature review strategy is used. A global and macro understanding of the practise is necessary to show the level of knowledge about the subject and for the reader to better understand what the subject is and what it is about.
The literature review informs about the advantages and disadvantages of Holacracy with the answers from the survey- and interview strategy. The information is needed in the conclusion of the research to answer the research- and sub questions.

3.1.3.2 Survey strategy

The survey strategy is used to obtain quantitative data that is needed to answer the research- and sub questions. The strategy is usually part of a deductive and explanatory approach (Saunders et al., 2009) and contains micro-level information by gathering answers.

Database

Before making the questionnaire, a database was created using Microsoft Excel, collecting information on all the organizations worldwide that use Holacracy since the available data was scattered and dated. To fill the database, three websites[31] were used that contained sources of information. To verify the information, Google, LinkedIn and the websites of organizations that possibly were using Holacracy were approached.

The format of the database consists of 15 columns, each applied with a filter. These filters provide quick access to the information in the columns and make it easy to compare. The first four columns of the database include the names of the Holacracy Organizations, the variables 'Contacted', 'Questionnaire Sent' and 'Questionnaire completed'. The variables can only contain a Yes or No, which makes filtering easy.

Holacracy Organizations	Contacted	Questionnaire sent	Questionnaire completed

Of the fifteen columns, the other eleven include only information about each organization. The titles of the columns include the amount of organization members, in which cities and countries the organization has offices, what kind of organization it is, what is the organizations' website URL and finally the information regarding the point of contact in each organization including their primary role, email address and phone number. The column 'Extra information' is used to store information about the organization that doesn't fit in the other columns.

Organization members	City	Country	Address	Organizational Type	Website	Point of contact	Role	Email	Phone	Extra information

Titles of the columns are straight forward, however the 'Organization Type' may need background information. To distinguish organizations and to pair similar ones, the organizational types are used from the company pages of the organization on LinkedIn. In case the organization doesn't have a company page on LinkedIn, an organizational type would be used that is similar to other organizational types by reading the organization's purpose on their website.

When the database is filled with organizations that use Holacracy as their management system, the second step is to filter the information to see which organizations meet the research conditions. The third step is to approach these organizations and invite them to participate in answering the questions of the questionnaire.

Questionnaire

The questionnaire used in the research consists of six pre-interview questions, 10 main interview questions and, depending on the answers of the participants, 30 sub questions and a comment box. The type of questionnaire[32] is explorative, finding out the relationships or lack thereof between variables. In formulating the questions, the time and effort of the participants was also considered. It resulted in a questionnaire with a low amount of questions (10 main questions) that could be answered in a small amount of time (nine minutes on average). To achieve in creating a short questionnaire but to still getting the answers to the research and sub-questions, open and closed questions are used.

Closed questions fall in to the category of 'List questions' because they offer a list of choices. The choices in the research are limited to 'Yes' or 'No' and in one instance to 'I don't know' (used to see if the participants understood a certain concept).

[31] Source: http://structureprocess.com/holacracy-cases/, http://energized.org/en/clients/ and http://www.organizationbuilders.com/cases/.

[32] See Appendix 1 : Microsoft Excel Questionnaire.

The benefits of using closed questions are they are easy to interpret. On the other hand, the participants are deprived of the opportunity how they want to answer the question.

Open questions are explorative and give the participants the opportunity to answer in the way they see fit. The downside of open questions is that interpreting is often hard because you must find the common denominator or common themes in the answers, which takes more time.
Most of the questions in the questionnaire start as closed questions. The question technique is used to gain quick insight into validating the question (yes or no). When participants answer the preferred choice of the question (yes), the question technique is to use open questions to get more information why they gave that answer. Next is to explain how the questionnaire is used.

Questionnaire process
The organizations in the database were send personalized emails if they met the conditions of the research. When a participant in the organization showed interest and wanted to participate by filling in a questionnaire, an email would be sent to them containing a link to a digital questionnaire. This type of questionnaire is called **self-administered**.
If the participants did not want to use the digital questionnaire but instead wanted one of the three other options like a personal meeting, video conference or a telephone conference, their answers were typed in the Microsoft Excel questionnaire.
This type of questionnaire is called **interviewer-administered**.
The second step was to fix the spelling and grammar. If the conversation was in Dutch, the next step would be to translate their answers. The translated answers were imported in the online survey-tool called SurveyMonkey. All the data was now available in one place with an automatic backup provided by cloud technology.
In the questionnaire process, the participants are first asked six pre-interview open questions.
The question technique is used to start with a few easy questions (today's date, participants' name, the name of the organization, receive the results yes/no) before getting to the more difficult questions (how many members there are in the organization and when did the organization implement Holacracy).
The participants opinion about the research is valued and secured by finishing the questionnaire with a comment box.

SurveyMonkey
SurveyMonkey was offered to the participants as a courtesy. The tool allowed them to take the questionnaire[33] at a time of their convenience, showed their progress as a percentage and allowed them to pause the questionnaire (that kept track of their progress) and to continue where they stopped.
As a tool in the research, SurveyMonkey made it possible to download the data from the participants and to receive an overview of who participated and who finished their questionnaire. A comparison between four online survey-tools led to trying out SurveyMonkey, however most of these tools are similar depending on the output the tools provide (SPSS, Excel, PDF, Word etc.) and how much you are willing to pay to use it.

3.1.3.3 Interview strategy
The interview strategy is a part of the survey strategy using standardized questions and receiving variable and qualitative results. The strategy was added to the research after the first personal meeting with participants who were eager to tell about their experience with Holacracy. It proved valuable to use the strategy in personal meetings, video conferences and telephone conversations since all participants liked to share their story of who they are, how and why they implemented Holacracy and how it impacted the organization. Most participants were also genuinely interested in hearing why the subjects in the research were chosen and how the research data is used.

With the participant's consent, their information was included to individual Microsoft Excel Questionnaires. The information received from the participants is not structured but is also not intended to be since they were in control of providing the information they wanted to share.
Their information combined is used in Chapter 5: Qualitative Results and gives insight to how the participants have perceived the research and sub questions.

[33] See Appendix 1: SurveyMonkey Questionnaire.

According to Saunders, Lewis, and Thornhill (2009) and Creswell (2007), the number of participants for interview studies should be 12 for a homogenous group and between 25 and 30 for a heterogeneous group. With 26 participants contributing to the interview study, the number suffices to label their qualitative data reliable.

3.1.4 Research method choices

The three strategies that are used are part of a collection of different techniques to collect the data and answer the research – and sub questions.
These **multiple methods** are chosen because they combine qualitative as well as quantitative data which provides a broader view using different angles. It is called triangulation, using one or more data collections of primary and/or secondary data and combining the insight both collections provide.
The downside is that more data also means that more time is needed to find the cause and effects or lack thereof. It is unique that a research is focused on a rare subject (Holacracy), the impact it has on application software, which is even more rare and the scale (worldwide) in which the research is conducted.
To sum up the differences between the multiple methods, these are the data types received in each strategy:

- Literature review strategy: Consists of qualitative data.
- Survey strategy: Collected quantitative data through questionnaire.
- Interview strategy: Receiving qualitative data during conversations with participants of the questionnaire.

The choice of using **quantitative and qualitative techniques** came second to using multiple methods as they are a part of the strategies chosen for the research. In the literature strategy, the choice to use qualitative data is to properly conduct a literature review as it should be. Focusing first on the information from subject-related books and whitepapers to form the framework and using articles and other information from websites to broaden the view with information that was absent in the books or is more recent. When possible, images were added as well to reduce complex or large amounts of information.
For the survey strategy, the information received from the questionnaire whether during an interview with the participant or receiving the information digitally is quantitative. The information is a snapshot, capturing the interpretation of questions in a questionnaire by a participant in an organization.
The interview strategy is part of the survey strategy providing the qualitative data next to the quantitative data. It contains extra non-numerical information in conversations with participants about how they perceive the organization. Having qualitative data and quantitative data available, it provides more insight to the answers of the participants.

Primary and secondary data are two different entities to use for retrieving information. Primary data for the research is retrieved using the survey and the interview strategy. The data distinguishes itself by being obtained only from first hand and from an identifiable and primary source.
Secondary data in the research is obtained from the literature review of sources such as books, whitepapers and articles.

3.1.5 Time horizon

The research is conducted and designed using a specific time to start and finish, which makes it a **cross-sectional** study. The research started with writing the first proposal in September 2016 to finishing the whitepaper, based on the research, in December 2017. It makes the entire research a sequence of planning, setting goals and achieving them.
It sets the research apart from a longitudinal study which is aimed at researching the changes between the case studies, surveys or interviews.

3.1.6 Credibility

The credibility of the research to uphold the academic and scientific standard is defined by explaining the entities ‘Reliability’ and ‘Validity’ in the design.

Reliability
The focus of reliability is to ask how the secondary and primary data for the research is obtained and analysed. Questions to ask to find the level of reliability of the research must be addressed to the reproducibility, transparency and the methods used for measurement of the data. To find the degree of reliability, each of these subjects are reviewed and discussed.
The reproducibility of the research is accurate, meaning that when participants are given the same questions, the same answers are given. However, the researcher must understand that participants are prone to 'Subject error'. It means that the answers of the participants may change depending on their emotions and feelings.
To reduce the error, the participant was in full control to decide if they wanted to participate, when they wanted to participate (location, date and time of the participants choosing) and how they wanted to participate (personal meeting in the Netherlands, video conference, telephone conference or answering the digital survey.
The probability of a 'Time error' is also present when reproducing the research. It means that time is used as a frame containing a snapshot with answers to the questions. As an example, some of the organizations in this research just started to practise Holacracy while others were already using it many years.

What is not reproducible is the information received from the interviews, because there was no questionnaire used with specific questions. All the information came from the urge of the participants who wanted to share. An 'Observer bias', in which the replies of the participants are interpreted differently by the observer, is not likely since the participants were elaborate in the context they provided.
The degree of reliability of the research is related to how the research is viewed. From an axiological[34] view, objective and subjective viewing points are used to define the choices and level of reliability. It corresponds with the pragmatist philosophy used in the research.

Transparency covers all the primary and secondary data that was needed and included in the research. The primary data, that includes the database, the digital questionnaires from SurveyMonkey and the original Microsoft Excel questionnaires is available to the researchers of this research. The secondary data that is used is available in the References of the research includes the books, whitepapers and articles. The methods used to measure the data are discussed in Chapter 3.2: Research Tactics.

Validity
The validity of the research is the logic used to interpret the findings. In the validity of the research, the participation and interpretation of organizations that chose to only answer the digital questionnaire of the research can be a threat. When the questionnaire is send, there is no telling if organizations want to participate. The risk is first reduced by reaching out to a large amount (142) of organizations and using a personalized approach. After contact is established and the organization tells it wants to use the questionnaire, only then will it be sent to them. If after two weeks the questionnaire is not answered, a friendly reminder is sent asking the participant if he or she needs any help. The approach also reduces the risk of not participating.
The risk that participants are not interpreting the questions the way the researcher intended them to be, is also a threat in the validity of the research (Saunders, et. al, 2009). The risk of having a **lack of consent**, which means the participant lacks knowledge, or having **implied consent**, which means the participant does not know his or her rights in giving information needed for the research are higher when the participant uses the digital questionnaire. With no way for the participants to cross check the intent of the questions with the researcher, there is a risk that the answers do not contain the intended information.

To reduce the risk and increase **implied intent**, which means the participant's consent is given using full knowledge and knowing their rights when giving information, the request sent to all participants is focused first on setting up a personal meeting, video conference or telephone conference.
Second, to reduce the risk of wrong interpretation of the questions, four participants reflected on the questions and the questionnaire at the beginning of conducting interviews.

[34] The role that values have in the research according to the researcher.

The participants independently told that of the 10 questions, two were redundant and two other questions needed more explanation. It resulted in a newer version of the questionnaire, including two rewritten questions and inserting two images explaining question number 8 and 10.

3.1.7 Ethical considerations

The behaviour of the researcher and the choices that were made following that behaviour are the ethics of the research. The ethics are a part of the research design, explaining the methodology and moral choices of the researcher. By using recognizable themes to describe and explain the methods and moral choices used in the research, the importance of the ethics is acknowledged.

Access to organizations

In order to use the Survey or the Interview strategy, getting access to the organizations was vital. It also applies to provide clear requirements, so the participants know what is expected and required from them. To get access to the organizations, the database that was especially created for this purpose was consulted.
With information from the database, personalized emails were sent to the main email address of the organization or to the owner/CEO if the organization's website provided that information. In some cases, the organization used a webform instead of email, so the webform was used to ask for a response but still using the same structure as each email.
Organizations in the Netherlands were sent Dutch personalized emails and organizations that were located outside of the Netherlands were sent English personalized emails. Each of the emails had the following structure in common:

Introduction
Stating the author's name, job title and which university is represented.
Business
Stating the business (international research on Holacracy)
Confirmation target audience
Ask to verify if the organization works with Holacracy.
Request
Ask for participation in the research. Stating the possibilities on how to participate (a personal meeting, telephone conference, video conference or sending a questionnaire) and how many questions (10) need to be answered.
Benefits
Stating the benefits for the organization (getting answers to the use of software, roles and Identity & Access management). Stating the results (May 2018). Stating the reward (include the participant and the organization in the Acknowledgement page of the research).
Ending
Stating the author's name, telephone number and a link to the author's LinkedIn profile.

Figure 9: Structure of emails send to organizations.

The use of emailing is the quickest way to reach the organizations. You are not bound by time or time zones and you can make your message clear using visual aspects, like images, fonts and font size to deliver the message. On the other hand, it is also a non-personal and non-interactive way to present your message. Especially when you don't know the recipient, there are many factors why someone would not want to reply. This was noticed after two weeks of sending emails and getting few replies. The factors why organizations would not want to reply are extensive and may include that the organization does not understanding the request, deems the request of low importance or the email was blocked by mail scanners or arrived in a spam folder.
To increase the chance of getting access to organizations, the social media LinkedIn was also used to connect with the people from the organizations that were needed to participate in the research.
It was done if there was no response from emails or webforms within two weeks. The approach was aimed to find and connect with the founder or CEO from an organization and send them a personalized LinkedIn connection request about the research. Because a connection request on LinkedIn only has room for 300 characters, the messages only contained the items Introduction, Business and Request from the email structure. It proved a better strategy since only 9 of the 70 connections refused to

connect. Alternatively, LinkedIn is also used to inform about the research on the profile page of the author, hoping to invite potential participants to react.
If a telephone number was available on the websites of Dutch organizations, a call was made.
In every call, the structure of the email form was used, except for including the author's LinkedIn profile. The results of calling were mixed. In some organizations, it proved difficult for members to connect the telephone call through with the right person. A few members also proved sceptical and overwhelmed when called. Being genuinely friendly is the only way to respond when calling, but also when meeting potential participants in person or using a video conference.

