



International Master Thesis Projekt

# Improving the Audit results of DPD Depot in Bad Bentheim

A Design Science Approach

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Stanislav Stoev



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OF TWENTE.

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# Improving the Audit results of DPD depot in Bad Bentheim

*A Design Science Approach*

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## Master Thesis's Public Version

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UNIVERSITY  
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University of Twente

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**“Tell me and I forget, teach me and I may remember, involve me and I learn.” —Benjamin Franklin**

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**“Each friend represents a world in us, a world possibly not born until they arrive....” — Anaïs Nin**

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Sincerely,

Stanislav Stoev

## **Abstract**

The master thesis at hand has been conducted with the purpose to explore real organizational problems at Dynamic Parcel Distribution GmbH & Co (DPD) and to present possible solutions for generating functional and operational improvements in the company's depot in Bentheim, Germany.

According to Van Aken et al. (2009), problem solving in organizations is often undertaken in a craftsman-like fashion, based on business experience and informed common sense. Here, the process of decision making in modern business organizations is often characterized by a mismatch between what science knows and what businesses actually do. Facing the problem with low audit results of one of DPD's operational facilities, the project aims at improving the performance of this operational facility by applying design-focused and theory-based methodology for business-problem solving proposed by Van Aken et al. (2009).

The project is oriented towards creating value from an individual organizational perspective and is executed in the following phases. First, in the exploratory phase the full scope and depth of the preliminary business problem is explored. Here, a qualitative interview with the quality manager of the company in combination with performance and document analyses indicate that insufficient levels of 'formalization', 'specialization' and 'professionalism' lead to low audit results of the depot. Second, in the analysis and diagnosis phase, concrete operational shortcomings caused by the previously indicated problems were verified by participatory observations. As an answer to these concrete operational shortcomings, in the subsequent plan of action phase, solutions, which combat previously defined performance problems, were designed on the basis of operational management theory. Then, as a result, a solution design including seven concrete improvement suggestions was developed. In concrete, these suggestions include adding of some additional tasks, formalization of jobs, introducing of standards for damage packages and reorganization of some current work procedures. Eventually, in the final phase, it is explained how and why the solution design will positively affect the functionality of the organization and what management has to be aware of after the implementation of the suggested improvements. The thesis ends with a reflection on the executed design science project and with a part discussing the limitations of the approach.

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# 1. Introduction

The courier, express and parcel (CEP) sector is continuing to grow. Due to the positive development of internet retailing and the reduction of warehouse space as a result of supply-chain optimization, there are much more packages sent throughout the world. The limits of weight in the CEP sector allow packages to be picked up and delivered by a single person, which in turn makes companies in this sector very attractive for businesses and for private customers (Vahrenkamp, 2007). Clients around the world use the fast and reliable solutions offered by CEP companies to send their shipments anywhere in a very short time.

With regard to Germany, latest analyses show that 1,760,000,000 shipments are made within the country each year (Helmke, 2005). These shipments are divided between the 8,000 companies, which offer CEP services in Germany. Facing this situation one can imagine the level of competition in this sector. In order to survive under the conditions of severe competition, all companies strive to provide the best services and attempt to respond to customer needs. To accomplish these goals the CEP companies have implemented sophisticated systems and networks, which allow fast and qualitative delivery of every single package.

Considering one of these CEP companies, the subsequent analysis is directed at understanding the internal operations of 'Dynamic Parcel Distribution' (DPD), one of the leading international express and parcel service providers. DPD leads the German market for business-to-business (B2B) parcel shipping and is responsible for the transport of 2.5 million parcels globally every day, of which 1.5 million parcels are shipped within Germany. In order to cope with this amount of deliveries efficiently, while simultaneously staying profitable in the long term, DPD implemented a 'depot-network system' for transporting parcels between the areas of delivery. Networks of 75 depots and 4,500 parcel shops in Germany allow DPD to offer quality products and services and to respond to most shipping requirements of their customers (DPD, 2013).

In the depot-network system, the depots perform the function of handling or transshipment terminals and are responsible for the consolidation of pick-ups and transshipment of deliveries within a fixed region (Vahrenkamp, 2007). In the morning, containers with packages are

delivered to the depots and unloaded. After the packages have been unloaded and registered, these are transmitted to drivers who are responsible for the further distribution. Carrying packages to the consignees, delivery drivers are also accountable for collecting packages from the customers located in the area of delivery. At the end of the day, collected packages are unloaded in the depot and consolidated to units that are transported to the recipient depots in the network. The single depots send and receive packages from other depots in the network, as their primary functions are transshipping and consolidation. In comparison to the transport of general cargo, that has various forms and sizes, parcels transported within the depot-network have standardized sizes, which are easier to handle. This allows parcel companies to implement high degrees of systemization and extensively standardized operations and processes within the organizations. The depots often use the same mechanical conveyor systems such as rollers, and running belts and rely on identical process for the proper handling of parcels (Vahrenkamp, 2007). However, an efficient use of the system implemented in the depots can only be achieved by high shipping volumes circulating in the depot-network. Controversially, the more packages have to be handled in depots, the more complications could appear within the work process. There is always the chance that some of the packages get damaged, receive the wrong identification label, get lost in the system, etc. Nevertheless, to assure the fast and reliable delivery of every single parcel, DPD is obligated to guarantee the best possible functionality of every depot in the system. Despite high shipping volumes, every single package is of importance for the good image of the company. Consequently, mistakes concerning the operational processes are highly undesirable.

## **1.2 Problem Statement**

However, mistakes cannot always be avoided. In the provinces of Lower Saxony and North Rhine-Westphalia, DPD has organized three of its depots in a depot group, which has its headquarter located in the city of Melle. The depots in Muenster and Bentheim belong to this group and are directly responsible for their performance to the CEO and management team in Melle. In order to control the performance of the entities, DPD evaluates every single depot of its network on the basis of yearly executed audits. In short, the audits examine the economy, efficiency and effectiveness of the audited entity with respect to the performance of its functions and activities and the compliance of these activities with established legislation and regulations (INTOSAI, 2007). As the results of the audits indicate, indirectly whether the

right things are being done and, if so, whether these things are being done in the right way, the management team in Melle considers the audit evaluation as an option to see how each of the depots is doing on its daily business. As audits examine all important functional areas of the organizations, high results on the audit assure a good quality of work and provide the basis for reaching the predefined market goals.

However, the depot group was not able to satisfy their plans for equally high quality in the depot group. For years, the depot in Bentheim has performed below the required standards for quality. Whereas the depots in Melle und in Muenster reached 92 percent in the evaluation, the audit results of the depot in Bentheim remained steadily far below the satisfying mark of 90 percent. This low performance in the evaluation results signalizes the existence of problems influencing the functionality of the depot in Bentheim.

From a customer perspective, the quality of the provided services can hardly be evaluated before something goes wrong. CEP service providers do not have a product that they can polish to a high gloss to make their customers happier. Customer buying courier, express and parcel delivery services have the “simple” expectation that all shipments will arrive on the right time in the right quality at the right place. Considering the low audit evaluation of the depot in Bentheim and the associated functionality shortcomings, there is a danger that customers will become unsatisfied with the service provided by DPD, which on the other hand will probably lead to image problems and profit losses for the company.

### **1.3 Research questions**

Facing this situation, the main research object of this thesis is to explore the functionality problems leading to the low evaluation in the audit results and, respectively, their possible solutions. In this context, the objective of this research project is not to develop general knowledge contributing to the state-of-the-art literature but to generate specific knowledge in a concrete business context. Thus, the purpose of the project is to solve the problem with unsatisfactory performance of the depot in Bentheim by providing a theory-based and practical-oriented solution that will lead to actual change and improvement of the current situation in the organization. The project is directed towards delivering value from a single organizational perspective by answering the main research question, namely:

### ***How can the audit results of DPD's Depot in Bentheim be improved?***

The research question sets the frame of the project and represents the goal that should be fulfilled in the end of it. However, at this point, a number of questions arise since the initial research project formulate above is rather broad in nature. Therefore, in order to determine the scope of the project and to guide its execution the following questions will be addressed in the exploratory and solution part of the thesis.

- 1. Which are the main problems leading to the poor audit results?*
- 2. How do these problems influence the actual functionality of the organization?*
- 3. What kind of operational approaches exist and how could these be implemented for the improving the performance of the organization?*

Whereas the first two questions cover the exploration part of the project, the last one focuses on the solutions that will contribute to the better functionality in the depot and subsequently to a better audit results. However, before starting with the exploration of the problem, in the following part, the methodology used in the project is represented. The goal of the subsequent chapter is to explain why the methodology for business solving projects (BPS) proposed by Van Aken et al. (2009) is an appropriate approach for the purpose of the thesis.

#### **1.4 Thesis outline**

Chapter 2 elaborates on biases in the process making decisions in organization and represents the business-problem solving methodology. Chapter 3 reveals the process of exploration of the problem with the low audit results and outlines the results of the initial analyses. In chapter 4, operational shortcomings caused by the previously indicated problems were verified by participatory observations. In Chapter 5, solutions that combat previously defined performance problems were designed based on the best available scientific knowledge and organized in comprehensive change plan. In the following Chapter 6 it is explained how and why the improvements included in the change plan would positively affect the functionality of the organization. Additionally, the chapter provides an advice of what the company representatives have to be aware of in the process of implementation of the change plan. Finally, in Chapter 7 the quality of the project is discussed according to the research criteria of

reliability, controllability, and validity. The chapter provides also a brief reflection on the research project and some final remarks.

## **2. Project Methodology**

Facing the problem with the poor audit results of the depot in Bentheim, the management team of the company needs a piece of advice that will contribute to further understanding of the problem and respectively its outlawing in the near future. Previously, being aware of the shortcomings in the performance for years, there have been made efforts by company representatives to turn the situation of the depot into a favorable condition. As a response of the low audit results, high and lower level managers as well as supervisors have introduced different interventions to improve the performance of the organization. However, the last years' audit results disclose that these efforts were not as successful as expected. The decisions that managers made and the actions they underwent did not meet the expectations for better evaluation. This leads us to the conclusions that the decisions the company representatives have made in response to the poor audit results are not the right ones.

### **2.1 Business Organizations and shortcomings in the decision making process**

Management is about getting things done by others (Merchant and Van der Stede, 2011). Managers are responsible for making a decision based on available resources and personnel in order to achieve particular goals (Merchant, Van der Stede, 2011). According to Luhmann (1984), managerial activities are based on a behavior that is reaction of expectations and decisions that the manager made in response to problems that the environment poses upon the organizations (Kaiser and Wellstein, 2008). Regarding the process of decision making, Shafir et al. (1993, p.12) argue that making decisions is often difficult because of the uncertainty, "about the exact consequences of our actions, and the conflict about how much of one attribute to trade off in favor of another". In the real world, exercising their profession, managers need to make decisions under conditions of incomplete information and unknowable futures (Romme, Van Aken, 2012). Moreover, these decisions should be made and reasoned (Luhmann, 2000). In this regard, one can think about the decision of the management team of General Motors to close the Opel factory in Bochum, West Germany or

the decisiveness of Mr. Winterkorn to implement the modular construction system for the construction of all future VW models. It is not only to make a decision, but also to substantiate it with the right facts and arguments, and this in a way that you receive the needed support.

In this context, Dawes (2001) refers to a general human dilemma according to which all of us see the world through our own assumptions. Here, the problem is not in the assumptions as such, but in the humans' inclination to reinforce pre-existing beliefs and to reflect mostly on them. Because we tend to give credence to what we have seen with our own eyes, we assume our own experiences are typical. In this regard, relying on prior experience instead of more systematic knowledge leads often to suboptimal outcomes (March, 2010). Considering the process of making decisions by the managers, it is usual that managers reduce their reasoning efforts following the "logic of appropriateness" and bring forward their arguments on the basis of generalized rules and own experiences (March, 1994, p.58). Another aspect with respect to the way managers make decisions is referred to the term of 'bounded rationality'. In situations of 'bounded rationality', unaided human judgment cannot fully use the array of information relevant for reliable arbitration (Simon, 1967). Under these conditions, since managers can only pay attention to a limited amount of information, they make use of random facts and considerations or of such they prefer to use (Rousseau, 2012). Because of 'bounded rationality' managers do not optimize or maximize their way of reasoning, they only search for a temporal satisfying decision (Simon, 1986). In respect hereof, Van Aken et al.(2009) summarize on this topic as they argue that "in practice problem-solving in organizations is often undertaken in a craftsman-like fashion, based on business experience and informed common sense" (Van Aken et al., 2009, p.4).

Considering this shortcoming in the way of reasoning, it could be mentioned that the basic function of the manager, to make decisions, solve problems, and reduce uncertainty in the organization, is biased (Seidl, 2005). According to March and Simon (1958), uncertainty is captured, when the decision is based on body of evidence and series of interferences. However, being aware of the shortcomings in the process of decision making by managers, one can argue that uncertainty is reduced artificially and this again leads to further uncertainties and problems. Thus, it is useful to see how uncertainty in organizations can be tackled appropriately.



## **2.2 Uncertainty in organizational decision-making**

According to Montague (2007), two different kinds of uncertainty exist. On the one hand, irreducible uncertainty is created by randomness and heterogeneity in the environment. It is the nature of the phenomenon and cannot be eliminated. On the other hand, reducible uncertainty can be lowered through learning and by having better and more complete information about the environment (Montague, 2007; James, 2004). In this context, Rousseau (2012) is on the opinion that by relying on scientific evidence based on large numbers of observations, managers could easily identify the variation of both irreducible and reducible uncertainty attributed to their decisions. The knowledge how to obtain and use scientific evidence and reliable business information helps practitioners respond effectively to the uncertainty they face every day in organizations and make better decisions. Taking into consideration that managers use evidence, which is limited by human biases in interpreting the world, taking the advantage of scientific knowledge is necessary to overcome these limitations (Rousseau, 2012).

In comparison to other types of knowledge, scientific knowledge is based on large samples sizes, controlled observations, validated measures, statistical controls and systematically tested and accumulated understandings of how the world works (Rousseau, 2012). In this line, while personal experience reflects an individual's interpretation of events of one's own life and tend to over-interpret small bits of information, the science with its scale and scope can counter the problems of misinterpretation. The advantage science has over individual experience is that scientific research is essentially a project involving many thousands of people using systematic methods to understand the world (Romme, Van Aken, 2012). In sum, it can be concluded that science is less biased than unaided human judgment and thus provides in general more valid knowledge (Rousseau, 2012). Additionally, relying on scientific methods and information contributes to overcome what Yates (2003) has defined as "decision neglect" or the failure to use fully the resources at hand that could help make good decisions.

## **2.3 The benefit of scientific knowledge in the process of decision making**

Making use of science is not an unusual practice in the common world. Professionals in the sphere of Medicine and Engineering, for example, use synthesized combination of explicit and tacit knowledge in a creative process of reflection-in-action (Romme, Van Aken, 2012).

These repertoires contain tacit knowledge developed through personal experiential learning, as well as explicit knowledge derived from their academic discipline (Romme, Van Aken, 2012). From this point of view, the challenge here is to demonstrate the added value of recently developed scientific evidence to managers. Experienced managers may have distinctive understandings of what counts as evidence. Furthermore, the benefit of research-based knowledge may not always be understandable, useful or applicable to them and the circumstances they work (Green, Potwowski 2012). In this regard, Davies (2007) mentions that managers seldom pay attention to academic literature and even in cases they do, they rarely adopt the findings because they are not effective for specific situation from the business reality. Indeed, although “the organizations have become dominant institutions on the social landscape the body of knowledge published in academic journals has practically no audience in business” (Daft and Lewin, 1990, p.1). From this point of view, the main critique concerning scientific research in the area of management is that it has very little impact on the thinking of managers. Supposed that managers are willing to use scientific research, this research is mostly too broad or too general to provide relevance for practice (Van Aken, 2004). Facing this situation in the management science, most scholars see a gap between the available scientific knowledge and the knowledge used by practitioners (Van Aken, 1994; Venable, 2010; Thorpe et al., 2011). The ‘rigor-relevance dilemma’, as the gap is called, refers to the problem that science is largely concerned with addressing rigorous validation and reliability issues and not the real problems of the manager. According to Davies (2007), most of the academic research in management is concerned with explaining existing phenomena and not with providing knowledge that is useful in practice. Thus, one can ask, “if knowledge doesn’t improve the decision making than what is the point” (Starkey and Madan, 2001, p.6)?

According to Nicolai (2004), the point is that science matter but that it does not function on the input-output basis. It is not in the nature and the purpose of the managerial science to be fed up with problems and respectively to produce solutions (Nicolai, 2004). From this point of view, “the question of the meaningful connection between the management practice and the results of scientific research is the center on the debate of relevance” (Nikolai and Seidl, 2010, p. 1260). Assuming that there is a mismatch between what science knows and what businesses do, it appears the following question: How is the academic research actually relevant for the process of decision making? In a broad sense, relevance could be understood as a condition where “X is relevant to Y only whenever X makes a difference for Y” (Bateson, 1972, p.315). In this line of reasoning, it is of interest what kind of difference scientific

knowledge makes. As Nikolai and Seidl (2010) mention every kind of knowledge could be seen as relevant for managers for making decisions. In order to determine some kind of practical forms of relevance in the process of decision making, it might be useful to look at the three different phases of the process, namely - (1) the definition of the decision situation, (2) the selection of one of the alternatives and (3) the enforcement or legitimation of the selected alternative (Nikolai and Seidl, 2010). In the phase of definition of the decision situation, the knowledge enriches the managers' understanding of the situation and has a "conceptual relevance" for the decision. In the second phase, knowledge has an impact on the choice of particular decisions or courses of action. Here, the knowledge makes a difference in the process of decision making as it has "instrumental relevance" for the decision (Van Aken, 2004). At the end, having chosen one course of action, managers often have to justify their decisions. Here, one can speak of "legitimative relevance" of knowledge (Nikolai and Seidl, 2010, p.1263). In this context, having more information could not be a disadvantage for making decisions. More information about the situation in which a decision should be made, make managers aware of intrinsic factors in the environment and broadens the spectrum of their insights. Thus, it is useful to think about translating scientific knowledge to increase its 'conceptual', 'instrumental' and 'legitimative relevance' in the area of management. These objectives can be achieved by means of Evidence-based management.

