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"Experiments on flat collaboration architectures"

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Abstract

More and more organizations are turning themselves away from authoritarian management styles and experiencing the benefits of forming collaborations. Agile teams, non-hierarchical organizations, “holacracies”, inter-departmental collaborations as well as inter-firm alliances hereby represent important examples of such alliances between organizations. The increasing awareness of this topic raises the question how successful collaborations can be fostered. The thesis addresses this research gap and aims at finding out if a certain tool helps groups to organize themselves and, more importantly, if they are able to successfully solve tasks independently. For this purpose an experiment has been conducted to test the effectiveness of this tool. The findings clearly show that groups that make use of such a tool perform better than those who do not. Statistical analyses also appear to support this hypothesis.

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1 Introduction

This chapter focuses on the personal motivation for writing the master thesis as well as the relevance of the topic of collaborations itself. It then continues with defining the aim of this thesis and with analyzing how the thesis is structured. The first chapter should therefore guarantee a good first impression of the importance of collaborations in organizational studies.

1.1 Motivation

My personal motivation for writing my master thesis in the field of Strategic Management can be seen as diverse. On the one hand I have done my major courses in Strategic Management at the University of Vienna and within that I have had the possibility to get in touch with so many interesting topics especially concerning the design and culture of organizations and with regard to that possible ways to lead and manage them. An important aspect that I could also learn during these courses was how organizations have changed in the last few years, the reasons why this has happened and within that also how the process of decision-making has changed in the past. During my major courses I have also had the possibility to gain insights on how to design a model, how to develop hypotheses and finally also how to conduct an experiment and to interpret the corresponding findings.

On the other hand it is also a very current topic that definitely needs to be explored deeper. All of these factors have waken my interest in doing my own research on this topic and encouraged me to write my master thesis in that field.

1.2 Relevance

Within the past decades organization theories have changed a lot. As a consequence many approaches have been made to analyze these changes. Novel organizations such as Open source software development and Wikipedia emphasize the importance of collaborations for organizations instead of relying on authority and show us how successful collaborations can be made (Puranam, et al., 2014). There are various factors that have been analyzed to be crucial for the success of collaborations. These include key characteristics such as motivation, communication, diversity, sharing, support as well as problem solving (Salonen, 2012). Despite the fact that much effort has been taken to examine

new forms of organizations there are still many possibilities for further research (Puranam, et al., 2014).

1.3 Aim

The aim of my master thesis can be divided into two parts. First I want to give a detailed overview of how and why the structure of organizations has changed dramatically in the past few years. Within this I want to present the key factors that have led to that shift in organizational theory and sum up the most important findings.

Second I want to analyze the factors that determine how effective flat collaboration architectures can be fostered. An extensive understanding can be guaranteed by first describing what collaborations are, why we need them and what makes specific collaborations flat and in a next step by analyzing a variety of examples of such alliances. The more important and also the largest part of this thesis then deals with the research question I aim to answer which is: "What are the effects of a flat collaboration architectures directory application on flat collaborations and how can they be fostered?". To be able to answer this question in the most profound way I will conduct an experiment in order to be able to test the underlying hypothesis and in a next step sum up the most important findings. Within this step especially the differences between the groups that were equipped with such a directory and those who were not will be presented and analyzed. Moreover a statistical analysis will be made to determine whether there are significant results or not.

1.4 Structure of the thesis

The thesis is structured as follows: First I will start with a short introduction about the definition of collaborations and with regard to this will describe the most important findings that have been generated in the past few years about the question how organizations have changed and how collaborations as we know them today have emerged. In this regard I will also present the models of collaborations and will then explore the differences between open and closed collaborations as well as the differences between flat and hierarchical alliances. Then I will analyze the key factors of collaborations and describe the factors that define a successful collaboration. After that I will present a variety of selected examples of collaborations such as agile teams, "holacracies" and inter-firm

alliances that have gained increasing attention in the past few years. In the last steps I will emphasize the setup of the experiment, the different requirements on the experiment and its findings to be able to answer the question how effective flat collaboration architectures can be fostered. This also involves analyzing the underlying statistical as well as the demographic data that has been collected through the questionnaire at the end of the experiment and present differences between the treatment groups and the control groups. Finally I will give a conclusion presenting the most important findings that have been generated during the experiment and give answers to the research question.

2 Definition and background

This chapter deals with the definition of collaborations. It will be explained what collaborations are, what they do, what exactly makes them flat and how they have emerged. With regard to this a short historic overview will be given.

2.1 What is a collaboration?

Before analyzing the complex constructs under which collaborations are able to work effectively a definition of the term collaboration seems inevitable. In the literature a collaboration is defined as the action of members of an organization working together in the absence of market or hierarchical instruments of control. But it is not just some kind of organizational action. According to this definition there are three key features of collaborations: First they happen to be interorganizational. Second collaborations are not affected by any changes in the market. And third there are no hierarchical constraints that control the way collaborations work so their members are more or less autonomous (Phillips, et al., 2002). An important aspect of collaborations is also the fact that they strongly rely on the cooperation between all members (Hardy, et al., 2005).

Often words like joint ventures, partnerships or teams are used as synonyms for the term collaborations. All have one thing in common which is signalizing a connection between two individuals or parties such as people or organizations. With regard to this it becomes vital that all participants agree on and have knowledge about the nature of the alignment in order to manage its complexity (Gajda, 2004).

These alliances are an ongoing process and must develop over time. This means that a collaboration begins as a cooperation where information is exchanged and then eventually evolves into a stage of coordination where tasks are aligned. In a next step actual collaborations begin to develop where participants work together to pursue the same goal. The last step refers to the development of a coadunation where not only the structure but also cultures are aligned (Gajda, 2004).

The last important assumption on collaborations is that individuals are as relevant as the process itself. Mutual trust as well as a good relationship between all members of a cooperation are distinct

because these characteristics build the basis for a successful collaboration. Individual as well as emotional relations are necessary instruments to form such partnerships. Also trust plays an important role in that because it can only be built if participants of a network are personally involved and as a result also dedicate their time and effort to the alliance (Gajda, 2004).

2.2 Why collaborations?

There is a variety of motives why people in an organization collaborate. On the one hand an effective collaboration is certainly able to produce favorable outcomes and on the other hand can also lead to cost efficiencies. Especially in the first phase of an initiative collaborations can contribute to cut costs regarding the research or training because these costs are distributed between its parties. Another reason why people choose to work together is the broader access to different services. If clients have a certain problem it can be beneficial to bring together all knowledge from agents to be able to solve it adequately. This approach especially occurs in human service agencies when joint ventures are needed to meet the needs of the customers. Consequently this approach also contributes positively in terms of a less complicated and more rapid approach to such services (Mattessich & Monsey, 1992).

Another important reason why people choose to collaborate is to combine knowledge and resources in order to achieve innovative outcomes. Also the possibility of penetrating new markets or coping with social difficulties represent important factors that encourage the development of different collaborations (Hardy, et al., 2005). In this regard another reason for the emergence of such alliances is the possibility of gaining new skills and capacities that support each other while ensuring agility. With regard to this collaborations also contribute to a higher level of innovation and offer the possibility of sharing risks (Camarinha-Matos & Afsarmanesh, 2006).

2.3 Models of collaborations

A collaboration can be divided into two different forms namely participation and the governance of a collaboration. In terms of participation one can further distinguish between an open and a closed collaboration. Regarding the governance of a collaboration it can either be flat or hierarchical (Pisano & Verganti, 2009). These forms will be further discussed in the following.

2.3.1 Open versus closed collaborations

The question whether an open collaboration is needed or not is dependent on the number of participants that are needed to solve a certain task. In this regard an open collaboration can be quite large while closed collaborations are usually smaller. Deciding to go for a closed collaboration implies that there is sufficient expertise to solve a specific task as well as that the right participants for this job have been chosen. So the source of wisdom and the right people play an important role when deciding between an open and a closed collaboration (Pisano & Verganti, 2009).

An open collaboration on the other hand offers the possibility to gain a high number of participants and, in turn, is able to generate a great amount of different ideas. Within an open network it is not crucial to know its participants very well. In this regard not knowing its members can have many advantages especially for the creation of very innovative ideas. Open networks on the other hand also show some disadvantages. One disadvantage lies in the fact that open collaborations are not as good at finding the best participants for a job as closed ones. This is the case because with a rising number of contributors in a project also the possibility that the idea of a certain member will be chosen decreases a lot. An open collaboration is therefore favorable when the gap between the optimal solution and the average solution is at least moderate and when there are no dramatic outcomes of failing to get a more favorable solution (Pisano & Verganti, 2009).

According to this choosing an open collaboration over a closed one means that the screening of different ideas is achieved in a cheap way and that participating does not impose any severe difficulties. In order to fulfill this last requirement it is crucial that a task can be divided into subtasks to make it possible for participants to work on their own. In this regard it has become easier for contributors to do so because of the emergence of information platforms which has enabled them to share their ideas and also to see the projects of others (Pisano & Verganti, 2009).

2.3.2 Flat versus hierarchical collaborations

Concerning the governance of a collaboration it is necessary to determine who makes the decision. In the case of hierarchies a certain company gets the right to decide and therefore also to guide the project into the right way. In flat collaborations an agreement is made together or at least in a

decentralized way. Of course this imposes a great amount of advantages such as pooling the risks or challenges (Pisano & Verganti, 2009).

A hierarchical approach is especially useful if an organization possesses the resources for screening the different options. A flat collaboration on the other hand is needed if the organization lacks these resources to make such an informed decision (Pisano & Verganti, 2009).

There is also a correlation between the governance of a company and its competence in generating new ideas. Such outcomes are more likely to be produced by large organizations as they possess a variety of resources for this purpose. Consequently such companies are also more likely to successfully deal with complex questions (Baldwin, 2010).

2.3.3 Other important aspects

In each case either with issues concerning openness or with governance-related questions it is necessary to provide the right incentives. This encompasses monetary as well as non-financial compensation. Besides extrinsic rewards there are other strong incentives such as reputation or personal fulfillment that imposes a high reward for the contributors. But every member is different and so are the incentives that are needed to push each participant to make a valuable contribution (Pisano & Verganti, 2009).

However there are other factors that also influence the decision of the right approach such as the strategy of an organization and the capabilities a firm possesses. Furthermore to make a collaboration work there is need to analyze possible potential of such alliances. Also the factor time plays an important role for the right mode of a collaboration. The best model of collaborations for each individual firm can change from time to time as sometimes the strategy of an organization does too. One factor that causes this ongoing development is the change in challenges for an organization. Also a combination of different collaboration models can be possible. Hence the right kind of collaboration always depends on the underlying circumstances (Pisano & Verganti, 2009).

2.4 Historic background and recent findings

More and more organizations are experiencing the benefits of a number of collaborative arrangements such as alliances or networks (Hardy, et al., 2005). A strong motivator for the emergence of such collaborations represents the technological progress in the past 50 years. Because of the rise of technology virtual as well as mass collaborations saw their possibility to emerge (Zammuto, et al., 2007). Such collaborative networks seem to bring an important change into a society that is mostly built around knowledge. But those collaborations have also arisen out of the fact that society has changed a lot in the past. For example decreased commercial barriers lead to better opportunities to acquire goods and on the other hand to an increased request for quality and diversity for customers. As a matter of fact also competition between firms rose a lot during that time. Due to that cause integrated supply chains as well as virtual companies began to emerge (Camarinha-Matos & Afsarmanesh, 2006).

Consequently also organizational theory has changed a lot in the past. Due to the fact that more and more alliances and networks develop organization theory saw itself changing its focus from a paradigm-driven to a problem-driven research (Davis & Marquis, 2005).

As a matter of fact also the design of organizations has changed a lot. Organizations have formerly been investigated by various groups of people such as sociologists very detailly and full of rich characterizations. Nowadays especially new designs of organizations seem to stand in the focus of investigators due to ongoing changes (Miller, et al., 2009). One important way how this investigation could be improved is by contributing more practically. Also most organization theories should make progress in terms of broadening and intensifying their investigations (Greenwood & Miller, 2010).

Nowadays an attempt is also made to explain these changes in terms of the four fundamental problems of organizations namely task division, task allocation, reward distribution and information provision. Organizations have been compared to other firms that pursue the same goal to be able to find out if there are differences in the way these new organizations respond to the four fundamental problems and what appears to be generally new about them (Puranam, et al., 2014).

3 Key elements of a collaboration

There are six key factors that appear to be crucial for the success of collaborations. These include motivation, communication, diversity, sharing, support as well as problem solving (Salonen, 2012). In the following they will be discussed in detail.

3.1 Motivation

In general to foster effective collaborations it is necessary that all members of that alignment are certain that they get something out of the alliance or that their contribution is meaningful (Salonen, 2012).

In a collaboration members often see themselves embodying two identities: On the one hand each participant stays himself or herself with his or her own personality. On the other hand, however, people that decide to work together also often see themselves as a collaborative identity. Consequently this requires a balance between personal interests where participants try to fulfill their own objectives and the interests of the group whose objectives need to be reached. To overcome this obstacle it needs to be ensured that individual and collective goals align and that reciprocity is given (Thomson & Perry, 2006).