When organizations wanted to participate in the research, the following choices were offered, with the only exception that a personal meeting was only available in the Netherlands:

- Arrange a personal meeting.
- Set up a video conference.
- Having a conversation by telephone.
- Sending a digital questionnaire by email.

The argument for offering a variety of choices is to see the participants as customers, giving them the service to choose how they would like to participate and at what time by using a personal meeting, video conference (Skype, Google Hangouts or Zoom), phone call (land lines, WhatsApp and mobile), or a digital questionnaire by email. It means that the participants chose the day, time and location of their convenience. By providing this service, the chance that a participant would join the research could be increased. The goal in receiving information from participants was aimed at 30, which means that with 67 participants in the research, that goal is accomplished.
A week before the deadline arrived after nearly two months of gathering data, the participants were sent an email explaining the deadline and including the date of the deadline (July the 19th). After that date, the remaining email links and weblinks to the SurveyMonkey questionnaire were closed, so the data could not be altered or tampered with by the participants.

Organisational concerns
To provide clarity about the resources and the time requested from the organizations (Easterby-Smith et al., 2008), in every phone call or email is told that the resources for the research are limited to only one participant. The only request is to verify if the organization is implementing or has implemented Holacracy and if they want to participate using one of the previous stated choices. The participant and the organization must however meet the conditions as stated in Chapter 1.6: Conditions.
Regarding the time needed from the organizations depends on which way they like to participate.
Based on tests with three participants and reflecting on it with them, it was calculated that for personal meetings and video conferencing, 30 minutes is the minimum amount of time needed, for telephone conferencing it is 15 minutes and answering the questionnaire would take most participants between 10 and 20 minutes (depending on their choice and length of answers).
The amount of time needed for personal meetings and video conferencing was often an hour because the participants really liked to talk about their organization and experiences. For the same reasons, the telephone conferencing was between 45 minutes and an hour. And based on the data from SurveyMonkey, the average time spent on a questionnaire was nine minutes.
With their consent, the extra information the participants provided before and after they finished the questionnaire were used in the Interview strategy.

The participants of the organizations were also told what the benefits would be when they would take part in the research. It provided insight to how application software, roles and Identity & Access management were used by several organizations that use Holacracy worldwide. The participants received a complete research that was sent to them in May 2018. Viewing the participants as customers, all organizations and the names of the participants are included in the Acknowledgements of the research to thank them for their time.
Concerns about the sensitivity on the subject was not an issue with the organizations, as all participants could see or hear what was written during personal meetings, video conference and telephone calls. Retraction or modification was possible during the interview, but that didn't happen. After the interview, the participants were not allowed to add new information to uphold the credibility of the research.

Using the database
In the database created for the research were 175 organizations worldwide that use Holacracy as their management system. Of these 175 organizations, 142 were approached using emails, phone calls or LinkedIn requests for connecting.
The other 33 of the 175 organizations were not approached. 12 organizations didn't meet the conditions to participate and 21 organizations were difficult to approach because of the language (French).

41 of the 175 organizations were based in France or in French speaking countries and were a limitation due to the inability to read or write French. Knowing the limitation, a test was set up using Google Translate to get the email addresses and information needed from the websites of eight French organizations. From these eight organizations only three replied to the English invitation that was sent. The lower than expected response and the time it would take to find and translate French websites to obtain a correct email address resulted in not contacting the remaining 21 French organizations.
Upon finishing the two-month period of collecting data, the nine participants who chose to take the digital questionnaire were sent a personalized message informing them that after three days, the collecting of data for the research would stop. Four of the nine participants yet responded and completed their participation.

The confidentiality of the data has not been discussed with the participants. However, the data they provided remained secure and was not read, altered or shared.
As for the anonymity of the data, there were concerns about the answers to question number 10 regarding Identity & Access management. Five organizations felt uncomfortable about answering the question because the answers tell how they use Identity & Access management. To meet the organizations that had concerns about the questions of the questionnaire, the answers were decoupled from the organizations and only used to generalize.

3.2 Research tactics

The research tactics provide insight to the process of gathering, selecting and analysing the data from the questionnaires that were used in the research. The data from the interviews with the participants is secondary and are only used to gain background information to the answers of the questionnaires. Combining the quantitative data (questionnaires) as well as the qualitative data (interviews) is a facilitation method that is used to view the answers in a broader perspective. This perspective leads to more knowledge to answer the research- and sub questions.

Both the quantitative and the qualitative data of the research were obtained in a period of nearly two months. The first questionnaire was received on the 18th of May and the last one on the 19th of July 2017. The first interview was on the 23rd of May and the last one on the 19th of July 2017. With both data sets present, the next step is to start with probability sampling and select the sample size.

3.2.1 Probability sampling

Using the survey strategy, the sampling to represent a population that is needed to answer the research questions is the **probability sampling**. This method is useful to calculate exactly if the sample in the research is representative for the population used with the survey strategy. The process of probability sampling uses the following steps[35]:

1. Identify a suitable sampling frame based on your research question(s) or objectives;
2. Decide on a suitable sample size;
3. Select the most appropriate sampling technique and select the sample;
4. Check that the sample is representative of the population.

Using the process, the first thing needed is a **sampling frame**. The sample frame is best described as a list that contains all the information of the population needed for the research. In the research, the population are all the organizations worldwide that use the practice of Holacracy daily.

[35] Source: Research methods for business students. Fifth edition (Saunders et.al., 2009).

As informed in previous chapters, there is no exact data available on the organizations worldwide that use Holacracy. HolacracyOne informs on their website there are more than 1.000 organizations, while in the research only 175 organizations were found worldwide. Based on the actual data found and included in the database from the research, the **sample population** is set at 175 organizations worldwide.
To decide on selecting the most suitable **sample size**, common questions about the frame need to be answered to increase the frame's credibility. When asking the common questions, the certainty of using the sample size is increased by finding the following answers regarding the sample:

- The sample applies to all the organizations of the sample population;
- The data used for the sample is up to date;
- The sample meets the objectives of the research.
- More than 30 organizations (sample population) are part of the sample. It means that the larger the sample size, the lower the error and the more representative the sample is.

To not only increase the credibility and representability, but also the confidence level of the sample size, the confidence interval (or margin of error) needs to be determined.
According to the Research methods for business students (Saunders, et. al, 2009), the ideal interval is 95% or higher. The sample population in the research are 175 organizations of which 142 were sent a request to participate in the research. Of the 142 organizations, 68 organizations participated in the research and only the results of one organization were discarded because the questionnaire was incomplete. With 67 organizations, the interval is 96,65% which means the confidence level of the sample size is high.

3.2.1 Selecting the sample size

In the research, 68 people from organizations worldwide that practise Holacracy daily have participated. The finalized sample size consists of 67 participants, since the questionnaire of one of the participants was excluded because it was incomplete (only the pre-interview questions and question number one were answered). The argument for excluding the data is also based on the survey strategy which uses the exclusion criteria and states that incomplete questionnaires are excluded since the data of the complete questionnaire can't be compared.
With the sample size of 67, the reliability of the data is high since a sample size of 30 or more is needed for the distribution of sampling to become effective. It is because the mean (average) is closer to a normal distribution (Stutely, 2003).

Response rate
Of the 67 participants, **15** answered the questions in a personal meeting, **15** used the telephone conference, **six** used the video conference and **32** used the digital questionnaire.
The **dropout rate** of the research is **nine** and based on the people who said they would participate and were sent the digital questionnaire but who didn't answer the questions. The impact that the dropout rate has is negligible compared to the 67 people who did participated. To substantiate the claim, the formula to calculate the total and the active response rate is included.

The **total response rate** is the percentage that shows how many participants responded to the request of answering the questionnaire (in a personal meeting, telephone conference, video conference or answering the digital questionnaire). The formula consists of the number of responses (67 participants), the total number in the sample (sample population of 175) and the number of ineligible people who could not participate (dropout rate of 9).

$$\text{total response rate} = \frac{\text{total number of responses}}{\text{total number in sample} - \text{ineligible}}$$

Using the formula, the following percentage is calculated:

67 participants --- 175 (sample population) - 9 (dropout rate)	67 ---------------- = **40,36 %** **Total response rate** 166

To calculate even more fairly the percentage of participants who actively responded, the formula for the **active response rate** is included too. The difference between these rates, is that the active response rate shows exactly the percentage of participants who responded based on the total requests. To calculate the percentage, the formula is used the following way:

active response rate =	total number of responses -- total number in sample – (ineligible – unreachable)

With the formula, the definitive calculation to get the active response rate is:

67 participants --- 175 (sample population) - 9 (dropout rate) - 66 (unreachable) Unreachable (142 organizations approached – 67 participants – 9 dropout rate) = 66	67 ---------------- = **67 %** **Active response rate** 100

The total response rate shows a percentage of 40,36% which means that of the whole sample population, almost halve of them participated in the research. The active response rate with a percentage of 67% is higher and takes in to account the participants from the whole sample population that didn't participate.

According to Baruch (1999) and Saunders et. al. (2009), a response percentage of 35% or higher for questionnaires is considered reasonable. It means that the total response rate is reasonable while the active response rate is great.

3.2.2 Sampling techniques

Having defined probability sampling and calculated the sample size, the next step is to use the most appropriate sampling technique to get a representative sample. Since the organizations that participated in the research are geographically dispersed and certain parts of a population are over- and under-represented, generalization over the samples is needed. It means that other probability sampling techniques have not been used in the research.
The Netherlands is the most over- represented country in the research and is caused by two factors: Availability and accessibility.
Of the 175 organizations in the database that use Holacracy, 35% (61 organizations) are based in the Netherlands and explains the availability. As a native Dutch speaker and living in the Netherlands, it made it easier to reach out to organizations by phone and to visit them. In comparison, Australia and New Zealand are the most under-represented countries since no organization from these countries, that are known to work with Holacracy, have replied to the invitations sent.

While no other probability sampling techniques have been used, **non-probability sampling** techniques are used instead. Non-probability sampling does not involve random selection and is used subjectively by sampling according to the judgement of a researcher.

Purposive sampling is based on the researcher's judgment to meet the objectives of the research and sub questions. In the research, using the sample frame and the data from the questionnaires, the following data fields were found:

- Organizational types (government, farming, internet. etc).
- Organization size.
- Geographical location per organization (HQ).
- Geographical locations of each organization.

The results of these data fields are available in Chapter 4: Quantitative Results.

3.2.3 Data collection types

The data collected to answer the research and sub-questions consist of two sorts: Primary and secondary data. While both have been explained, a quick summary of which data is used provides a better traceability.
The **primary data** is comprised of quantitative data (the 67 questionnaires) as well as qualitative data (the 12 Interviews). The database created to collect the 175 organizations that use Holacracy is also an example of primary data used in the research. In short, the primary data is used to create the necessary data to answer the research and sub-questions.
The **secondary data** is comprised of e-mails, books, white papers, articles, website URL's including videos and images. The argument for using secondary data is to build the scientific fundament to create the research and sub-questions.

Triangulation is a technique that was also used to collect one or more data collections, combining the data from the survey strategy and interview strategy. The answers from the questionnaire used in the survey strategy are the primary data source while the answers of the interviews are used to create more insight to why the participant gave their answers.
Viewing the data collection techniques all together, multiple methods are used to combine quantitative and qualitative data. These techniques match the research philosophy **pragmatism** used throughout the research process.

3.2.4 Data collection process

The first source used to collect the data to answer the research and sub questions were the questionnaires used during personal meetings, telephone conferences and video conferences with the participants. These Microsoft Excel questionnaires were used to quickly jot the answers and information from participants. With this strategy, there was more time to use a spelling control, to translate the data (see next sub chapter) and to insert the information from handwritten notes, obtained during the interview with the participants. Then, all the questionnaires were copied and pasted in the online tool SurveyMonkey.
The argument to use the strategy is that the information in SurveyMonkey is automatically backed up and the questionnaires inserted do not contain grammar or spelling errors. It is also a less stressful way because data did not have to be translated on the spot during interviews.

After the deadline, the complete data from SurveyMonkey was downloaded in a Microsoft Excel sheet and in Microsoft PowerPoint slides. The Excel sheet was used to create a data matrix (see Chapter 3.2.5.2: Data matrix). With the data matrix, the questions and answers from the questionnaire were used to find variables. The information from the data matrix, along with the Microsoft PowerPoint slides, are used to provide the metrics and images of Chapter 4: Quantitative Results.

3.2.4.1 Translating data

During personal meetings, telephone conferences or video conferences the data received from participants was in the language used in the conversations. In case Dutch was spoken, the data had to be translated to English to be able to compare it with the other data from the questionnaires. The following data was translated from Dutch to English:

- 14 out of 15 questionnaires from personal meetings were translated.
- 2 out of 6 questionnaires from video conferences were translated.
- 12 out of 15 questionnaires from telephone conferences were translated.
- 1 out of 32 digital questionnaires was translated. Although the questionnaire was written in English, the participant answered the questions in Dutch.

3.2.4.2 Securing personal data

The data of all participants of the research, including the personal data is cared for in a safe and secure way. The data is stored on only three devices: In the cloud using Microsoft OneDrive (secured with username and password), on a laptop (secured with username and password) and on a NAS server (encrypted in a RAID configuration with a username and password).
These three devices are assigned and needed primarily as a backup in case hardware or software on the devices is malfunctioning or in a case of a malicious cyber-attack.

3.2.5 Data analysis process

The data analysis process uses the same data as the data collection process, which are quantitative and qualitative data. How the data is analysed and grouped is described in this chapter, starting with analysing the quantitative data.