#### **2.4 Evidence based management - an alternative to bridge the gap between what sciences knows and what business does**

A large amount of scholars take the view that scientific information is inextricably bounded to the process of making decisions in business organizations (Pfeffer, Sutton, 2006, 2012; Briner et al., 2009; Rousseau, 2012). Over the last ten years, academic articles representing new ways of thinking about the practices of managers have influenced academic society and business practitioners. Most of them acknowledge the gap between science and practice, but still consider academic research a powerful instrument for managers when making decisions. On their premises, managers should stop to discriminate the large amount of available scientific information, and begin with the practice of an Evidence-based management (EBM). In general, Evidence-based management is a decision making process, which combines critical thinking with the use of the best available scientific evidence and business information. Instead of searching for best practices or providing managers with concrete solutions, EBM calls for searching the best available evidence when it comes to decision making (CEBMA,

2013). In this case, 'best available evidence' implies valid, reliable and relevant information that support managers in the process of decision making. EBM is the systematic, evidence-informed practice of management, incorporating scientific knowledge in the content and process of making decisions. Scientific knowledge contributes to a better definition of the decision situation (conceptual relevance of knowledge) and provides managers with more alternatives for solutions than they are able to synthesize on their own (instrumental relevance of knowledge). Furthermore, there is no better way to legitimize one's decision than by using scientific proven information from previous conducted studies (legitimative relevance of knowledge). Moreover, EBM does not replace intuitive, experience based management, "but extends it by judiciously gathering, validating, selecting and using knowledge on the incumbent organization, its environment and the types of issues at stake"(Romme and van Aken, 2012, p.72). Advancements in practitioners' judgments through critical thinking and decision aids reduce bias of craftsman-like decision making, based predominantly on someone's own experience or on the experience of people, he knows.

Referring to the problematic with uncertainty in organizations, EBM could be seen as an instrument that increases the probability for effectively reducing uncertainty in the process of decision making. This, however, is not done by theoretical guidelines for the right course of action or by offering recommendations to practitioners on how to act. Rather, a proper application of the principles of EBM reduces uncertainty by enriching the practitioners' understanding of the three phases of the decision making process. Instead of focusing exclusively on 'instrumental relevance' of scientific knowledge and its utilization, EBM, used proactively, can assure the acquiring of needed information for the proper construction of the three phases of the decision situation. In this context, appreciation of the decision situation, and not the direct selection of particular courses of action, distinguishes intelligent from non-intelligent decisions (March, 1999).

On the one side, EBM preaches for using scientific literature, but on the other side, this kind of management practice does not stand for the direct utilization of available scientific knowledge. Hence, one can think about the creative use of currently best available scientific evidence and its translation in practice. In this context, we follow the ideology of Romme and Van Aken (2012), who see EBM as a practice that is much more than rational decision-making. It is a method for changing the actual into the preferred using research-informed designing (Romme and van Aken, 2012). EBM promotes the activity of collecting

information and paying attention to scientific evidence, as well as to organizational characteristics and experiences. Yet, this is only one part of the model. Having gained the needed information and scientific evidence, the core process of EBM focuses on working with this information input. It entails a creative design process with the purpose of developing a situation specific solution to business problems. “EBM draws on scientific evidence as a source of design propositions and for creating a design process that effectively makes use of a broad array of knowledge and perspectives “(Romme and Van Aken, 2012 p.175). In this context, EBM is not merely conceptualized as a research-informed, organizational decision making process (Tranfield, Denyer & Smart, 2003) but rather as a design science approach (Romme, 2003; van Aken, 2004). Looking at EBM as a design-oriented discipline is not something novel. This kind of conceptualization follows the ideology proposed by Simon (1986) in his book *The Science of the Artificial*. Accordingly, EBM can be considered a design process, in which practitioners solve real-life organizational problems using scientific evidence and validated organizational facts.

Facing the primary purpose of this paper, namely solving the problem with the poor performance of the DPD’s depot in Bentheim, EBM is of great value for finding a solution within the current situation of the organization. Thus, referring to the main principles of EBM, we first need to gather a sufficient amount of valuable scientific knowledge and local information relating to the problem. Second, we have to initiate a design process using this information. In order to accomplish this task, we will acquire the relevant knowledge about the main principles of Design Science Research in the following section.

## **2.5 Design Science Approach to Evidence based management**

The goal of design science research is to generate knowledge and to be “used in realization of artifacts in the improvement of performance of existing entities” (Van Aken, 1999, p.4). Seeing the descriptive knowledge as insufficient for practitioners to solve their problems, the lack of utilization of scientific knowledge in academic management theory can be tackled by using the model of design science. Following Simon’s (1986), designing a future is fundamentally different from describing and explaining the present. Design science researchers are not satisfied with describing field problems and analyzing their causes, but they develop alternative general solution concepts for field problems (Romme, van Aken,

2012). Having this in mind, ‘design’ can be conceptualized as a process where one gets involved to make things work in the real world (Nelson and Stolterman, 2003). Here, the main concern is to be as ‘real’ as possible and not necessarily to focus on what is ‘true’ (Fallmann, 2007). “A design science approach is a pragmatic one. It is not about developing “true” propositions about reality. Rather, it develops propositions that inform people about how to create preferred realities” (Romme and Van Aken, 2012, p.153).

Approaching organizational problems through the lens of design science in combination with the principles of EBM, involves managers in a creative process of decision making that avoids the bias of craftsman-like decision making in organizations. Taking for granted that design science research produces knowledge for solving field problems in organizations, it is still of interest how a design process is executed in particular.

## **2.6 Methodology for business problem-solving projects in organizations**

According to Romme and Van Aken (2012), design processes require the provision of several intermediate inputs. In addition to the specific knowledge of professionals, the core process of designing requires a clear formulation of the design problem, specifications of the design, analysis of the root causes of the problem, and an analysis of the problem context. The design literature has produced a great variety of models of design processes, wherein the overall design process is subdivided into a number of stages (Evbuonwan et al., 1996). In business and management, the regulative cycle proposed by Van Strien (1997) is one option to conduct design-oriented research. The regulative cycle is a full-cycle approach providing general structure for business problem solving process. The classic problem-solving cycle by Van Strien, has five basic process steps: 1) problem definition, 2) analysis and diagnosis, 3) plan of action, 4) intervention, and 5) evaluation.

Following the logic of the problem-solving cycle and implementing previously represented principals of EBM, Van Aken et al. (2009) represent design-focused and theory-based methodology for business problem-solving projects in organizations. The methodology incorporates the five basic steps of the regulative cycle and proposes a practical structure for carrying out business problem-solving projects (BPS) for improving the performance of business systems, departments, or companies on one or more criteria. In its core methodology focuses on “the design of the solution for a concrete business problem, the design of the

change process needed to realize that solution in new or adapted roles and procedures, and the analysis needed to make those designs” (Van Aken et al., 2009).

## **2.7 Improving the performance of DPD’s depot in Bentheim by using the methodology for BPS**

Considering the performance problems of DPD’s depot in Bentheim, the purpose of our project is to contribute to change and performance improvement in the organization, which in turn will lead to better audit results. Having made the long journey from the nature of scientific knowledge to its appropriateness for better decision making in organizations, we have justified the using of the principals of EBM in combination with the design science approach for the utilization of management science in the practice of business reality. Furthermore, we determined the methodology for BPS project as logical structure that will allow us to rely on scientific evidence and practical experience to work systematically on the performance problem of the company. As the purpose of the project is to design a solution for the current performance problem of the depot, our goal is different form providing of generic rigorous knowledge in the field of business and management studies. Considering this, we follow the steps of the previously described regulative cycle. However, due to time constraints we will predominantly focus on the design part of the regulative cycle, which is common to most BPS-projects (Van Aken et al., 2009). In concrete BPS-project will be executed throughout the following steps:

### *Step 1: Problem definition*

Business problem is defined by Van Aken et al. (2009) as current state of affairs in the company with which one or more important stakeholders are dissatisfied. Comparing the audit results of the depot in Bentheim with the results from the other depots in the group and with customary for the sector quality standards, management team of DPD’ depots group in Melle faces a situation where the evaluation of the organization in Bentheim does not meet realistic standards for performance. However, audit results being the most visible problem for the stakeholders is only an indication of underlying problems that actually lead to the poor evaluation of the organization. So, in this context, problem definition step is executed with the

purpose of indicating underlying causes leading to the poor audit results. In order to accomplish this at first, we conduct an exploratory interview with the quality manager. Here, we discuss possible reasons that lead to the low audit results of the depot. At next, company's audit reports from the last three years were checked for indicators that confirm the reasons mentioned previously by the quality manager. At the end, third source of information, namely the data retrieved from available organizational documentation, was analyzed for the purpose of verifying of the preliminary suggested causes of the problem.

### Step 2: Analysis and diagnosis

The predominant purpose of the analysis and diagnosis step is to validate the found business problems and to explore and validate their causes and consequences (Van Aken et al., 2009). In this phase object knowledge on the concrete business system and observed shortcomings is used to materialize the previous identified reasons leading to the poor audit results. Applying the method of participatory observations, we search for concrete practices that are resulting from the previously indicated shortcomings and affect the performance of the organization?

### Step 3: Plan of action

The plan of action step of the regulative cycle focuses on solution design, i.e. the design of a solution for the indicated concrete problems. The plan of action step involves fitting contemporary literature to the validated context specific information and problems in the analysis and diagnosis step. Within this step, systematic review of the literature should result in a range of solution concepts to solve the business problem (Van Aken, 2009). In order to tackle the previously indicated shortcoming in the area of analysis, we conduct a thorough literature review and design a series of partial solutions. Solution concepts from the theory are contextualized to specific solutions that should contribute to the improvement of the execution of the individual jobs in the depot and respectively to the solving of the registered shortcoming along the flow of work.



### **3. Problem Definition**

DPD`s depot in Bentheim faces the problem of very low audit evaluation of its performance since years. Despite the continuous initiatives of the management team to improve the functionality of the organization, new problematic issues appear frequently that led to unsatisfactory audit reports in the last three years. Considering this, it could be mentioned that the organization in Bentheim faces a closely interwoven problem mess, consisting of numerous causes, which affect the overall performance. The poor performance of the depot is registered but for one or the other reason not improved. Facing the complexity of the problem mess, the management team of the company decided to engage in a BPS project in order to try a more systematic approach in their efforts to solve the problems.

In the problem definition chapter, the problem with the low audit results is analyzed and via a thorough decomposition process further explored and framed. Here, we rely on the method of methodological triangulation (3.1) to execute the analysis. As a first step, an interview with the problem owner has been held. Based on this interview initial problems are dedicated. Next, organizational shortcomings mentioned in the interview, which lead to insufficient audit results, are set against theoretical foundations from the field of organizational design theory (3.2). Supposing that most of the problems in the organization are due to deficiencies in some of the structural dimensions in the organization, the audit results of the company from the last three years are narrowly explored and checked for indicators supporting these initial suggestions. Then, an analysis of available organizational documents is conducted to prove the preliminary suggested causes of the problem (3.3). Eventually, the preliminary business problem in the depot of Bentheim is defined based on these sequentially performed steps and discussed with the problem owner (3.4).

#### **3.1. The method of ‘Methodological Triangulation’**

Many researchers who conduct qualitative studies use the method of triangulation to check the validity of their studies and to strengthen the confidence of their research findings. By examining a research question from different perspectives, researchers are able to come up with more valid and exact conclusions (Guion, 2011). This is because the method of methodological triangulation allows researchers to verify their findings by employing

multiple approaches such as interviews, performance observations, and document analysis in the process of data collection (Denzin, 2006). Using multiple methods is an effective way to overcome most of the weaknesses of each method used independently (Gray, 2004).

The first step of the problem exploration consists of a broad interview with the quality manager of the depot group. Next, for the purpose of our study, we rely on method of methodological triangulation to confirm the results of interview. Starting with a semi-structured interview, analysis of audit results (performance) and document analysis was conducted for the purpose of problem validation. The problem is validated in terms of organizational relevance, when minimum two of the analysis identify the same problematic aspects. Consequently, the method of triangulation will be used for both exploring (3.2) and validating (3.3) the problem within this section on ‘problem definition’.

### **3.2. Problem exploration**

During the internal orientation phase, the business problem should be discussed with important stakeholders. The main goals of this discussion are to reveal the scope and depth of the problem and to obtain new perspectives and insights about it (Van Aken et al., 2009). Therefore, discussing the problem with people who are confronted with it daily is useful to learn more about the problem and its specific context conditions (Van Aken et al., 2009). According to Kahn and Cannell (1957), a possible alternative for leading purposeful discussion is to conduct interviews. Here, in-depth interviews can be very helpful to “find out what is actually happening and to seek new insights” of the problem (Robson, 2002, p.59). Especially, in explorative studies semi-structured interviews are highly beneficial because these are conducted for the purpose of refining and increasing the author’s understandings of a topic (Van Aken et al., 2009). In general, in depth or semi-structured interviews are non-standardized interviews, which are not just used to reveal and understand “what” and “how” but to explore “why”.

Following this logic, a semi-structured interview was conducted with the quality manager of the company. The interview followed the guidelines proposed by Van Aken et al. (2009) and was set up to outline the major problems that affect the functionality of the depot in Bentheim. In this interview, the quality manager had to explain the problem from his point of view and provide us with broad explanation of the situation in the organization. His explanation should determine the real scope and depth of the problem and provide descriptive information about

organizational circumstances. Moreover, the discussion with the quality manager had for a purpose to unveil some preliminary relationships between potential causes and their effects on the performance leading to problem with the insufficient audit results.

For the purpose of the thesis, the information provided by the manager was documented in form of full interview transcriptions (see Appendix A). Next, in order to derive to useful insights from the interview, grounded coding method that isolates thematic statements (codes) out of descriptive data (Creswell, 2007), was used. For the concrete procedure and method how the interview has been coded we refer to Appendix B. In the following, the results of the interview will be presented.

### **3.2.1. Summary of the interview outcomes**

The interview conducted with the quality manager of the depot group was very useful to gain a broad overview over the initially formulated problem. He emphasized many aspects concerning origin, effects, development and possible solutions of the problem. According to him, poor audit results of the depot in Bentheim seem to be an ‘umbrella term’ for the poor execution of confluence of practices and activities within the borders of the organization.

First, the manager mentioned that the roots of the problem do not necessarily lie solely on the depot’s territory in Bentheim. Instead, he pointed to the centrality of the problem and spoke about vague organizational handbooks and steadily increasing complexity in the entire company. According to the manager, there is no single problem or a single cause leading to the poor results of the depot. For him, it is much more the confluence of unfavorable factors that lead to poor performance results. The lack of easily applicable system rules and process prescriptions causes great concerns within the management team. Having no clear rules implemented, led to situations where a single employee has to execute daily activities or resolve a lot of occurring problems on the basis of their personal interpretation of the rules. What is more, having to make such decisions is seen as an undesirable situation by the employee and often leads to problems in the functionality of the whole system. Eventually, the lack of concrete rules biases the training on the job of new employees and leads to negative attitudes among the personnel towards their job.

Merely performing a task instead of thinking in processes is also seen as an unfavorable state of affairs concerning the work of the employees. In this context, having no clear process prescriptions is not just a problem for the employees but also for the management team. The

quality manager admitted that the management team does not have complete knowledge about every single process in the organization. The goal is to have 85% of the work processes exactly prescribed. However, as this is not the case, the management team refers mostly to measures of snapshots of the current performance when making decisions. Under these conditions, the management team also faces a problem with the top-down communication of know-how and with the implementation of new rules. It is hard to change the form of something when this form (rules) does not exist. In sum, the lack of clear standardized processes and common job specifications lead to numerous external and internal problems for the depot. According to the company representative, this often leads to misunderstandings within and between the depots in the depot group. Additionally, further negative effects like increase costs, image problems and customer dissatisfaction occur. According to the quality manager, every failure that is being made in the organization leads to customer dissatisfaction, image damage and to problems for the entire depot group.

In the interview, the quality manager mentioned another very important insight concerning the poor audit results of the depot in Bentheim. Instead of looking at the internal functionality of the production facility only, the audit also examines the performance of the delivery and collect service performed by the system partner. According to the quality manager, delivery is another crucial point that contributes to the negative results of the depot. He is of the opinion that the problems in this area mainly occur due to the personnel bottleneck that the system partners have faced in the last three years. Moreover, it was mentioned that the job as a driver for a system partner is generally considered low appealing by people searching for work. Because of this, the system partners are forced to employ almost everybody who applies for the job. Thus, it is often the case that unqualified and incapable labor is assigned to complex tasks and work processes. This in turn has the consequences that the quality of work diminishes and the cost for the delivery process rises.

Facing the current situation in the depot, the quality manager is steadily seeking for alternatives that are useful for solving problems with a daily character immediately. According to him, in situations where immediate solutions are needed, work on chunk is preferred. However, the company representative mentioned his willingness to work on holistic and sustainable decisions in the long term that are directed towards improving the whole system of work and do not aim at single shortcomings. He is willing to install instruments that would provide him with actual information of the functionality of the depot and not just

snapshots of the performance. For the future, the quality manager is striving for a control and observation system that will enable him to gain knowledge. To sum up, the quality manager is oriented towards long-term projects that will enable the reengineering of the operational aspects of the depot. Finally, it was mentioned that the quality manager strives for standardization of processes that would enable the benchmarking between the depots in Muenster, Melle and Bentheim, which would make a comparison of the operational data of these depots possible.

### **3.2.2 Categorization of interview outcomes**

In order to derive to useful insights from the interview, the perceived information was further analyzed. According to Krippendorff (2004), content analyses represent a generic research approach suitable for drawing replicable and valid conclusions from data to their context. A concrete technique used in the content analysis refers to a coding procedure. The coding procedure isolates thematic statements (codes) out of descriptive data (Creswell, 2007) (Appendix C). The isolated codes are seen as “tags or labels for assigning units of meaning to the descriptive or inferential information compiled during a study” (Miles, Huberman, 1994, p.11) and are employed to describe, compare and explain qualitative data (Ryan, Bernard, 2003). In order to capture the most important facts of the interview, words, sentences and paragraphs were labeled with codes. On the basis of existing relationships between the forty codes these were further grouped into six categories (see Table 1). In the following, the resulting categories are presented according to their positioning on the organizational level of analysis.