In this regard there are two parts of intrinsic motivation that can foster someone's personal commitment to a collaboration. On the one hand there are individual aspects and on the other hand interpersonal aspects. Concerning the former it is important for members of a team that they are determined to the collaboration and that they have the feeling that they do something meaningful. In this regard doing something meaningful refers to the feeling of a team member that his or her contribution has a purpose. Being determined on the other side is about the ability to make a voluntary decision on whether to contribute or not. On the other hand interpersonal factors are about the belief of a team member that he or she will do well at a task and about the feeling that the personal commitment is vital for the success of the project. All these factors explain why individuals decide to work together to produce something great without gaining extrinsic rewards (Zhang & Zhu, 2006).

But also the job they do has to impose a variety of different factors in order for team members to be motivated. The intrinsic motivation of employees tends to be especially high when feedback is provided and also in jobs with great independence (Hackman & Oldham, 1976).

3.2 Communication

The rise of information technology has brought many positive changes to the way how people coordinate their actions in an organization. While the development of computers contributed to diminish coordination costs as well as to a better quality and rapidity concerning coordination issues it has also lead to massive changes in the field of communication. As a matter of fact the emergence of information technology and its manifestations such as electronic mail helped to decline communication costs and ensured a more effective way of collaborating as well as contributed to a better information exchange (Malone & Rockart, 1991).

An important driver for a successful communication within a group is the way of communicating. In fact the style of talk represents a key driver for the success of a collaboration. These factors are crucial for the development of emotional energy within a group. If an alliance has to succeed two styles of talk are crucial: First a talk that underlines the similarities between the members of a group. This can be achieved for example by creating an atmosphere where all members of a group are equally important. Second also a talk is needed that is used to underline a member's individual positions and to show that the private interests are aligned with the interests of the company. This plays an important role in guaranteeing that the interests of all stakeholders are taken into account. Both ways of talking play a crucial part in the accomplishment of the goals and are equally irreplaceable (Hardy, et al., 2005).

But also information concerning the alliance should be communicated correctly. This enables its members to make a choice if they really want to join the alliance or not (Salonen, 2012).

3.3 Diversity

In order for an alliance to succeed it is crucial that its members display a variety of skills and expertise to secure the diversity in a team (Salonen, 2012). This is especially important for companies in a

sense that diversity can be a strong driver for efficiency and quality. By bringing together the power of individual members of a collaboration synergies can be deployed. Besides some key factors that a team should possess such as pursuing a common goal it can be beneficial to also make sure that participants have various skills because this could be a driving force for greater performance and innovations. Therefore a team should be as heterogeneous as possible (Holtzman & Anderberg, 2011).

3.4 Sharing

On the one hand the act of sharing refers to the sharing of a purpose. This can be mostly achieved through trust and solidarity that hinder egoistic actions. With regard to this sharing also refers to the position of a company and the factors that drive its success. A shared purpose has an impact on all levels of a company. Unfortunately it is often difficult to specifically define the purpose that everyone in the company shares because that purpose can be extremely diverse starting from simply meeting financial objectives to satisfying the needs of customers (Adler, et al., 2011).

On the other hand sharing also refers to common values when working together. This approach is not just about everyone making their work done as individuals, it is more about working together as a team and adding value to a shared good (Adler, et al., 2011).

Another aspect of sharing is the sharing of knowledge. Firms gain a competitive advantage by forming alliances between firms and sharing knowledge about technology or pooling management skills. This accumulated knowledge helps companies to differentiate from firms that do not align with others (Sammarra & Biggiero, 2008).

Another meaning of sharing in terms of collaborations represents the exchange of resources. These especially include money or time. As a result coordination is needed in order to manage those resources. This is especially important for companies in the way that people who are in the possession of those resources also tend to be more powerful. A good way to address this problem is through the implementation of a coordinator who is in charge of such decisions (Malone & Crowston, 1993).

But sharing also refers to building a collective identity and focuses on common attributes among its participants. Concerning organizational issues collective identity can be described as convergent attitudes of participants on certain aspects of the organization. These namely have an impact on the way participants feel about and react to organizational matters (Hardy, et al., 2005). There are certain actions that can encourage organizational identity. These include rituals or practices for that purpose. Beyond that organizational values can also lead to employees recreating themselves (Dutton, et al., 1993). On the other hand collective identity can also contribute to actually taking specific actions such as enhancing or diminishing a member's commitment to a company or encouraging others to collaborate. Consequently a collective identity represents a key factor of the success of a collaboration (Hardy, et al., 2005). But culture affects also other organizational fields such as loyalty and the possibility of attracting new participants. Consequently organizational culture has an impact on various company's stakeholders (Warrick, 2017).

Lastly, the term sharing also refers to the ownership of ideas. Certain group members must be rewarded for their input, however it is vital to discuss questions concerning intellectual property in advance (Salonen, 2012).

3.5 Support

If an alliance has to succeed it is crucial that its members support each other even when they face severe problems (Salonen, 2012). In order for participants to trust in the collaboration they need to be sure that the group shows enough competency to fulfill a certain task. The more people in a collaboration trust in the team's capabilities the better the performance will be. This is specifically the case if the actions of participants are connected to each other. One way to create trust can be through cooperation (Chiocchio, et al., 2011).

Another reason why trust is so important in an alliance is the fact that trust makes the coordination between team members easier. This is necessary because the more trust participants have in each other the greater the possibility for a participant to cooperate and, more importantly, to exchange information with others in the group. This also, in turn, contributes to better results (Chiocchio, et al., 2011).

3.6 Problem solving

In order to foster effective collaborations it is necessary that the members of a group address upcoming difficulties together (Salonen, 2012). With regard to this it is also more beneficial to form heterogenous groups. If members of a collaboration are diverse the possibility of gaining better and more inventive results is higher compared to groups that are homogeneous (Hoffmann, 1959).

4 Examples of collaborations

This chapter deals with selected examples of collaborations. These include agile teams, non-hierarchical organizations, "holacracies", inter-departmental collaborations and inter-firm alliances (Puranam, et al., 2019). In the following they will be presented in detail.

4.1 Agile teams

The term "agile team" is a relatively new one in the field of software development. Agile teams refer to a group of people with high expertise working together independently to produce something. An important factor that represents a key component for agile teams is the fact that they are not so much focused on controls but more on responding to changes while working on a task. Also in agile teams participants are more focused on creativity. Agile teams are based on certain principles such as an informal communication or flexibility. Deciding for agile teams of course can require certain changes in management style or in the culture as an agile team relies strongly on the interactions between its participants. As a result feedback and communication represent crucial elements (Moe, et al., 2008).

Another important characteristic is also the division of leadership and decision-making. Although there is a project manager that is in charge of everything participants are able to contribute if they have enough skills. In this regard the leader has to put together a team and is in charge of certain aspects of the project as communicating the vision. The group should also be as small as possible to be able to lead the project to great success. An ongoing training is also an important part that determines how well a collaboration will work (Moe, et al., 2009).

Besides the size of the group there are various other factors that need to be considered in order to put together teams in the most profitable way. These include aspects such as diversity and time. Diversity and personality can lead to turnover and decline productivity if some of the participants in the group do not have the qualities that are necessary to work with other participants in a group. It is also beneficial to put together experienced and inexperienced participants in a group in order to ensure not only knowledge but also flexibility. Also a mix of technical and collaborative expertise tends to represent key conditions for successful alliances. On the other hand the composition of a group seems to be an important driver for enhancing communication. Also privacy and recognition seem to be

vital. With regard to time it also seems that working full-time is an important factor to ensure group focus. On the contrary working part-time makes it difficult to be up-to-date with the progress of the project (Melo, et al., 2013).

Mutual trust and respect between group members are necessary for an agile team to succeed. Also the leader has to trust in the capabilities of the group to finish their parts in time. In this regard trust also refers to letting go great parts of control. Through specific actions this trust can be strengthened. Especially in the field of software engineering methods like pair programming can encourage trust between co-workers (McHugh, et al., 2012). With regard to that also the difficulty of the task plays an important role. If the task is too easy or too difficult to solve this could influence the willingness to collaborate (Melo, et al., 2011).

4.2 Non-hierarchical organizations

There is a variety of trends that have contributed to the emergence companies that are less hierarchical. The first one represents the technological progress. Due to the increasing uncertainty different requirements are needed in order to respond to changes in the needs of clients. The second trend that has been observed is related to the emergence of a knowledge economy where ideas are more important than supplying products. This generation of ideas cannot be done alone but instead requires a collaboration between many participants. The third trend has resulted out of wish for individual fulfillment. This can be lead back to the millennials that had different requirements for the job they do such as gaining control. Consequently also hierarchy had to be adapted (Lee & Edmondson, 2017).

This need for changes in hierarchy resulted in the emergence of a number of new institutions. One of them represents the development of autonomous groups that got empowered with authority. Also the creation of participatory management can be seen as improvement due to the possibility of employees to take a part in work-related issues. With regard to this there have also been employee initiatives that allow people throughout the organization to be part of the decision process. Also so-called “organic” models that rely more on horizontal interactions seem to represent a new form of

hierarchy. Each of these cases seem to have one thing in common, that is decentralized authority (Lee & Edmondson, 2017).

One example that is best known for such a decentralized authority is Wikipedia. Wikipedia represents the largest free encyclopedia and encompasses approximately 100,000 unpaid participants. The people that work for Wikipedia do so either because of connecting socially, because they want to be part of something or simply because it is entertaining. With regard to this everyone is able to contribute to Wikipedia regardless of his or her experience. Many people can contribute to the same article at the same time. This is the reason why there are also pages where people get the possibility to communicate and to coordinate their actions. In order to manage the growing amount of participants as well as to maintain the high standard there was need for an administrator. In the case of Wikipedia it has been shown that the role of the administrator is desired and that this does not have a negative influence on the motivation of its members (Klapper & Reitzig, 2018).

4.3 Holacracies

With the new developments in both information and telecommunication also collaborations began to emerge and saw the rise of new organizational designs that aimed to replace top-down management styles and to improve the agility in companies. The so-called "holacracy" organization model was developed. Various mainly technology-based firms began to adopt this system. As one of the first companies Zappos, an online retailer, made use of the "holacracy" organization model (Van De Kamp, 2014).

The term "holacracy" is hereby related to a new method of structuring a company and an alternative to traditional hierarchies. Rather than relying on a top-down management style power is equally allocated between all members of the firm which results in more freedom for members in order to achieve the goal of a company. There is a number of key factors that help distinguishing between traditional firms and "holacracies". First of all in "holacracies" not only the objective of the company but also the objective of each group and each participant are coordinated. This encourages each member of the organization to work towards the goal of the company. Second "holacracies" ensure that the company is able to react fast to changing circumstances. Another core factor represents the

fact that their rules represent an alternative to traditional hierarchies and enable transparency within the company. Finally in "holacracies" also the different roles of the participants seem to be transparent (HolacracyOne, LLC, n.d.).

The term "holacracy" also refers to a technology that affects the way of making decisions. It stands for an adaptable institution and a place where authority is shared. A "holacracy" is typically composed of independent groups that are often named "circles". A "holacracy" is also not about not having any hierarchy at all, it is more about relying on a hierarchy that is created naturally. Also the absence of job titles is an important factor. In contrast to agile teams "holacracies" rely on roles that develop when they are desired. It is possible for members of a circle to have numerous roles. Also decisions are made and leadership is shared by the whole company. A "holacracy" seems to represent some kind of an open network where members should be able to find opportunities to make the company better. With regard to this regular meetings are necessary to exchange information and also to discuss the required roles. In general one person from each circle who is chosen come together to discuss and secure that the interests of all parties are considered. In this regard an important aspect represents the fact that results are achieved through consent and offers the opportunity for fast feedback. Moreover information is exchanged through the whole company. The structure of a firm also changes with the opportunities it faces (Van De Kamp, 2014).

4.4 Inter-departmental collaborations

For many organizational processes the engagement of more than one department of a company is needed which makes it necessary to exchange knowledge (Kock, 2000). An interdepartmental collaboration hereby refers to the eagerness of departments to collaborate (Kahn & Mentzer, 1996). In general such collaborations are limited in time and members have to deal with a lot of pressure (Holland, et al., 2000). Deciding to collaborate initiates the need of having the same vision as well as the same objective. These processes are in general intangible and are strongly connected to each other (Kahn & Mentzer, 1996).

However there is a number of obstacles that are likely to make cross-functional collaborations more difficult. These especially derive from problems concerning conflicting individual or firm objectives,

uncertainties regarding responsibilities or priorities as well as the not being able to work together (Holland, et al., 2000). Managers can facilitate an integration through the development of programs to help departments to collaborate. Due to the fact that the majority of the collaborating activities are usually strategic also processes have to be altered in order to guarantee the willingness of as many departments as possible to participate (Kahn & Mentzer, 1996).

4.5 Inter-firm alliances

In the past there have been changes in the rivalry between companies due to the enhancing globalization. Consequently many organizations faced difficulties with developing competitive strategies and maintaining their competitive advantage. Due to the expanding market it becomes more and more difficult to be a leader (Das & Teng, 1996). Moreover this progress made it indispensable to distribute not only knowledge but also technological capabilities between firms (Mowery, et al., 1996). Even small companies that used to solely serve local communities more and more face the need to become globally competitive (Etemad, et al., 2001). One possibility for companies to solve this problem is to collaborate with other organizations (Das & Teng, 1996).