Analysing quantitative data
The quantitative data collected in the research originated from the questionnaires used in combination with SurveyMonkey and Microsoft Excel and is part of the survey strategy. Without using an analysis technique, all data is of little meaning because it represents answers without context. To analyse the data, it can be divided into the following data groups:

- **Numerical**
  Numerical data is used for measurement purposes by showing the quantity of data. These data types can either be descriptive or ranked.
- **Categorical**
  The categorical quantitative data is used for information that cannot be measured by numbers. It can be used to create categories based on variables such as characteristics and ranks.
  Data types within a group can be either continuous (measurable based on value) or discrete (measurable by numbers).

Analysing qualitative data
All the qualitative data in the research originated from the interviews with the participants as part of the interview strategy. The data consists of the information the participants wanted to share during the interview and includes personal views, anecdotes and business- and personal information. The data is part of the data group:

- **Non-numerical**
  As opposed to numerical data, non-numerical data consists of non-quantifiable data. It means that the data, which consist mainly of words, has not been analysed. For the data to be used properly, it must be summarised or categorized to provide meaning.

The benefit of using both qualitative and quantitative data is that the data complete each other. The quantitative data shows information in a numerical and categorical way without any meaning. But when using the qualitative data, it gives meaning by providing information needed to interpret the data.
To summarize how both the qualitative and quantitative data were used in the research; The data is translated (transcribing was not necessary), categorized (using a Data matrix) and interpreted with data analysis software.

3.2.5.1 Data analysis software

The data analysis software is the software used to analyse the data. The software consists of SurveyMonkey, Microsoft Excel and IBM SPSS.
The online survey-tool SurveyMonkey is used since it offers basic comparisons between questions by clustering the answers in tables and visualizing it in an image. This feature of SurveyMonkey costs little effort and provides quick results without an extensive need of knowledge how SurveyMonkey works

However, to calculate and compare data using tables and pivot tables, Microsoft Excel is used more often than SurveyMonkey. Microsoft Excel is used because the data is available as extension to download from SurveyMonkey and is interchangeable between the Microsoft Excel questionnaire, the Microsoft Excel data matrix and the Microsoft Excel database that stores the 175 organizations that use Holacracy as their management system.

Other extensions that are available to download the data from SurveyMonkey are .PDF, PPT, XLS and XLS+.
To compare the answers to the questionnaire with each other, IBM SPSS was used. By using three kinds of data analysis software to compare data, it shows that effort has been made to provide a thorough research of the data.

3.2.5.2 Data matrix

The quantitative data of the research is analysed using a data matrix[36], created with Microsoft Excel. The form is also known as a frequency distribution, summarizing the data to read the variables (see Figure 10). To use it effectively to compare the variables, each of the questions and corresponding answers of the questionnaire were included per tab. It also included the pre-interview questions and the comment box at the end of the questionnaire. The method however increased the size of the Excel-sheet, taking more time to open.

	Id	Variable 1	Variable 2	Variable 3	Variable 4
Case 1	1	27	1	2	1
Case 2	2	19	2	1	2
Case 3	3	24	2	3	1

Figure 10: Structure of a data matrix. Source: Saunders et al. (2009).

Each of the tab's in the Excel sheet contained the following structure: 'Organizations' in the left column and the 'question and the answers' in the column next to it. All the following columns contained the variables, ranging from two to six variables per question, depending on the answers.
In other words, the more answers were similar, the more these variables could be grouped as a theme. The definition of a theme for the research is using similar words and/or sentences to create a 'topic'[37]. The number of the identical themes are added up at the bottom of the column and transported to the Excel-sheet were the variables of each question are ranked. Each variable is then reflected upon by counting the number of variables, discussing the possible relationships between other variables and giving a short overview using two or three original quotes of similar answers per variable. With this method, the answers of the participants can be grouped in more than one variable.

3.2.4.3 Visual aids

The research includes a variety of visual aids. These aids are used to help the researcher with findings clues and the viewer in explaining the information in an attractive and striking presentation.
The most common visual aid used in the research are **bar charts**. Bar charts are used to show the difference in lengths of the bar chart between two values. The approach is to use a percentage with 0 being the lowest variable and 100 being the highest. It made it easier to quantify and calculate the data. Other aids have been tried to visualize the data using different views including trends, compositions, distributions and relationships, but did not deliver the information that was expected or needed.

The leading reference in using and creating visual aids for the research is the chart from http://www.chart.guide. The chart is used because it provides extended knowledge from the chapters regarding visual aids used in the book 'Research methods for business students' (Saunders et al. (2009). The chart is also known for its frequent usage in specialized visualisation courses for data in the Netherlands.

[36] See Appendix, Microsoft Excel: Data matrix.
[37] Source : https://en.oxforddictionaries.com/definition/theme.

4. Quantitative Results

The Quantitative Results contain the questions and answers of the questionnaire[38] (survey strategy) from the participants of the research. In order to map these clear and quickly to the sub questions of the main research question, the sub chapters of both the Quantitative and the Qualitative Results are using the same lay out.
All the sub chapters first include background information on the participants and their organizations and then essential information on the sub questions of the main research question regarding the practising and implementing Holacracy, Application software, Application software and roles and Application software and Identity & Access Management in organizations.

4.1 Participants

The 67 participants of the research work in organizations that use Holacracy as their organizational management system. These organizations differ greatly in size. The organization with the most members is Deutsche Telekom IT GmbH with around 5.000 organization members. The number is however skewed since Deutsche Telekom IT GmbH has not implemented Holacracy in the whole organization yet. Zappos, a well-known American online retailer and NL Healthcare, a Dutch health care organization are better examples of organizations that use Holacracy in the organization.
Both organizations coincidentally have around 1.500 members in the organization.
The participants of the smallest organizations had a minimum of three members and include rvg media & impact, Nestr and FNKE.

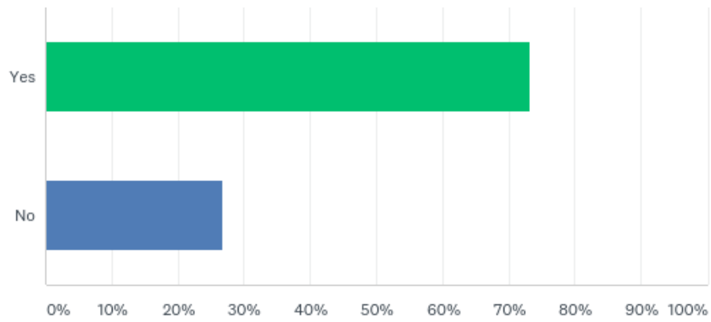
The organizations were the participants work are very diverse. Based on the organizational types they used on LinkedIn, 31 types are identified. These types differ widely, ranging from Farming (Purely Poultry) to Government (Washington Technology Solutions) to Biotechnology (The Hyve).
Still, the majority of organizational types in the research are Information Technology and Services (14 times), Consulting and Management Consulting (10 times) and Internet (10 times).

On a geographical focus, most participants work at organizations that have their headquarters in The Netherlands (36 times), with the United States of America in second place (10 times).
In total, 13 countries have been identified that include The Netherlands, the United States of America, Switzerland, France, Germany, Hungary, Austria, the United Kingdom, Iceland, India, Canada, Spain and Belgium.
Finally, of the organizations with the most locations worldwide, the United States of America comes in first with 43 locations but with The Netherlands in close second with 41 locations. Archerpoint, with 33 locations, is an organization that has the most locations, followed by Netcentric with 10 locations in total.

4.2 Practising and implementing Holacracy in organizations

The information about what Holacracy is, is available in the summary of the Literature review on Holacracy. The second part of the question is to find out how Holacracy is implemented in organizations. Based on the results of the questionnaire, 73,13% of the organizations that participated use a Holacracy Coach to implement Holacracy. It means the majority of organizations use a Holacracy Coach who helps them to start with and implement Holacracy.

[38] See Appendix : Microsoft Excel : Questionnaire and SurveyMonkey : Questionnaire.



Answer	Percentage	Response
Yes	73,13 %	49
No	26,87 %	18
		67

Figure 11: Answers to the question: When you implemented Holacracy in your Organization, did you use a Holacracy Coach?

The arguments the participants gave when asked why they needed a Holacracy Coach were clustered to provide the following overview:

We needed help
15 out of 49 participants desired help with the implementation. They gave similar answers telling they didn't want to 'do it alone' and they 'needed help' from experts outside of the organization.

To implement Holacracy as intended
12 of the participants wanted to implement Holacracy the right way and how it was intended as encouraged by HolacracyOne and in the Holacracy-related books the participants read. They wanted to 'implement it properly', 'wanted to do it well' and to 'doing it right'.

Holacracy is complex
Nine participants told that Holacracy is complex and challenging to implement.
These participants found it 'complex and challenging', a 'complicated concept' and 'Holacracy is difficult, that's why we needed coaching'.

We wanted to learn
Six participants told they wanted to gain knowledge and to learn from the teaching provided by the Holacracy Coach. They needed a Coach because they 'didn't have the knowledge to implement the organizational structure and processes' and 'to accelerate learning'.

We were advised
Four participants told they were advised by other organizations to use a Holacracy Coach.
A Coach was 'used because of external references' and 'advised by other Holacracy Organization'.

Still, 26,87 % of the participants told they did not use a Holacracy Coach. Their arguments for not using a Holacracy Coach are clustered here:

A Holacracy Coach is too expensive
8 out of 18 participants told that it was too expensive for them to hire a Holacracy Coach.
Their answers are similar, explaining 'we couldn't afford it', 'cost was very expensive' and 'Starting the company, we didn't have the money for a Holacracy Coach'.

Want to do it ourselves
Five participants were determined to implement Holacracy themselves without a Holacracy Coach. Their answers range from 'we wanted to do it with a team', 'we could do it ourselves' to 'we started experimentally'.

We are Holacracy Coaches
Four of the participants told they are a Holacracy Coach themselves or they have one or more Holacracy Coaches in the organization. These participants did not need a Holacracy Coach to implement Holacracy.

44,44% (8 out of 18) of the participants argue that the price of hiring a Holacracy Coach is too expensive for them. It means that more than a quarter (26,87 %) of the organizations would have liked to use a Holacracy Coach but found it too expensive.

In the pre-interview questions, the participants were asked when their organization implemented Holacracy. With this information the following graph is created. The graph shows that the number of organizations that have implemented Holacracy is slowly increasing, except for implementations in the year 2012. Despite extensive research, there is no evidence found that can explain why less organizations have implemented Holacracy in 2012.
Since the data from the organizations is retrieved from the 18th of May to the 19th of July of 2017, it explains the lower number of organizations that implemented Holacracy.

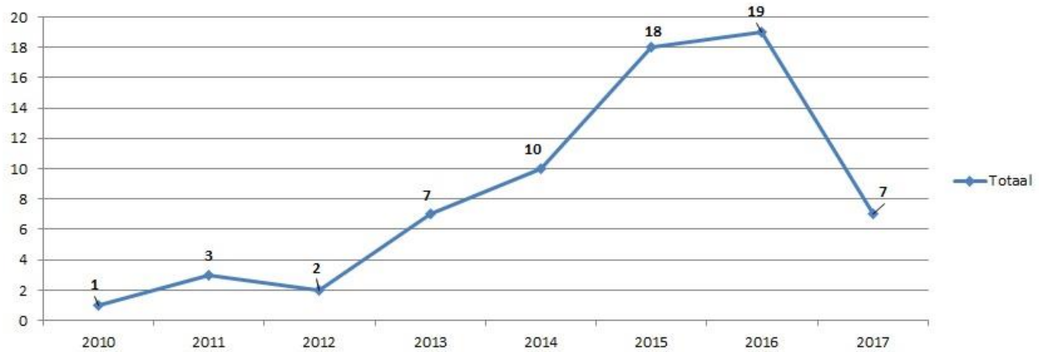


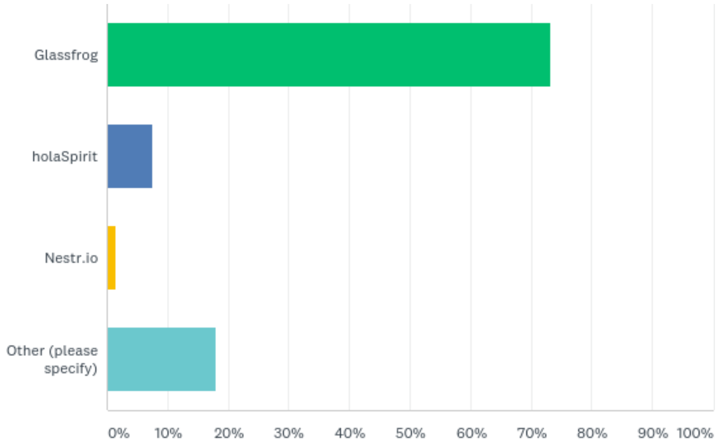
Figure 12: Number of organizations that implemented Holacracy per year.

<u>Key results on what Holacracy is and how it is practised and implemented in organizations:</u>

- **The majority of the organizations that implement Holacracy use a Holacracy Coach.**
- **Organizations that use a Holacracy Coach do it because they:**
  - **Needed help;**
  - **Want to implement Holacracy as intended;**
  - **Find Holacracy complex and difficult;**
  - **Want to learn from the Holacracy Coach;**
  - **Were advised by other organizations that implemented Holacracy.**
- **44,44% of the organizations that use Holacracy but did not hire a Holacracy Coach found them too expensive. Other arguments were that the question did not apply to them because they were Holacracy Coaches themselves and because the organizations wanted to specifically implement Holacracy without a Holacracy Coach.**
- **There is an upward trend in the number of organizations that implement Holacracy each year from 2012.**

4.3 Holacracy and Application software in organizations

The organizations that would like to start with Holacracy are advised to use governance software to track their governance records (see Chapter 2.3: Implementing Holacracy). The participants in the research have been asked which kind of governance software they used first for storing and managing their governance records when they implemented Holacracy.



Answer	Percentage	Response
Glassfrog	73,13%	49
holaSpirit	7,46%	5
Nestr	1,49%	1
Other	17,91%	12
		67

Figure 13: Answers to the question: When you implemented Holacracy in your Organization, which software did you use for your Governance records?

With 73,13% of the participants use HolacracyOne's Glassfrog while some choose other governance software like holaSpirit or Nestr.
The minority of the participants with 17,91% told they use other software for their governance records. Of these other application software, four are classified as governance software of which three are surprisingly Glassfrog and one is Consent.works' Weave[39]. This changes the percentage of organizations that used Glassfrog as their Governance software from 73,13% to 77,61%.
The total number of organizations that use governance software is now 59, which translates to a percentage of 88%.
In total, 59 participants used governance software while eight participants used non-governance software for their governance records such as Google docs (three times), Asana, Org OS, GitHub, Microsoft Excel and Gaiasoft software.