### **3.2.3 Problem categories in the context of organizational level of analysis**

Having coded the content of the interview with regard to the situation in Bentheim, and having mapped all the codes on a provisional work plot (as depicted in Appendix C), it appeared that these codes could not only be assigned to overall categories but also related to different levels of the organization. Some of the codes were assigned to information about the vague company handbooks and others (organizational level), for instance, are labeling information about problem with the work attitudes of employees towards the process of rules implementation (personal level). Considering this, Daft (2010) proposes three levels on which organizational functionality could be analyzed. These are inter-organizational, organizational, and group/individual level of analysis. In this line, for the purpose of further analysis the

categories build from the codes are represented according to their relation to the particular organizational level of analysis.

The codes in the interview that referred to the central character of the problem were assigned to the category "*Management Issues*". Because this category encompasses codes relating to causes of the problem that have an interorganizational character and concern the whole DPD Company, the category was seen as such that refers to 'inter-organizational level of analysis'. At next, the codes referring to, inter alia, the 'interpretation of system rules', the 'lack of clear process specifications' or the 'lack of concrete prescriptions' were combined within the category "*Standardization of Work*". Additionally, the passages of the interview concerning the future implementation of a control system which would enable the management team to measure, reengineer, and standardize most of the processes in the depot is represented within the category "*Control System*". The category named "*Communication of Rules*" is related to interview statements referring to complications of communicating expertise to the depot's employees. Because all of these three categories are associated with the issues concerning strictly the internal functionality of the depot in Bentheim, these are positioned on the 'organizational level of analysis'.

Next, the coding procedure generated two categories on the individual level of analysis. First, the category "*Employee Aspects*" include statements about negative attitudes by employees towards the work process in the depot as well as their unwillingness to take responsibility and think in processes. Second, the category "*Delivery Problematic*" includes statements regarding insufficient work quality of the depot's system partners and the resulting shortcomings in the delivery service of the organization. These two categories have been positioned on the individual level of analysis because of the fact that these shortcomings were simply caused by personal attitudes towards the work process or by employees, who do not possess the required qualification or qualities to execute the job. Finally, the last category "*Negative Effects*" includes those statements that refer to very general negative externalities such as 'increased costs' or 'image damage', which could not clearly be assigned to one of the three levels of analysis. This category included all of the negative effects that the quality manager has mentioned during the interview.

Looking at each category in more detail, some categories could be related to more than one level of analysis. For example, the category "*Communication of Rules*" could obviously be

assigned to the individual level of analysis as well. Likewise, the category “Control System” could be analyzed on an individual level concerning the communication channel from the perspective of the employees and their interpretation of the rules imposed by the control system. Despite ambiguity in some cases, however, for the purpose of our analysis each category is assigned to that very level where it appears most appropriate or to that level of analysis where each category is to be tackled as a problem.

**Table 1: Problem categories on organizational level of analysis**

Interorganizational level	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Management Issues</div>	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;">Negative Effects</div>
Organizational level	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Standartization of Work</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">Control System</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">Communication of rules</div>	
Individual level	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto; display: inline-block;">Employee Aspect</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto; display: inline-block; margin-left: 20px;">Delivery Problematic</div>	

Source: Own illustration based on Daft (2010): level of analysis

Improving the performance requires the organization’s management team to tackle the problems outlined in the abovementioned categories effectively. However, some categories are interdependent. Having this in mind it is likely that dealing with every problem category separately will not lead to an improvement of the depot’s audit results. Accordingly, Douglas and Wykowski (1999) argue that causes and effects cannot be isolated from their specific contexts. Therefore, systematic and comprehensive problem solving should go beyond the linear cause and effect relationship. Thus, it was useful to relate the depot’s organizational characteristics to previously identified problem categories based on theoretical guidelines. This well-grounded and enhanced understanding will allow us to initiate systematic interventions beyond single problem-solving initiatives by treating the organizational needs as a whole. Therefore, instead of segregating the defined problem categories into specific problem aspects, in the next section, we will engage in a process of assigning these eight problem categories to the structural dimensions of organizations as proposed by Daft (2010).

### 3.2.3. Interview categories and structural dimensions of organizations

As demonstrated in the previous analysis, most problem categories are situated on the organizational level of analysis. Therefore, we will neglect the influence of the external environment for the moment and focus on intra-organizational aspects. Following Daft (2010), organization theory is one way to analyze organizations more accurately and deeply than one otherwise could. According to the author organizations are “*social entities that are goal-directed, designed as deliberately structured and coordinated activity systems, and are linked to the external environment*” (Daft 2010, p.16). In accordance to this, the author is on the opinion that the first step to understand organizations is to look at features that describe organization specific design traits. Understanding and analyzing organizations requires examining both structural dimensions and contingency factors. Whereas contingency factors relate to the external environment structural dimensions provide labels describing the internal characteristics of an organization (Daft, 2010). Independent from organizational size, function, and makeup, operations of all organizations are based on (1) a division of labor, (2) a decision-making structure and (3) rules and policies. Daft (2010) divides these three core elements further into six structural dimensions:

**Table 2: Six structural dimensions of organizations**

<b>Dimension</b>	<b>Description</b>
Formalization	the amount of written documentation in the organization. Documentation includes description regulations, procedures and policy manuals. These bundles of documents describe behavior and activities
Hierarchy of authority	reports flow and the span of control for each manager
Centralization	to the hierarchical level that has authority to make a decision
Specialization	the degree to which organizational tasks are subdivided into jobs



Professionalism	the level of formal education and training of employees
Personnel ratios	the deployment of people to various functions and departments

Source: Daft (2010)

Assuming that DPD's organization in Bentheim can also be divided into these structural dimensions, we suggest that those problems that were outlined in the interview and subsequently grouped into problem categories can be assigned to one of these dimensions respectively. In this line, the problems could be additionally assigned not just to the level of organizational analysis but also to the structural dimensions proposed by Daft (2010). Grouping the problem categories on the basis of the organization's structural dimensions will allow us to identify not only specific problems but deficits within the entire organizational structure. Table 3 presents the organizational structural dimensions on the x-axis and the level of analysis on the y-axis. The problem categories, derived from the coding process, have been positioned on the chart according to the level of analysis and the structural dimension they relate to. Here, in order to place the problem categories on the x-axis, we refer to the detailed description of the problematic aspects in the interview and matched these with the definitions of the structural dimensions proposed by Daft (2010). The description of the problem with unregulated jobs and processes within the organization, for instance, led us to the conclusion that the problem is directly related to the degree to which organizational tasks are subdivided into jobs, and respectively to the level of specialization in the depot. Having assigned the problem categories to the structural dimensions, it seemed that the problems of the depot in Bentheim are mainly caused by insufficiencies within three structural dimensions. According to the analysis, based on the interview with the quality manager of the company, it turns out that the poor audit results originate from the current level of 'formalization', 'specialization' and 'professionalism' in the organization. In other words, the depot has problems with the documentation of its rules, the division of tasks into jobs and the training of the employees working there.

**Table 3: Organizational problem categories based on interview**

<i>Interorganizational level</i>						
	Management issues					
<i>Organizational level</i>						
	Control System			Standartization of work	Comunication of rules	
<i>Individual level</i>						
				Employee Aspect	Delivery Problematic	
	<i>Formalization</i>	<i>Hiearachy of authority</i>	<i>Centralization</i>	<i>Specialization</i>	<i>Professionalism</i>	<i>Personal ratios</i>

Source: Own illustration based on Daft (2010)

### 3.3. Problem validation

The previously conducted interview analysis reveals deficits in the organization’s level of ‘formalization’, ‘specialization’ and ‘professionalism’. However, despite the fact that the quality manager is a person knowing much about the investigated problem issues, backing our analysis only on a company representative’s opinion may bias our problem definition. Van Aken et al. (2009) allude to bias problems in situations where the problem owner frames the organizational problem(s) independently. In order to avoid this problem, students are requested to verify the interview’s opinion by means of additional analysis and expertise. Although the information received from the interview is valuable input, students should further analyze whether this information represents the real story of the company (Van Aken et al. 2009). Being in line with the method of ‘methodological triangulation’, the interview with the quality manager was the first step to gather an in-depth understanding of the organization’s problems. Next, additional research in terms of performance analysis (audit

reports) and document analysis (audit questionnaire list and organizational handbook) helped us to verify the problem issues as ‘real’ organizational instead of independently framed problems.

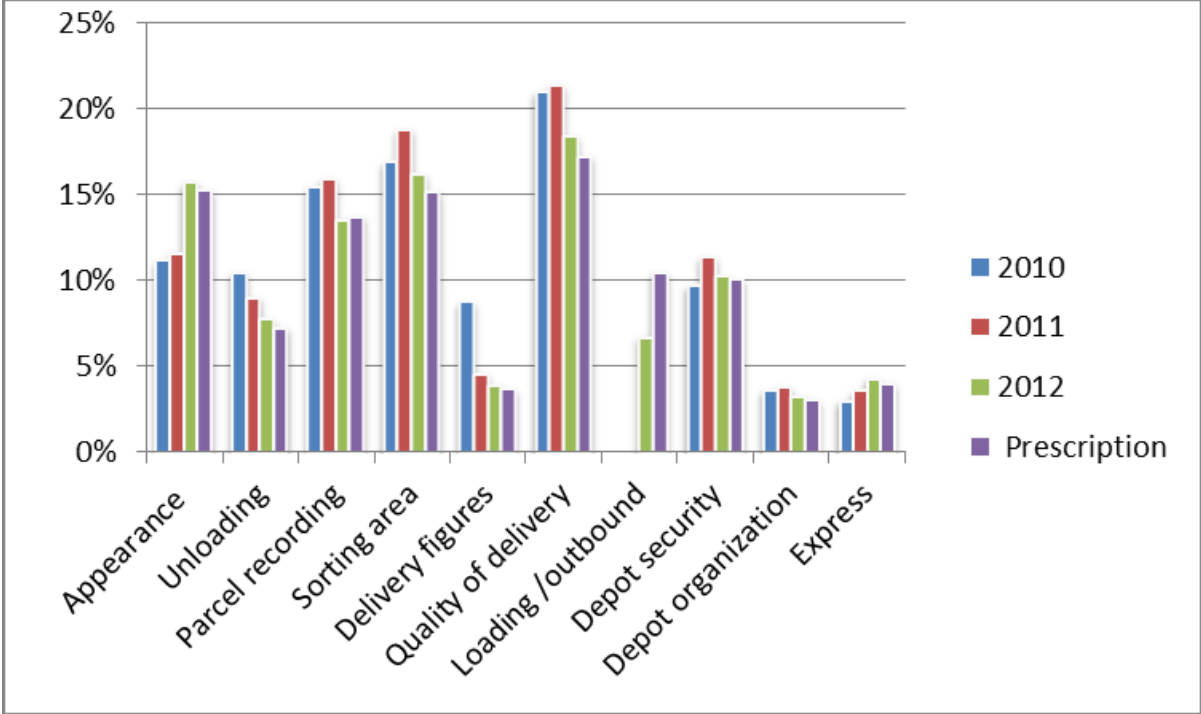
### **3.3.1. Performance analysis (audit reports)**

In order to verify the problem categories identified through interview analysis, we now look at the company’s audit results from the last three years. Here, we focus on problem areas, which are of great importance for the depot’s audit results but scored particularly low in the evaluation. We do the analysis by comparing the results actually achieved with the results normatively desired. Cases where reached results continually deviate from the desired performance levels indicate a ‘remarkable situation’. A ‘remarkable situation’ is defined as the deviation of results of important audit categories measured against the norms, which are significantly variable or have scored behind the normative results over the years (Zondervan, 2011). This work definition reveals two important criteria, namely ‘relative category importance’ and ‘result deviation’, which guide the analysis of the audit reports.

The audit reports of the depot in Bentheim entail eleven major categories (see Figure 1). These eleven major categories are divided into different subcategories for which the relevant information is gathered by questionnaires (Appendix D). The questions for each subcategory constitute the key indicator for the depot’s performance within each category and are measured against predetermined normative standards. According to the concrete object of evaluation, some questions are answered with “Yes/No” and others are assigned to percentage responding to the actual level of performance. The auditor examines every question within the individual subcategory and evaluates the performance on each of them by means of a percentage degree against the level of hundred percent given for the optimal execution. The end audit result represents the average result of the reached score on each category. However, as for every audit category there exist different amount of points to be given, each different category has its relative importance on the audit. Therefore, the first step in the following analysis was to determine the relative importance of each category. Figure 1 represents ten of the eleven categories that are responsible for 99,8 percent of the end audit results. The categories are organized along a scale representing the relative impact of each category on the

audit results in the last three years. The column in violet shows the standard level of importance for each category.

**Figure 1: Relative importance of audit categories**



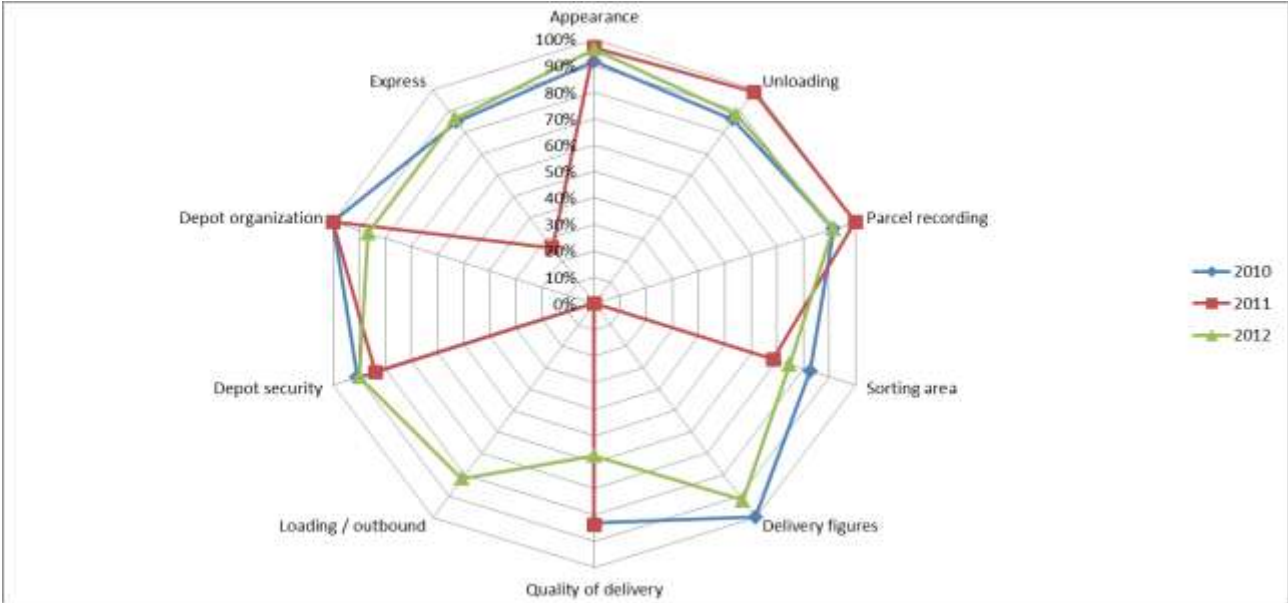
Source: own illustration based on audit reports 2010-2012 of the depot in Bentheim

Looking at the table one can see that there has been a certain amount of fluctuation within the ‘relative importance’ of each category over the years and in comparison to the normative standards. This is be explained by the fact that questions, which account for the results of the subcategories and the categories respectively, could not be examined by the auditor. Because of lack of information or impossible observations, some questions remain unvalued. A category that includes such unevaluated questions could still receive optimal results on the execution but loses of its relative importance on points, which could not be given because of impossible assessment.

Despite of the fluctuations, it was clear noticed that three of the categories, namely “Sorting area”, “Quality of delivery” and “Parcel recording” have the highest relative importance for the end audit results. These three categories are responsible for more than a fifty percent of the audit outcomes in the last three years. Considering these outcomes, it could be concluded that these three categories comply with the prerequisite for high relative importance for remarkable situation.

However, a category is seen as remarkable situation that impede the functionality of depot in Bentheim only when the assessment of this categories digress constantly from the prescribed norms. At next, we examined the performance of the depot on each of the categories for the last three years. For a better representation, the results were organized in a spider diagram where the performance of every year of each category was compared with the performance of the category in the years before. This representation allowed us to look at results deviation and respectively search for remarkable situation. Measured against the optimal performance of hundred percent, there are shortcomings in the performance of every audit category. In the areas of “Appearance”, “Parcel recording“, „Delivery Figures”, the organization was able to stabilize its performance within the desirable zone of ninety percent. In contrast, in the other seven categories the depot experiences considerable shortcomings of what is desired to what is actually reached. Remarkable are the results in the areas of “Express”, “Quality of delivery” and “Sorting area”. Here, the results are not just far below the norms, but they also deviate strongly across the years. Based on these outcomes and in regard to relative importance of the categories, it could be concluded that the categories of “Quality of delivery” and “Sorting area” are the remarkable situations in the performance in the depot of Bentheim. Although these two audit categories are of great importance for the end audit results, their evaluation remain far below the required standards. Moreover, the scores of these categories deviated strongly during the years, which leaved the impression of uncontrollability on them both.

**Figure 2: Audit performance sorted by category and year**



Source: own illustration based on audit reports 2010-2012 of the depot in Bentheim

### **3.3.1.1. Comparison of the interview outcomes with the results of the audit report**

The audit categories “Sorting area” and “Quality of delivery” are the areas of functionality that lead to a great deal to the poor results of the organization. However at this point it could not be said, which are the underlying reasons for the poor performance in these areas. In relation to the previous analysis, it is to be analyzed whether the poor evaluations of these areas could be related to the previously mentioned insufficiency in the structural dimensions. According to our previous analysis of the interviews, the nonsatisfying audit results of the depot are due to issues related the current level of ‘formalization’, ‘specialization’ and ‘professionalism’ in the organization. In this turn when an organization has real problem with this aspects, it could be the case that this do impair the functionality of its daily operations. According to the results from the audit report, the operations in the field of “Sorting area” and “Quality of delivery” are responsible for average thirty-five percent of the overall performance of the depot, and are not executed well. Hence, it is likely that the operational shortcomings in these two areas are due to the early mentioned insufficiencies in the levels of ‘formalization’, ‘specialization’ and ‘professionalism’.