Especially small companies can reach the possibility to emerge globally through the collaboration with large organizations which, in turn, can benefit from the outsourcing of certain processes to small companies (Etemad, et al., 2001). As a result inter-firm collaborations have gained popularity (Das & Teng, 1996). It is also distinct that the relationship between the companies is interdependent in order to be beneficial for both sides (Etemad, et al., 2001). This interdependence also encourages organizational learning and, as a result, enlarges the competencies of a company (Powell, et al., 1996).

Inter-firm alliances can hereby refer to a number of different collaborations such as joint ventures or technology licensing. It can furthermore be distinguished between collaborations that involve equity and those who do not. In this regard the former suggests that some sort of equity changes from being in the possession of one firm to being in the possession of another firm whereas in the latter no equity is distributed at all. Equity can either be distributed through purchasing parts of the other company or through creation of a whole new business (Das & Teng, 1996).

Along with these alliances also come different risks. On the one hand there is relational risk. This refers to the risk that one or both companies are not as involved as desired and therefore do not fully participate to achieve their common goal. On the other hand there is performance risk. This refers to the risk that all parties entirely dedicate themselves to the coalition but do not manage to pursue their goal. An example for this includes operating in a new market where companies cannot only rely on their expertise about markets they are already familiar with. Examples for performance risks include international risks as well as technological risks (Das & Teng, 1996).

5 Fundaments of the experimental setup

This chapter focuses on the experiment on flat collaboration architectures. First the model will be described. Second the underlying hypothesis will be presented. In the last step it will be explained how the hypothesis was tested as well as the different stages and the scoring system of the experiment.

5.1 Model

In the used model it is supposed that a flat collaboration architectures directory application prior to task completion has a positive impact on the performance of the group. Here the step-by-step instruction is the independent variable whereas team performance represents the dependent variable.

5.2 Hypothesis

The hypothesis that results from the underlying model is the following:

H1: Groups that apply the flat collaboration architectures directory prior to task completion perform better than teams without such a flat collaboration architectures directory application.

Consequently the null hypothesis states as follows:

H0: Groups that apply the flat collaboration architectures directory prior to task completion perform the same as teams without such a flat collaboration architectures directory application.

But this is not the only question that is interesting when testing the effect of such a step-by-step instruction on the performance of a group. In this regard it is not only relevant if this directory has a positive effect on team performance but rather the way how team performance is effected by such an instruction. This especially involves a procedural analysis. In this regard it is of special interest if there are any difficulties concerning the instructions or not and if so what those difficulties are, in which step they occur and where the different groups need further explanations. Other relevant questions include how much time it takes for the participants to completely understand the instructions, which illustrations or explanations might be helpful to explain certain steps as well as the question which steps leave the participants more or less motivated than the other steps and why. Moreover it is also interesting how long the different steps take and which one is the most time-

consuming or the least time-consuming one. For the development of the flat collaboration tool itself this means that it needs to be found out if that tool should be more detailed or if it is too detailed where it must be shortened.

5.3 Testing

There are three different requirements that have been essential for developing an experiment with which this hypothesis can be tested: Firstly it is vital that the effects of the experiment can be measured objectively. Secondly it is important that the experiment is suitable for the target group. And thirdly value must be added in the form of complexity. In this regard it has to make a certain difference if the members of a group sit together and think who will do what and when in advance.

After eliminating a variety of different experiments that came into question the most promising experiment was chosen. The hypothesis was then tested within the following experiment: The participants were asked to hypothetically furnish an office and search for the required items, to document those and to choose the right place for the items they found. For this experiment the groups had 60 minutes including discussions on the step-by-step instructions as well as a fictional budget of €10,000. Within this experiment the participants were equipped with a draft of the office as well as a list of the different items. The items varied from large, essential items such as desks, chairs, file cabinets or a refrigerator to smaller ones like a printer, a coffee machine or a microwave. In the following the list of all essential items is presented:

- A printer with at least scan and copy function
- A coffee machine
- Two wardrobe stands
- A refrigerator
- A microwave
- Ten desks (minimum 160cm x 80cm)
- A roller container for each desk
- Ten office chairs

- Two file cabinets
- A meeting table with six chairs

Furthermore there was additional information on the right position of the items. This, for example, concerns the obligated free floor area of the employees as well as boundaries concerning the distance from the desks to the printer for each employee. The groups also needed to find the right place for adding walls and a kitchenette. The participants also got the possibility to gain points for the following features or smaller items on the second list:

- Height-adjustable desks
- Ergonomic office chairs
- Footrests
- A fire extinguisher
- A first aid kit
- Plants
- Paintings
- Umbrella stands
- Bins
- Coffee house furniture
- A red thread through the design

The participants were equipped with computers and laptops to enable them to look up the items for their hypothetical office. At the end of the experiment they also needed to fill out a questionnaire in which their personal data was collected. All information that the participants received within the experiment is listed in the appendix.

Since it was not possible to already test the tool in an electronic form the different steps were verbally presented. At the beginning of the experiment also a number of pilot tests were performed to see how the experiment goes, if there is enough variation of data and also to be able to find out where to make changes if necessary. The total number of all participants was 120. The participants were separated

into 30 groups. Each group consisted of four people. This, in turn, lead to 15 treatment groups as well as 15 control groups. The chosen participants mostly originated from a circle of friends and acquaintances and the experiment was tested over a time of approximately two months. The experiment was conducted in German.

5.4 Steps

In contrast to the control groups the treatment groups got a step-by-step instruction on how to solve the tasks in an organized way. Before working on the task itself the treatment groups were guided through different steps that should help them to organize themselves and to think and plan in advance. These steps include the following:

1. Define tasks

In the first step the members of the group were asked to write down the different tasks that arise within the experiment and to break down that complex problem into subtasks. For example instead of just writing down "searching for items, budgeting and placing items in the draft" the participants should divide the tasks in many small ones. This would result in a detailed task list such as "searching for desks, searching for office chairs, searching for coffee machine, searching for file cabinets, searching for a meeting table with six chairs, budgeting, drawing walls, placing items in the draft,…".

2. Order of tasks

In the second step the different group members had to define the right order of the different subtasks. In this regard the participants needed to draw a timeline, a flow chart, a value chain or something like that and to choose exactly the right order and timing for each task. This is very important because the right timing of the tasks can contribute to finish a certain task faster than others and also to avoid time slots where one or more group members have nothing to do. For example it could be less time-consuming for the groups if certain tasks such as the search of the items and the positioning of the items were fulfilled simultaneously because while two in a group are busy searching for the items in the list the other two group members can already add the walls and the kitchenette, plan the whole room and place every item according to the rules. In comparison to that if every member in the group

is in charge of searching for the products it can take a lot of time to think about and to agree on the right place of each item.

3. Task allocation

In the third step the different subtasks that have been defined in the first stage were allocated to the different group members. This is necessary because it makes clear who in a group does what and prevents misunderstandings. It also ensures that everyone in the group knows what the other people do and sets clear boundaries. Tasks can be allocated in various ways. One way is that each group member will get one or more subtasks so that everyone in the group has something to do and is able to contribute to the output. But there is also the possibility that someone in the group does the whole task by himself or herself and the others in the group do nothing at all. There is also the third option that one or two members of the team do nothing at all and the other two or three do the task on their own.

4. Reward distribution

In the last step the distribution of the reward should be discussed. In this regard it is assumed that the group members would get a fictional reward for the completion of the task. This can be money, sweets or something completely else. This step is important as group members get the possibility to discuss in advance what they would give to their group members for their work. This amount might not always be equal. When discussing on the right distribution of the fictional reward there are a few possibilities. On the one hand there is the option that one group member gets the entire reward and all other group members get nothing. On the other hand there is the possibility that two group members get the reward and split it either equally so that each of them would get 50% or unequally. There is also the third possibility that three in the group get to have the reward. Of course they can again split their parts either equally or unequally. The forth possibility is that everyone in the group get something out of the reward and nobody gets nothing. Again there is the possibility to either equally share the fictional profit or not. The fictional reward can be distributed based on the number

of the tasks someone has to do, on the degree of difficulty of the task or based on any other measurement the group chooses.

As mentioned before the different groups had 60 minutes to solve the task. The verbal presentation and the pre-working on the different steps included 15 minutes. For the solving the actual task the groups had 45 minutes left.

The four steps are greatly simplified and based on the seven steps of Puranam, Alexy & Reitzig (2019) which are the following:

1. Define objectives

In this step the objectives and, if necessary, also the deadlines have to be set. From this the different tasks as well as the order of the tasks must be defined.

2. Identify collaborators

This step deals with picking suitable team members for the various tasks. In this regard also favorite participants can be chosen.

3. Who does what (by when)

In this step the different tasks are allocated to the various members of the team. In this regard it is vital that each gap is filled, that reasons for preferences are explained and that a timeline is drawn.

4. Who talks to whom

The forth step deals with the question where there is need for certain group member to inform others in the team. Of course this also involves determining from who to get permission if necessary and which tasks are especially related to each other.

5. Who gets what

In this step the distribution of the reward has to be discussed. The different members of the group could hereby be compensated dependent on the goal and it does not always have to be extrinsic.

6. Managing exceptions

This step deals with possible debates between members of the group and ways of overcoming them. Hereby it is vital that the escalation process and, with regard to that, the outcome are recorded.

7. Review together and initiate

In this last step the insights on the above mentioned steps can be discussed together and different opinions can be exchanged.

(Puranam, et al., 2019)

5.5 Scoring system

To be able to measure the difference between the performance of the treatment groups and the performance of the control groups objectively an adequate scoring system had to be invented. For each item that the groups were able to find one point was assigned to the group. This also corresponds to the items on the second list. An exception represented plants and paintings. Here two points were given to the groups if they found more than just one plant or one painting and only one point was given to them if the group had only one plant or one painting on their product list. Consequently the maximum amount of points that a group was able to get for finding all products from both lists were twenty-three points which result out of the ten points for the items on the first list and the thirteen points for the items from the second list.

For the statistical analysis not only the number of the items played an important role but also the price of each product on their list. In this regard the items from the first page such as desks, office chairs or the meeting table with the six chairs the price was much higher than the price of the items on the second list that included plants, a first aid kit or paintings. This allows a detailed analysis of the differences in the acquisition of the products between the treatment groups that were in possession of such a directory and the control groups who were not.

6 Findings on treatment groups

This section gives an overview of the findings on the experiment with regard to the treatment groups. This especially involves results on the different steps of the instruction namely task division, the order of the tasks, task allocation as well as reward distribution.

6.1 Task division

The division into subtasks varied from group to group. Firstly there were two groups that only roughly divided the task into five subtasks. These include splitting up the room, searching for the different products, writing the product list, budgeting and placing the items.

Secondly there were groups that decided to divide the searching of the items into different subtasks based on the size of the products. This means that the searching of the greatest items like the ten desks, the ten office chairs and the meeting table with the six chairs were listed as subtasks whereas subtasks such as the search for smaller items like the coffee machine or the printer were not listed separately. An example for this would be the following:

- splitting up the room
- budgeting
- searching for large items: ten desks, ten office chairs, meeting table with six chairs, ten roller containers, two file cabinets
- searching for the rest: printer, coffee machine, wardrobe stands, refrigerator, microwave
- writing the product list
- placing the items

Thirdly there were groups that separated the subtasks based on the different rooms namely the kitchen, the meeting room and the office. As a consequence the different items were assigned to these rooms. An example for such a subtask would be the following:

- splitting up the room
- budgeting

- kitchen: searching for a coffee machine, searching for a refrigerator, searching for a microwave, placing the kitchenette
- office: searching for a printer, searching for two wardrobe stands, searching for ten desks, searching for ten office chairs, searching for ten roller containers, searching for two file cabinets
- meeting room: searching for a meeting table with six chairs
- writing the product list
- placing the items

Fourthly there was one group that divided the different tasks based on the type of the product. This means that the items were separated into technical or electronical and non-technical devices. An example for this would be the following:

- splitting the room
- budgeting
- searching for technical/electronical equipment: printer, coffee machine, refrigerator, microwave
- searching for non-technical equipment: wardrobe stands, desks, roller containers, office chairs, file cabinets, meeting table with six chairs
- writing the product list
- placing the items

Lastly the majority of the observed treatment groups managed to divide the different tasks into many small subtasks that were as simplistic as possible. In this regard the tasks searching for the products, placing the products, planning and creating the list of products were broken down as small as possible while the task budgeting was not further divided. An example for this would be the following:

- placing walls
- checking free floor area
- placing kitchenette

- checking placing of the employees' office desks
- checking distance to the printer
- budgeting
- printer: searching, writing printer into product list, placing printer
- coffee machine: searching, writing coffee machine into product list, placing coffee machine
- wardrobe stands: searching, writing wardrobe stands into product list, placing wardrobe stands
- refrigerator: searching, writing refrigerator into product list, placing refrigerator
- microwave: searching, writing microwave into product list, placing microwave
- desks: searching, writing desks into product list, placing desks
- roller containers: searching, writing roller containers into product list, placing roller containers
- office chairs: searching, writing office chairs into product list, placing office chairs
- file cabinets: searching, writing file cabinets into product list, placing file cabinets
- meeting table with chairs: searching, writing meeting table with chairs into product list, placing meeting table with chairs

In almost all groups the task division was only made for the items on the first page. For these groups the items from the second list were not included in the task division process and the participants only searched for them at the end of the task when all items from the first list have been found and when there was time and money left. Nevertheless there was one group that mixed up both categories and searched for all items at the same time.