Of the 12 organizations that used other software than Glassfrog, holaSpirit or Nestr when implementing Holacracy, 10 organizations switched during the implementation to different governance or application software. Six organizations switched to Glassfrog while others switched to Asana, Podio in combination with Trello, Glassfrog in combination with holaSpirit and Nestr and one unspecified type of application software.

The participants in the research have been asked why they choose this software for their governance records when they implemented Holacracy. The similar answers are clustered here:

Features of the software
27 of 67 participants tell that the features of the software they use for their governance records were an important factor for choosing their software. The answers they gave range from 'ease of use was the most important', 'they were releasing new features on a weekly basis' to 'because it is multi-language based'.

Influence of the Holacracy Coach
22 of the participants told they choose the software because they were influenced by their Holacracy Coach. The participants gave answers such as 'it was mentioned and provided by the Holacracy Coach', 'it also was advised by our Holacracy Coach' and '...was preferred by the Holacracy Coach'.

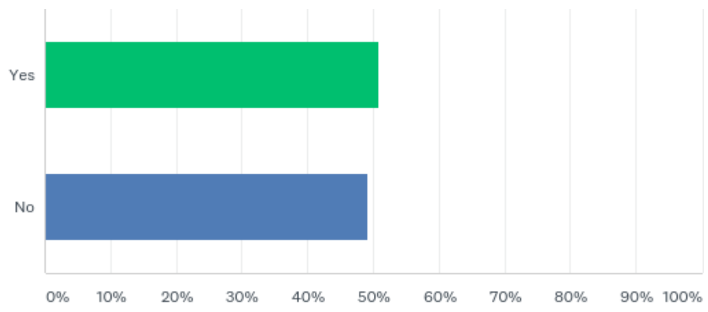
Availability of software
18 participants noticed that the availability of governance software was scarce. It is derived from answers such as 'it was the only one that was 'ready for use' at that point', 'it was the only alternative' and 'there was not so much choice'.

[39] Consent.works is a partner organization of 'Die Wertschätzer', a participant in the research.

Cost of software
11 of the participants answer that the price of the governance software was important to choose their software. Depending on the answers, it can be interpreted positively in the answer ‘it’s not expensive for small organizations’ or negatively in the answer ‘...we moved to holaSpirit as it's cheaper and even more beautiful’.

Holacracy as a brand
11 of the participants told Holacracy and HolacracyOne as a ‘brand’. Their faith in Holacracy shows by using HolacracyOne’s Glassfrog. The participants gave answers like ‘I thought it would be the best one since it's developed by H1 (HolacracyOne)’, ‘it looked the most obvious and came from HolacracyOne’ and ‘it is the software that is made for working with Holacracy’.

When asked if the Governance software that the participants use is needed to add, modify and delete roles, 99% answer yes. Only the online retailer Zappos uses different application software for their roles. Looking at the percentage of organizations that needed new software, just 50,75% of the participants told they did.



Answer	Percentage	Response
Yes	50,75 %	34
No	49,25 %	33
		67

Figure 14: Answers to the question: When you implemented Holacracy in your Organization, did you need new Software or Applications?

Of the 34 participants who answered they did need new software, the software names and software types that were needed are:

Software name	Number of times mentioned	Type of software
Glassfrog	8	Governance
Trello	7	Project management
Slack	7	Collaboration & communication
Asana	5	Collaboration & project management
Google Docs	3	Collaboration
Google Drive	3	Collaboration, Cloud Storage & File backup
Todoist	3	Organizing

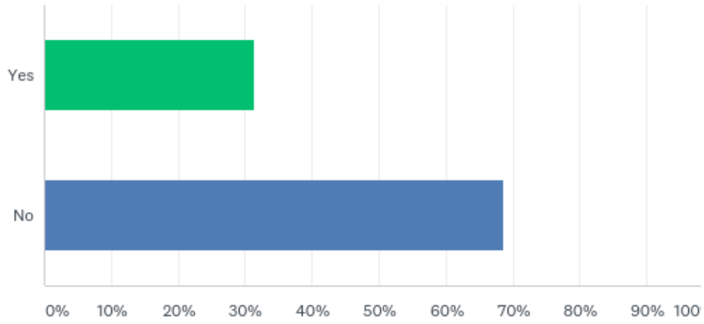
The mention of needing Glassfrog as new software gives a skewed view since previous answers provided a higher number. Other software names and types are not shown because they were just named once. These names and types are however included in counting the multiple software types. Therefore, the most mentioned types are Collaboration software (seven times), Project management software (six times) and Organizing software (four times).

Trello, Slack and Asana are the names of new application software that are needed most, next to Glassfrog in organizations that implemented Holacracy. When asked why the participants needed this specific software, their answers were clustered in the following overview:

Organizational demand
26 of the 34 participants tell they choose their application software based on the demands of the organization. It resulted in answers like ‘because it made it easy to conduct meetings and track results’, ‘to track roles and governance’ and ‘...Facebook's Workplace is used to focus our internal communication’.

Software features
15 participants tell they needed the software features as an argument for new software. The answers vary from ‘because of it features for Project Management’, to ‘for the Governance records and the Tactical meetings. For these features the software is the easiest and best’ and ‘tailored to Holacracy it supports all kinds of documentation...’.

The participants were also asked if they needed to modify their software when they implemented Holacracy. 68,66% tell they did not modify their software. 31,34% that did modify their software told Asana (four times), Trello (three times) and Glassfrog (two times) needed to be modified most.



Answer	Percentage	Response
Yes	31,34 %	21
No	68,66 %	46
		67

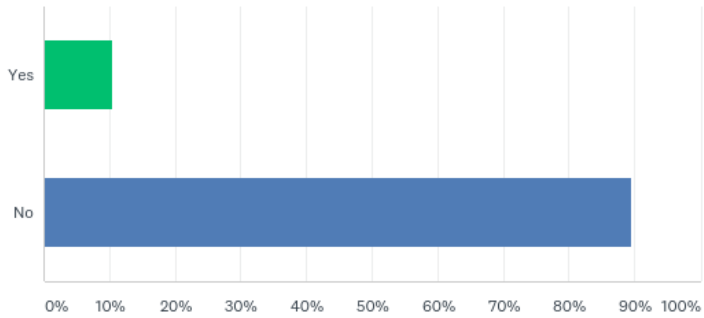
Figure 15: Answers to the question: When you implemented Holacracy in your Organization, did you need to modify your Software or Applications?

The most modified type of software is Collaboration software (three times), Project management software (three times), Governance software (two times), Feedback software (two times) and Finance and HR software (two times).
Asking why the participants needed their application software to be modified, their similar answers can be clustered again in Organizational demand and Limiting software features:

Organizational demand
14 of the 21 participants tell they modified their application software to meet the demands of the organization. This is seen in answers like ‘there were too much projects and that didn't contribute to our purpose’, ‘Because we wanted to explore a new way to manage it. We wanted to transfer the authority on a new process’ and ‘Simply to support the needed workflow’.

Limiting Software features
14 participants tell they modified the application software because of limiting software features. Their answers range from ‘Some of the features are emphasized in Glassfrog. But Projects are not connected’ to ‘manage projects which is still not adequately possible in holaSpirit but should change in due course’.

The next question the participants were asked is if they had to remove application software because it became obsolete. 89,55% of the participants tell they did not remove their application software.



Answer	Percentage	Response
Yes	10,45 %	7
No	89,55 %	60
		67

Figure 16: Answers to the question: When you implemented Holacracy in your Organization, did you need to remove Software or Applications because they became obsolete?

The 10,45% of the participants who told they did remove application software also tell which software names and types they removed in the following overview.

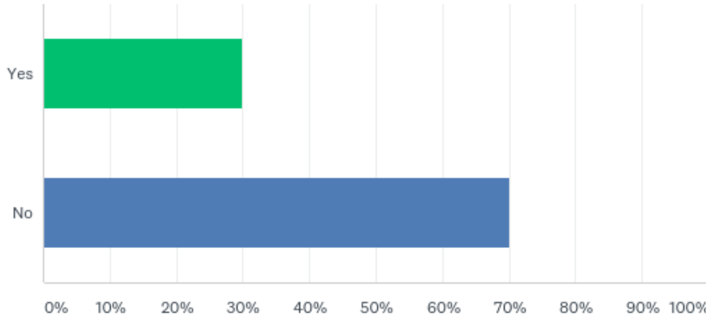
Software name	Number of times mentioned	Type of software
Pipedrive	2	Sales management
Asana	1	Collaboration & project management
Glassfrog	1	Governance
Slack	1	Collaboration & communication
GRID360	1	Feedback
Traction (now called 'Teampage')	1	Collaboration & project management
HR software (unspecified)	1	Finance & HR

It means that Collaboration software and Project Management software as software types are removed most in organizations that implemented Holacracy. When asked why the participants removed their application software, the answers are similar to the previous themes, Organizational demand and Software features:

Organizational demand
Five of the seven participants told they removed their application software because of organizational demands. It is seen in answers such as 'because, all the rules were managed by one person and we found better to transfer his authority to a process managed by collective intelligence' and 'stopped with using Asana (works only in small part of the company)'.

Software features
Four participants tell that the software features were the argument for removing application software. Their answers range from 'we use a better system for record keeping and our spreadsheets' to 'we now use Asana for our project and planning' and 'we don't use mail and the mail options Glassfrog provides (like the Next actions option via email)'.

Following up the questions about removing software, the next question the participants were asked is if they created their own application software when they implemented Holacracy. 70,15% answer they did not created their own application software.



Answer	Percentage	Response
Yes	29,85 %	20
No	70,15 %	47
		67

Figure 17: Answers to the question: When you implemented Holacracy in your Organization, did you create your own Software or Applications?

Why the participants did not create their own application software was asked too and enclosed here:

No need because of current and available Software
20 out of 47 participants replied that the current or the future software they are using is the argument for not creating their own software. It is seen in answers ranging from 'there are tools out there that can be modified for this purpose', 'Google docs was enough for us to pilot the project' and 'because holaSpirit was suitable enough...'.

No organizational need or not necessary
16 participants tell that there simply was 'no need' or that is was 'not necessary'.

Would like to create software, but unable to
Eight of the participants told they would like to create software but are unable to right now. Why they think they are unable to ranges from '...no skillset nor finances...', 'different priorities (including having no time)', and having no 'skills and knowledge', 'capacity' and 'expertise'.

The 29,85% of the participants who did create their own software, were asked why they created application software and what kind of application software they create. The arguments for creating application software showed two similar themes that were used to cluster their answers in here:

Organizational needs
16 out of 20 participants told that creating software was based on the needs of the organization. Their answers range from 'needed a way to communicate based on circle members which frequently changed', 'we have built an application using Holacracy to be able to provide guidance on what kind of attention the organization enters' and 'that coincided with ISO certification'.

Available Software didn't meet the needs
Nine participants told that the available software didn't meet the needs of the organization and so they created their own software. Answers that acknowledge it are 'we configured Podio because Glassfrog didn't work for us', 'by making the automatic metrics we recreated a robust, easy and objective piece of software' and 'the overview of the projects from Glassfrog and Asana is insufficient'.

When asked what kind of software the 20 participants created, they provided the following 24 types of software:

Software name	Type of software	Description
Relatics	Business Cloud Platform / Project management	Cloud platform for projects.
Platform	Business Software Platform	Business Software Platform
(no name)	Feedback	Feedback and Skills
Flindt	Feedback	Feedback tool
(no name)	Reporting / Project management	Reporting tool with projects and filters
Nestr	Governance	Platform facilitating the purpose academy
(no name)	Governance	A custom Glassfrog
1. Jammer 2. Modified version of Asana.	1. Unknown 2. Collaboration & project management	1. Unknown 2. Modified version of Asana
(no name)	Reporting / Project management	Automatic metrics delivery for projects
Bullfrog	Governance	Allocation & attention tool
(no name)	BI (Business Intelligence)	BI tools
(no name)	Collaboration & communication	Customizable online hub for work & communication
Role marketplace Om Open market Zappos profilez People points	Governance / Teal organization kit	Role marketplace Om Open market Zappos profilez People points
Weave / Consent.works	Governance	Web tool for consent-oriented organizations
(no name)	Finance and HR	Finance and HR software
(no name)	API	Application that read from the GlassFrog API
(no name)	API	A standalone API (pulls data from Glassfrog
(no name)	1. Feedback 2. API 3. API	1. Peer review tool (360 tool) for compensation 2. Integration tool for Glassfrog and Asana 3. Integration tool to create Slack groups for Glassfrog

The list shows that Governance software (five times) and API[40] software (mentioned four times) is the most created software type in the organizations that implemented Holacracy. What strikes out from the list is that 10 of the 24 software types are not named.

The participants who created their own application software were also asked if and why they offered their application software to the Holacracy App store. All the participants answered they did not offered their application software to the Holacracy App store. Their arguments are that offering their application software did not apply to them (10 times) and because they were unfamiliar with the Holacracy App store (four times). However, of the five available apps, two of the apps are created by Arca and one app is created in association with Zappos. Since Arca and Zappos are participants in the research, the outcome of the question is skewed.

Application software is created by some of the organizations as a part of their business, such as Nestr and Consent.works. Other organizations made their application software available to all on GitHub like Devhouse Spindle's feedback software Flindt.

[40] API is short for Application Programming Interface. Source : https://en.oxforddictionaries.com/definition/api.