Having matched the results of the coding procedure with the indicators provided by the audit reports, there appeared a clear overlapping on outcomes from the analysis. Delivery is an aspect that has occurred as a problematic point in our first analysis and simultaneously scores far below the norms in the audit report in all of the years. Previously mentioned as “Delivery Problematic”, this problem category has to do with the quality of work of the delivery drivers and the following lowering of the core service of the organization. According to the analysis based on the interview, the problem attributed to the category “Delivery Problematic” indicates low level of ‘professionalism’. The audit results in the category “Quality of delivery” also continuously outline performance shortcomings in this area and provide clear indicators for the low level of professionalism. Let us look at a specific example for visualization in more detail. Regarding the audit report, the depot in Bentheim has continuously performed low on the questions “Parcels delivered against addressees receipt?” and "With readable repeat of name (does the name typed in by the driver matches with the customer’s signature?)" for the past three years. These questions belong to the audit report’s category “Quality of delivery” and their poor performance clearly indicates a lack of ‘professionalism’ within the organization.

Consequently, the category “Quality of delivery” revealed nonsatisfying results in the audit report with regard to organization’s level of ‘professionalism’ over the last three years. This matches with answers given in the interview by the quality manager who identified similar problems with respect to the level of ‘professionalism’, which have been assigned to the category “Delivery aspect”. The fact that two different types of analysis (interview and performance) both revealed a lack of ‘professionalism’ validates ‘professionalism’ as a cause for the poor performance in the functionality of the delivery area.

Furthermore, it is to be seen how the poor results in the field of “Sorting area” relate to the previously indicated deficiencies in the level of ‘formalization’, ‘specialization’ and ‘professionalism’, which result from the interview analysis. In comparison to the problems in the delivery area, which could clearly be validated in both interview and performance analysis, the drawbacks in the category “Sorting area” cannot be directly explained by only matching the interview and the performance analysis. In order to examine whether there is a relationship between the poor performance in the “Sorting area” and the three structural dimensions, we have to scrutinize the audit category “Sorting area”. Here, it is of interest how this area is described in the company documentation, what activities are mentioned in it and how these activities are evaluated in the audition process. Looking at these aspects, will give us a clue what exactly is going wrong and what the possible causes for the poor performance in the “Sorting area” might be. If the causes leading to the poor performance have its origin in one or more of the previously determined dimensions ‘formalization’, ‘specialization’ or ‘professionalism’, we will be able to validate one or more of these dimensions as a real problem for the performance of the organization. In order to accomplish this, we will subsequently use the method of document analysis to research the available written documentation for task description in the “Sorting area”.

### **3.3.2. Document analysis**

Documents provide information about the investigated phenomenon and are available independently of the researcher’s actions. The documents are not a product of researcher’s activities and are normally produced for specific purposes other than those of research. However, the researcher can use them for analytical purposes (Corbetta, 2003).

In this phase of the analysis, we use documents to further elaborate on whether the insufficient levels of ‘formalization’, ‘specialization’ and ‘professionalism’ have an impact on

the performance in the “Sorting area”. In order to do this, we first look at the available documents to learn about the specific tasks that are executed by employees. Further objects of interest are description regulations, procedures and policy manuals that are actually implemented to govern the behavior and activities in the examined category. Finally, we will elaborate on the question whether the available documentation provide the necessary information needed to divide the tasks into specific jobs effectively, to describe the jobs sufficiently and to organize the formal training of the employees.

Therefore, it is important to be clear about the regulations, activities (tasks) and performance indicators embedded in the audit category “Sorting area”. For this purpose, we begin with the analysis of the “audit questionnaire list” that includes all the indicators on which every category in the audit is evaluated. Apart from the questions for each category, the questionnaire list further includes the standards for proper execution (see Appendix D).

### **3.3.2.1 Audit Questionnaire List**

The category “Sorting area” is the fourth category in the audit and is divided into the following sub-categories: “Condition”, “Boxes “, “Storage of exception parcels”, “Processing of exception parcels” and “General equipment”. These categories are evaluated on the basis of seventeen questions, which can be answered “yes”, “partly”, or “no”. The auditor is obligated to judge the concrete performance against the predefined standards by answering the particular questions in accordance with the real situation he observes. In other words, the questions represent the key performance indicators (KPI) implemented by the organization for a common category of operations in the depot. Moreover, looking at the questions attributed to the category “Sorting area” more precisely, it can be said that these questions mainly evaluate the sub-categories “Processing and Storage of exception parcels”, which refer to a row of operations assuring the proper handling of parcels that for one or another reason have not been loaded in the delivery vehicle and thus remain in the depot, or were brought back by a driver after unsuccessful delivery. Overall, the audit category “Sorting area” is measured by those indicators that assure optimal storage and processing of exception parcels. Achieving this goal requires the organization to reach the maximum on the KPIs in the audit questionnaire.

From a theoretical perspective, key performance indicators are predetermined desired outcomes, which refer clearly to objectives that are of high importance for the organization



(Sakkhamduang, 2008). In most of the cases, these indicators are used to detect operations, performance, or achievements that are useful for an organization in planning, forming and executing particular policies (Chausirikun, 2007). On one hand, KPIs measure the work achievement and success, but on other hand disclose activity operations that are of importance for the organization. In the previous analysis of the audit reports, we looked at the results and work achievements of the depot in the audit categories. In this part of the analysis however, it is useful to look at the KPIs as indicators and guidelines of important operations and activities. In the audit questionnaire list that is common for all depots in the depot group, the company does not only reveal individual KPIs in the form of questions, but also descriptions of activities and processes, which are required for sufficient performance. Looking at these descriptions allow us to see which activities and processes should be performed in the category “Sorting area”. In relation to our previous analysis, it is of interest whether the documentation of these activities is sufficient for the proper description of procedures and policy manuals (‘formalization’) and whether the descriptions are sufficient for the optimal translation of organizational tasks into concrete jobs (‘specialization’). It is also to be seen whether the described activities and processes do require specific training or qualification from the performing employees.

Examining every single activity description given for explanation of the processes, leads us to conclude that these descriptions specify aspects that are important for the understanding of what is actually measured and under which conditions the evaluation questions would be positively evaluated. There are specific indicators for what should be done, but reading this description does not inform the concrete performer about how this should be done. Therefore, the International Organization for Standardization (ISO) suggests that every organization should recognize, manage and guide a lot of mutual related activities in order to function effectively (DIN:ISO, 2000). Controversially, the documents (questionnaire list), which describe the activities in the “Sorting area” do not provide any clear explanation about sequence of and guidelines for performing concrete activities. Although the category “Sorting area” comprises activities and processes that are logically interdependent and serve for executing a common purpose in one specific area of the organization’s functionality, this cannot be recognized by looking at the questions and the guidelines attributed to them in the audit. Following the standards, assuring high score in performance evaluation, provides the employees with checkpoints. However, the route between the checkpoints and the right

behavior on this route remain open for interpretation. According to Daft (2010), documentation includes description regulations, procedures and policy manuals that describe behavior and activities. In comparison, the descriptions taken from the questionnaire list could not be seen as such kind of documentation. Regulations and desired procedures do exist, but these are far away from providing guidance of activities for the employees.

Likewise, it is also not clear how the tasks, responsible for fulfilling the requirements drafted in the questionnaire, are subdivided into concrete jobs. Regarding the level of ‘standardization’ and ‘formalization’, the questionnaire list does not provide the needed guidance for the regulation of these two structural dimensions in a sufficient way. Finally, looking at the questionnaire it does not become clear how employees should be trained in order to reach the desired outcomes.

### **3.3.2.2. Organizational Handbook**

The normative handbook of the organization is our next object of the document analysis. Here, it is of interest whether this documentation provides the information about the right way of doing things in the “Sorting area”.

As described in the Introduction part, the holding of DPD is organized on the basis of franchising. The franchisor is the head of the holding of DPD. The franchisor determines the rules and is responsible for establishing the legislation. Resulting regulatory documentation applies to every individual regional organization. The regional organizations, having the functions of dispatch, recipient or hub depots are the franchisees in the system and are obligated to follow strictly the rules posed by the franchisor. All these rules are collected in one organizational handbook (OHB) and are applicable for every single depot.

The OHB has nine chapters, which are directly related to the performance of the whole system of dispatch, recipient and hub depots. The main goal of the OHB is to assure that every single parcel that had been taken for delivery will reach its recipient or, in case of exceptions will stay in the system until clearance of the individual case. The rules follow the parcel and cover every single aspect of the transport from A to B. In regards of functionality of single depots, the OHB poses direct regulations where the processing of the parcel is inseparably dependent on a proper functionality of the organization. Concrete examples of such cases are the functional activities of “Loading” and “Unloading”. As these activities are primary for the processing of the parcel in the system, these are fully described in the

handbook. On the other hand major operations concerning the optimal storage and processing of exception parcels, the main examined topics of the category “Sorting area”, are not sufficiently regulated. There is information how different type of exceptions should be coded and what is their potential storage period, but the OHB gives any information about a holistic process for proper dealing with this exceptions. In addition, the whole complexity in this area is further intensified by the fact that there exist around thirty-five types of exceptions, which are assigned to three periods of duration of the storage period and many different types of processing procedures. In addition, subcategories like “Boxes” or “General equipment” or questions like “Are damage exceptions processed correctly and immediately?” are not even mentioned in the OHB. It can be summarized that the OHB leaves a lot of room open for interpretation for the execution of activities that are not indispensable for the processing the parcel. On the other hand, the OHB provides useful and concrete task descriptions in cross-areas where the functionality of the depot is directly related to the properly processing of parcels in the system.

It can be concluded that the current level of formal documentation does not assure one sufficient level of ‘formalization’ in the organization in Bentheim. Thus, it might be that employees follow the instructions given by their supervisor, but there is no legislation that regulates the formal subdivision of task into jobs. With respect to the formal training and education of the employees, the lack of predetermined best practices and clear job specifications will lead to complications in the particular training on the job. Having no documented process instructions let the employees no choice but to interpret the rules (that are possibly also not known) on their own. So, instead of formal training on the job, the employees cope with their daily job on the basis of what they have learned by colleagues or on their own.

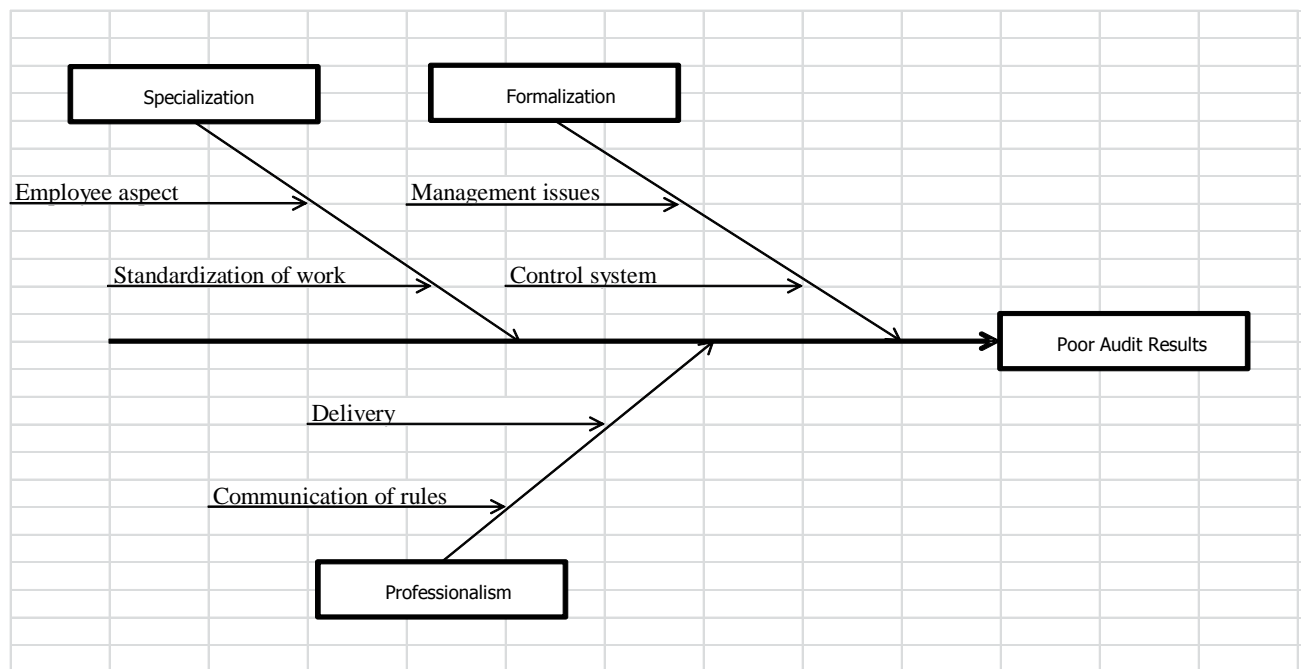
### **3.4. Preliminary conclusion and the direction of further analysis**

Giving the chance offered by the quality manager of the company to speak freely about the effects, plans for solution and about the problem itself, we have learned a lot about the problematic aspects influencing the performance of the depot. However, instead of digging deeper into the mentioned problems, we tried to aggregate small problematic aspects to broader problem categories in order to find issues with sensitive impact on the overall organizational performance level. For this purpose, we executed a coding procedure and

labeled problems in categories. Herewith, we were able to determine six problematic categories, which were further attributed to three overall structural dimensions, responsible for the functionality of organizations (see Table 3). In sum, we determined that the problems in the depot in Bentheim lie in insufficient levels of ‘formalization’, ‘specialization’ and ‘professionalism’ within the organization. The next step was to validate these claims. To do this, we looked at the performance of the depot on the most important organizational audit categories. Two of these categories, which influence over thirty percent of the end audit results, were performing badly. The category “Quality of delivery” scored far below the required standards. The problems in this very first category matched with the problems in the category “Delivery Aspects” perfectly. Both led to poor level of ‘professionalism’. This overlapping was interpreted as sufficient evidence for validating professionalism as a ‘real’ problem in the depot in Bentheim. Shortcomings in the category “Quality of delivery”, referring mostly to quality of parcel delivery, are seen to be caused by the insufficient level of ‘professionalism’ of delivery drivers. According to the quality manager, they do not have the needed qualification or knowledge for the proper execution of their daily job.

The second poor performing category in the depot was the “Sorting area” category. Due to the fact that it was not clear what kinds of operations are measured within this category, here, the audit requirements were further examined. The purpose was to see what types of activities are measured by the audit within this category and how these are actually regulated by the organizational policies. Based on document and data analysis from the audit reports, we arrived at the conclusion that the organizational documentation was not sufficient for the enactment of an adequate level of ‘formalization’. Simultaneously, document analysis justified that the levels of ‘standardization’ and ‘professionalism’ are also insufficient for the proper coordination of activities in this organizational category. In sum, we found evidence that the insufficient level of written documentation does not provide sufficient information for dividing tasks into specific jobs and the training of employees.

**Figure 3: Problem categories with impact on organizational performance sorted by structural dimensions**



Source: based on Ishikawa (1986)

Following the symptoms of the different causes for the insufficient audit results mentioned in the interview, we were able to differentiate and organize these causes in a way that these could be represented to the management team (see Figure 3). The choice for a direction out of the represented diagram should lead to a selection of one or more issues to work on. With a selection of issues and formulation of an assignment related to this issue, an important demarcation must be made: Only symptoms, causes and solutions with respect to the chosen topic will subsequently be taken into account. Therefore, the strict dedication to that very issue should be made carefully.

After this diagram had been completely explained to the quality manager, the company representative had to make a decision for the further nucleus of this project with regard to one specific issue represented in the diagram. Having completely understood the analysis and valuing its results, the quality manager proposed a small adjustment for the further direction of the assignment. Instead of choosing one of the previously determined problematic issues of ‘formalization’, ‘specialization’ and ‘professionalism’ within the whole depot as the project’s focus, the principal decided to restrain the project boundaries to a specific problem area. According to the quality manager, the quality of work examined in the audit could be simply divided into activities that are executed “within” and “out of” the building. As the activities executed in the building concern the internal process functionality of the depot, the activities

out of the buildings are related to the delivery process. Because the problem with the quality of delivery is not completely within the span of control of the principal and the management team had already undergo some initiatives to tackle this problem, the quality manager insisted to focus on issues concerning the internal functionality of the depot. More precisely, the quality manager proposed the “Sorting area” to be the domain where the insufficient level of ‘formalization’, ‘specialization’ and ‘professionalism’ should be tackled. Being aware of the fact that the activities in the “Sorting area” add up to more than 15 percent of the audit results and steadily perform far below the desired standards, the principal wanted the project to focus on this area of functionality.

In this chapter, the major problems leading to the low audit results were determined. Additionally, the “Sorting area” was settled as an operational field where the insufficient level of ‘formalization’, ‘specialization’ and ‘professionalism’ should be tackled. The purpose of subsequent Analysis and diagnosis part is to search for concrete operational shortcomings causing the poor performance in the depot of Bentheim and to develop preliminary ideas about alternative interventions that will contribute to the optimization of functionality of the organization.

## **4. Analysis and diagnosis step**

As the preliminary definition of the business problem is not enough to fully grasp the organization's situation, the methodology for BPS projects suggests the execution of an Analysis and diagnosis step for further elaboration of previously outlined problems. Specifically, its purpose is "to explore and validate the causes and consequences of the problem and to develop preliminary ideas about alternative directions to solve the problematic" (Van Aken et al., 2009, p. 63). In this phase, knowledge of the business system and observed shortcomings are used to support the diagnosis and validation of the problem. In the context of the Bentheim Depot's problems of 'formalization', 'specialization', and 'professionalism', the following section seeks to answer the following questions: Are there indicators for an insufficient level of the above-mentioned structural categories in the actual work practices in the category "Sorting area"? How do these insufficient levels of 'formalization', 'specialization' and 'professionalism' affect the functionality of the organization?