There was one group that was especially creative when it came to the placing of the furniture and consequently also divided the task in a slightly other way. Instead of mapping the different items from the product list on the draft that each group got at the beginning of the experiment the participants decided to draw the different items on a paper with regard to the right dimensions and to simply cut them out and clue them on the draft. Because the whole cutting and placing process would require quite some time and help from others the group decided to split themselves into two parts so

two participants were assigned to searching the products, budgeting and making the product list while the other two had to make the layout, place the items, check the different requirements and add the walls as well as the kitchenette. Of course the different group members had to be well-coordinated and constant consultation was necessary.

Nevertheless, there was one small problem that occurred in some groups during task division namely that these groups did not understand how to divide the task into very small work packages and that they just wanted to split the tasks into a few basic subtasks. This made it necessary to explain the principles of the task division by means of an example which was the following: Imagine that you want to book a trip. For this trip, you have to book different things such as flights, the accommodation or additional services you want to see or experience during your stay such as a sightseeing tour or a concert. This would again require a variety of different other actions. So instead of just booking the flights, you would have to look for different things such as the travel period, compare the different airlines in terms of prices or other characteristics and then you actually book your flights which is just a small part of booking a trip. Also instead of just booking the hotel you would maybe have to register on the website if you are booking though the website for the first time. In the next step you will have to filter the results such as budget constraints, additional features such as available parking spots, pet friendly hotels, included breakfast, star rating, beach access, property type or the distance from the center in order to find the right hotel for you. In fact there are many ways to split a task into various subtasks. In this case a detailed division of the task into many different subtasks would look like the following:

- 1st set a date
- 2nd search for flights
- 3rd book flights
- 4th search for hotel
- 5th book hotel
- 6th book additional services
- etc.

That example helped a lot of groups to understand the division of a task into subtasks and most of them could also implement it. Nevertheless a few teams still divided the tasks only rather superficially.

6.2 Order of tasks

For the visualization of the order of the tasks the participants either used a flow chart or a timeline. In this regard the observed groups tend to use flow charts more often.

In most groups the searching of the items and the budgeting process were made simultaneously. This means that in those groups the budget was checked after each item was found and written in the product list to be able to determine how much money was still left. Another possibility was to estimate the budget before searching for the products and then again after the product list was finished. In the rest of the cases the observed groups only checked if they kept the budget at the end of the task when the product list has already been written and each item has already been placed.

Concerning the searching of the items some groups started with searching the most expensive items to be able to estimate how much money they would have left for the less expensive items. This can also be applied to the observed groups that decided to divide the searching of the products based on the different rooms as they started with the room with the most expensive furniture. For products such as plants, the coffee machine or the microwave the members of the group searched at the very end when there was still time left. This plan was also performed by those who decided to only check if they kept the budget at the end of the experiment.

There was one group that even estimated the budget at the beginning of the experiment to see if they can manage to get along with the money. In this regard the participants estimated how much money they would spend on each item in the list and came up with a sum of €11,050. This helped them to get a general idea of which items would cost the most and where they could save most of the money.

Almost all groups had a particular thing in common which was to parallelize the searching of the items and the placing of the items. This plan tended to be enormously time efficient. These groups split themselves in a way that two participants were assigned with the search for the products and the

other part would have to place them. Clearly they were faster than those who placed the items only at the end of the experiment because the searching process and the placing process both tended to be the most and also nearly equally time-consuming tasks. Room partitioning took place either at the beginning of the experiment before searching the products, during or after creating the product list.

Clearly also the searching of the items and the creation of the product list were done simultaneously. Generally there have been two approaches concerning this: On the one hand there were groups that decided that one or more participants search for all items while the other ones write down the products. One the other hand there were groups where the participants that searched for the items made the product list on their own. In each case these participants sat next to each other to be able to exchange information on the price.

Despite parallelizing a lot of different tasks the groups decided not to parallelize more than three big tasks at the same time in order for the other members to be able to keep up with them. It has been observed that the exchange of information such as measurements of the items or information on the budget required ongoing communication and coordination between group members. Therefore it was not possible for the participants to do a great amount of tasks at the same time.

The most beneficial way to time the different tasks was to do all time-consuming tasks such as searching for the products, budgeting, writing the product list and placing the items nearly at the same time. While it has been shown that these tasks need a lot of coordination and information exchange it seemed to be most time efficient to do these tasks simultaneously. Especially the placing of the different products needs a lot of time and discussions. Therefore it seemed to be very time-efficient to do the planning of the room nearly at the beginning of the task.

6.3 Task allocation

In nearly all groups the different tasks were assigned in a fair way so that each subtask was assigned to not more than two people. This makes a lot of sense as certain tasks such as writing the product list or placing the items do not require more than two team members. Nevertheless in all groups the

budgeting task was always only assigned to one person. The tasks that were most time-consuming and therefore assigned to most people were the search of the products as well the placing of the items.

Tasks were selected in a way that nobody was assigned with a task that he or she would not want to do at all or a task where the participant does not have any experiences or understanding of how to fulfill the task but instead based on the different interests of the team members. On the other hand tasks were assigned to the different team members according to their strengths or experiences. In groups where someone usually has a lot to do with numbers or finances or where people have experiences in building houses the corresponding subtasks were primarily assigned to them because of their lead in experiences. After defining the tasks and agreeing on the right order of fulfilling the different subtasks the group members allocated the different tasks. First most of the groups began to allocate the subtasks that were most time-consuming namely the searching for the products and the placing of the items to the different group members. After that the remaining tasks were assigned to the team members.

Concerning the budgeting process there was one group that decided to estimate the budget that they would spend on each item before actually searching for the different products and making the product list. In this group the budget estimation was made by two group members while the other two group members were assigned with splitting the room. One of these two team members that were assigned with the calculation of the budget also checked again later if the group managed to keep the budget.

Another group where two group members cut out the different items, designed the rooms and placed the items in the draft did so while the other two team members searched for the products and wrote the product list. This group split themselves into two subgroups. The subgroup that was responsible for planning and placing the items only had to coordinate themselves with the other subgroup in terms of measurements of certain products such as the exact measurements of the office desks. But coordination was only necessary at the beginning of the task. While one subgroup was busy with searching the rest of the products and making the product list the other subgroup only had to concentrate on the interior design so after that there were no coordination or communication issues.

6.4 Reward distribution

In each group the reward distribution was the same. There were no variances in any way. Each group decided to split their fictional reward in a fair way so that every team member would get the same. Consequently each team decided to give everyone in the group 25%. This even was the case for groups where some team members generated more input than others.

Concerning the distribution of the reward there was one obstacle that occurred during that stage which was that the participants asked questions about which reward they were dealing with. They needed to get an understanding of the dimension of the reward as well as the type of the reward to be able to split the reward correctly. Since the reward was only fictional and the fact that they would not actually get an extrinsic reward out of finishing the task made it seem that there was no need to overthink it. Nevertheless every participant in the group took his or her task or tasks seriously and there was nobody who did not contribute at all. This circumstance made it seem very reasonable for all team members to split the fictional reward fairly.

Besides the extrinsic reward it was clearly visible that also the intrinsic motivation played an important role for the participants. The groups had a lot of fun with setting up the office and with searching for the items online. This could also be clearly seen in the feedback sheets where a variety of participants added that the task was really fun. There also were a few people that had experiences in designing rooms. But also a lot of participants were very interested in interior design and saw it a possibility to be creative. Moreover it also seemed that there was no one in the group who had problems with using electronic devices to search the different web sites. This fact facilitated not only the process of searching the items but also might have an impact on the perceived fun level of the whole task.

6.5 Maximum points

All treatment groups that successfully completed the task managed to achieve at least some extra points. The maximum amount of points that the treatment groups achieved was 21. There were two groups that managed to get such a high result. The lowest number of points was 17. There were two

groups that only managed to get 17 points. The average amount of points that those treatment groups that succeeded the test achieved were 19 points rounded.

6.6 Average time needed

There were two treatment groups that successfully completed the task that only needed three quarters of the provided time to complete the whole task. Two other groups were also very fast. There was also one treatment group that needed 47 minutes and another group that needed 52 minutes. The other nine observed groups needed the exact amount of time to fulfill the task. This makes an average time of 56 minutes rounded per observed treatment group.

6.7 Average budget needed

The majority of the treatment groups that successfully completed the task needed more than half of the available budget. There were only two groups that needed less than €5000. Most of the observed groups spent more than €6000 on the products including the items from the second list. There were four treatment groups that almost spent the entire budget. The average budget that the successful treatment groups needed to complete the task was about €7000.

6.8 Failure rate

There were two out of fifteen treatment groups that did not manage to fulfill the task successfully. This leads to a failure rate of 13.33%.

7 Findings on control groups

This chapter deals with the results of the empirical study for the control groups concerning task division, the order of the different tasks and task allocation. In addition this section emphasizes important differences between the treatment groups and the control groups.

7.1 Task division and allocation

Task division and allocation in the control groups have been made together as one step. The task division in the observed groups has hereby only been made roughly and only into tasks such as searching for the products, room planning and placing the different items. The writing of the product list and the budgeting task were not divided as separate tasks and therefore also not allocated to the different group members but rather developed as separate subtasks later when the team members who searched for the items also took care of the product list and the calculation of the budget.

After reading the instruction the subtasks were immediately allocated to the different group members without more profound discussions. In this regard one team member asked the group who would want to do which part of the task. The task allocation was fast and also without discussing on a plan concerning how to best search for the tasks, how to best divide the rooms or where to best place the different items. In fact after assigning the different subtasks to the group members each of them fulfilled their task in a way he or she thinks it is best and without consulting the others in the team. The group members only interacted with each other when it came to the measurements of certain products to be able to place the items correctly. The different group members also did not discuss on the optimal order of fulfilling the task. Moreover the tasks were allocated in a way that the different group members would not have more than one subtask to do. They simply allocated the three different subtasks to the team members and then they fulfilled their tasks simultaneously. All in all the control groups only spent about three minutes on the discussion before they started solving the task on their own.

In comparison to the treatment groups the control groups did not divide the searching of the different products based on the size of the items, on the type of room or on the fact if the product is technical or electronical or not. Instead two other approaches have been made by the observed groups. Firstly

the majority of the observed control groups decided to just stick to the description of the task and search for the items in the exact order they were mentioned in the task description. These control groups first searched for the products on the first page of the task description. Then they went on with searching for the remaining items for which they would get extra points. In most cases this was not a strategic decision but instead just resulted out of the fact that these groups did not manage to discuss about how to solve the task in the most organized way and about where to start best but rather simply go with the order of the tasks in the description. This had a positive effect for some of the observed control groups as they clearly differentiated between the two sorts of items and as a result did not mix up the required items that they needed to find and the extra items.

Secondly there was one observed control group where one team member that was supposed to search for the different items decided to search the products based on their estimated price and so started with searching for the most expensive items. Again here a distinction between the required and the extra items from the list has been made. In these groups the team members also only searched for the extra items in case there was time and money left.

In almost all control groups the tasks were allocated in a fair way. An exception represented one particular control group where the leader of the group divided the tasks on his own. This person decided to do all tasks only by himself. As it was the case with the treatment groups the control groups also decided to split themselves up. Those groups hereby either divided themselves into two groups of two people or into a group of three people and a group of one only person. Concerning the first approach two participants were assigned with the search of the different items while the other two participants would have to do the room partitioning and would have to find the right place for the products. The other part of the group was assigned with the searching of the different items. The constellation of the second approach looked similar. In these teams the group that consisted of three participants were assigned with splitting the room and placing the products whereas the fourth person in the group had to search the different products on his or her own. In most cases the team members that were assigned with the searching for the products also paid attention to a red thread though the design.

7.2 Order of tasks

As already mentioned above three different subtasks were done simultaneously. Only one group did all subtasks namely searching for the products, placing of the products and room partitioning successively. This was the group with the leader that was mentioned before.

Concerning the budgeting process the control groups differed only slightly. In most groups the budget was checked during the writing of the product list after each item was found. In other groups the budget was not checked until the product list was finished. Unfortunately compared to the treatment groups there was no control group that came up with the idea of estimating the budget they would spend on each item together as a group at the beginning.

Clearly the creation of the product list and the searching of the items were made simultaneously. Comparing to the treatment groups there has been only one approach concerning this. In each group the participants that searched for the required products also did the writing of the product list.

7.3 Maximum points

All of the observed control groups that successfully completed the task were able to get some extra points. The maximum amount of points that the control groups achieved was 17. There was one group that managed to get such a high result. The lowest number of points was twelve. There was one control group that only got twelve points. The average amount of points that the observed control groups managed to get were 15 points rounded.

7.4 Average time needed

There were only two control groups that successfully completed the task which only needed 45 minutes to complete the task. The remaining groups needed the full 60 minutes which most groups used for the searching of the items from the second list. This makes an average time of 56 minutes rounded per observed control group.