<u>Key results on how application software is used in organizations that practise Holacracy:</u>

Governance software

- **The majority of organizations use Glassfrog as their Governance software to manage their governance records.**
- **A few organizations that started with Holacracy, did not use Governance software to manage governance records.**
- **Organizations that used other governance software than Glassfrog, holaSpirit or Nestr when implementing Holacracy, switched to different governance or application software with the majority ending up with Glassfrog.**
- **The arguments that are mentioned most when choosing Governance software are the features, the influence of the Holacracy Coach, the availability, the costs and the Holacracy brand.**
- **With a score of 99%, almost all organizations use their Governance software to add, modify and delete roles.**

New software

- **The majority of organizations needed new software when they implemented Holacracy.**
- **The software types they needed most are Collaboration software, Project Management software and Organizing software.**
- **Trello, Slack and Asana are the names of new application software that were needed most.**
- **New software is needed because of organizational demand and software features.**

Modify software

- **The majority of the organizations did not modify their application software when they implemented Holacracy.**
- **Organizations that did modify their application software did it because of Organizational demands and limiting software features.**
- **The software type that needed to be modified the most are Collaboration & Project Management software, Governance software, Feedback software and Finance and HR software.**
- **The names of application software that needed to be modified most are Asana, Trello and Glassfrog.**

Remove software

- **The majority of the organization did not need to remove application software that became obsolete.**
- **Collaboration software and Project Management software are the software types that are removed the most.**
- **The arguments for removing application software is because of Organizational demand and Software features.**

Create software

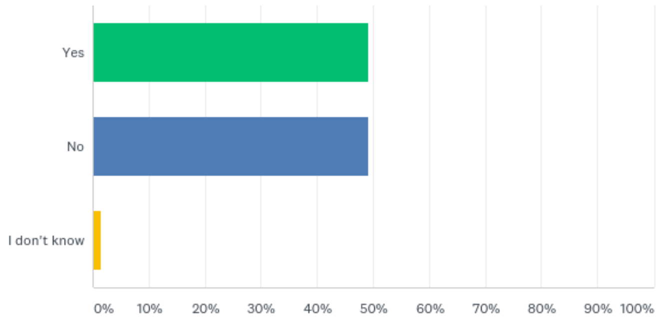
- **The majority of the organizations did not create their own application software when implementing Holacracy.**
- **The arguments for not creating their own application software are because their current or available software does suffice, there is no need to create software and they are unable to create application software.**
- **The arguments for creating application software are Organizational needs and the available software did not meet the organization's needs.**
- **The most created software types are Governance and API's.**
- **10 out of 24 types of self-created application software are not named.**

Holacracy App store

- **None of the participants creating their own application software offered them to the Holacracy App store, but these answers are skewed.**
- **The arguments of the participants not to offer their application software to the Holacracy App store are because they think it does not apply to them or they were unfamiliar with the Holacracy App store.**

4.4 Holacracy, Application software and roles in organizations

After the software-related questions, the participants are now asked role-related questions to find out how application software is used combined with the roles in Holacracy organizations.



Answer	Percentage	Response
Yes	49,25 %	33
No	49,25 %	33
I don't know	1,49	1
		67

Figure 18: Answers to the question: When you implemented Holacracy in your Organization, did you use Role-Based Software?

In Figure 18, the outcome shows that the answers are evenly divided between yes and no. What is more surprising is that almost every participant should have answered 'yes' since all governance software is Role-based software.

Realizing that participants were unfamiliar with the subject of Role-based software during the review of this question with a select few participants, the image of Figure 19 was included in the questionnaire in SurveyMonkey. During videoconferences and personal meetings, the image was also shown to define what Role-based software is. During telephone conferences, the text of the image was read out loud. To meet the participants who still didn't know what Role-based software is, the option 'I don't know' was added. Only one participant marked that answer.

Role-Based Software is software that use Role-based Access Control (RBAC). RBAC is an access control mechanism that defines the roles and privileges of individuals and groups in an organization.

This mechanism connects employees to one or more roles, that in turn connects one or more roles to one or more permissions. These permissions are used to grant or deny a role access to a system or data.

Examples of **vendors** that use RBAC are IBM, Microsoft, Siemens, Oracle, Sybase, RSA, Novell, Symantec and Cisco.

Figure 19: Definition of Role-based Software used in the questionnaire, personal meetings and telephone- and videoconferences.

Half of the participants who told they did not use Role-based software were also asked why. Their answers could be clustered in the following overview:

Unnecessary or not needed
12 of the 33 participants told that Role-based software was unnecessary or not needed. It shows in answers such as 'we use Windows, so we don't need another technology', 'didn't need it' and 'it was not something we needed'.

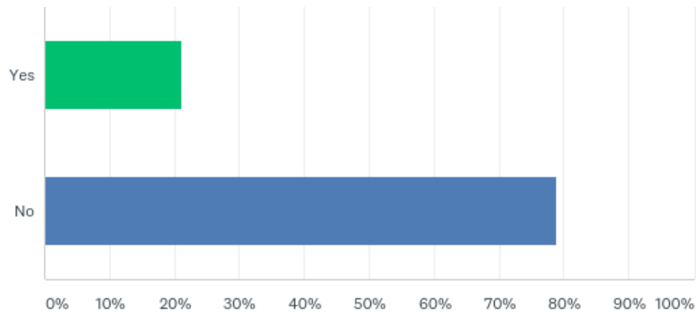
Organization is too small
Eight participants tell that their organization is too small to use Role-based software. Answers range from 'we're too small to bother with it' and 'only three employees' to 'we're a small organization, so we didn't need that software'.

Trust and open access
Seven participants describe that their organizations use trust and open access to their software. Therefore, they don't need role-based software. It reflects their answers such as 'because everything is

transparent in our organization, everyone has access to everything', 'we have a trust-based culture, not an access-control-based culture' and 'because we are open and transparent'.

Unaware of Role-based Software
Four participants told they were unaware of the existence of role-based software.

The 33 participants who told they did use Role-based software were also asked if they encountered situations where organization members had difficulties to perform their work because of Role-based software. With 78,79%, the majority answered they did not encounter these situations.



Answer	Percentage	Response
Yes	21,21 %	7
No	78,79 %	26
		33

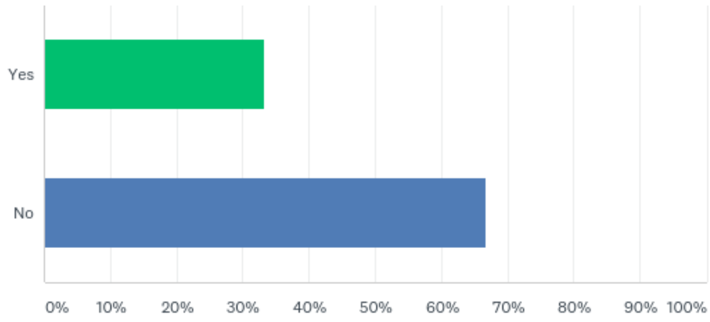
Figure 20: Answers to the question: Have you encountered situations where employees had difficulties to perform their work because of Role-based software?

The 21,21% of the participants who did encounter the situations where the organization members had difficulties to perform their work because of Role-based software where asked two questions: 'What situations were caused because of Role-based software?' and 'How did you handle these situations?'. The participants had similar answers regarding the situations. These were access-related and software-related as provided in the overview:

Access-related situations
Four participants experienced access-related situations. They experienced difficulties based on their roles and the lack of access to specific application software. They handled the issue by adding accountabilities to certain roles, evaluating the roles and asking for or changing permissions.

Software-related situations
Three participants told they had software-related situations because of the Role-based software. Using Role-based software created difficulties. These participants handled the issues using a best practice approach, fall back on expertise of the Holacracy Coach and providing a learning curve to submit and solve tensions.

Participants were asked if they encountered role-related issues in combination with non-Role-based application software to determine if role-related issues also exist in combination with the organizations' non-role-based application software.



Answer	Percentage	Response
Yes	33,33 %	21
No	66,67 %	42
		67

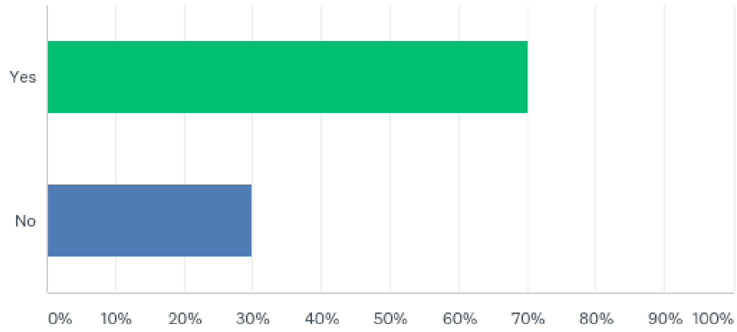
Figure 21: Answers to the question: When you implemented Holacracy in your organization, have you encountered role-related issues in combination with your application software (non-Role-based)?

With 66,67%, the majority told they did not encountered role-related issues in combination with the non-role-based application software.
For the participants who told they did encountered role-related issues in combination with the non-role-based application software, they were asked what kind of role-related issues they encountered. Their answers were similar and clustered to the themes 'Limiting software features' and 'Role Ambiguity'.

Limiting software features
The role-related issues of 9 out of 21 participants are related to limiting software features. It means that the features of specific software used by the participants are limiting them. These features don't work as intended or there is a lack of features which is seen in their answers ranging from 'it wasn't possible to give back roles in holaSpirit' to 'the software tool People Points does not have control over assigned and non-assigned roles' and 'we used Podio back then and one of the minor issues was that we couldn't assign tasks on role level, but only to people'.

Role Ambiguity
Seven participants told that role ambiguity was a role-related issue for them. They describe that one or more roles caused uncertainty in their organization. Answers reflecting it are 'from a lead link role, managing external access doesn't work good', 'who makes the decisions which software to select' and 'the roles are sometimes not well articulated'.

The next role-related question the participants were asked is if they encountered one or more issues regarding Roles. The question is aimed at finding role-related issues that do not specifically have to do with application software.



Answer	Percentage	Response
Yes	70,15 %	47
No	29,85 %	20
		67

Figure 22: Answers to the question: When you implemented Holacracy in your organization, have you encountered one or more issues regarding roles?

With a score of 70,15%, the majority of the participants encountered one or more issues regarding roles in the organization. The participants were then asked what kind of role-related issues they encountered and how they handled these issues. The answers to what kind of issues were encountered are similar and clustered here:

Role dynamics issues
16 answers from the 47 participants could be themed as role dynamic issues. Role dynamics is focused on the way organizations are using and working with their roles and seen in the answers that range from 'the dynamic allocation to the roles of people', to 'identifying in which role we are doing the action' and 'the roles and use of roles were strange at first'.

Accountability issues
15 of the answers were directly related to the issue of accountabilities. Accountabilities of the organization members are the use or disuse of being accountable in roles. Answers that acknowledge the issue are 'lead links that want to solve anything', 'we had to describe accountabilities of the new roles more detailed than before' and 'they wait a lot instead of getting into action'.

Role creation issues
12 answers were related to the issue of role creation. Role creation simply focuses on creating roles in the organizations. Each role is based on purpose and includes tasks and accountabilities. Answers of the participants regarding role creation issues are 'in two circles (Sales and Operations) we had the same role. That did not work', 'clarity and how to describe roles and accountabilities in a good way' and 'roles did not match reality'.

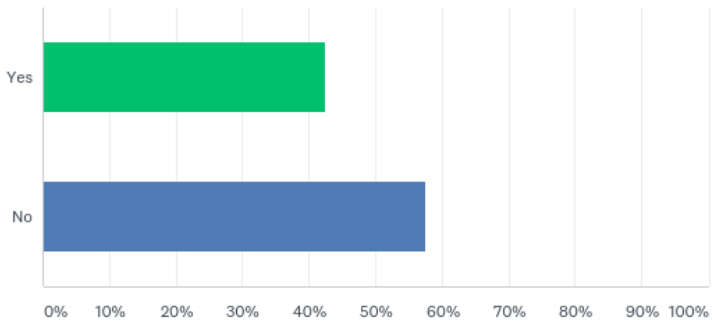
Working with Holacracy issues
12 answers are issues that are related to working with the Holacracy management system. These issues focus on implementing, using and working with Holacracy. Answers reflecting these findings range from 'we have a lot of tensions' to 'people think of people and not the roles they have' and 'to make adjustments based on tensions'.

Key results on how application software is used in combination with the roles in organizations practising Holacracy:

- **Exactly half of the organizations that participated tell they do not use Role-based software, which means that the other half of the organizations do use Role-based software. Because all Governance software is Role-based, and most organizations use this type of software, the number of organizations that use Role-based software should be higher.**
- **Arguments why half of the organizations do not use Role-based software is because they think it is unnecessary, their organization is too small, they trust their member, they use open access and they were unaware of the existence of Role-based software.**
- **The majority of the organizations that use Role-based software did not encounter situations where organization members had difficulties performing their work because of Role-based software.**
- **The participants who did encounter situations where members had difficulties to perform their work because of Role-based software experienced access-related and software-related situations.**
- **The majority of the organizations did not encounter role-related issues in combination with their non-role-based application software.**
- **Participants who did encounter role-related issues in combination with their non-role-based application software are identified as limiting software features and role ambiguity.**
- **The majority of the organizations encountered role-related issues when implementing Holacracy.**
- **These role-related issues are centred on role dynamics, accountabilities, role creation and working with Holacracy.**

4.5 Holacracy, Application software and Identity & Access Management in organizations

The final questions for the participants is focused on how their application software is used in combination with Identity & Access Management. The first question is aimed to find out if the participants also implemented Identity & Access Management in their organizations.



Answer	Percentage	Response
Yes	42,42 %	28
No	57,58 %	38
		67

Figure 23: Answers to the question: When you implemented Holacracy in your Organization, did you also implement Identity & Access Management?

57,58% of the participants tell they did not implement Identity & Access Management when they implemented Holacracy.

Because not every participant might be familiar with Identity & Access Management, the following text was used in the SurveyMonkey questionnaire and during personal meetings and video conferences. During telephone meetings, the text in Figure 24: Definition of Identity & Access Management was read aloud.

Identity and Access Management (IAM) is the security discipline that enables the right individuals to access the right resources at the right times for the right reasons. (Gartner, 2017).

Identity and Access Management covers issues such as how users gain an identity, the protection of that identity and the technologies supporting that protection. (Wikipedia, 2017).

Figure 24: Definition of Identity & Access Management used in the questionnaire, personal meetings and telephone- and videoconferences.

The 38 participants who didn’t implement Identity & Access Management were asked why. Their answers were similar and clustered to the following themes:

Identity & Access Management already implemented
10 of the 38 participants told they already implemented Identity & Access Management before they implemented Holacracy and is reflected in their answers like ‘for instance, with Google Apps, we have admin, group manager and user roles. This is in place already’, ‘Google provided such a service’ and ‘Identity & Access Management has already been arranged, using the name of the employee to log in’.