Firstly, the field of analysis, namely "Sorting Area", is extensively described (4.1). Secondly, a participatory observation approach is used to analyze the operational process in the "Sorting area" (4.2). In the following, the present levels of 'formalization', 'specialization' and 'professionalism' in the early and late shift of work are examined (4.3) and potential shortcomings are summarized. Lastly, we collect data identifying incidents within a certain set of activities and the coordination of dependencies within the operational process (4.4) and describe seven concrete drawbacks that interrupt the operational process of the depot.

### **4.1 General description of the object of analysis**

As explained in the previous part of the thesis, "Sorting Area" is an audit category that has a significant influence on final audit results. The category includes five major sub-categories, which are assessed through sixteen specific questions. The evaluation of the sub-categories "Boxes" and "Condition after departure of delivery drivers" is done according to the tidiness of the operational area and the correct positioning and labeling of held-over parcels (parcels that remain in the delivery area after the departure of delivery drivers). "Equipment" is a sub-category in which the auditors evaluate the availability of compulsory work equipment in the

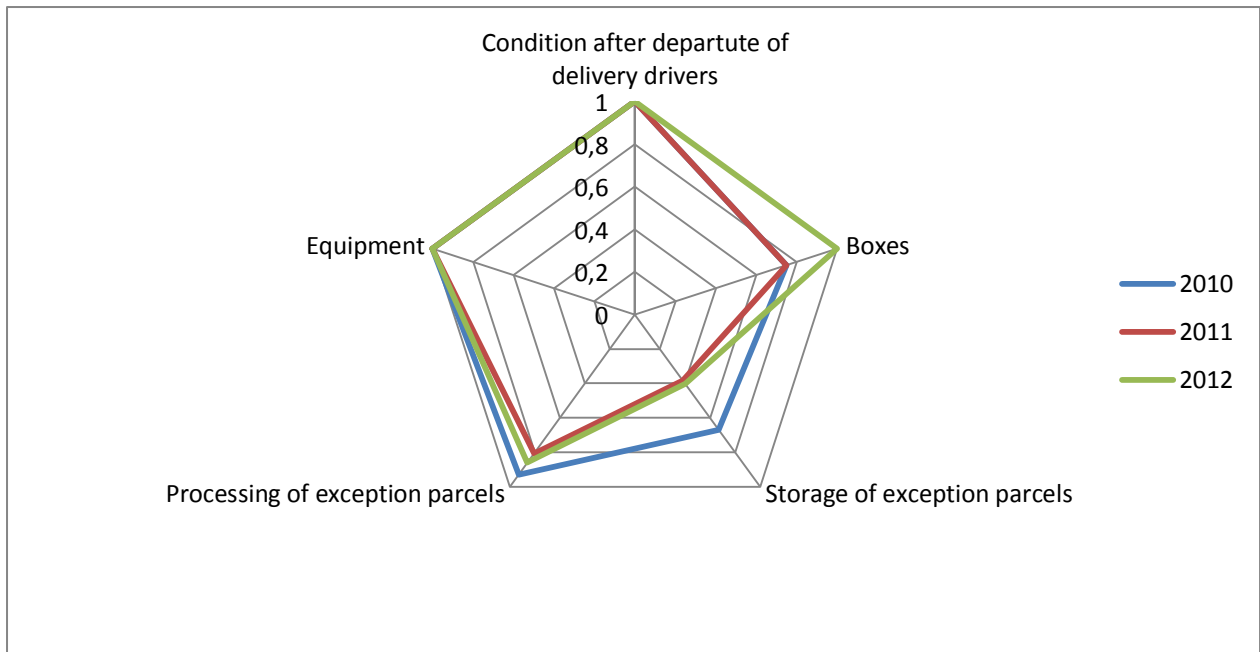
area. The sub-categories of “Processing of exceptions” and “Storage of exception parcels” are evaluated against the proper processing and storage of exceptional parcels.

From the maximal amount of 12057 points (18% of the Audit in 2012) in the category “Sorting Area”, the share of the sub-categories “Processing of exceptions and “Storage of exception parcels” amounted to 9685 points (14% of the Audit in 2012). Therefore, activities related to storage and processing of exceptions are most important for audit results of the depot in the category “Sorting Area”. Generally, exceptions can be defined as packages, which are not directly delivered on the day of deconsolidation, or are supposed to be additionally processed and stored before the next delivery attempt. Common reasons for the appearing of such exceptional parcels are routing/loading/postcode errors, damages on the package or its label, insufficient delivery information or inaccessibility of the recipient, etc.

In relation to the relative importance of exceptions, the sub-categories “Processing of exceptions”, “Storage of exception parcels” and “Delivery/punctual” are evaluated against the amount of exceptions remaining in the depot. Combined, the sub-categories “Processing of exceptions“, “Storage of exception parcels” and the major audit category “Delivery/punctual” (total percentage of exceptions) account for about 15.000 points of the audit. Put differently, the proper handling and processing of exceptions is responsible for approximately 22 percent of the entire audit results. Exceptions are an important part of the ordinary functioning of the depot and critical for the evaluation of the category “Sorting area”. A short glance on the audit reports from the last three years reveals at the depot in Bentheim is not doing quite well on these performance indicators.



**Figure 4: Audit performance of the category “Sorting area” sorted by sub-categories and year**



Source: own illustration based on audit reports 2010-2012 of the depot in Bentheim

According to the spider diagram, processing and storage of exceptions have not been optimal. The question that remained here was whether these shortcomings were caused by poorly adjusted levels of formalization, specialization or professionalism. Hence, the system implemented for the dealing with exceptions in the depot in Bentheim became an object of further analysis. Accordingly, the concrete operational performance and the causes of poor performance are extensively examined in the next section.

#### **4.2 Method of Participatory observations**

According to Van Maanen (1982, p.138), “There are no easy or formulated answers to the dilemmas of fieldwork since one cannot know what one is getting into until one gets into it.” Therefore, the next step of the analysis was to get involved in the daily work of the depot in Bentheim. For this purpose, we use the method of participatory observations. Briefly described, the method of participatory observations is seen as inductive technique allowing the researcher to use his or her own experiences as source of data (Brewer, 2000). In contrast to most other methods, the participant observer uses his initial observations as the starting point from which to formulate initial explanation of the concrete situation (Jorgenson, 1989). In the participatory observations, the major method of recording data is note taking. In the

notation phase, the researcher should place priority on comprehensiveness and self-discipline and notice everything that could be valuable for the complete understanding of the situation (Waddington, 2004). Taylor and Bogdan (1984, p.53) argue that this process should include descriptions of people, events and conversations as well as the observer's actions, feelings and hunches or working hypotheses. In the end of the observations, the field notes provide the researcher with the information that is to be recalled about the observation. Having noticed all the important components from the internal organizational environment, researcher has to work with these raw materials in order to derive to valuable for the analysis data. Initial written materials are examined for patterns and relationships, derived from literature, existing theories, of ideas that have emerged during fieldwork or simply commonsense suspicions (Jorgenson, 1989).

As the main purpose was to describe the current execution of concrete processes along the workflow, the method of participatory observation was seen an appropriate technique to get deeper into the organizational reality and search for operational indicators causing the bad performance in the examined area of functionality. In cases of existing operational shortcomings caused by the insufficient level of 'formalization', 'specialization' and 'professionalism', the previously defined problem is validated.

#### **4.2.1 Applying the method of participatory observations**

The observations started in the beginning of the early work shift on 17.05.2013 at 5:00 o'clock in the morning and proceed three days. At first, I was introduced to the supervisor and employees. After briefly introducing my project, I started my observations. Everything in the depot was happening very fast, so I decided not to search for shortcomings and pitfalls directly but to sketch a plan of the work area and subsequently trace process along the resulting process map. Much of the data that I needed was derived from direct observations of the work area and informal conversations with the supervisor and workers. Once the plan was drawn, I walked along the different workstations, followed the road of packages from the containers to the delivery drivers, and spoke with employees. In the beginning, I had no prepared questions and I did not know where I should ideally locate myself to observe the most crucial events. Over time, I began to follow the work flow more systematically and described individual activities extensively. As a result, I registered some shortcomings that could possibly lead to the poor audit evaluations. All these observations were written down in

the form of field notes. Apart from the written descriptions, the possibility of comparing employees' actions with their opinions, increased my understanding of the situation. The decision for terminating my field research was motivated by two reasons: firstly, a substantial amount of useful information was gathered and no major new insights were gained in the period leading up to my withdrawal. Secondly, the period for the project was initially set and the available funds did not allow for further extension of the observation procedure.

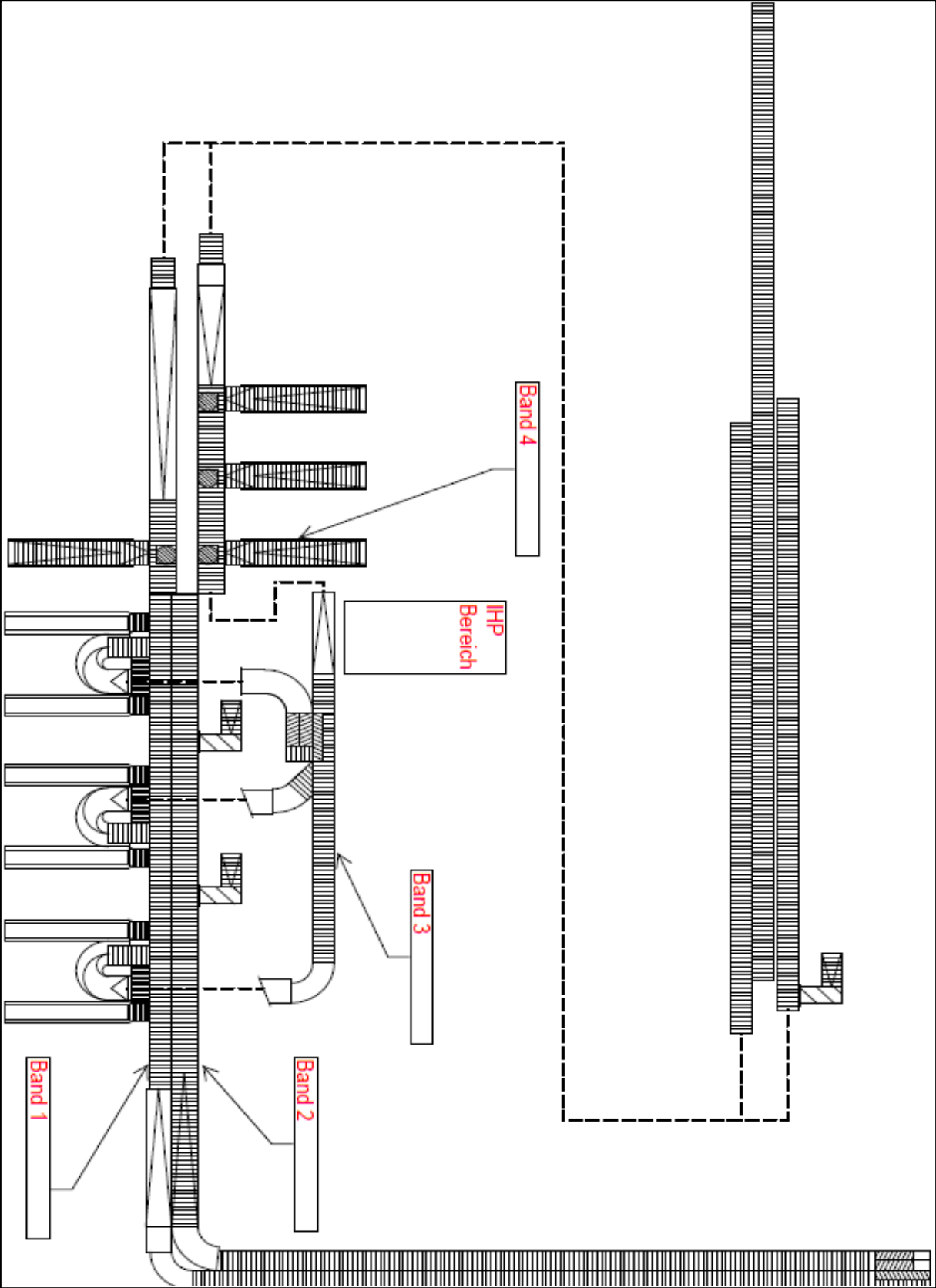
#### **4.2.1.1 Functions of the depot in Bentheim**

To better describe the experienced situation in the organization, a brief explanation of the operational practices in the DPD's depot in Bentheim is provided. In the depot-network system of DPD, the depot in Bentheim is responsible for pick-ups and deliveries of parcels within a fixed region. Early in the morning, containers with packages from other depots in the network arrive. Late in the afternoon, containers with packages that have been picked up by the drivers during the day are sent to other depots of the group. The primary functions of the depot are the transshipping of the bundle of parcels that come in early in the morning and the consolidation of the parcels that have been collected by the delivery driver during the day. In addition to these two functions, the depot is responsible for processing, handling, and storage of parcels that cannot directly be delivered to the recipient for various reasons. The equipment through which activities in the depot are accomplished is a conveyor system that is located in three connected hangars. Along the conveyor system, workers perform different activities, which as a whole assure the proper processing in the early shift and consolidation in the late shift. Additionally, containers for storage of packages and places for further manipulation of unordinary parcels assure the proper processing, handling, and storage of exceptional parcels.

#### **4.2.1.2 Plan of the conveyor system in Bentheim**

According to Van Aken et al. (2009) the student should relate the business problem to the actual operations of the organization. Thus, one should gain knowledge on the physical environment where the organization's processes are executed. Therefore, a plan of the conveyor system of the depot in Bentheim was made. This plan represents the physical system where the processes of unloading, scanning, processing, handling, and storage of ordinary parcels and exceptions are executed.

**Figure 5: Plan of the conveyer system**

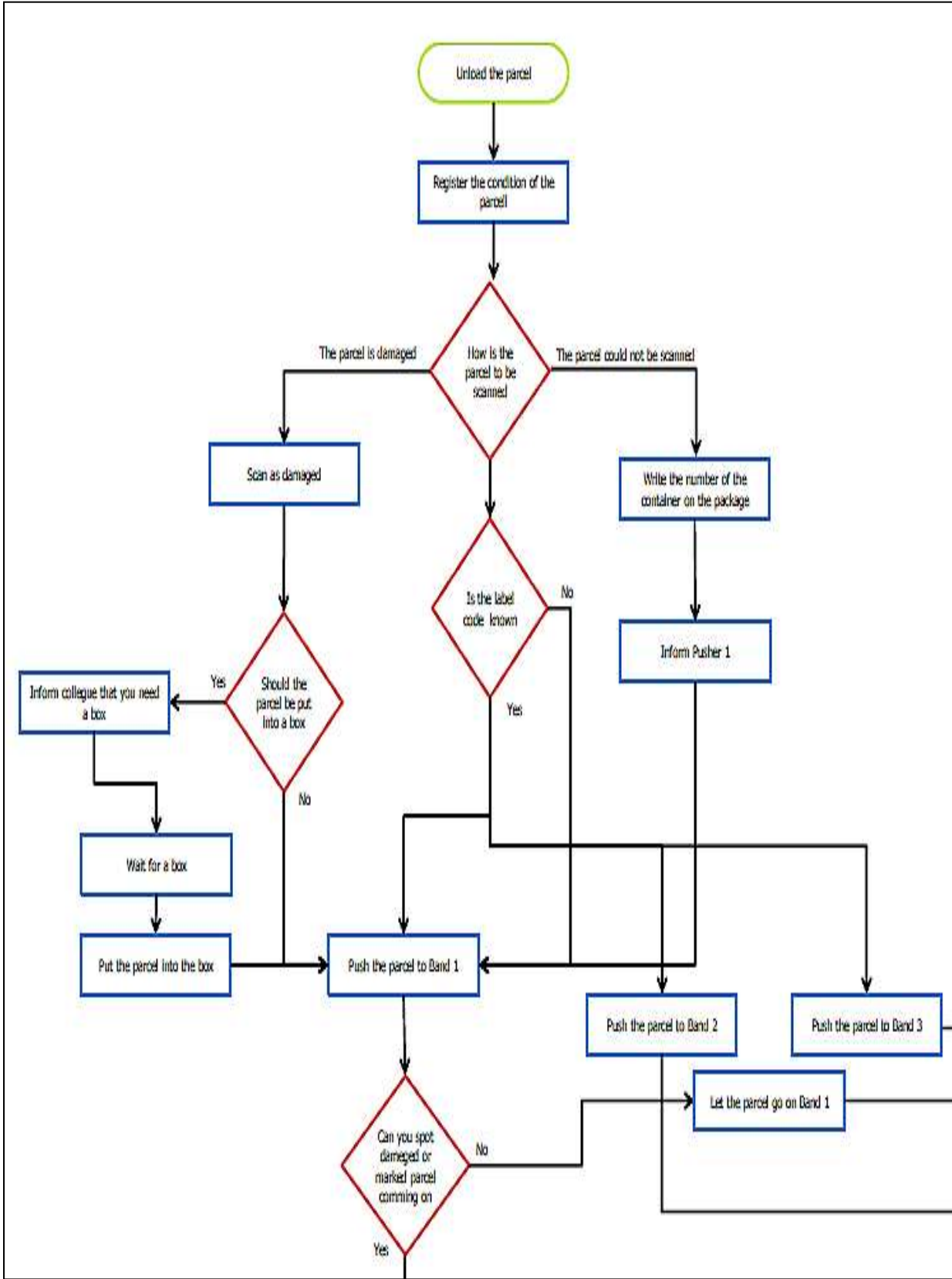


Source: own illustration

#### **4.2.1.3 Map of the work processes in the “Sorting Area”**

During the Analysis and Diagnosis phase of the project, the business process of the organization should be thoughtfully analyzed. For this purpose, one has to develop a general description of the business process that includes both the operational process and the control system along the workflow (Van Aken et. al, 2009). Consequently, in addition to the plan of the conveyor system the work processes in relation to exceptional parcels was mapped. According to Marelli (2005, p.40), “process mapping is the step-by-step description of the actions taken by workers as they use a specific set of inputs to produce a defined set of outputs”. The resulting process maps depict the inputs, the performers, the sequence of actions the performers take, and the outputs of a work process in a matrix or flowchart format, usually combining both words and simple graphics”. Depending on the process of interest, a process map may focus on a whole organization, a business unit, a division, a function, a work group, or even an individual performer (Langdon, 1999). With regard to the Bentheim Depot, the process mapping was seen as useful tool for both identifying performance improvement needs and determining the underlying causes of performance problems. Once the process has been fully described, it became possible for us to spot insufficiencies, shortcomings, and other obstacles that impede the performance of the business system implemented to deal with exceptions in the depot. Focusing on processing, handling and storage of unordinary parcels, the flow of the exception parcels in the system was examined. The resulting process map portrays process steps that trace the road of the exception parcel in the system, and describes specific tasks that are executed until parcels are available for delivery. Only activities that are crucial for the observed work process in the area of analysis are included in the graphical representation.