7.5 Average budget needed

The majority of the observed control groups that successfully completed the task needed more than half of the available budget. There was only one control group that needed less than that amount.

Moreover there was no control group that spent the entire or nearly the entire amount of money. The average budget that was needed to complete the task was about €6000. On the one hand that amount of money that the observed control groups spent on the products is smaller than the amount of money that the treatment groups spent but on the other hand clearly the extra points the treatment groups managed to get is almost twice as high as the extra points that the control groups got and there were also far more control groups that have failed than treatment groups.

7.6 Failure rate

In comparison to the treatment groups a much higher number of control groups failed the experiment. Out of the fifteen control groups that have participated in the experiment only about half of the control groups managed to find and place all the required products in time. More specifically there were eight groups that managed to successfully complete the task whereas seven groups failed. The fact that seven out of fifteen treatment groups did not manage to fulfill the task successfully leads to a failure rate of 46.66%.

8 Statistical analysis

This chapter deals with the statistical analysis of the underlying data gathered through the experiment. In this regard a t-Test as well as a simple linear regression have been made. There is also a scatterplot to illustrate the differences between the treatment groups and the control groups.

8.1 T-Test

Gruppenstatistiken

	Group	N	Mittelwert	Std.-Abweichung	Standardfehler des Mittelwertes
PriceDifference	treatment	15	1696,1607	2259,45889	583,38978
	control	15	3483,0567	1646,95762	425,24263

Figure 1 Group statistics

Figure 1 shows the mean value of the price difference of the treatment groups as well as the control groups. The price difference hereby refers to the sum of the differences between the optimal price of all items and the price of the products the different groups found. The mean value of the treatment groups is 1696.16 rounded whereas the mean value of the control groups is 3483.06 rounded. This comparison makes clear that the price difference of the control groups is approximately twice as high as the price difference of the treatment groups. N hereby refers to the sample size. As mentioned before the number of treatment groups was 15. This is also the case for the control groups.

Test bei unabhängigen Stichproben

		Levene-Test der Varianzgleichheit		T-Test für die Mittelwertgleichheit						
									95% Konfidenzintervall der Differenz	
		F	Signifikanz	T	df	Sig. (2-seitig)	Mittlere Differenz	Standardfehler der Differenz	Untere	Obere
PriceDifference	Varianzen sind gleich	2,966	,096	-2,475	28	,020	-1786,89600	721,92446	-3265,69122	-308,10078
	Varianzen sind nicht gleich			-2,475	25,602	,020	-1786,89600	721,92446	-3271,95721	-301,83479

Figure 2 Test for independent samples

Figure 2 answers the question whether the results are significant or not. The p-value is 0.020 or 2%. In this case, however, the testing had to be unilateral. This results in the fact that the p-value has to be divided by two to be able to gain the p-value of the unilateral testing. Consequently the adjusted

p-value is exactly 0.01 or 1% which means that the p-value is highly significant. The fact that the p-value is under 5% means that the null hypothesis can be rejected and that the alternative hypothesis can be confirmed.

8.2 Simple linear regression

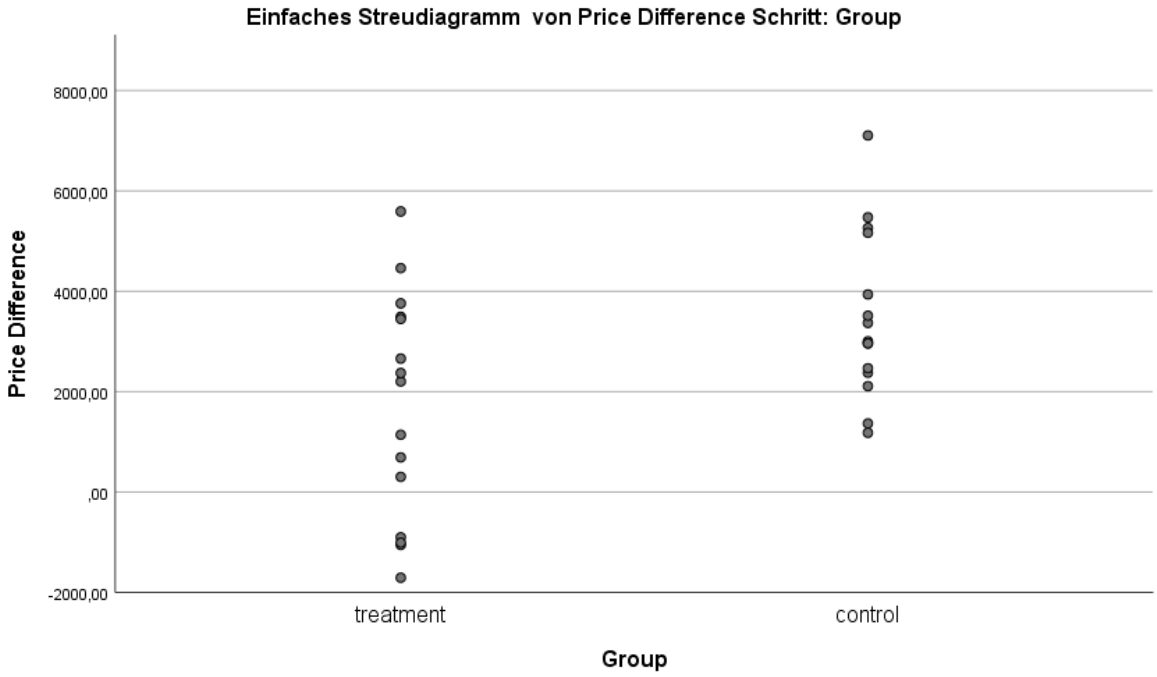

Figure 3 Scatterplot price difference: group

Figure 3 illustrates the different data points that have been generated. On the x-axis the type of the group is shown so whether the underlying group was a treatment group or a control group. On the y-axis the price difference is illustrated. This difference ranges from -2000 to +8000. It can be shown that some treatment groups managed to achieve a price difference of almost -2000 whereas there is no control group that managed to get a negative price difference at all. On the other hand the highest price difference in the treatment groups is almost about 6000 whereas the highest result in the control groups is even about 7000. In this graphic it can also be seen that the mean value of the treatment group must lie somewhere around +2000 and that the mean value of the control groups is somewhere slightly below 4000. Figure 1 seem to support this suggestion as it proves that

the mean value of the treatment groups which is 1696.16 rounded and the mean value of the control groups which is 3483.06 rounded.

Modellzusammenfassung

Modell	R	R-Quadrat	Korrigiertes R-Quadrat	Standardfehler des Schätzers
1	,424[a]	,180	,150	1977,07156

a. Einflußvariablen : (Konstante), Group

Figure 4 Summary of the model

Figure 4 shows the characteristics of the underlying model. The R-square is 0.180 which means that 18% of the dependent variable can be explained through the independent variable.

ANOVA[a]

Modell		Quadratsumme	df	Mittel der Quadrate	F	Sig.
1	Regression	23947479,86	1	23947479,86	6,127	,020[b]
	Nicht standardisierte Residuen	109446734,7	28	3908811,955		
	Gesamt	133394214,6	29			

a. Abhängige Variable: PriceDifference

b. Einflußvariablen : (Konstante), Group

Figure 5 ANOVA

Figure 5 shows that the p-value is about 0.020 which is 2%. Again this value has to divided by two. The adjusted p-value is 1% and indicates that there is a significant effect of the independent variable on the dependent variable. This also shows that the null hypothesis can be rejected and that the alternative hypothesis can be confirmed.

Koeffizienten[a]

Modell		Nicht standardisierte Koeffizienten		Standardisierte Koeffizienten		
		Regressionskoeffizient B	Std.-Fehler	Beta	T	Sig.
1	(Konstante)	1696,161	510,478		3,323	,002
	Group	1786,896	721,924	,424	2,475	,020

a. Abhängige Variable: PriceDifference

Figure 6 Coefficients

Figure 6 shows the different parameters of the linear regression model. The first parameter refers to the constant and is 1696.161 whereas the second parameter is 1786.896 and illustrates the slope of the line. Here again a significant result can be seen.

9 Demographic data and feedback

This chapter gives a general overview about the most important parameters that the study was dealing with. This includes age and gender as well as the profession of the participants. Moreover in this section also the received feedback will be analyzed.

9.1 Age

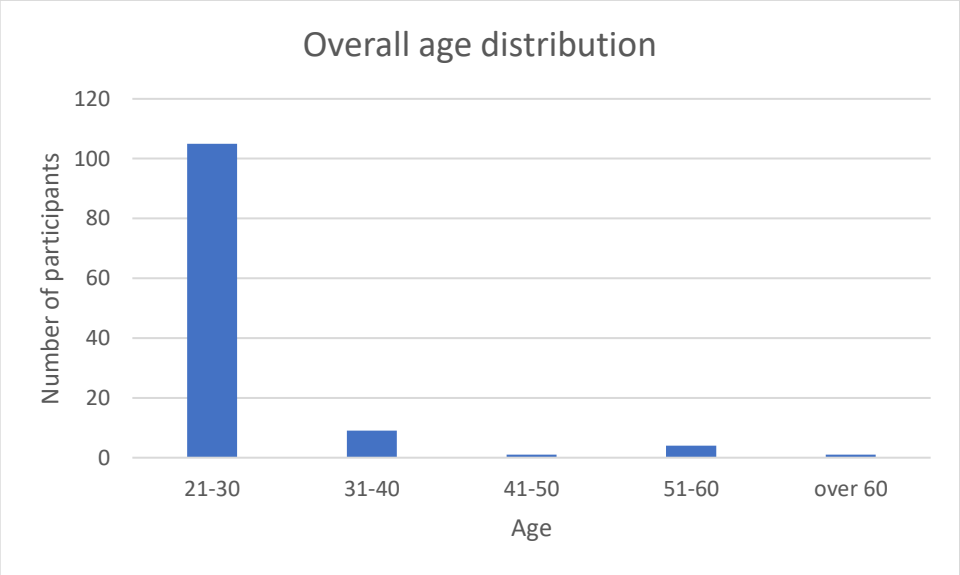

Figure 7 Overall age distribution

Figure 7 shows the overall age distribution of all 120 participants. The majority of the participants namely 105 people were between 21 and 30 years old, 9 participants were between 31 and 40 years old, 1 person was between 41 and 50 years old, 4 people were between 51 and 60 years old and 1 person was over 60.

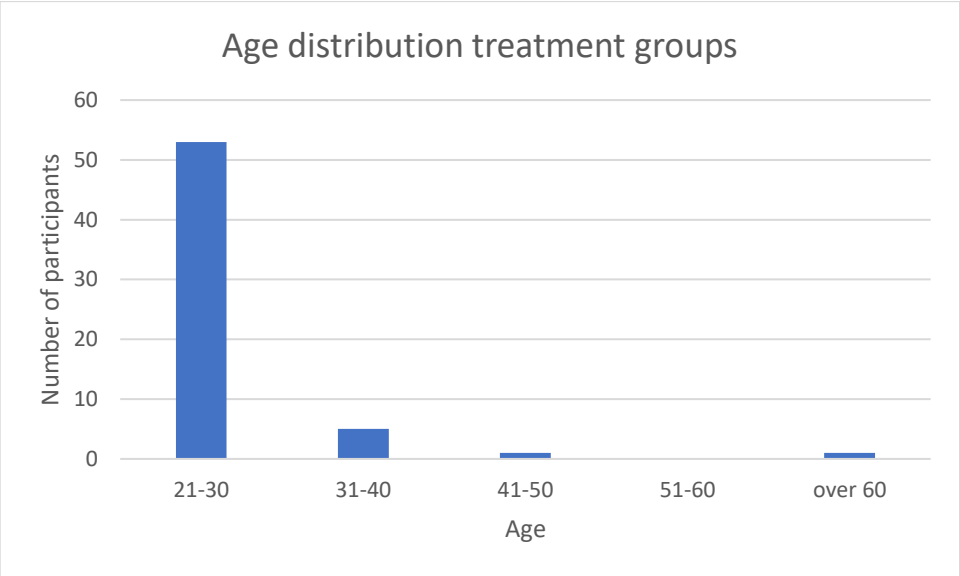

Figure 8 Age distribution treatment groups

Figure 8 shows the age distribution in the treatment groups. Of all 60 participants 53 participants were between 21 and 30 years old, 5 people were between 31 and 40 years old, 1 person was between 41 and 50 years old and another person was over 60. There was no participant that was between 51 and 60 years old.