Organization is too small
Nine participants told that their organization is too small to implement Identity & Access Management. The information shows in their answers ranging from ‘we are a small organization, so we must be able to replace each other if necessary’ to ‘our organization is too small, and the costs are way too big to implement this’ and ‘we're too small to bother with it’.

No need
There are seven participants who told they had no need to implement Identity & Access Management in their organization now. Answers that support it are ‘was not necessary in this organization’ and ‘no needed’.

Transparency
Six participants tell they didn’t implement Identity & Access Management because of the transparency the organization offers to it organization members. The participants told that the transparency of the organization is even offered to its customers which is seen in answers such as ‘there are no secrets in our organization’, ‘we value transparency and getting work done fast’ and ‘but more important than anything, we achieved full transparency by having everything public’.

The 42,42 % of the participants who did implement Identity & Access Management were also asked why. Their answers were similar and clustered in these themes:

Needed Security
5 of the 14 participants told they needed security as their argument to implement Identity & Access Management. Two of the participants’ answers used the generic term ‘Security’, two participants used ‘Information security’ and one participant used the term ‘Identity, Access and security purpose’.

Use ISO standard
Four participants tell that using an ISO standard is their argument or implementing Identity & Access Management. ISO (International Organization for Standardization) defines standard specifications for products, services and systems, to ensure quality, safety and efficiency[41]. In the answers, the ISO versions that the participants refer to are ISO 7001, ISO 2701 and ISO 9001.

[41] Source : https://www.iso.org/about-us.html.

Managing access
Four participants are focused on managing access to implement Identity & Access Management. Answers that acknowledge it are ‘who has access to what system’, ‘we want everyone to have access to all applications’, ‘all employees should have a personal account and that is also what we implemented’ and ‘so that the correct users had the correct access to systems’.

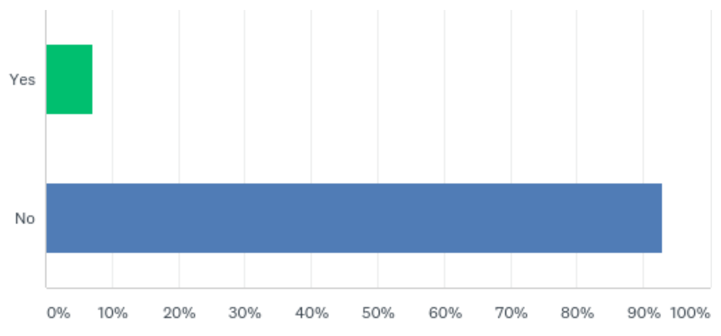
Organizational or non-organizational requirements
Three of the participants told that Identity & Access Management is implemented because of requirements from inside and outside of the organization and seen in answers such as ‘conform to privacy laws and norms’, ‘because we work with Google Apps’ and ‘required by some role-related 3rd parties or pre-existing conditions’.

The follow up question for the participants was which application software they used to implement Identity & Access Management in their organizations. Based on the number of times mentioned, the following list contains the software names and types of software the organizations used to implement Identity & Access Management:

Software name	Number of times mentioned	Type of software
Atlassian, Jira Crowd server, Google SSO, Intuo SSO	9	Single Sign On (SSO)
LastPass, 1Password, Password Manager	8	Password manager
Google Apps, Gmail, G-suite, Google services	8	Google collaboration
Glassfrog	6	Governance
Not mentioned	6	‘Other’ IAM software
Keyhub, Google Authenticator	3	Authentication
LDAP	3	LDAP

Asana, Amazon web services, Facebook, Office 365, Active Directory, Dropbox and non-specific encryption software were all named once as software to implement Identity & Access Management.

The final question the participants were asked that implemented Identity & Access Management was if they encountered issues with their application software that were related to Identity & Access Management.



Answer	Percentage	Response
Yes	7,14 %	2
No	92,86 %	26
		28

Figure 25: Answers to the question: When you implemented Holacracy in your Organization, did you encounter issues with your application software that were related to Identity & Access Management?

Almost all participants answered they did not encounter issues with their application software that were related to Identity & Access Management. Only two participants told they did encounter issues. Based on follow up questions, the participants gave these answers:

Participant	Which issues did you experience with your Software or Applications that were related to Identity and/or Access Management?	What was the cause of these issues?	How did you handle or solve these issues?
1	Not using IAM creates risks, hence we are working with ISO 7001 and ISMS.	Not using IAM.	Use IAM in ISO 7001 and ISMS.
2	Manage of access privileges was not good enough and it we had no SSO. On shared accounts there was no two-factor authentication.	Did not offer the functionality we want.	We used Keyhub - Topicus.

<u>Key results on how application software is used in combination with the Identity & Access Management in organizations practising Holacracy:</u>

- **An above average part of the organizations does not use Identity & Access Management.**
- **Arguments why the organizations are not using Identity & Access Management are because they were already using Identity & Access Management, their organization is too small to use Identity & Access Management, they want to be transparent to their members and customers and finally since there simply was no need to use it.**
- **The organizations that did implement Identity & Access Management did it to need security, to use an ISO standard, to manage access and because of organizational or non-organizational requirements.**
- **The most used Application software to implement Identity & Access Management is Single Sign On, Password managers and Collaboration software from Google.**
- **Most organizations did not encounter issues with their application software that were related to Identity & Access Management. Two organizations did encounter issues. These are; not using Identity & Access Management created risks, the management of access privileges was not at its best, a lack of SSO and a lack of two-factor authentication.**

4.6 Conclusion to the quantitative results

The key results from the sub chapters are all based on the survey strategy, answering the questions of the questionnaire.

Implementing Holacracy
The majority of organizations that implement Holacracy worldwide use a Holacracy Coach to help them. Organizations need a Holacracy Coach to help them to implement Holacracy as intended by HolacracyOne and in Holacracy-related literature (Robertson, 2015) (Janse & Bogers, 2013) and as advised by other organizations that have implemented Holacracy.
The use of a Holacracy Coach satisfies the organizations yearning to learn from them because they find Holacracy to be complex and difficult. Of the organizations that did not used a Holacracy Coach, 44,44% would have liked to use a Holacracy Coach but found it too expensive.
The number of organizations worldwide that decide to implement Holacracy increases each year since 2012.

Application software
The majority of the organizations that implemented Holacracy worldwide is using governance software with HolacracyOne's own governance software Glassfrog mentioned most.
The criteria on which organizations choose their governance software are the features, the availability of different governance software, the cost of governance software, the brand of the governance software and the influence of the Holacracy Coach. Governance software is used for 99% of the organizations to add, modify or delete the roles used in the organization.
The 83% of the organizations that didn't use governance software (Glassfrog, holaSpirit or Nestr) when they implemented Holacracy switched their software to either application- or governance software, with the majority choosing Glassfrog.

Half of the organizations worldwide that have implemented Holacracy needed new application software because of organizational demand and the features of the wanted software. The software types that

were needed most are Collaboration software, Project Management software and Organizing software and software names Trello, Slack and Asana were mentioned most.
Of the organizations that implemented Holacracy, the majority of them did not modify their existing application software. The minority of the organizations did modify their application software with software types Collaboration & Project Management software, Governance software,
Feedback software and Finance and HR software modified the most.
Names of the most modified application software are Asana, Trello and Glassfrog and arguments for modifying the application software were organizational demands and limiting software features.
Most of the organizations that implemented Holacracy did not need to remove their application software because they didn't become obsolete. The software types that were removed most are Collaboration software and Project Management software. Arguments to remove application software are due to organizational demand and software features.

Of the organizations that implemented Holacracy worldwide, the majority did not create their own application software. They didn't do so because their current or available software does suffice, there is no need to create their own software and the organizations are unable to create their own application software. The most created software types in the organizations are governance and API's.
Arguments to create application software are because of organizational needs and the available application software didn't meet the organizations' needs.
2 of the 67 organizations in the research that created application software have offered it as a governance proposal to the Holacracy App store while the rest of the organizations say that offering their application software does not apply to them or told they were unfamiliar with the Holacracy App store.

Roles
Almost half of the organizations (49,25%) that implemented Holacracy worldwide are not using Role-based software. The percentage is skewed, since 88% of all organizations in this research use Role-based software governance software.
Possible causes for the score of 49,25% are that the organizations were unaware they used Role-based software, thought the question did not concern their governance software or they already implemented Role-based software before using Holacracy.
Of the 49,25% that implemented Role-based software, the majority did not encounter situations where the members of organizations had difficulties to perform their work because of Role-based software. In organizations that did encounter these situations, the issues were access-related or software-related.

Role-related issues with types of software that are non-Role-based were not encountered by an above average part of the organizations. The role-related issues of organizations that did encounter them were defined as limiting software features and role ambiguity. What the majority of the organizations did encounter were role-related issues when they implemented Holacracy.
These issues centred on role dynamics, accountabilities, role creation and working with Holacracy.

Identity & Access Management
An above average part of the organizations worldwide that practise Holacracy have not implemented Identity & Access Management. The percentage is skewed since 10 of the 38 participants that said they did not implemented it, told they were already using Identity & Access Management. With these numbers, 57,58% (38 participants) of all the organizations have implemented it and 42,42% did not implement Identity & Access Management before, during or after practising Holacracy.

Arguments of the organizations why they used Identity & Access Management is the need for security, they wanted to use an ISO standard, to manage access of their systems and they needed it to comply to organizational or non-organizational requirements. The most used application software by organisations to practise Identity & Access Management are Single Sign On, Password managers and Collaboration software from Google. Finally, most organizations did not encounter issues with their application software due to Identity & Access Management.

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5. Qualitative Results

This chapter contains the qualitative information from the interviews with select participants and is used to answer the research- and the sub questions. The information from the participants was obtained from a personal meeting, a telephone conference or a video conference.
The time before attending to the questionnaire or after finishing it was used to a talk with the participant. Their information, if given after their consent, is the information that is used in in the chapter. During the meetings and conferences, almost all participants were eager to tell about their organization and how they perceived Holacracy.

The overview of the chapter is identical to the previous chapter since the aim is to answer the sub questions of the research.

5.1 Participants

Of the 67 participants in the research, 26 gave information on a variety of topics they chose themselves. Their information was obtained during one of the following meetings:

- 15 personal meetings
- 6 telephone conference
- 2 video conferences
- 3 questionnaires

The three participants of the questionnaire gave their information during one telephone conference and two video conferences that occurred before they received the questionnaire.

5.2 Practising and implementing Holacracy in organizations

There are several definitions of what Holacracy is according to the participants. They see it as a way to become and lead a purposeful organization, to provide a better way of processing organizational tensions by using the Integrative Decision-Making process and to use Holacracy to become a TEAL organization as described in the book Reinventing Organizations (Laloux, 2014). Most organizations told that the distributed authority in Holacracy provides them with a management system that offers them more freedom to change and transparency about the responsibilities of each role.

The second part of the question is aimed at how Holacracy is implemented in organizations. Most of the organizations use a Holacracy Coach to help them implement Holacracy. In micro[42] to small organizations (<50 members in an organization), implementing Holacracy was a combined effort and every member was actively involved to learn about Holacracy to implement it. During the implementation of Holacracy, these organizations hired a Holacracy Coach at least once and depending on the organizations' needs, the Holacracy Coaches could be asked to help them more than once.
The medium-sized (<250 members) to large organizations implemented Holacracy by using an even more custom approach due to the number of members and sometimes due of the number of different locations. These organizations have all used a Holacracy Coach who guided them in more than one session to help them implement Holacracy.

A lot of the organizations in the Netherlands based their decision to implement Holacracy by reading the Dutch book Getting Things Done (Janse & Bogers, 2013). In this book, a fictional manager of an organization is working on a high prestige project with a deadline and uses Holacracy to empower the members of his team to meet the deadline and finish the project. Other books that are found and are frequently referred to in the Dutch organizations are Start with Why (Sinek, 2009) and The Lean Startup (Reis, 2011).
The time it took the organizations to implement Holacracy varies from a few weeks to more than a year. Micro organizations with less than 10 members implemented Holacracy the quickest because of their size and organizations that had one or more certified Holacracy Coaches working with them implement Holacracy even quicker because of their knowledge and experience.

[42] Source: http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition/.

The participants gave three arguments why they needed more time to implement Holacracy as their management system:

- The organization is too big;
- The organization did not fully implement Holacracy (and was not complete during the interview);
- The organization temporarily stopped with practising Holacracy.

The organizations in the research were in one of the three different implementation Stages[43]. They were either in **Stage 1** (just started practising Holacracy), **Stage 2** (working towards implementing Holacracy as defined or consciously not using all Holacracy's defined set of rules, structures and processes) or **Stage 3** (implemented the Holacracy management system as defined).

In the first stage, a part or sometimes even the whole organization is starting to practise Holacracy with Tactical and Governance meetings and using the role structure. Job titles are often still used, and authority is not always distributed or used. Along this stage, the organizations use dynamic or concrete fixed moments to reflect on the progress of implementation.

The second stage is characterized by unresolved strategies in the organizations which prohibits them to implement Holacracy in their management system. These organizations have sometimes implemented Holacracy in just a part of the organization or are not using the predefined ways to process tensions, lead meetings and using the governance software. Some organizations still use the old management structure where the owners or directors of the organization are operating outside the Holacracy management system to make decisions.

The organizations in the third stage have implemented Holacracy in their organizational management system as defined. This is characterized by the frequent changes of the roles, task and the circles in the organization. The Lead link roles have been passed to several members and the organizations are using specific application software like feedback software to review and compensate their members.
The more the organizations have seriously adopted Holacracy, the more purpose driven the organization becomes.

Among the organizations that participated, there is one organization that admitted they stopped using Holacracy. It was due to an employee-related issue.

5.3 Holacracy and Application software in organizations

Some of the organizations that participated told that their choices of using, modifying, deleting or creating application software have nothing to do with Holacracy. They argue that application software was often obtained before practising and implementing Holacracy.
The majority of organizations used Glassfrog for their governance software. It was easy to implement, it was advised by the Holacracy Coach and the software is made by the organization that created Holacracy and owns the trademark (HolacracyOne). On the other hand, the type of software were most organizations are negative about is governance software and especially Glassfrog. The price of the governance software and a lack of desired features, such as a better integration with other application software, are the most common arguments.