**Figure 6: Map of the work process in the yearly work shift (for the full map see Appendix E)**



Source: own illustration

#### **4.3. Levels of ‘formalization’, ‘specialization’, and ‘professionalism’ in the morning shift**

As previously mentioned in the Problem Definition part, no specific written documentation that describes the proper coordination and execution of work activities can be found among the organizational documentation. Accordingly, one goal of the observations was to check the availability of rules describing standard operation of procedures and instructions for performing certain tasks. Asking and searching actively for such kind of rules and standards on which the employees have to rely by performing their daily job, it could not be found any written information. Whereas formalization pertains to the written documentation in the organization, in the DPD’s depot in Bentheim, we could not find any procedures, job descriptions, regulations, or policy manuals. Information is transferred from employee to employee via word of mouth or through personal observation. The work in the depot was conducted in accordance with informal rules of daily repetitive system whereas individuals used high degrees of freedom of how to execute specific tasks.

As a result of the observations, it was concluded that task interdependence in the depot was sequential. The different activities along the work flow were strictly set apart and organized in directional order (Van de Ven et al., 1976). In cases where one of the activities is not performed correctly, complications ensue for the performance of the next task. With regard to the specialization of the work, it can be concluded that the activities performed in the depot were informal but highly specialized. Each employee had to perform a single kind of job and focus on a narrowly defined activity. However, in spite of the fact that tasks were appropriately divided into jobs, we came to the conclusion that in many cases the concrete specialization did not assure the required convergence between sequential jobs. Current specializations in the depot ensure a sufficient performance of a certain activity, but neglect the dependence between activities, which led to shortcomings that will be presented in the following.

Finally, we looked at employees’ levels of professionalism in the early shift. Defined as the formal education and training in the organization, we examined the availability of formal practices for training on the job and tasks in the depot. This was not provided. All that should be known is handed down by word of mouth or learned through personal observations. Nevertheless, despite of the lack of formal training, during some talks with workers we were sufficiently convinced that everybody knew how to perform his or her job in a situation of a

normal work conditions. However, when more packages have to be unloaded and transmitted and the work pressure increased, the employees underwent a cognitive shift from what they know about the right execution of work and what they thought to be the most appropriate behavior in the current situation. In situations of high work intensity, most of the employees performed their task differently as what they previously explained to be the right way of doing the work. The lack of formal training on the job led to situations, in which the employees change their work practices as an answer of the work pressure. In such cases, subjective way of doing their work prevailed the regular way of performing which on the other hand lead to additional mistakes and decreasing the quality of work.

Additionally, the lack of a formal model for training on the job leads to one more problem in the organization. Letting new employees to observe someone that is performing well on a certain activity does not ensure an effective training on the job and high level of professionalism. It is not sure that by the observation the trainee will become aware of the all of the information that is needed to be known by executing the task. Only formal training based on concrete instructions would prohibit the case of making mistakes because of the lack of sufficient understandings on the work process.

#### **4.3.2 Levels of ‘formalization’, ‘specialization’ and ‘professionalism’ in the afternoon shift**

In the afternoon shift, 8-9 employees are responsible for the consolidation of pick-ups, processing and storage of exceptions. In comparison to the morning shift, the work in the afternoon shift flows smoothly. Due to the lower amount of processing parcels and relative slow tempo of work, occasional pressure was much less common compared to the morning shift. With regard to task division, it was observed that seven regular employees were solely responsible for the consolidation of packages; either scanning or loading the delivered parcels in a container. In cases where exceptions were returned to the depot, the job of the scanning employee was simply to register the exception and pass it on to the supervisor. The two supervisors in the afternoon shift were responsible for the supervision of work processes and dealing with the exceptions. Through interviews with one of the supervisors, we learned that the supervisor implemented division of work between them and the rest of the employees in order to avoid any possible mistakes concerning the work with exceptions. As mistakes with exceptions influence audit results directly, the two supervisors had studied audit reports and



organizational handbooks extensively and consequently organized their own system including a series of activities that ensures the proper processing, termination, storing and readdressing of exceptions. The supervisor had centralized the most important and complicated task in order to avoid possible failures in the work with exceptions.

With respect to the work activities of the rest of the employees, the supervisors had also composed a written document that disclosed work instructions describing the requirements for the task of scanning and loading. Every employee should sign this document before he/she begin to work in the depot. Work activities in the afternoon shift were strictly formalized and narrowly specialized. The employee responsible for scanning and loading of parcels received a document with instructions for his/her work, and as such a sufficient formal education on the job. Considering the process of dealing with exceptions, the formalization of concrete steps and centralization of the process assures the proper processing and storage of exceptions. In sum, we did not find any indicators for insufficient levels of ‘formalization’, ‘specialization’, and ‘professionalism’ that lead to shortcoming in the system implemented for dealing with exceptions and the consolidation of pick-ups.

#### **4.4 Concrete shortcomings in the morning shift**

In the end of the first phase of observations, we identified a gap between current work practices implemented in the morning shift and the applied level of ‘formalization’, ‘specialization’ and ‘professionalism’ required for their optimal functioning. Although this finding partially validates the initially defined problem, we still have any specific insights on concrete drawbacks caused by the lack of formal rules, education on the job and inadequate specialization. We did know that in the depot existed a problem with the current level of ‘formalization’, ‘specialization’ and ‘professionalism’, however we did not know what are the concrete functionality problems that the insufficient level of these structural dimensions cause in the process of transmission of packages. In this context, it was important to know, which concrete practices are influenced mostly by the abovementioned problem and how they obstruct the functionality of the depot. Hence, further data was gathered that could outline concrete causes for hindering the proper handling and processing of exceptions. Activities and practices that could have a negative influence on the performance of the system implemented for dealing with exceptions were fully examined. In cases where processes seemed to influence the system in a negative way (i.e. exception remain in the depot for one more day,

exceptions are not properly handled or registered etc.), empirical data was used to validate these suspicions. These concrete shortcomings will be described in the following.

#### **4.4.1 Damaged parcels enter the system without to be scanned**

At the very beginning of the morning shift, packages from the container are unloaded on to a short band which moves them to the scanning position. The informal instructions that govern the behavior of the worker performing this task include two major commands: “Lay the package on the band as safely as possible!” and “Lay the parcel in such a way that the labeled parcel’s side faces upwards!”. However, packers often ignore damages on the lower side of the packages. Damages on the lower side of the packages cannot be seen by the scanner and unordinary packages proceed as regular parcels in the system without being scanned as damaged. The current way of unloading packages hinders the proper registering of damaged parcels and makes fixing them later impossible.

For the purpose of validation, the exact time of damaged parcels entering the system as ordinary ones was noted. As the flow of packages is recorded from different angles by surveillance cameras along the conveyor system, the notation of the incident’s exact time enabled us to re-watch such events.

#### **4.4.2 Scanner has to wait for a box needed for the further transportation of severely damaged parcels**

At times, severely damaged parcels arrive at the depot. Despite their strong damage (such as liquids escaping the packaging or smashed boxes), these packages nonetheless need to be unloaded and scanned. Several shortcomings were observed in this process. At first, packages are unloaded from the container onto the band moving to the scanner desk despite the damage. Here, the packages often fall apart and cause a further mess. When these packages eventually reach the scanner, they are scanned as damaged but cause a delay in the work process: in order to forward these packages to the content check, the scanner needs a box where the packages have to be put in. As these boxes are situated on the other side of the conveyor system, the scanner has to inform another employee that he needs a box and wait for it. As a result, the current way of processing severely damaged parcels is inconvenient for employees and causes a delay in the work process.

#### 4.4.3 Significant difference in the amount of scanned damages among the scanners

After unloading, parcels are moved to the position of the scanner where he or she has to scan the label of the parcel. However, as described earlier, some of the packages or their labels are in improper condition. In cases where the parcel is damaged, the scanner is required to scan this parcel as damaged and forward it to the place, where it should be checked and fixed. In this process, a problem became obvious: firstly, the frequency of scanning packages as “damaged” varied strongly among scanning employees. While one employee scanned almost every fourth parcel as damaged, her colleague had done this once during twenty minutes of observations. Moreover, this occurred without any significant differences in the packages’ condition. This observation was verified by the data representing the percentage of scanned damages during the work shift by each scanner in a period of three days.

**Table 4: Amount of damaged parcels scanned at each terminal**

17.05.2013					21.05.2013					22.05.2013				
Terminal	Summe	Damaged			Terminal	Summe	Damaged			Terminal	Summe	Damaged		
22	1016	12	1,18%		22	749	6	0,80%		22	1179	8	0,68%	
23	1691	151	8,93%		23	1600	107	6,69%		23	1607	108	6,72%	
24	1820	106	5,82%		24	1607	91	5,66%		24	1854	84	4,53%	
25	2026	92	4,54%		25	2060	87	4,22%		25	1890	128	6,77%	
26	2105	68	3,23%		26	1805	44	2,44%		26	1747	79	4,52%	
27	1895	400	21,11%		27	1750	506	28,91%		27	1933	362	18,73%	
	10553	829	7,86%			9571	841	8,79%			10210	769	7,53%	

Source: numbers gathered by DPD management

#### 4.4.4 Ineffective procedure for directing damaged parcels to the place of content check

Additionally, another problem concerning the processing of damaged parcels occurred when the parcel was scanned as damaged and had to be forwarded to the place for content checking. As the parcel had been scanned already, the employee has to inform the pusher responsible for redirecting packages on the conveyor system how to process it. Because of the distance between the scanners and the pusher, loud conditions of work, the amount of packages moving towards the pusher, and the difficulty of remembering every damaged parcel, a high amount of packages passed by the pusher without being forwarded properly. This observation

was directly supported by the data representing the amount of packages scanned as damaged against the amount that actually arrive at the place for content check.

**Table 5: Amount of damaged packages scanned against the amount that actually arrive for content check**

	17.05.2013				21.05.2013				22.05.2013			
	Sum	Damages		Handled	Sum	Damages		Handled	Sum	Damages		Handled
	10579	835	7,89%	127	9596	846	8,82%	113	10238	775	7,57%	132

Source: numbers gathered by DPD management

**4.4.5 Insufficient Equipment**

The next drawback concerned the equipment available in the area of content check and relabeling. When a package is damaged or has to be relabeled, this is pushed down to Band 4 and should be handled immediately by the content checkers. At the time of observations, Band 4 was constantly overloaded by upcoming packages. In these situations, the pusher had two alternatives: to either stop the entire conveyor system or to let the unordinary package pass. As the pusher tries to shift every unordinary package, he does this, but pushing the next unordinary parcel on the band causes another packages lying on the band to fall down. Given the large potential weight of parcels and the height of Band 4 (1,50 m), packages can easily incur damages in case of falling.

**4.4.6 Most of the damaged parcels are immediately bonded and fed back in the system without any further control of their content**

The next issue concerns the performance of employees responsible for checking, bonding or repackaging of damaged parcels. Since proper content checking and handling of damaged parcels can protect the depot against undesirable events such as customer dissatisfaction, image problems, etc. this task is deemed highly important in the organization. 5 to 6 workers are responsible for this task in the depot. When damaged parcels (or those, which cannot be scanned) are shifted to Band 4, these are taken down and further processed. For damaged parcels, it is to be decided whether only the packaging is damaged or the content is affected as well. Instructions followed by the employees for making this decision are simple: “If you think that the content could be damaged, inform the content check employees. If not, bond the package with authorized scotch tape and put it back in the system.” In cases where the package proceeds to the content check employee, the package is completely opened and its

contents are examined. After opening the parcel, the content check employee is required to write a protocol of registered damages. During the observations, we registered very few cases in which the content of the parcel was extensively checked. Most of the time the workers had directly bonded the package and pushed it back in the system. Parcels with extreme damages of the upper covering were directly bonded and fed back in the system. These observations were confirmed by the data representing the amount of checked parcels (CC) against the amount of these that were immediately bonded (Handled).

**Table 6: Amount of checked parcels against the amount of parcels that were immediately fixed**

17.05.2013				21.05.2013				22.05.2013			
Sum	Damages		Handled/CC	Sum	Damages		Handled/CC	Sum	Damages		Handled/CC
10579	835	7,89%	123 / 3	9596	846	8,82%	113 / 8	10238	775	7,57%	132 / 15

Source: numbers gathered by DPD management

**4.4.7 Accumulation of packages at the end of the conveyor system**

Due to the fact that some packages destined for the “left delivery area” are pushed back by drivers because of false E-Sort codes, a significant amount of packages end up at the right end of the conveyor system. Here, nobody is tasked with further processing these packages leading to the packages being disorderly thrown on a small place just behind conveyor system. As a result, many parcels were damaged due to the weight of parcels thrown on top of them. Furthermore, many parcels in this pile had their E-Sort codes crossed out. This was due to drivers having crossed out the codes previously and pushed the packages back into the system since they recognized these respective codes as faulty. Yet because of this failure, parcels were not picked up by the right recipient drivers and laid in the back of conveyor system. Subsequently as the incorrect codes of these parcels are not changed before the package goes back in the scanning area, this ordinary packages could not be allocated to the correct tour for delivery and remain in the depot for one more day and are registered as exceptions called sorting failure. The amount of this kind of exceptions validates the existence of such cases.

**Table 7: Amount of exceptional parcels registered as ‘sorting error’**

	17.05.2013	21.05.2013	22.05.2013	23.05.2013	24.05.2013
Sorting error	17	15	16	24	24

Source: numbers gathered by DPD management

Applying the method of the ‘participatory observations’ allow us to draw a plan of the operational area and map the work process of the depot. Tracing the work process from the beginning to its end, seven concrete shortcomings concerning the current operations of the depot was registered. In the following chapters, concrete interventions that tackle the identified shortcomings are designed and specific plan that guidelines their particular realization is formulated.

## **5. Plan of action**

The purpose of business problem-solving projects is to improve the performance of organizations in one or more criteria. This is achieved through designing and realizing solutions, which combat previously defined performance problems. According to Van Aken et al. (2009) these solutions can range from a simple new tool or procedure merely supporting the organizational business system to a completely new business system including new structures and/or work processes. Specifically, the elimination of existing process steps or integration of new ones, as well as a change in procedures or design of tools supporting current operational systems are possible interventions (Van Aken et al., 2009). In this regard, business problem-solving projects should provide a sound solution design to previously identified organizational problems, and a tangible plan of action or the practical realization of that solution. Whereas the developed solution design pertains the question “what needs to be done?”, the change plan sketches how the aspired change will be achieved (Van Aken et al., 2009).

For designing a solution that increases the performance of the DPD’s depot in Bentheim, a theoretical exploration of possible solutions will be conducted in a first step (5.1). Secondly, identified solutions from the theory are evaluated against a set of organizational specifications and requirements (5.2). At next, concrete solutions to the previously indicated problems will be represented (5.3). In the last part, the solutions are organized in 7-Steps operational change plan (5.4).

### **5.1 Possible solutions from the theory**

Gregory (1966) distinguishes between the scientific method of problem solving, employed for finding out the nature of what exists and the design method, implemented for inventing things of value that do not exist. In this line, Lawson (1980) points out that a scientist solves problems by analysis, whereas designers engage in a process of synthesis to find a solution of a particular problem. For the purpose of this paper, available theoretical knowledge was synthesized in the design of applicable solutions to the previously indicated problems in the organization. In the preceding “diagnosis” chapter, the conclusion was that inappropriate

levels of ‘formalization’, ‘specialization’ and ‘professionalism’ lead to shortcomings in the performance of operational processes in the organization. Referring to the definitions on these terms given by Daft (2010), an additional specialization of concrete tasks into jobs, further formalization of individual processes and establishment of extra training practices could be beneficial for improving the functionality of the work system in the depot. Here, the theory on operations management was identified as valuable source of scientific knowledge guiding to how are these interventions to be accomplished. In general, the theory considers the development of the most efficient operations in terms of resources that are to be used, as well as the most effective organizational practices suited for meeting customer needs (Kumar et al., 2008). Operations management pertains to the managing and directing of physical and technical functions and includes a broad variety of principles and methods for accomplishing these in organizations (EIES, 2009). In the following text, individual principles and methods that are embedded in the theoretical domain of operations management and applicable for designing of solutions to the problems in the depot in Bentheim are briefly described.

### **5.1.1 Taylorism**

The roots of operations/manufacturing management can be traced back to eighteenth century when Adam Smith recognized the economic benefits of specialization of labor (Kumar and Suresh, 2008). Visiting a pin factory, Smith observed that a single worker, who was not educated to his job, could at best make 20 pins per day. However, with the introduction of division of labor – breaking production of pins down to 18 distinct tasks performed by 10 different workers – output per worker per day increased to 4,800 pins. (Lanz et al., 2011, p.2). Dividing production tasks into specific job processes gives workers the possibility to focus in concrete jobs in which they eventually become highly skilled and efficient.

These lessons leading to the efficiency in the pin factory were further refined and developed by Frederick Taylor. In *Principles of Scientific Management*, Taylor (1919) defends a scientific method that “(a) seeks to divide work into regularized movements through breakdown and separation of tasks by systematic analysis of skills, gestures, and tasks; and (b) to scientifically plan the best way of performing any task” (Bahnisch, 2000, p. 52). According to Taylor (1919, p.7) the “most important object of both the workmen and the management should be the training and development of each individual, so that he can do (at his fastest pace and with the maximum of efficiency) the highest class of work for which his natural



abilities fit him.” Using time and motion studies combined with rational analysis and synthesis, Taylor aimed at defining the best method for performing any particular task (Taylor, 1919). According to him, maximum efficiency in organizations was only possible if each single job was completely rationalized and standardized. Employees are to strictly follow job instructions and do only what they were previously coached. In accordance with the principles of scientific management, the fragmentation of tasks into distinct processes was maximized in order to minimize skills requirements, allowing mass production in an environment of skills shortages (Lanz et al., 2011). The organizational methods by Taylor allowed mass production of goods by introducing a clear operational method for repetitive tasks, learned within a short period of time. Moreover, as labor remains a significant factor in the cost of production, the scientific organization of work contributed to productivity gains in terms of lowering costs (Peaucelle, 2000).