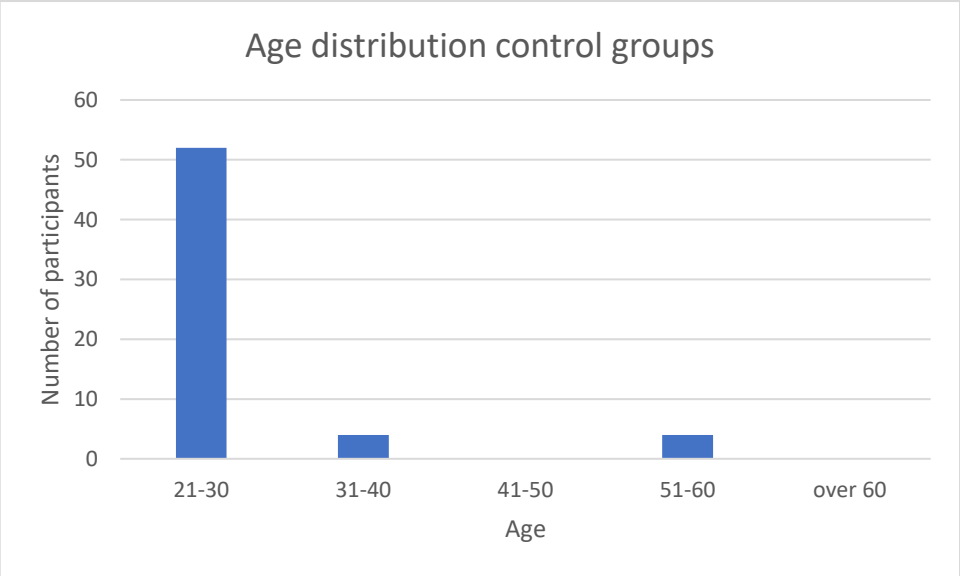

Figure 9 Age distribution control groups

Figure 9 illustrates the age distribution in the control groups. Of all 60 participants 52 participants were between 21 and 30 years old, 4 participants were between 31 and 40 years old and again 4 people were between 51 and 60 years old. There was no participant that was between 41 and 50 years

old and also nobody over 60. These graphics show clearly that both the control groups as well as the treatment groups consisted of mostly young participants.

9.2 Gender

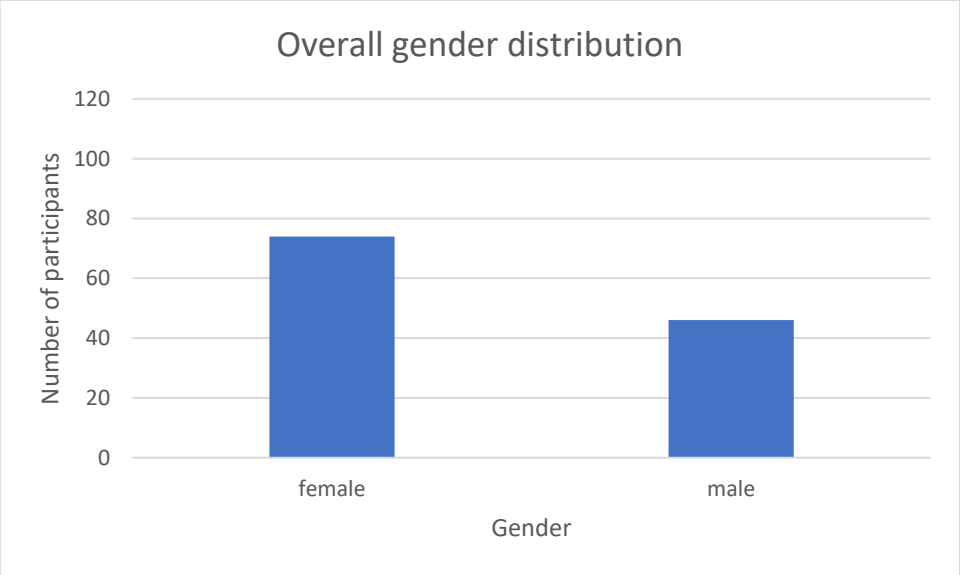

Figure 10 Overall gender distribution

Figure 10 shows the number of female and male participants in all treatment groups and control groups. Of all 120 participants there have been 74 female participants and 46 male participants.

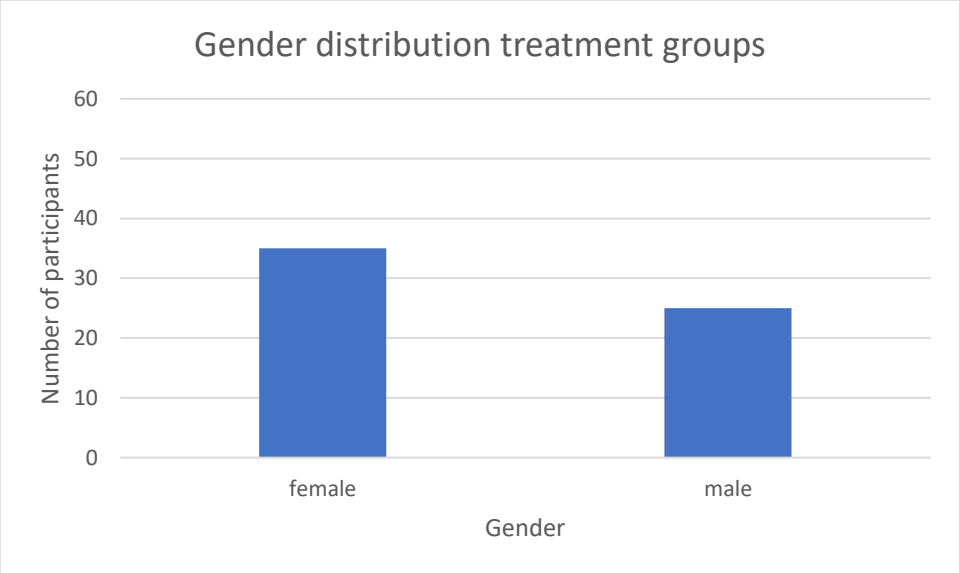

Figure 11 Gender distribution treatment groups

Figure 11 illustrates the gender distribution in the treatment groups. Of all 60 participants there were 35 female participants and 25 male participants.

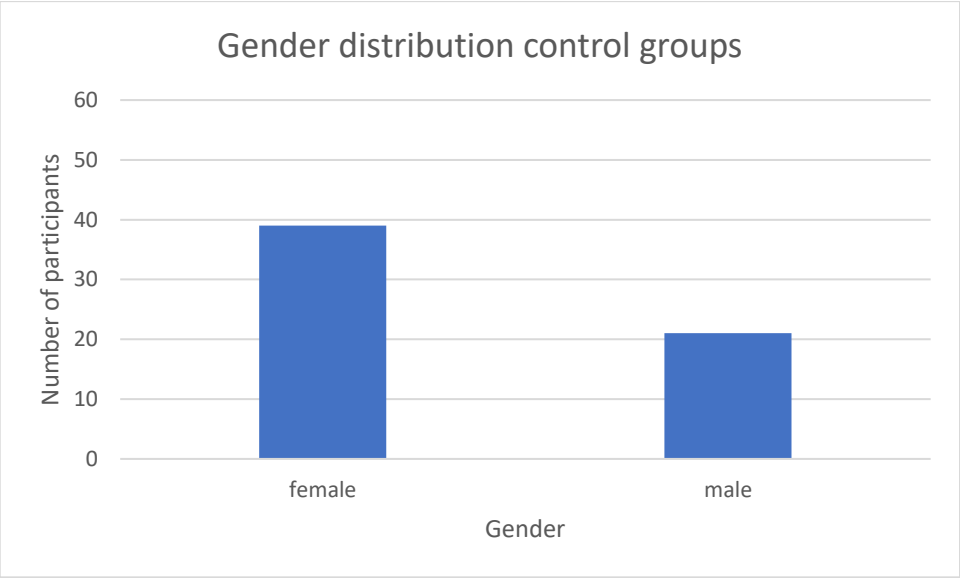

Figure 12 Gender distribution control groups

Figure 12 shows the gender distribution in the control groups. Of all 60 participants there were 39 female participants and 21 male participants. Moreover these graphics made clear that the gender distribution in the control groups and the gender distribution in the treatment groups are nearly equal.

9.3 Profession

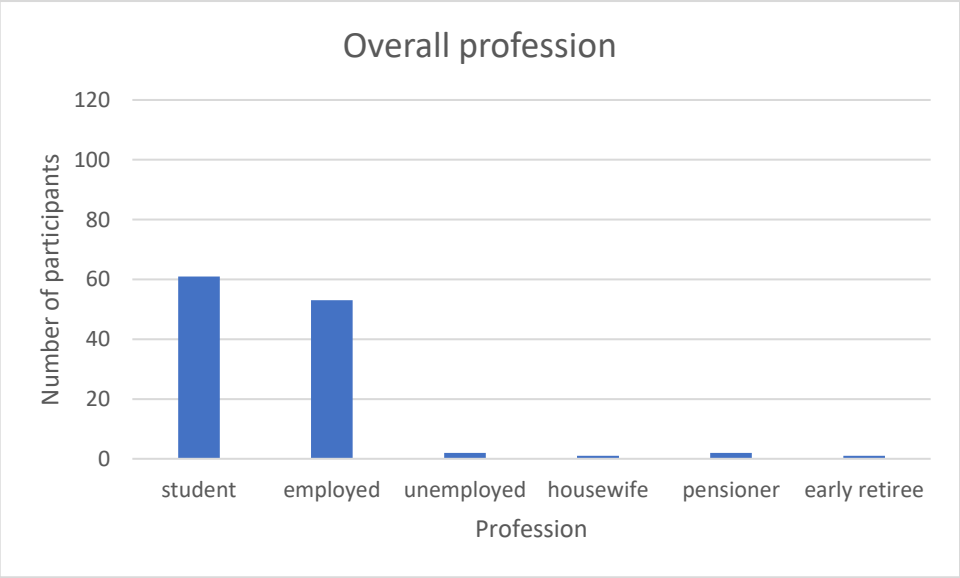

Figure 13 Overall profession

Figure 13 illustrates the overall profession of all 120 participants. There were 61 students, 53 participants were employed, 2 participants were unemployed, 1 participant declared herself as a housewife, 2 persons were pensioners and 1 person was an early retiree.

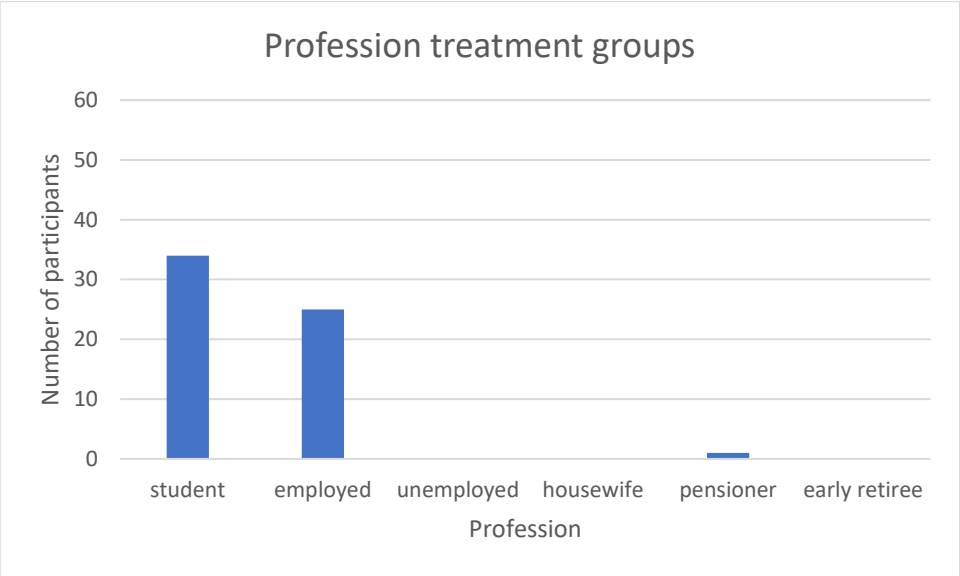

Figure 14 Profession treatment groups

Figure 14 shows the profession of the participants in the treatment groups. Of all 60 participants in these groups the majority namely 34 people were students, 25 participants were employed and 1 person was a pensioner. There was no participant that was unemployed, a houseman or a housewife or an early retiree.

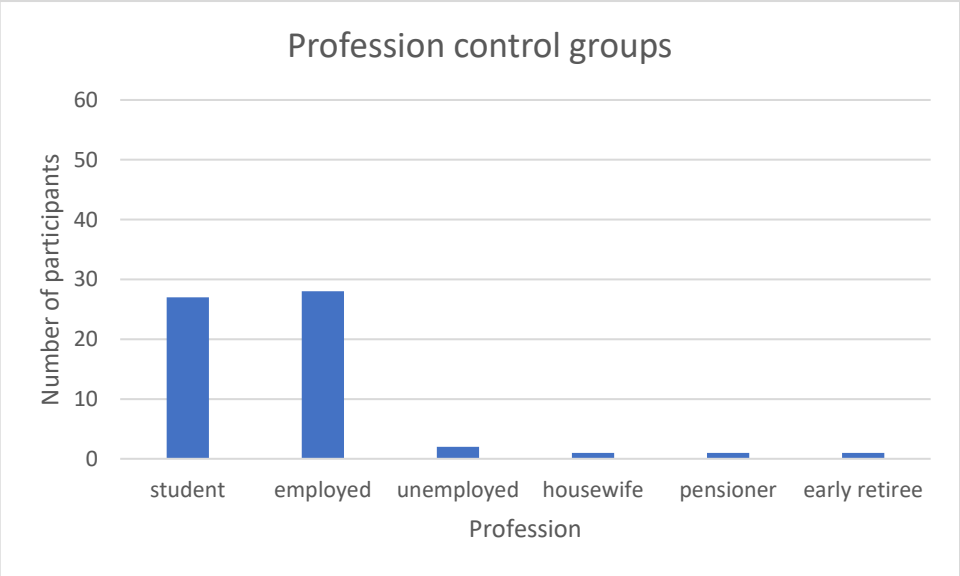

Figure 15 Profession control groups

Figure 15 illustrates the profession of the participants in the control groups. Of all 60 participants in the groups 27 people were students and 28 people were employed. Moreover there were two people that were unemployed, 1 person that was a housewife, 1 participants that was a pensioner and another

person that was an early retiree. As with the treatment groups the control groups also consisted of mostly students and employees.