There is an increase in the need for specific application software such as feedback software, collaboration & project management software and organizing software. The organizations tell they use the feedback software to complement, review and/or compensate their members. The organizations that use this type of software are satisfied when using it, but also tell they want to modify the software or add new software that better fits the organization's needs.
A need to use collaboration & project management software, such as Trello, Slack and Asana is strong because the organizations told they work together to achieve their goals.
Organizing software is used in the organizations to work with the GTD method, which is incorporated in the Holacracy Constitution since version 3.0. It is often unknown in organizations which organizing

[43] See Chapter 2.2: What is Holacracy

software is used because the members are free to choose their own organizing software. The members are still encouraged to use organizing software but are not required to do so.
Some organizations were surprised that there is no real application software in the Holacracy App store.

5.4 Holacracy, Application software and roles in organizations

Some of the participating organizations were sceptical about researching the combination of roles and software. They were even more sceptical about researching role-based software. The arguments for their scepticism is they did not know what role-based software was, did not use ‘big’ role-based software products or experienced issues from organization members that changed one or more roles and could not access role-based software because of this change.
The organizations did however acknowledge that there were always role-related issues but also told they could solve these issues and found them of minor importance. Some mention they had a hard time to fix their role-related issues and in few cases could not solve them at all.

5.5 Holacracy, Application software and Identity & Access Management in organizations

For the discipline of Identity & Access Management and using Identity & Access Management related software types, the organizations are either in favour or against it. The organizations that are in favour of Identity & Access Management are using the practice themselves because it helps them to be and stay secure. These organizations use Identity & Access Management application software.
Organizations that are against Identity & Access Management tell they have no need to manage access because they are transparent to their members and want to extend this transparency to their customers. Some of the organizations say that in a Holacracy organization or other self-organizing organization, you need to be open, which means for them to provide and share digital access to data, application software and even networks and systems.

5.6 Conclusion to the qualitative results

The key results from the sub chapters are all based on the interview strategy, receiving information from a part of the participants in the research.

Implementing Holacracy
Holacracy is seen as a purpose-driven, problem solving management system that can be used to become a TEAL organization. Working with in an organization that use Holacracy provides freedom, transparency, responsibility and structure.
For the majority of organizations, implementing Holacracy is done using a Holacracy Coach. Most small organizations (<50 members) use a Holacracy Coach at least once while all organizations that have 42 or more members used a Holacracy Coach that helped them more than once. Dutch organizations often used the books Getting Teams Done (Janse & Bogers, 2013), Start with Why (Sinek, 2009) and The Lean Startup (Reis, 2011) as inspiration in their organizations. Implementing Holacracy can go quickly, in just a few weeks, to more slowly, needing more than a year. The organizations in this research are either in Stage 1, Stage 2 or Stage 3 of the Holacracy implementation process.

Application software
The organizations are most negative about governance software, and especially Glassfrog because of its price and a lack of features. On the other hand, the majority of organizations still use Glassfrog because it is advised by their Holacracy Coach, it is easy to implement, and it is made by HolacracyOne.
The software types in organizations that are needed most are feedback software, collaboration & project management software and organizing software. Especially the feedback software needs to be modified to suit the organizations’ needs. Organizing software is used frequently in the organizations to work conform the GTD method. Since organizations let their members specify which organizing software they use, it is unclear how many of them are using it and what software name they prefer.

Roles
Most organizations were sceptical about researching role-based software, since they did not know about it, did not use a big role-based software product or did not encounter issues with them. Role-related issues however were reported by the majority of organizations. Some organizations told that a few of their role-related issues could not be solved while other organizations told their issues could always be solved.

Identity & Access Management
Organizations are divided about using Identity & Access Management as a practice and its related application software. For the organizations that use it, security is their main argument. The organizations that do not use it tell that keeping transparency is their argument. In some cases, transparency is translated to open access and sharing access to their systems that includes their data, application software, networks and systems.

6. Conclusions

This chapter presents the summary from Chapter 2: Literature review on Holacracy, the conclusion of the results from the questionnaire in Chapter 4: Quantitative Results and the conclusion of the interviews with the participants in Chapter 5: Qualitative Results. The conclusions are combined to answer the main research question and sub questions.

6.1 Main findings

The main findings contain the answers to the conclusions and are ordered in the sequence of the sub questions.

1. What is Holacracy and how is it implemented in organizations?
Holacracy is a practice since people need to practise the processes, rules and structures of Holacracy to make it an integral part of their work routine in the organization. By performing these actions continuously, each member within the organizations contributes to implementing Holacracy in their organization's management system.
It means that when organizations use Holacracy in just a select part of the organization, Holacracy remains a practice and is not a part of the organizations management system since not everyone in the organization is able to use Holacracy's structures, processes and ruleset.

The practice of Holacracy is presented as dynamic, self-organizing and evolutionary. The current state of Holacracy, that is derived from the pages of the Holacracy Constitution, is less dynamic and evolutionary since suggested ideas, typos and 'bugs' that are targeted at changing the Holacracy Constitution are managed only by one individual.
Another argument why the dynamic and evolutionary aspect of Holacracy is limited, is the lack of adding and discarding management ideas, frameworks and principles in a new version of the Holacracy Constitution.

By the majority of the participants in the research, Holacracy is seen as a practice to lead a purposeful organization. Holacracy is used in their organizational rules, structures and processes and when dealing with tensions in their organization. Some of the participants also see that practising Holacracy is a way to become a TEAL organization (Laloux, 2014). The popularity of Holacracy has grown as the number of organizations worldwide that implemented Holacracy has increased each year since 2012.

Holacracy is implemented in the **majority of the organizations with the help of a Holacracy Coach**.
Arguments for this choice are the recommendation by HolacracyOne to use a Holacracy Coach, the advice from organizations that have implemented Holacracy and the recommendation from the books about Holacracy (Janse & Bogers, 2013; Robertson, 2015).
Organizations also argued they needed help and wanted to learn more about Holacracy from a Holacracy Coach since they found it to be complex and difficult to work with. In micro (<10 members[44]) and small-sized organizations (<50 members), a Holacracy Coach was used at least once and in medium-sized to large organizations, a Holacracy Coach was used more than once. Organizations that did not use a Holacracy Coach to implement Holacracy in their organization argue that hiring a coach was too expensive.

Organizations that are practising Holacracy are in **one of three implementation stages**:

- Stage 1 is for organizations that are just starting to practise Holacracy using primarily the Holacracy Quick Start Guide with the Holacracy Constitution.
- Stage 2 is characterised by organizations that are willing to implement Holacracy into their management system and are halfway in this process. Not all of Holacracy's ruleset, structures and processes are implemented at this stage. Stage 2 is also applicable to organizations that decided that Holacracy limits their organization and therefore are one using one or more of Holacracy's ruleset, structures and processes.

[44] Source : http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition/.

- Stage 3 applies to organizations that implemented the practice of Holacracy into their organizational management system as described by Robertson's whitepaper and book (2007, 2015). All of the structures, processes and ruleset of Holacracy are used and implemented in these organizations.

2. How is application software used in organizations that implement Holacracy?
Most of the organizations that practise and implement Holacracy use the specific software type **governance software** to manage their roles and organization's structure. The governance software that is used most is HolacracyOne's Glassfrog. Although Glassfrog is used most, the organizations that use it are unhappy about its price and lack of desired features.

More than half of the organizations that implemented Holacracy **added new application software** to work with. The software types that were added most are Collaboration software, Project Management software and Organizing software and with software names Trello, Slack and Asana named most.
It is noticed that the more the organizations are practising Holacracy, the more they need to define their processes. For example, when organization members are using the Holacracy role structure and are encouraged to frequently add, change and discard their roles, the organization should define a new process for compensation. With more processes defined, the need for new and often specific application software, like feedback software, increases.

More than a quarter of the organizations have **modified application software** during the implementation of Holacracy. The software types that are modified most are Collaboration & Project Management software, Governance software, Feedback software and Finance & HR software.
Asana, Trello and Glassfrog are the software names that are modified the most.

Owning **application software that became obsolete** was not the case for the majority of the organizations. The minority of organizations that experienced obsolete application software say that the software types Collaboration software and Project Management software became obsolete most.

Creating application software is something the majority of organizations did not do when they implemented Holacracy. The software types that the organizations created most were governance software and API's[45].
The majority of the organizations did not **contribute to the Holacracy App store**; an initiative from HolacracyOne to use organizations' governance proposals to create application software. Organizations were often unfamiliar with the Holacracy App store or were even aware of its existence.

3. How is application software used in combination with the roles in organizations that implement Holacracy?
Application software that supports the use of roles is called role-based software. Half of the organizations in the research told they do not use role-based software. However, the governance software that most organizations are using are role-based software. The question about the use of role-based software is not formulated as intended and is therefore invalid.

What can be concluded is that most organizations are unfamiliar with role-based software and how to use it. Arguments that validate this originate from the answers in the quantitative and qualitative results. These answers varied from being unaware that role-based software existed to using role-based software is not necessary.

Role-related issues are encountered by the majority of the organizations, but they are not related to application software. The most mentioned issues are role dynamics, accountabilities, role creation and working with Holacracy. For organizations to have role-related issues is common since the structures, processes and ruleset of Holacracy provide an environment in which encourages organization members to formulate and (collectively) solve their tensions.

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[45] Source : https://en.oxforddictionaries.com/definition/api.

4. How is application software used in combination with Identity & Access Management in organizations that implement Holacracy?
An above average part of the organizations did not implement the discipline Identity & Access management when they started to practise Holacracy. The percentage is skewed since 10 of the 38 participants answered they already had implemented Identity & Access management before they practised Holacracy in the follow-up question. This means that an above part of the organizations (57%) actually have implemented Identity & Access management.
The organizations that implemented Identity & Access management did it to be secure, to manage access, to use/achieve an ISO standard and to meet (non) organizational requirements. The software types that most organisations used to practise Identity & Access Management are Single Sign On, Password managers and Collaboration software from Google.

Organizations that did not implement Identity & Access management felt their organization was too small to use it or they wanted to continue being transparent to their members and customers (and using Identity & Access management would hinder that).

With the main findings answered, the answer to the first part of the main research question ('What effect does practising and implementing Holacracy have on organizations') is:
Practicing and implementing Holacracy in organizations drive changes by using Holacracy's structures, processes and ruleset. Practicing Holacracy, as recommended in the whole organization, the practice can be implemented into the organizational management system of organizations and change existing structures, processes and rules. Organizations that practice Holacracy can either be in one of three Stages of the implementation process.

The answer to the second part of the main research question ('And how does it affect their application software and Identity & Access Management? ') is:

- **Holacracy's change to existing structures, processes and rules in organizations leads often to needing new application software and sometimes to modifying new or existing application software.**
- **Organizations need governance software when they practise Holacracy to maintain and monitor their organizational structure, including circles and roles. The frequent changes of roles are not a problem in organizations if roles are updated directly in the organizations' Role-based software.**
- **Organizations are not required to use the discipline of Identity & Access Management and its related software when they practise Holacracy, but more than half of the organizations have implemented it.**

6.2 Recommendations

To let the practice of Holacracy be dynamic, self-organizing and evolutionary as presented (Robertson, 2007, 2015), measures are to allow users of Holacracy to implement changes such as typo's and 'bugs' to the Holacracy Constitution. The practice of Holacracy then truly offers its users a self-organizing way to evolve the practice.
To make the practice evolutionary, current management ideas, frameworks and principles should be allowed to be discarded and even replaced by new management ideas, frameworks and principles. The process of gradual development lets the practice of Holacracy use only the structures, processes and ruleset that work and allows the abandonment of the ones that do not.

For organizations that want to implement Holacracy, the help of a Holacracy Coach is crucial if organizations want it done as recommended by HolacracyOne. Hiring a Holacracy Coach is especially recommended when organizations have more than 10 members, since organizations of this size tell that due to their size and incomplete understanding of Holacracy, implementing Holacracy to their management system was achieved slower than expected or was even not achieved at all.
Even before organizations want to implement Holacracy, they should think about why they want to do it, how they want to do it. With that strategy, organizations could save time and create transparency. A good Holacracy Coach can help organizations to achieve this.

When organizations are implementing Holacracy, they should be prepared to add new application software and modify their existing and even new application software. Using new or modifying existing application software is needed to facilitate the changes that Holacracy brings to the organization's processes, structures and rules. It is recommended that organizations use role-based governance software such as Glassfrog, holaSpirit or Nestr to monitor their organizational structures, including circles, roles and tasks.

Organizations should be aware that practising Holacracy leads to dealing with role-related issues. It is no surprise as the practice of Holacracy let members use tensions to question existing processes, structures, rules, roles and responsibilities. Governance software is recommended to keep track of the role-related issues and solutions the members suggest and use.

Although Holacracy does not tell organizations to use specific processes, implementing the discipline of Identity & Access management is recommended for organizations. Since Identity & Access management provides organizations a set of structures, processes and ruleset that allows members to access data based on their roles and responsibilities, there is a large comparison to the practice of Holacracy.

6.3 Research limitations

The main findings and recommendations offer facts supplemented by solutions and measures.
To discuss the research and recommendations, the limitations of the research need to be addressed too.
The main limitations discovered before, during and after finishing the research are:

Participant's point of view and knowledge
By inviting only one participant per organization, the participant's answers and point of view can differ from that of other members in the organization and from a collective organizational point of view.
The limitation was noticed before reaching out to potential participants and could be corrected by inviting more participants from each organization. However, it would pose a conflict with the planning of the research and would also be a dependency to bring a specific set of participants together at the same time during video and telephone conferences.
The participant's knowledge to answer the questions of the questionnaire is also a limitation.
By explaining the conditions of the research using emails that followed up the first invitation, telephone conferences and video conferences, the risk of letting a member of an organization participate who did not have the right knowledge was reduced.

Linguistics
Reaching out to organizations that possibly practised Holacracy, the goal was to invite only Dutch organizations to participate. Due to lower response rate than expected, the search was broadened to possible Holacracy practising organizations worldwide which increased the response rate and at the same time posed a linguistic limitation. If the organizations had an English website, the linguistics were no problem. However, next to American and Dutch organizations were many French organizations that practised Holacracy. Since their websites were mainly in French and the author of this research is unable to read and write French, most of these organizations were not invited to participate. Translating French websites with Google Translate or finding a translator would be a solution but were not used due to time constraints.