### **5.1.2 The Toyota Way**

Towards the end of the twentieth Century, the idea of mass production was gradually substituted by objectives of efficiency (productivity), deadlines (timeliness), reduction of defects (quality) and the production of variations of basic products (diversity) (Peaucelle, 2000, p.457). The old principle of production of the highest quantities for the lowest costs, shifted when the objectives of quality and flexibility of the production operations became increasingly important.

As markets became increasingly competitive, organizations faced the necessity of having to improve all aspects of their business. Companies had to apply the sort of operations, which assured them the best possible use of resources and at the same time provided a high level of quality and flexibility. As a response to these changes, ‘Lean thinking’ entered the realm of operations management, and completely changed the way manufacturing has developed during the past decades (Moreira et al., 2010).” Firstly introduced in the Toyota Production System (TPS), the term ‘lean’ has become a paradigm in manufacturing. By definition, lean manufacturing is ”primarily focused on designing a robust production operation that is responsive, flexible, predictable, and consistent. The new manufacturing operations based on the lean method are focused on continuous improvement through a self-directed work force and driven by output-based measures aligned with customer performance criteria (Feld, 2001,

p.6)”. In a lean manufacturing company, the expenditure of resources for any goal other than the creation of value for the end customer is considered to be wasteful and should be eliminated (Womack and Jones, 1998). A lean learning organization seeks to achieve its objectives with minimum waste by continually getting better.

### **5.1.2.1 Kaizen**

Charting ones organizational process from start to end, one can find a depressing amount of activities that do not contribute any value form the customer perspective (Liker, 2004). However, registering a certain amount of waste is not the same as reducing it. Hence, the challenge that the operational management faces is to develop a systematic method for continuously identifying and eliminating waste (Liker, 2004). The main principle applied in the Toyota production system (TPS) to reach this purpose is Kaizen. Kaizen means continuous improvement and is based on simple and effective technique reducing of waste in the workplace (Imai, 1986). This process reduces hard work and teaches people how to improve their daily activities by eliminating waste in business processes. In comparison to the Taylorism approach, Kaizen does not focus directly on cost cutting in a single part of the process. The costs are reduced by applying operations that continuously improve productivity and quality, and reduce insufficient practices along the whole flow of work and not individual job (Moore, 2001). For designing an organizational process free of waste, Kaizen relies on two major activities, namely standardization and elimination of the most common types of waste like overproduction, inventory, repair/rejects, motion, processing, waiting and transport. Kaizen proposes the following tools and principles to achieve these aims. (Imai, 1986):

- ✓ Muda – (waste of all forms)-eliminate it
- ✓ Mura – (variability or irregularity)-minimize it
- ✓ Muri – (difficulty or strain)-minimize it
- ✓ 5S – Seiri, Seiton, Seiso, Seiketsu, Shitsuke (sort, straighten, scrub, systematize, standardize)
- ✓ 5M – (Manpower, Machines, Materials, Methods, Measurements) - align them to a common strategy and purpose
- ✓ Poka Yoke – (a certain action must be completed before the next step can be performed) - make it easy to do the job right

### **5.1.2.2 Standardization**

According to Deming (1993), variation in work processes is a major factor of poor results in organizational operations. Organizations amass substantial amounts of waste through random activities and inconsistent methods. Hence, reducing the variation within processes will lead to reducing the waste in organizations. Standardization is used as a method to achieve this goal of identifying and eliminating waste. Essentially establishing routines that delineate how to perform a specific task, standardization establishes standard practices and sets up model cases allowing workers to discern the normal form from the abnormal execution of work. Primarily, the purpose of standardization lies in the detailed determination of what is to be done, who has to do it, and when it is to be done. Hence, standardization allows the establishment of most effective work methods for cyclical and repetitive tasks. Additionally, the documentation of this method is used as a visual reference to ensure adherence to the standard. As a result, standardization is often seen as causing rigidity and stifling creativity in organizations. This, however, is not judged as a challenge according to standardization proponents – quite the contrary, standardizing best practices enables an organization to capture previous experience and channel the lessons from it into the work processes. Without standardized processes in the organization, individuals can make great improvements in their own approach to the work but no one will learn from them (Liker, 2004). Through formalizing standards, organizations can continuously improve upon the existing standard. Future improvements are thus seen as upgrades of existing standards: “It’s essential to have stability before you can improve. Without stability, it’s hard to determine where you are, and whether or not you have improved. It’s a bit like hitting a moving target” (Moore, 2001, p.194).

### **5.1.3 Benchmarking**

Responding to the emergence of previously mentioned new production management trends, Benchmarking surfaced as a new strategy, which allowed managers to improve operation practices by comparing one’s own against these of other organizations (Luiz and Melo, 2002). By comparing operations, work methods and business processes, organizations are able to identify and implement better ways of doing things. Lema and Practice (1995) define the procedure of Benchmarking as “a process of continuously measuring and comparing an organization’s business process against business leaders anywhere in the world to gain

information that will help the organization take actions to improve its performance”. However, before looking at practices from the external environment, it is advisable for the organization to search for a solution among its own departments. In the process of internal benchmarking, units within a firm are compared with other units in the same firm (Brown et al, 1996). Irrespective of whether the benchmarking is internal or external, the strategy ascribes five common steps of execution (Drew, 1997):

- ✓ Identify the object of study
- ✓ Select a superior performer
- ✓ Collect and analyze data
- ✓ Set performance goals for improvement
- ✓ Implement plans and monitor results

#### **5.1.4 Management Control System**

In spite of optimal practices being benchmarked, processes being standardized and a waste-free operation being developed, employees may not implement the practices imposed by the respective operational system. To address this issue, a management control system, delineating “the devices or systems managers use to ensure that the behaviors and decisions of their employees are consistent with the organization’s objectives and strategies” (Merchant, Van der Stede, 2011, p.5), can be introduced.

In order to ensure that employees follow the prescribed operational practices, managers can rely on direct supervision or on measures that encourage, enable or force employees to act accordingly (Merchant, Van der Stede, 2011). Generally, options include proactive controls to prevent problems before they occur; or reactive controls to respond to undesirable events. Specifically, controls may take the form of required approvals, computer passwords, mandatory planning processes, score cards, segregation of employees’ duties, etc. (Merchant, Van der Stede, 2011). With respect to particular tasks, the objects of control can focus on generated results (results control), actions taken (action control), or types of people employed and their shared norms and values (personnel and cultural control) (Merchant, Van der Stede, 2011). The correct design and implementation of a management control system, independent from the types or objects of control, can significantly increase the probability, that employees follow the prescribed course of action and thus improve organizational objectives.

## 5.2 Design Specifications

As presented in the previous sections, current scientific literature offers many suggestions for the design of a solution applicable to the Bentheim depot. Defining design as “the process of determining the required function of an object to be designed, combined with making a model of it”, Van Aken et al. (2009, p.23) turns the focus of designing to the specific requirements which a product or system has to satisfy in order to be valuable for the user. Hence, as the designed solution has to fulfill a certain function in the actual domain of implementation, the solution design should conform to concrete functional specifications posed by the organization.

To meet the unique needs and solve the specific problems in the depot in Bentheim, the following section evaluates the theoretical suggestions extracted from the literature against concrete context-dependent specifications and requirements. According to the theory on design as summarized by Van Aken et al. (2009), design specifications are classified in four major categories. Ensuing, a discussion of these general specification categories with the quality manager of the company, the following set of concrete requirements on each category was identified:

- Functional requirements (the core of the specification in the form of performance demands on the object to be designed):
  - ✓ realization of the solution should contribute to improving the audit evaluation in the category “Sorting Area”, and increase the level of work and services quality in the organization;
  - ✓ the solution should consider the sequential workflow and improve the linkage between the individual performed tasks along the process;
  - ✓ the benefits of the designed solution should exceed its costs;
  - ✓ the solution should be focused on a long term and sustainable improvement of the performance in the depot
- User requirements (specific requirements from the viewpoint of the user):
  - ✓ the competences required for integrating the proposed solution should not exceed the competences of the people presently working in the depot;
  - ✓ the solution should be user-friendly and accepted by the employees;
- Boundary conditions (to be met unconditionally):

- ✓ the proposed solution should comply with legal requirements, including those on health and safety;
  - ✓ the proposed solutions should comply with the present operational policies of the company (unless the objective of the project is to change such policies);
- Design restrictions (preferred solution space):
- ✓ the project should take no more than 9 months;
  - ✓ the realization of the solution should change as little as possible in the present operational system

Considering the requirements for the solution design and the stable workflow in the depot, a full reengineering of the operational process or implementation of completely new operational practices was deemed impossible. Being aware of the drawbacks along the workflow in the morning shift, it is thus most useful to think of the combination of improvement of operational practices and optimization of tasks performed along the operational process . Understanding a task as a set of actions performed by a worker who transforms inputs into outputs using tools, equipment, or work aids, new tools, incremental improvements in the equipment or additional work aid/instructions should contribute to avoiding previously indicated shortcomings and optimizing the workflow in the depot.

### **5.3 Design Solutions**

“If we are ever to understand successful organizational practices, we must be able to recognize and represent the organizational practices we see. And in order to improve organizational practice in a particular situation, we must also be able to imagine alternative ways of accomplishing the same things” (Malone et. al, 1993, p.72). In this context, observing and learning about the organizational practices of the DPD’s depot in Bentheim the first thing that was registered was that the sequential interdependence of tasks performed along the process of workflow in the depot. The proper execution of work actions occurring at a later stage of the sequential work process largely depended on the performance of workers whose tasks have been performed earlier (Thompson, 1967). Errors in the stage of unloading packages, for instance, have negatively influenced the scanning process (the next step of the operational process).

In order to improve the performance in the depot, we thus start developing solutions for the better execution of each distinct stage by looking at the initial stages of the workflow and then gradually move on. Here, we aim to reduce waste along the whole flow of work by redesigning task and managing dependencies between activities. To accomplish this, we firstly choose applicable tools, concepts or principles (or a combination of these) from the literature on operational management, which conforms to previously mentioned user specifications. Solution concepts from the theory are contextualized to specific solutions that improve the execution of the individual task and subsequently to solving of the previously registered concrete shortcoming along the flow of work. Theoretical suggestions applied to the Bentheim depot include Scientific Management, Kaizen, Standardization, Benchmarking and Action Control Systems. Dependent on the individual insufficiencies within the operational process further formalization and/or supplementary specialization of task in combination with additional training on the job should contribute to the better evaluation on the category “Sorting Area” in the audit.

### **5.3.1 Avoid influx of unmarked damaged parcels**

The first problem that was registered during the observation stage pertained to parcels arriving at the depot with damaged packaging. Damaged parcels frequently go unnoticed by handling personnel due to inefficient scanning procedures, and are registered as ordinary parcels. In order to find a more efficient and less problem-prone scanning method, the principles of Scientific Management were consulted and applied. Observing the unloading process, we divided the work into regularized movements and analyzed the activities that the worker carries out before parcels are placed on the band, which moves towards the scanner. According to job instructions, the worker has to place the parcel in a way on the band that the label of the packages is directly visible by the scanner. As only one side of the package is labeled, packers look after the labeled side and turn it upwards. Turning the parcels in their hands before they lay them on the band allows the packers to look at the parcel from different perspectives and potentially notice existing damages on the packaging. However, not being directly instructed to look for damages and seeking to do their job as fast as possible, parcels are frequently positioned on the band in such way that partial damages cannot be registered by the scanner. Here the problem appears because of the neglected dependency between the task of unloading and the task of scanning. In this regard, additional specialization of the task

performed by the packer could reduce the amount of damaged parcels entering the system without being properly scanned. Instructing packers to signal the scanner of having noticed damage on the parcel would ensure that the damages are properly registered. A possible way of signaling for damages, that does not incur any additional cost or efforts, is the alternative of turning the damaged side of the parcels towards the scanner. Regardless of the label's position, the package should be placed in such a way on the band that the damage is inevitably seen by the scanner. Seeing the damaged side of the package first, the scanner has to turn it over before scanning it in most of the cases. Although this procedure ascribes an additional activity, probably no significant amount of time is needed to perform the activity. Moreover, as this is a very simple procedure that holds potential to avoid the flow of unmarked damaged parcels into the system and reduce the amount of uncontrolled damaged parcels transported to the delivery area, it is worth the extra effort.

### **5.3.2 Providing boxes for a hardly damaged parcels direct near the unloading gates**

Except of the parcels that could be turned around in the process of unloading, in some cases damaged packages were in such a condition and they literally fall apart before they could be scanned. Having this kind of damages in front of them, the scanners are able to find the label and scan the package as damaged. However, there is the need for an additional box, where these packages can be put in for further transportation. These boxes are not directly positioned at the places where the unloading or scanning is executed. Being located near the place for content check, the scanner has to inform another employee, working in the area where the boxes are, wait for a box to come and then put the package into the box. In addition the current practice is also problematic because of the fact that hardly damaged parcels must be firstly laid on the band to reach the scanner desk. In order to find a better practice for handling of hardly damaged parcels, we just observe how the same process in the DPD's depot in Muenster is executed. According to the theory, Benchmarking is an effective method for gaining information, which will help the organization to take action to improve its performance. Therefore, we look at practices from the other depots to search for a solution for this problem. In a process of internal benchmarking, it was registered that the depot in Muenster, having the same problem with hardly damaged parcels, has solved it in a very simple way. Positioning the boxes in the area of unloading, allows the employee to have an access to the boxes before the package has been laid on the band. The employees can just take



a box put the damaged parcel in it and lay it on the band. The hardly damaged parcels arrive directly in these boxes to the scanner, and after the scanning, proceed further to the place for content check. Comparing the unloading areas in the depots in Muenster and Bentheim, any significant difference could be registered. In Bentheim, there is sufficient place between the unloading gates, where the boxes can be positioned and there are enough boxes that could be spread evenly across the unloading areas.

### **5.3.3 Establishing standards for damaged parcels**

The second problem that we registered during the observation stage consists of the immense differences among employees' criteria for damaged parcels. Without significant differences in the condition of unloaded packages, one of the employees scanned an average of 1% of the packages as damaged on three different days of observations. In the same timeframe, her colleague marked 23% of unloaded packages as unordinary. Based on these differences, significant inconsistencies of how the different employees interpret the informal rules for scanning a parcel as damaged. The lack of explicit standards results in variations as to how damages are registered and lead to a confusing task environment for scanners. As this causes additional and unnecessary drawbacks in the depot, formal job instructions and additional training should support the scanner in evaluating, which parcel is to be scanned as damaged and which not. In this regard, the theory on Standardization claims that reducing variation within processes will lead to reducing waste in organizations. According to Liker (2004), problems in organizations are caused by inconsistent methods and varying executions of the same task. By establishing routines and formal guidelines for particular tasks, standardization provides models that allow workers to discern the normal from the abnormal execution of work, hence improving the workers' understanding of the issue. However, concrete standards or a definition of what constitutes a damaged parcel were absent within the Bentheim depot's organizational handbook. Including instructions on what is a damaged parcel and how to process it would be a significant improvement. Here, the theory on Standardization does not suggest building definitions and instructions from scratch – rather, available knowledge used up to this point is to be aggregated und used as a blueprint for standardized best practices. With regard to the Bentheim depot, the “protocols for damages” (see Appendix E) fulfilled in cases of registered damage could be consulted to extract previously amassed knowledge. Although these reports do not directly define the damage, they include categories that

extensively describe a wide range of possible alterations of the packaging. These noted variations of damages could be used to create a new document, which instructs employees on which damage is important and should be scanned as such. Using existing pictures of damages, additional categories could be created to enable a more precise categorization of damages. A formal document representing the most important damage categories would provide a common ground for the employees' interpretation of parcel scanning rules, and thus reduce individual variation in scanning results.

#### **5.3.4 New procedure for the shifting of damaged parcels to the place for content check**

When an unloaded parcel's packaging is deformed, an additional check is conducted to avoid damaged parcels being delivered to the customer. Nonetheless, many damaged packages that are scanned as such are directly forwarded to the delivery area without being checked again. Currently, an acoustic signal by the scanner informs an employee positioned within the conveyor system to direct the damaged parcel towards the additional content check. However, due to loud noise in the depot and a high amount of packages to be transferred by the employee, these signals are often either not given or not heard by the addressed employee. Furthermore, the currently used procedure is inefficient since it leads to additional efforts for the scanning and shifting employees.

One of the major principles of Kaizen, 'Muri' recommends minimizing the difficulty and strain in the work process, replacing hard work with user-friendly procedures, and thus improving the workflow and reducing waste in organizations (Imai, 1986). In this regard, user-friendly procedures would minimize the efforts made by scanning and shifting employees in charge of redirecting damaged parcels.

One such measure would be substituting the existing acoustic signal with a visual one. If a damaged parcel were marked with a visual sign by the scanner, this would eliminate the need for direct contact between the two employees. Instructing the scanner to mark with a visual sign the damaged parcels would render sound signals unnecessary and enable the shifting employee to focus on the task of shifting, rather than following packages along the conveyor system. In this regard, a simple colored label attached to the damaged parcel would suffice to make the parcel easily recognizable, in turn leading the shifting employee to push the parcel to the band towards the content check. As this change in procedure would require additional materials, it is necessary that the solution's benefits outweigh the costs of its introduction.

Considering the average amount of damages scanned in the depot, the use of readily identifiable colored labels would cost approximately 1.50 Euros per day and 33 Euros in a month. Executed properly, the procedure would make all damaged packages visible to the shifting employee and thus allow further checking, bonding or repackaging of damaged parcels. Consequently, image problems incurring from delivering deformed parcels as well as compensation costs for lost or damaged content could be averted. Accordingly, the new procedure represents a low-priced solution to the frequent problem of uncontrolled damaged parcels.