9.4 Feedback

The majority of the participants emphasized the entertainment factor of the experiment. They mentioned that the task was really fun and that they enjoyed shopping online and furnishing rooms. Others said that they first thought that there was way too little money to furnish the whole office with all required items and feared that they would not manage to successfully fulfill the task. Nevertheless after they searched for the most expensive items they realized that the budget was enough. Some of the participants also mentioned that they are convinced that other teams that do not have such an instruction on how to organize themselves would for sure came up with an idea of organizing themselves similar to the steps in the instruction. Based on the results of the team performances of the control groups, however, this argument cannot be supported. Finally there were also participants that emphasized the necessity and usefulness of the instruction and were convinced that they managed to divide and allocate the task organized and carefully considered.

10 Conclusion

The findings of the experiment show that such a flat collaboration architectures directory can indeed be very useful for such alliances. The different treatment groups spent a considerable amount of time on the different steps of the instruction although some steps such as reward distribution required less time than others. Nevertheless those teams that were equipped with the flat collaboration architectures directory managed to fulfill the task in a more organized and thus efficient way than the other groups that did not have the possibility to make use of such step-by-step instructions.

With a few minor exceptions the division of the task in the treatment groups has been made in a very detailed way. The treatment groups hereby divided the tasks based on a variety of different criteria such as on the size of the products, the room, the type of the product or for each product separately. In this regard mostly all treatment groups as well as control groups managed to separate the must-have items from the good-to-have items from the list. Nevertheless some of the treatment groups struggled with getting a feeling on how to divide the task into subtasks. In this regard the example of booking a trip where someone does not simply book a trip but rather has to do a variety of different tasks such as to set a date, search for flights, book the flights, search for the hotel, book the hotel and book additional services if desired provided useful assistance to the groups.

To be able to set the right order of the tasks the treatment groups used flow charts or timelines while flow charts were more frequently used than timelines. Most groups parallelized the searching of the items and the budgeting process as well as the searching and the placing of the products. Concerning the searching of the items the majority of the groups started with the most expensive items and one group even estimated the budget in advance. Obviously all groups also parallelized the searching of the items and the writing of the product list. The teams also decided not to do more than three big tasks at the same time.

Task allocation was fair and either based on preferences or strengths and experiences. Moreover the most time-consuming tasks were allocated first and smaller tasks were assigned later.

The reward distribution was the same in all teams. Each group split their reward in a fair way so that every team member got 25%. Concerning the distribution of the reward one small problem occurred namely that the participants did not know with which reward they were dealing with and that the reward was only fictional so the participants may did not overthink their answer. Nevertheless every participant in the group took his or her part seriously and everyone approximately equally contributed to the output. Besides the fictional reward also the intrinsic motivation represented an important part of the experiment.

In contrast to the treatment groups task division and allocation in the control groups were made simultaneously. In this regard the participants divided the different tasks only roughly into the following three subtasks namely searching for the products, room partitioning and placing the different items. The writing of the product list and the budgeting were not mentioned as separate tasks and thus not allocated explicitly to the team members. They rather developed as separate subtasks later and were adopted by the team member or team members that was or were assigned with the searching for the different products.

In the control groups the tasks were allocated immediately after the participants read through the instruction. The task allocation was fast and without discussing on a plan. After the tasks were allocated each team member fulfilled his or her task as efficiently as possible but without any severe consultation.

The members of the control groups also did not discuss on the optimal order of fulfilling the different subtasks. After allocating the different subtasks to the team members the participants fulfilled their tasks at the same time.

Regarding the participants of the experiment the majority was female and rather young and they were mainly students or employees. There were no great differences between age, gender and profession of the participants in the treatment groups and of the participants in the control groups.

The differences between the treatment groups that had the possibility to use such a directory and the control groups who had to solve the task without such instructions become apparent when comparing

the success rate of both types of groups. While 13 out of the 15 treatment groups managed to successfully fulfill the task in time only half of the control groups have done so.

Despite the fact that the treatment groups needed in average the same amount of time to fulfill the task as the control groups they managed to get almost twice as many extra points as their opponents. While the control groups only managed to get five extra points, the treatment groups got nine.

The findings of the experiment also illustrate that there is a variety of problems that can occur during task completion whether they occur at the beginning, in the middle or at the end of the task. Many problems, however, can be avoided by discussing the task and its complexity together with the other team members before immediately start to solve the task on someone's own. Especially task division and allocation as well as the right order of the subtasks can be a strong driver for the success of the completion of a task and need to be carefully thought through. Although going through the different steps and agreeing on the details together as a group takes quite some time the findings show that the time such teams put into the preparation of the task definitely pays off as groups that use such a flat collaboration architectures directory tend to solve the task in a more organized and efficient way.

Statistical analyses also seem to support this claim. The analyses show that the use of a flat collaboration architectures directory prior to task completion appears to have a significant effect on the performance of a team. Of course these analyses are only the beginning of a variety of future examinations in that field. Moreover a broader sample size would probably have generated more detailed as well as a much higher number of relevant findings. Nevertheless this certainly is a field that needs to be further investigated. But there is still a lot of research to do.

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12 Table of figures

13 Appendix

13.1 Task and questionnaire for the treatment groups

Flat Collaboration Tool

Das Ziel dieses Experimentes ist es, die unten angeführte Aufgabe zu lösen. In einem ersten Schritt lesen Sie bitte die Aufgabe durch und gehen im Anschluss die Schritte 1 bis 4 mit Ihrem Team unter der Führung des Moderators durch und sammeln Sie Ihre Ergebnisse in den dafür vorgesehenen Tabellen. Abschließend führen Sie bitte die Aufgabe, wie beschrieben, durch!

Aufgabe

Ihre Aufgabe besteht darin, einen Büroraum für 10 Personen mit allen notwendigen Gegenständen einzurichten. Diese beinhalten:

- Einen Drucker, der mindestens eine Scan- und Kopierfunktion besitzt
- Eine Kaffeemaschine
- Zwei Garderobenständer
- Einen Kühlschrank
- Mikrowelle
- Zehn Schreibtische mit 160cm x 80cm Mindestmaß
- Pro Schreibtisch einen Rollcontainer
- Zehn Bürosessel
- Zwei Aktenschränke (Höhe: mindestens 150cm, maximal 200cm)

- Ein Besprechungstisch mit sechs Sesseln

Küche und Besprechungsraum sollen durch Wände (diese sind vom Budget ausgenommen) vom Arbeitsplatz der Mitarbeiter/Mitarbeiterinnen getrennt werden. Dabei sollen Sie beachten, dass jeder Mitarbeiter/jede Mitarbeiterin 2 Quadratmeter freie Bodenfläche beim Arbeitsplatz haben muss. Außerdem ist eine Küchenzeile (Maße: 150cm x 80cm) bereits vorhanden und im Büroraum sinnvoll zu platzieren. WC sowie Waschbecken sind ebenfalls bereits im Büroraum vorhanden. Diese sind nicht zu platzieren. Die Schreibtische der Mitarbeiter/Mitarbeiterinnen sind außerdem so zu platzieren, dass die Mitarbeiter/Mitarbeiterinnen nicht mit dem Rücken zum Fenster sitzen. Die Schrittlänge zum Drucker soll maximal 23 Schritte betragen (Beachten Sie hierbei, dass ein Schritt etwa 60cm beträgt).

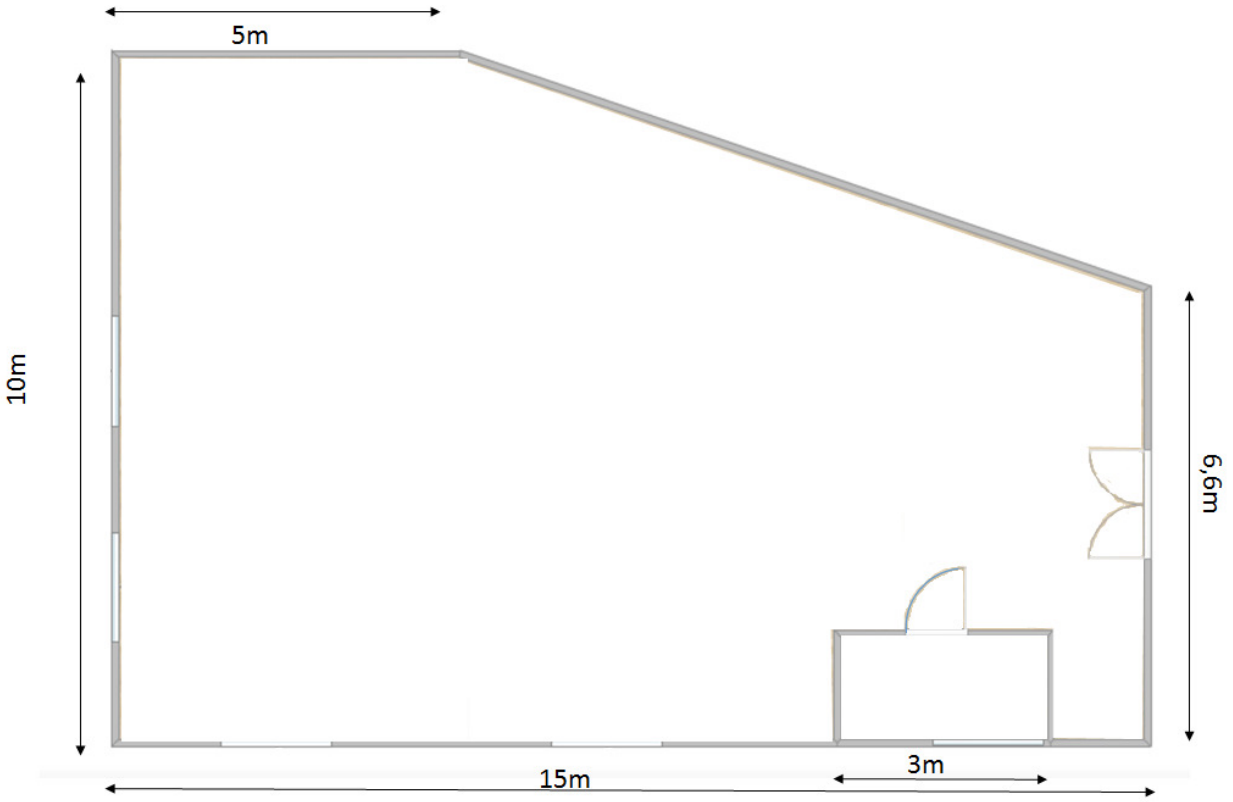
Bitte beachten Sie, dass es darüber hinaus Extrapunkte für die folgenden Kriterien gibt, sofern diese erfüllt werden:

- Höhenverstellbare Tische
- Ergonomische Sessel
- Fußstützen
- Feuerlöscher
- Erste-Hilfe-Kasten
- Pflanzen
- Bilder
- Schirmständer
- Mistkübel

- Kaffeehausmöbel
- „Ein roter Faden“ im Innendesign

Für diese Aufgabe nutzen Sie bitte das Internet, um die entsprechenden Gegenstände herauszusuchen. Außerdem müssen Sie die gefundenen Objekte auch im beiliegenden Plan einzeichnen. Bitte geben Sie ebenfalls die genaue Bezeichnung des Artikels, den Preis des Artikels, den Namen des Online-Shops bzw. Möbelhaus sowie die Adresse der Website an.

Für Ihre Aufgabe steht Ihnen ein fiktives Budget von 10.000€ und 45 Minuten Zeit zur Verfügung. Viel Erfolg und vielen Dank für Ihre Teilnahme!