Variance in questions
Most of the questions of the questionnaire show little variance, asking only to answer 'yes' or 'no'.
The questions were 'proof read' by three people who commented on the questions, but not on the technique used to formulate questions. Asking the reviewers to comment on the techniques used to formulate questions would have resolved this limitation.

Number of organizations
The actual number of organizations that practise Holacracy is unknown. Information about these numbers are derived from websites that encourage the organizations using Holacracy to sign up and websites that collect information on organizations using Holacracy. Still, the information on these websites is incomplete and sometimes outdated.
Even after cross referencing the information of these websites, that lay at the basis for the database created for the research, the exact number of organizations that practise Holacracy is not complete.

6.4 Discussions

Continuing from the research limitations, the first discussion to start is the need and necessity to create and maintain a database that contains information of all the organizations worldwide that are using Holacracy. I believe a database is of value for organizations to use this information for statistics, such as comparing organization sizes, locations and organization types. It can also be used as a reference, including contacts from organization and their experience of working with specific organizational processes.
Since the majority of organizations find it hard to use, practise and implement Holacracy, having access to information from organizations that experience or overcame the same challenge can help them by interacting with each other. The focus should however be on actualizing the information on organizations, adding new organizations starting with Holacracy and listing organizations that stopped using the practice.

A discussion to conduct before creating the database is how to define an organization that uses Holacracy. From HolacracyOne's perspective, an organization that implemented the Holacracy practice into the organizations management system would be preferred and ideal.
However, organizations are not constricted to use only parts of the Holacracy practice, such as the rules of the Holacracy Constitution, the organizational structure of working with circles and roles and having Governance and Tactical meetings. As seen in this research, some of the organizations that are in Stage 2 of the Holacracy implementation process actually experience limitations of Holacracy's ruleset, structures or processes in their organization.
It's interesting to discuss when organizations can use parts of Holacracy, can we still speak of a Holacracy organization and when not? Is it a set number of rules, structures and processes? Is it when organizations use HolacracyOne's Glassfrog governance software?

As the future of Holacracy looks promising since the number of organizations that are using the practice increased each year from 2012 to 2017, it is possible that organizations will create more **unique organization management systems**. These systems are not limited to predefined structures, processes and rules which allows organizations to create systems that are unique and different in each organization.
There are two causes that can contribute to this internal shift, starting with prime examples of organizations that stand out from other organizations like Semco, Valve and Morningstar.
These organizations are unique and often researched because they have alternative solutions for common organizational issues.
The principles these organizations hold were used to influence other organizations and movements such as the TEAL organizations and the Semco Style Institute. Using a principle-based approach to adapt the selected structures, processes and rules from these organizations instead of using a rule-based approach like Holacracy, organizations can create a unique organization management system that fits their needs and their organization's culture.
The second cause that can contribute to shift organizations towards creating unique organization management systems are Holacracy's ruleset, structures and processes. Medium and Bol.com are examples of organizations that felt limited by Holacracy and choose to use only some of the methods.
It can be interesting for HolacracyOne to find out which organizations felt limited when using Holacracy and particularly which ruleset, structures and processes did work, and which did not work for them. This information can benefit current and future versions of the Holacracy practice by truly using the evolutionary feature that HolacracyOne markets[46].

Organizations that want to create their own unique organization management system need help from a consultancy firm to change their organization. The firms that provide guided change courses to organizations and can deliver custom solutions that do not solely focus on Holacracy are the best fitted to choose from. The consultancy firms should however focus not only on advising about the common organizational and cultural aspects, but also on the legal aspect. Since the organizational forms are changing from traditional hierarchy management systems to self-organizing management systems and even hybrid systems (organizations that use both self-organizing and traditional hierarchy management practices), the traditional legal definition of an organization does no longer suffice.

[46] See Chapter 6.2: Recommendations.

The necessity to focus on the legal aspect of organizational change is that the changes to the organizational structures, processes and rules can pose challenges to examples like hiring & firing, compensation, partnerships, profit & loss distribution and selling an interest in or even selling the whole organization.

The final discussion is the acknowledgement that modern management theories are based on the research of organizations that used a traditional hierarchy management system. With the increase of organizations that are self-organizing or use a hybrid form to operate, existing and new theories should be tested if they apply to these organizations too.

6.5 Recommendations for further research

With the findings of the research, further research can be performed on the time it takes organizations to implement Holacracy with specific defined goals to achieve within a set time. The research would be useful to discover key findings during implementations that can be used in the documents needed to practise Holacracy. HolacracyOne and consultancy firms that help organizations to practise and implement Holacracy would benefit most from this research.

Another recommendation is researching why organizations have ended working with Holacracy entirely or just stopped using specific structures, processes or ruleset. It would be interesting and useful to see which parts of the Holacracy Constitution are not followed by organizations and for what reason.
The insight would be particularly useful for HolacracyOne to measure how organizations experience practising Holacracy.

Since the legal aspect of self-organizing, including Holacracy, and hybrid organizations have not been researched thoroughly, another recommendation for further research is aimed at this subject. It would be interesting to know if laws (per country) conflict with the structures, processes and ruleset of self-organizing and hybrid organizations. Current but especially future self-organizing and hybrid organizations would benefit from the insight of such a research by knowing the legal boundaries of such organizations but also legal policy makers, consultancy firms and HolacracyOne can use the information to point out these deficiencies and suggest alternatives.

The final recommendation for conducting an international research, based on the reflections of the research, is to include a cross cultural perspective like the GLOBE leadership management studies (House et. al, 2004). Using such a perspective, the impact of each country's culture can enrich a research as it reveals not only information about a subject, but also how it is perceived.

In addition to the recommendations, future researches can also benefit from this research by using a tool for their quantitative data that includes more choices in the answers and a test to validate that data. Reflecting on the research, the answers could have included more accuracy and variance if a Likert scale or similar tool was used. If Cronbach's Alpha was used to validate these answers and other data, the reliability of the research would increase even more. Due to inexperience and time constraints, these improvements have not been implemented in this research.

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Omar Sequera from EMPAUA, Spain.
Patrick Scheuerer from Xpreneurs Ltd., Switzerland.
Paul Clappers from FNKE, The Netherlands.
Philippe Pinault from talkSpirit and holaSpirit, France.
Quinten Gazendam from Smarthotel.nl, The Netherlands.
Rashid Gilanpour and Lori Rock from Encode.org LLC, United States of America.
Raymond Vellener from Brightin, The Netherlands.
Remo Rusca from VillageOffice, Switzerland.
René Santing from Devhouse Spindle, The Netherlands.
Rene van Beek from ONE15, The Netherlands.
Rick Kahler from Kahler Financial Group, United States of America.
Robert Annaars, Mariella Vrijhof, Tine Bieber, Candide van der Sloot from Oliver Valves Nederland B.V., The Netherlands.
Robert van Herk from Connectis, The Netherlands.
Roy Lim from Entalis, The Netherlands.
Simone Zeddeman from NL Healthcare, The Netherlands.
Stefan Faatz-Ferstl from dwarfs and Giants, Austria.
Stefan Wobben from Concept7, The Netherlands.
Tamar Biersma from Computer Profile & Fleet Profile, The Netherlands.
Tom Schenkenberg en Joni Overbosch form iBuildings, The Netherlands.
Tom van der Lubbe from Viisi & ViisiLabs, The Netherlands.
Tracy Simpson from Precision Nutrition, Canada.
Tyler Danke & Anna Pattermann from Purely Poultry, United States of America.
Xuan Wang from Rockstart, The Netherlands.
Yoko Malbos from euforia, Switzerland.

Glossary

The glossary in of the research provides definitions and descriptions of common used Holacracy terminology. Source : https://www.holacracy.org/glossary.

Accountability
An ongoing activity expected of a Role. Accountabilities can only be added to roles or circles via the governance process. They're captured as full sentences that begin with an –ing verb. For example, a "Website Manager" Role might have an accountability for "Building and maintaining the company's website."

Circle
A group of Roles that all contribute to the same Purpose. Every Circle has "core roles" (e.g. Facilitator, Secretary, Lead Link, and Rep Link) as well as other Roles doing the work. A Circle is treated like a Role with the additional authority to break itself down into sub-Roles.

Domain
Similar to a property right, a Domain centralizes control of a resource to a specific Role. For example, a "Social Media" Role might own the Domain of "corporate Twitter account." A Role may impact its own Domain to achieve its Purpose, but may not impact another's Domain unless given permission.

Election
An integrative process for selecting people to fill the Facilitator Role, Secretary Role, and Rep Link Role. Elections follow the Integrative Election Process that includes nominations and the processing of Proposals and Objections.

Facilitator
An elected Role with the purpose of facilitating the Circle's Governance and Tactical meetings in accordance with the rules of the Constitution. The Facilitator's Purpose and Accountabilities are listed in the Constitution's Appendix. Also, the Lead Link of a Circle is not eligible to be elected Facilitator for that Circle.

Governance
An explicit, written set of rules and expectations including the Circles, Roles, Purposes, Accountabilities, Domains, and Policies of the organization. The organization's Governance changes in response to the demands of the environment through the processing of Circle member's Tensions during Governance Meetings.

Governance Meeting
A recurring meeting to process Tensions related to the Circle's Governance by making Proposals and raising Objections. Changes can be made to the Circle's Governance by creating new or making changes to existing Roles, Policies, and Elections. Governance Meetings follow the process outlined in Constitution section 3.3.

Holacracy Constitution
The documents that defines the fundamental rules, processes, and other constructs of the Holacracy system for organizational governance and operations. Within an organization running Holacracy, the Constitution is the formal power-holder in the organization rather than a specific person (e.g. CEO, President, etc.)

Lead Link
A Role that holds the Purpose of the overall Circle. The Lead Link is responsible for assigning people to Roles that have been created through Governance Meetings. The Lead Link also allocates resources and defines Priorities, Strategies, and Metrics within the Circle.

Metrics
Data chosen by the Circle's Lead Link to provide visibility into the work of the Circle. For example, a Metric for a "Social Media" Role might be "Number of Twitter followers." It is up to the Lead Link of the Circle to define and assign relevant metrics to the Roles within that Circle.

Objection
An Objection is a reason why a Governance Proposal will cause harm or move the Circle backward. A Circle member raises an Objection during a Governance Meeting when that member experiences a Tension in response to the Proposal.

Policy
A Policy allows or limits others from impacting a Domain. For example, if a "Social Media" Role owns the Domain of "corporate Twitter account" then a Policy might be enacted to allow an "Events Promotion" Role to make posts to Twitter (e.g. "Events Promotion has permission to post events-related content to the corporate Twitter account").

Project
A Project is a specific outcome that requires multiple and/or sequential actions to complete. Projects are phrased in the past tense as in, "Budget report completed." All Circle members are required to capture and track Projects for their Roles in a tangible form and to regularly review and update them.

Proposal
A recommended change to the Circle's Governance presented by a Circle member during a Governance Meeting. A Proposal is based on the proposer's felt Tension and may involve as many parts as necessary to resolve that Tension.

Purpose
Clarifies the identity and intention of a Role or Circle. The Purpose orients the action of a Role even absent any other explicit Accountabilities, Policies, Strategies, Priorities, or resources.

Rep Link
An elected Role used to represent the interests of a sub-Circle to its super-Circle. Also note that the Lead Link of a Circle may not serve as the Rep Link of that Circle. Rep Links allow Tensions from the sub-Circle to be processed by the super-Circle when the issue seems to extend beyond the sub-Circle's current authority.

Role
An organizational entity used to define certain functions of the organization. The definition of a Role includes a Purpose to express, Domain(s) to control, and Accountabilities to perform. The only way for a Role to be created, revised, or destroyed is through the Circle's Governance process.

Secretary
An elected Role with the Purpose of aligning Circle Governance and operations with the Constitution through maintaining Circle records, scheduling meetings, and interpreting Governance upon request. The Secretary works actively and collaboratively with the Facilitator during Governance and Tactical Meetings.

Strategy
An easy-to-remember rule used to guide Circle member's decisions. A Strategy defines one potentially valuable activity, emphasis, or goal over another. The Lead Link is accountable for defining the Strategies of the Circle and may use whatever process he/she feels is appropriate for gathering input from other Circle members.

Tactical Meeting
A recurring meeting for Circle members to surface operational data, updates, and triage Tensions into Projects and Next Actions. Agenda items are created during the meeting while the Facilitator works to get through all items in the allotted time. Tactical Meetings follow the process outlined in Constitution section 4.2.

Tension
A person's felt sense that there is a gap between the current reality and a potential future. The Circle processes member's Tensions during its Governance and Tactical meetings. This approach ensures that Governance and operational changes are driven by real experience rather than theory.

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Application software – Collaboration

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Appendix

A. Microsoft Excel: Questionnaire

Template-Survey-Fina
l-20170706.xlsx

The Microsoft Excel document contains the layout and the questions used in meetings (personal meetings, telephone- and video conferences) with the participants. This document is also used to create the digital SurveyMonkey questionnaire. All completed questionnaires used in personal meetings, telephone- and video conferences were uploaded to SurveyMonkey to gain consistency in the research process and to provide as a back-up with Cloud technology.

B. SurveyMonkey: Questionnaire

SurveyMonkey_11726
8321.pdf

The SurveyMonkey questionnaire is a copy of the Microsoft Excel questionnaire, with the added feature that it is digital, web-based and contains images. The questionnaire was available to the participants from May to August 2017.

C. Microsoft Excel: Data matrix

Due to confidential information, the Data matrix is not included in this version.

The Microsoft Excel Data matrix is based on an Excel document from the SurveyMonkey research website that contained all the questions and answers from all participants in the research. The Data matrix included extra information, such as the locations, contacts and organization types to create variables for the data analysis process.

D. Invitation letter to participants

Invitation-letter-partic
ipants-20180428.docx

The invitation letter was sent to potential participants to encourage them to respond and either take the questionnaire, participate in a personal meeting, video conference or a telephone conference.

E. Holacracy Governance Meeting process

Governance-Card-5.5
-2018.pdf

The Governance Meeting Card from HolacracyOne contains two cards that can be used as a reference in a Holacracy Governance meeting. Source : http://www.holacracy.org/governance-meetings.

F. Holacracy Tactical Meeting process

Tactical-Card-5.5-201
8.pdf

The Tactical Meeting Card from HolacracyOne contains two cards used as a reference in a Holacracy Tactical meeting. Source : http://www.holacracy.org/tactical-meetings.