5m
10m
6,6m
3m
15m

Flat Collaboration Tool

Schritt 1 – Einzelne Aufgaben definieren

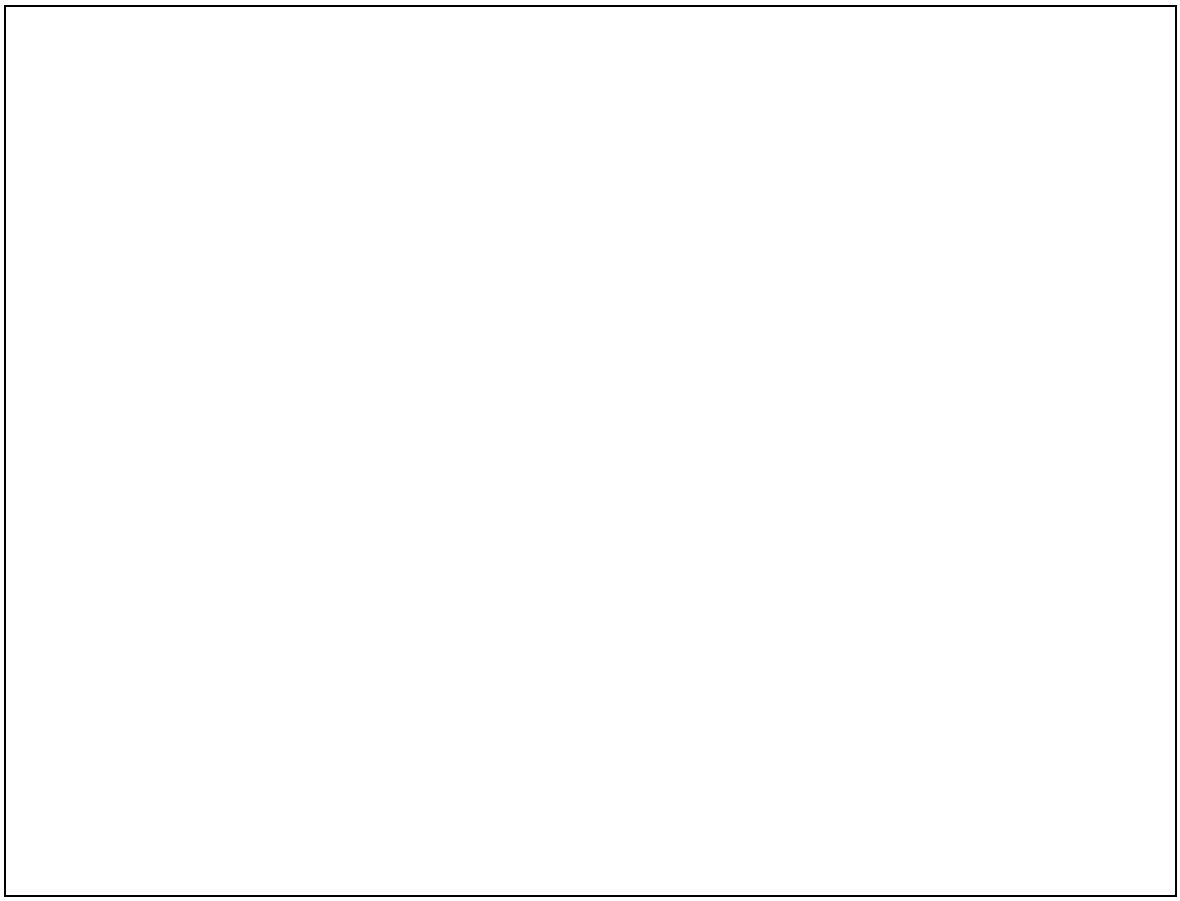
Welche Aufgaben fallen an? Was muss alles erledigt werden? Brechen Sie das Projekt in möglichst kleine einzelne Aufgaben. Schreiben Sie Ihre Tasks in die vorgesehene Tabelle auf Ihrem persönlichen Flat Collaboration Tool Formular.

Aufgaben definieren

Schritt 2 – Reihenfolge der Aufgaben

In welcher Reihenfolge sollen die Tasks erledigt werden? Welche Tasks können parallel erledigt werden und wo gibt es Abhängigkeiten? Zeichnen Sie hierzu ein Prozessdiagramm oder arbeiten Sie mit einer Zeitlinie, Value Chain, etc.

Reihenfolge der Aufgaben



Schritt 3 – Personen den Aufgaben zuteilen

Teilen Sie Ihre Teammitglieder auf die zuvor bestimmten Aufgaben auf. Erfassen Sie dies wiederum auf Ihrem Formular.

Teammitglied	**Aufgabe**

Schritt 4 – Verteilung der Belohnung

Definieren Sie, wie viel jede Person für ihre Performance bekommt.

Person	**Prozentueller Anteil der Belohnung**

Bitte tragen Sie hier die Details zu den von Ihnen ausgewählten Produkten ein.

Produkt	Genaue Bezeichnung	Internetseite	Preis

Budget gesamt:

Angaben zu Ihrer Person und Kritik/Lob:

1. Geschlecht	☐ weiblich ☐ männlich
2. Alter	
3. Berufsstand	☐ Schüler/Student ☐ nicht selbstständig ☐ selbstständig ☐ arbeitslos ☐ Pensionist
4. Kritik, Lob und Verbesserungsvorschläge:	

Vielen Dank für Ihre Teilnahme!

Flat Collaboration Tool

Das Ziel dieses Experimentes ist es, die unten angeführte Aufgabe zu lösen. In einem ersten Schritt lesen Sie bitte die Aufgabe durch und gehen im Anschluss die Schritte 1 bis 4 mit Ihrem Team unter der Führung des Moderators durch und sammeln Sie Ihre Ergebnisse in den dafür vorgesehenen Tabellen. Abschließend führen Sie bitte die Aufgabe, wie beschrieben, durch!

Aufgabe

Ihre Aufgabe besteht darin, einen Büroraum für 10 Personen mit allen notwendigen Gegenständen einzurichten. Diese beinhalten:

- Einen Drucker, der mindestens eine Scan- und Kopierfunktion besitzt
- Eine Kaffeemaschine
- Zwei Garderobenständer
- Einen Kühlschrank
- Mikrowelle
- Zehn Schreibtische mit 160cm x 80cm Mindestmaß
- Pro Schreibtisch einen Rollcontainer
- Zehn Bürosessel
- Zwei Aktenschränke (Höhe: mindestens 150cm, maximal 200cm)
- Ein Besprechungstisch mit sechs Sesseln

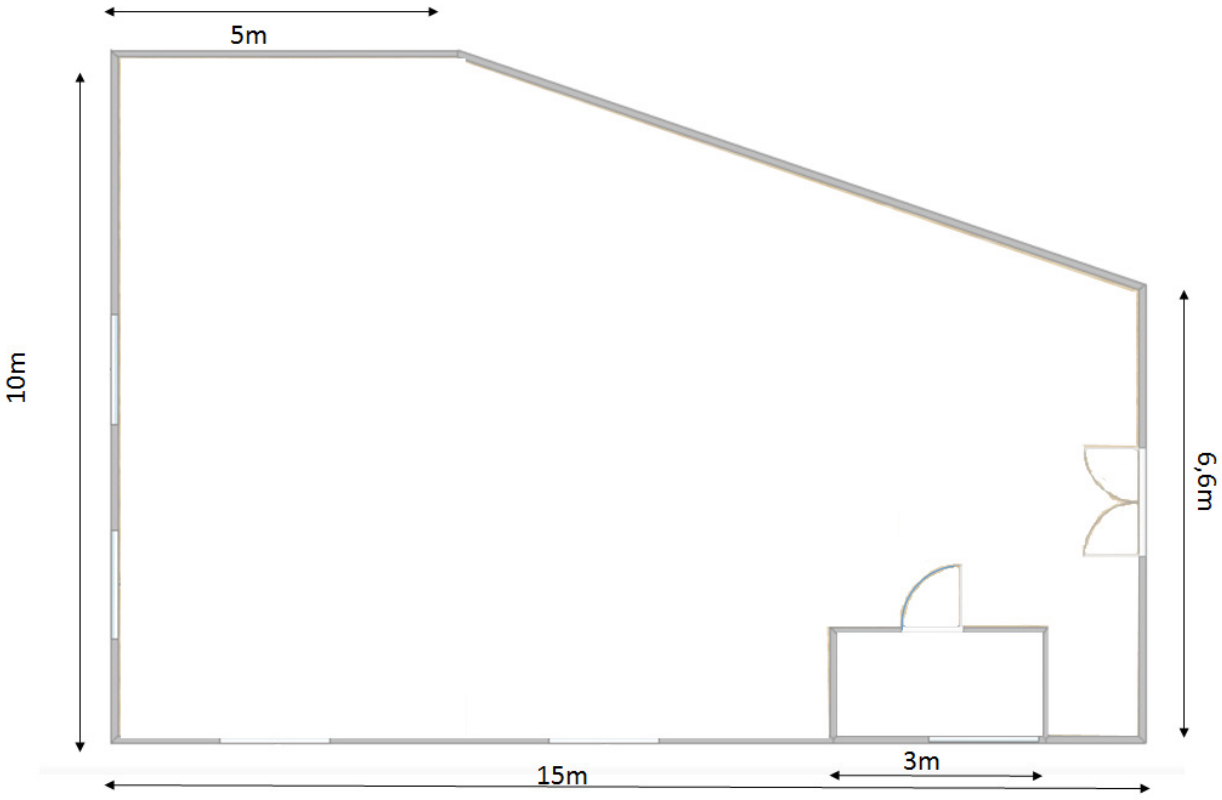
Küche und Besprechungsraum sollen durch Wände (diese sind vom Budget ausgenommen) vom Arbeitsplatz der Mitarbeiter/Mitarbeiterinnen getrennt werden. Dabei sollen Sie beachten, dass jeder Mitarbeiter/jede Mitarbeiterin 2 Quadratmeter freie Bodenfläche beim Arbeitsplatz haben muss. Außerdem ist eine Küchenzeile (Maße: 150cm x 80cm) bereits vorhanden und im Büroraum sinnvoll zu platzieren. WC sowie Waschbecken sind ebenfalls bereits im Büroraum vorhanden. Diese sind nicht zu platzieren. Die Schreibtische der Mitarbeiter/Mitarbeiterinnen sind außerdem so zu platzieren, dass die Mitarbeiter/Mitarbeiterinnen nicht mit dem Rücken zum Fenster sitzen. Die Schrittlänge zum Drucker soll maximal 23 Schritte betragen (Beachten Sie hierbei, dass ein Schritt etwa 60cm beträgt).

Bitte beachten Sie, dass es darüber hinaus Extrapunkte für die folgenden Kriterien gibt, sofern diese erfüllt werden:

- Höhenverstellbare Tische
- Ergonomische Sessel
- Fußstützen
- Feuerlöscher
- Erste-Hilfe-Kasten
- Pflanzen
- Bilder
- Schirmständer
- Mistkübel
- Kaffeehausmöbel
- „Ein roter Faden“ im Innendesign

Für diese Aufgabe nutzen Sie bitte das Internet, um die entsprechenden Gegenstände herauszusuchen. Außerdem müssen Sie die gefundenen Objekte auch im beiliegenden Plan einzeichnen. Bitte geben Sie ebenfalls die genaue Bezeichnung des Artikels, den Preis des Artikels, den Namen des Online-Shops bzw. Möbelhaus sowie die Adresse der Website an.

Für Ihre Aufgabe steht Ihnen ein fiktives Budget von 10.000€ und 60 Minuten Zeit zur Verfügung. Viel Erfolg und vielen Dank für Ihre Teilnahme!


5m
10m
6,6m
3m
15m

Bitte tragen Sie hier die Details zu den von Ihnen ausgewählten Produkten ein.

Produkt	Genaue Bezeichnung	Internetseite	Preis

Budget gesamt:

Abschließender Fragebogen:

1. Geschlecht	☐ weiblich ☐ männlich
2. Alter	
3. Berufsstand	☐ Schüler/Student ☐ Angestellter/Arbeiter ☐ selbstständig ☐ Pensionist ☐ Sonstige: _____
4. Haben Sie die Aufgabe vorab strukturiert und Aufgaben verteilt?	☐ Ja ☐ Nein Wenn ja, wie haben Sie die Aufgaben strukturiert/verteilt?
5. Denken Sie eine strukturierte Herangehensweise (z.B. ein Leitfaden zur Organisation einer Aufgabe) wäre sinnvoll?	☐ Ja ☐ Nein

Vielen Dank für Ihre Teilnahme!

13.3 Abstract

More and more organizations are turning themselves away from authoritarian management styles and experiencing the benefits of forming collaborations. Agile teams, non-hierarchical organizations, “holacracies”, inter-departmental collaborations as well as inter-firm alliances hereby represent important examples of such alliances between organizations. The increasing awareness of this topic raises the question how successful collaborations can be fostered. The thesis addresses this research gap and aims at finding out if a certain tool helps groups to organize themselves and, more importantly, if they are able to successfully solve tasks independently. For this purpose an experiment has been conducted to test the effectiveness of this tool. The findings clearly show that groups that make use of such a tool perform better than those who do not. Statistical analyses also appear to support this hypothesis.

13.4 Zusammenfassung

Mehr und mehr Organisationen kehren autoritären Führungsstilen den Rücken und erleben die Vorteile, die das Schließen von Kollaborationen mit sich bringen. Agile Teams, nicht-hierarchische Organisationen, “Holacracies”, abteilungsübergreifende Kollaborationen sowie Zusammenschlüsse zwischen Firmen repräsentieren hierbei wichtige Beispiele solcher Kollaborationen zwischen Unternehmen. Das immer größer werdende Bewusstsein dieser Thematik wirft die Frage auf, wie erfolgreiche Kollaborationen gefördert werden können. Die Arbeit befasst sich mit dieser Forschungslücke und hat das Ziel, herauszufinden, ob ein bestimmtes Tool Gruppen dabei hilft, sich selbst zu organisieren und, was noch wichtiger ist, ob sie dazu in der Lage sind, Aufgaben erfolgreich und unabhängig zu lösen. Zu diesem Zweck wurde ein Experiment entwickelt, um die Effektivität dieses Tools zu testen. Die Ergebnisse zeigen deutlich, dass Gruppen, die ein solches Tool heranziehen, eine bessere Performance aufweisen als solche, die das nicht tun. Auch statistische Analysen scheinen diese Hypothese zu bestätigen.