### **5.3.5 Improvement of the Equipment**

Frequently, a number of damaged parcels, pushed to Band 4, fall on the ground. Taking into account the band's height and the weight of the packages, there is a high risk of falling parcels incurring damage as a result from the fall. In this context, one of the principles of Kaizen requires the full alignment of Manpower, Machines, Materials, Methods, and Measurements for reaching high operational performance. When an organization's performance declines, a root cause analysis is used to determine which of the five dimensions is responsible. Considering 'Manpower', there were enough people waiting for the upcoming packages to process them. However, both sides of Band 4 were missing retaining walls that were otherwise installed along the whole conveyor system. Given the large amount of packages that were moving down on the band, it was a frequent occurrence that upcoming packages pushed the other packages off the band. Here, a small equipment upgrade would solve the problem without any necessary routine changes. The additional costs associated with the installation of new equipment are justified by the relatively small, one-time cost vis-à-vis significantly lower parcel damages within the depot.

### **5.3.6 Assuring that content of parcels with significant deformations on their packaging is checked for damages**

Often, packages that arrive at the content check are immediately fed back into the system. Packages that are completely open or shredded are hastily fixed together and pushed back. None of the employees controlled whether the content in the package was damaged. In spite of the fact that employees were instructed to take care of the content, employees focused their

attention towards fixing the packages' exterior as fast as possible. Here, a formal rule obligating employees to examine the content of every package arriving at the area for content check could be helpful.

However, considering the high amount of minimal damages like simple scratches, dents or bumps on the packaging, this does not appear effective. Nonetheless, more packages need to be opened and checked, creating a necessity to differentiate between packages that require exterior fixing only vis-à-vis packages that require a content check. Given the wide variety of different kinds of parcel deformations, exhaustive standards or criteria would be excessive and inefficient. Hence, a system is needed that controls for employees' actions. In this context, the theory on management control system suggests the implementation of a control system (Merchant, Van der Stede, 20011). Among the series of potential forms of control that may be set up are the separation of duties that "involve dividing up the tasks necessary for the accomplishment of certain sensitive action" as well as 'poka-yokes', "a control form built into a process that assures that a certain action is completed before the next step can be performed" (Merchant, Van der Stede, 20011, p.77). These control systems appear to be applicable to ensure that parcels with significant deformations on their packaging will be checked for their content.

Currently, employees who are not educated about the process of a content check are those who first take the parcel from Band 4 and make a decision whether the parcel should be forwarded to an authorized employee. Although they are instructed to be aware of possible content damage, damaged packages often go unchecked. To deal with this issue, a new division of duties for the checking, bonding and processing of damaged parcels could assure that packages with significant damages are thoroughly controlled. When a damaged parcel arrives at the place for content check, a decision is made whether the parcel should be bonded directly or checked further. The decision to empower the authorized employee to make that judgment should be based on his/her ability to make an informed decision based on additional education and experience. In a second step, packages could be positioned in different zones that signal other employees how to process the respective packages. Based on the authorized employee's decision, packages that can be bonded proceed to the first zone, packages that need to be opened and checked go into the second zone, and parcels in need of repacking and/or damaged content are forwarded to the third zone. Employees responsible for the processing of the packages in the different zones could be additionally educated for the work process and specialize in specific tasks. However, this separation of duties would not be

effective if the abovementioned steps are not strictly followed. Action control systems in general and principles of ‘poka-yokes’ in particular require the implementation of administrative or physical constraints that prevent deviation from the concrete order of steps (Merchant, Van der Stede, 2011). Hence, formal instructions should supplement this new separation of duties. The last step of implementing of an action controls system requires making involved employees accountable for their actions. The implementation of action accountability controls requires (1) employees to be informed about what is actually expected from them, (2) observations on the way employees perform their job and (3) the provision of feedback for their performance (Merchant, Van der Stede, 20011). A possible option to satisfy all these points is an organization of a formal feedback loop between the authorized employee and the system implemented for handling customer complaints. At monthly meetings between the employee and the quality manager responsible for handling customer complaints, specific cases referring to the processing of individual damaged parcels could be discussed. Here, the employee will be able to receive a feedback of his work and become aware of additional points that should be taken in consideration for the successful execution of the job.

### **5.3.7 Correct the E-Sort codes directly at the right end of the conveyor system**

As it was previously described, some packages, which should be transmitted to the left delivery area, end up in the right one. Likewise, those with E-Sort codes that are not in accordance with delivery addresses are forwarded to the end of the conveyor system without being picked up by the drivers. Whereas the packages that were simply not picked up during the ordinary workflow can be collected during the return flow as the conveyor system moves backwards, packages with false E-Sort codes are returned to the unloading area where they receive correct E-Sort codes. However, this happens after the drivers have already left, meaning that the parcels have to remain in the depot for one more day and are registered as exceptions in the system. To avoid this issue, another practice, successfully implemented in the depot in Muenster, can be benchmarked. In Muenster, false E-Sort codes are changed directly by additionally educated employees before packages are fed back into the system. In cases where parcels with false (crossed out) E-Sort codes are noticed, employees look at a list on a wall nearby and search for the right E-Sort code according to the delivery address. As a result, they can directly change the false code with the right one. Packages labeled with the right code are collected by the drivers during the return flow and delivered on the same day.

With respect to the physical conditions of the conveyor systems, the situation in both of the depots is approximately the same. Therefore, the practice applied in Muenster can and should be used in Bentheim. For this purpose, a complete list with E-Sort codes referring to the regions of delivery should be prepared and hung up at the back of the conveyor system. Additionally, employees who are responsible for the return flow of uncollected packages should be educated and instructed to notice packages with false E-Sort codes.

#### **5.4. 7-Steps Change Plan**

In the methodology for BPS projects provided by Van Aken et al. (2010, p.104) the “solution design defines at first the business system to be realized and the change plan specifies in the following how that is to be done”. Theoretically, solutions can range from a simple new tool or procedure to a completely new structure or work processes in the business system. Because of the sequential workflow in the depot that is built of consecutive interrelated single tasks, we focus on a solutions of a problems registered in the execution of each task. Here, we follow the idea that the optimization of the performance on every single job will reduce the waste in the operational process and improve the functionality of the depot in the area of intervention. Up to this point, solution design, including series of recommendations, offers an answer of the question what needs to be done. However, having the solution is not the same as making use of it. Therefore, the following specific interventions outline the realization of the previously proposed solutions. These interventions are arranged in successive steps, which do not strictly follow the order of solution design from the previous part, but are introduced in a way that assures the best possible integration of every single solution in the operational process.

##### **Step 1**

Because of the significant differences in the amount of scanned damages, the solution design proposes a precise definition and categorization of damages to which the employees have to comply with when scanning the parcels. Such kind of standards are, however, also useful for the task of unloading of the packages. Firstly, in the solution design it was proposed that in the process of unloading the damaged side of the parcels should be turned towards the scanner. This is a sufficient method to give a signal to the scanner, but could not be properly executed

before the unloading employee also knows what kind of damages are of importance. Because of this, in the first step taken towards the realization of the solution design we propose the preparation of an instruction document representing all kind of damages that are to be scanned in the system. For the purpose of better exemplification, the categories of damages should be additionally explained with the help of pictures visualizing each category. The final document should be hanged out as a poster and handed out to every employee. (For exact guideline for the preparation of the document, see 5.3.3.)

## **Step 2**

As it was previously mentioned, the work process in the depot is sequential and performance of each task depends of the proper executed of the previous one. The neglected dependency between the task of unloading and the task of scanning led, for instance, to the entering of damaged parcels in the system without acknowledging them as such during scanning. Being aware of the fact that additional specialization of the task of unloading should be made in accordance to the needs for the process of scanning, the solution design proposes additional instruction on the job of the unloading employee. As one of the major tasks of the scanner is to register damaged parcels, instructing the unloading employee to turn the damaged side of a parcels towards the scanner will allow every damage parcel to be noticed and simultaneously prohibit the entering unregistered damages in the system. However, being aware of the fact that any kind of description of the work process is existing, specialization and formalization on a single job is not sufficient. In this context, we propose the preparation of a map of the work process that includes the work positions that employees occupy along the conveyor system and the work instructions on each of these positions. Such kind of map will make it possible for employees to see their work activities as a part of the work process in the organization and provide them with formal instructions on what is to be done for the optimal execution of every task. This will also lead to the standardization of the work activities in the organization and establish a baseline of operations from which a further improvement is possible.

### **Step 3**

In order to facilitate the processes for unloading, scanning and transportation of hardly damaged packages, change plan recommends the relocation of the boxes used for the moving of these kinds of packages. As currently, the boxes are located near the place for content check these are much more needed between the unloading gates. Positioning of the available amount of boxes between the gates will give the possibility of the employees to make use of them immediately as they need them. Having the boxes at hand, will make it easier for the workers to process hardly damaged packages and prevent further damage on the way to the scanner. Additionally this relocation will allow to get rid of the delay in the procedure incurred by waiting for the box to be received by the scanner.

### **Step 4**

Implementation of the changes introduced in the previous three steps, will assure that every damaged parcels will be noticed and registered in the system. Next, in order to avoid damaged parcels to be delivered to the customer, the system of work should assure the forwarding of damaged parcels to the area where these are checked and fixed. Currently an acoustic signal by the scanner informs an employee positioned within the conveyor system to direct the damaged parcel towards the additional content check. However, this procedure is not sufficient and leads to situation where many damaged packages move direct to the delivery area without being properly fixed. In order to avoid this situation we propose the replacing of the currently used acoustic signal with a visual mark identifying a package as damaged. With regard to the specific implementation of the procedure, we suggest the placing of a bunch of colorful labels on each scanner desk. The labels are to be stick on every damaged parcel. On one side, the sticking of a colorful mark on the package will not incur any additional effort for the scanner, and on the other side, the mark will be easily spotted by the employee, who directs the damaged parcels towards the additional content check. Overall, this new procedure of signalization will ease the work of the scanner and assure the shifting of every damaged parcel to the area of content check.



### **Step 5**

The fifth change proposition in the plan is relatively cost intensive but of immense necessary for the proper functioning of the operational system. When implemented, the previous four change steps will lead to the situation that many damages will be pushed on Band 4 for further content check. Here, these packages need to remain on the band until an employ picks them up for further handling, and not fall down due to collisions with other upcoming packages. For this purpose, we propose a small equipment upgrade that would solve the problem with falling packages, without any necessary routine changes. Installing of retaining walls on Band 4 will keep the upcoming packages on the band and prevent further costs incurred by falling down and damaging of a parcels' content.

### **Step 6**

When packages arrive at the place for content check, the main reason for these to be there is motivated by the fact that the organization wants to reduce the chance of damaged packages being delivered to its customers. For this purpose, the DPD's depot in Bentheim has integrated a procedure in which employees are responsible for checking the content and fixing the exterior of damaged packages. However, according to our observations, the procedure is not organized well, and the content of much of the damaged packages is not checked at all.

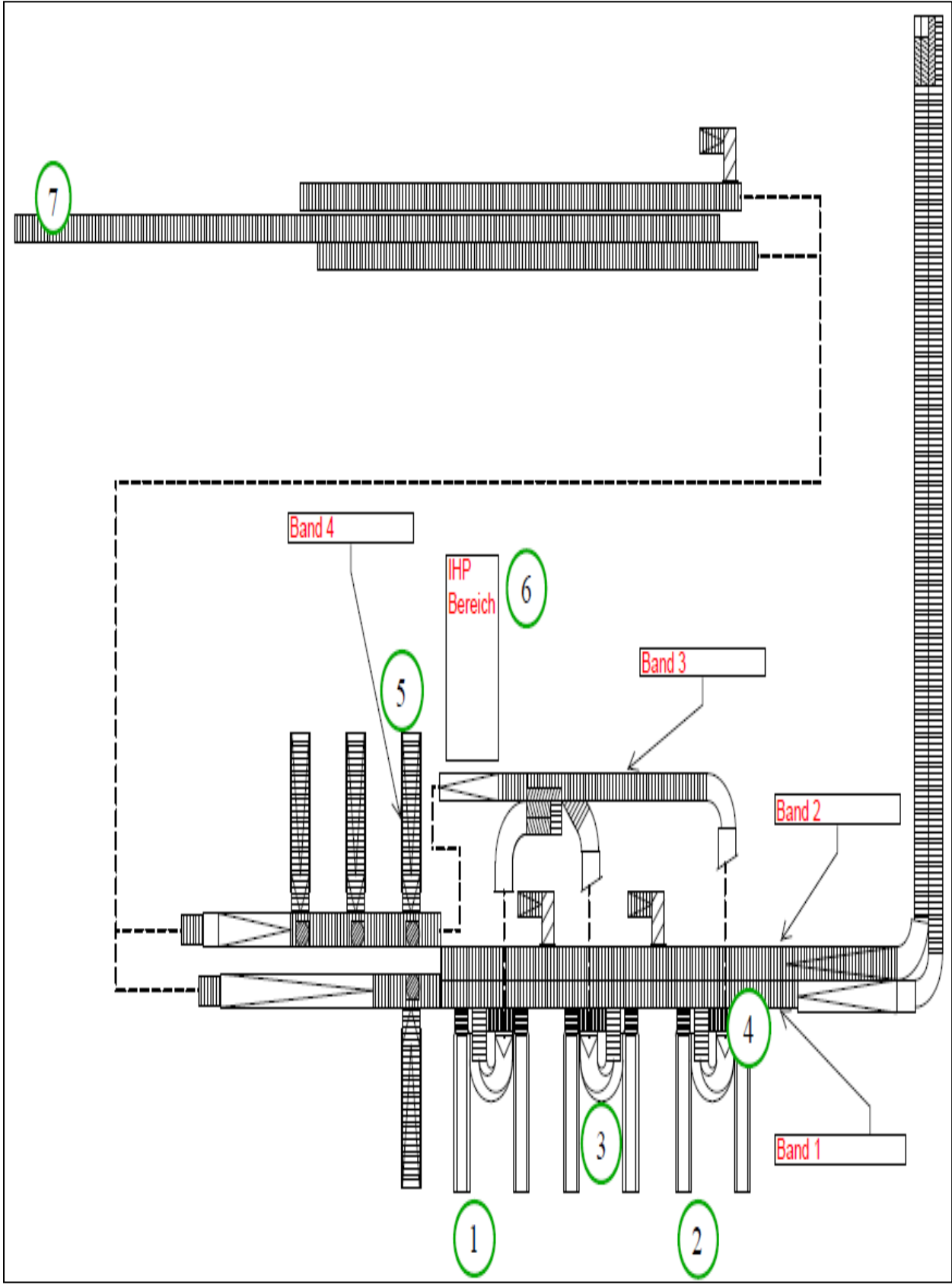
Considering this, the change plan suggests the reorganization of the current procedure. In this context the first intervention that we propose is the clear separation of duties between the employees who are additionally educated on the process of content checking and these who are responsible just for the fixing of the packages. Here we propose that the decision of what is to be done with a concrete parcel arriving at Band 4 should fall exclusively under the authority of the educated on the process of content check employees. As the authorized for the content check employees have normally much more experience and know more about the requirements on the process, they can better rule out which parcels could be directly fixed, in which cases the content of the parcel should be just checked, and by which damages an extensive content check and protocolling is required. Additionally, we insist for the establishing of three separate work zones, where packages with a different kind of damages should be handled according to the extent of their damage. In the first zone, the packages should be directly bonded, in the second opened and checked and in the third directly repacked or protocolled as packages with a damaged content. Deciding on what is to be done

with a package, the employee authorized for the content check will be able to inform directly the other employees for his decision just by situating the parcel in one of these three zones. Subsequently assigning the rest of the employees to work in only one of the different zones will contribute to their specialization on the specific tasks. In the end, to fulfill the procedure we propose integration of a feedback loop between the authorized for the content check employee and the system implemented for handling customer complaints. Here, monthly meetings between the employee and the quality manager who is responsible for the system implemented for handling customer complaints will give the possibility to the employee to receive a feedback of his work and become aware of additional points that should be taken in consideration in the further execution of the job. For the proper functioning of this new procedure, it is of vast importance that the all of the different task included are formally prescribed and strictly followed.

### **Step7**

In the last part of the change plan, we suggest an integration of a new process step that should support the operational system in the depot. As currently false E-Sort codes are changed only after these have been returned back to the unloading area, we suggest that these should be done at the right end of the conveyor system just before the packages are fed back in the system for the return flow. For the practical realization of this step, a complete list with the E-Sort codes referring to the regions of delivery should be prepared and hanged up at the back of the conveyor system. On the list, postal codes of the regions of delivery must be written against the regular E-Sort codes. Noticing E-Sort codes that do not correspond to the postal code listed on the delivery label, the employees can directly change it by writing the new one on the label. Being correctly labeled this kind of packages will be picked up by the delivery driver during the return flow and delivered on the same day. However, for the successful integration of this step in the process employees should be educated on this simple procedure and instructed to follow this by noticing packages with false E-Sort codes.

Figure 7: Change plan



Source: own illustration

Figure 7 represents the change plan, specifying the various actions to be taken and improvements to be made along the work process in the depot. Each improvement is labeled according to its area of intervention along the workflow in the early morning shift. Being in a position of this plan, the management team of the depot can follow it and change the current way of performing certain activities in the organization. However, the interventions will not reach their optimal effect before the change plan is justified and communicated to the management team and the employees. The employees should be convinced in the appropriateness of the change plan and fully support it. For this reason, the following chapter provides a justification and explanation of how the change plan contributes to the better functionality of the organization and instructions how it is to be communicated. Additionally, as the purpose of the change plan is to improve the performance of the depot on the long term, the following chapter offers also a plan for evaluation of the sustainability of the proposed interventions.

## **6. Practical realization of the 7-Steps change plan**

In the Diagnosis part, it was concluded that inappropriate levels of ‘formalization’, ‘specialization’ and ‘professionalism’ lead to shortcomings in the performance of operational processes in the organization. Subsequently, we could register concrete problems that were caused by an insufficient specialization of concrete tasks into jobs, deficiency in the formalization of individual processes/tasks and lack of formal training practices. Facing these problems, a 7-Steps change plan was developed. Despite the fact recommended interventions are developed based on scientific literature and tailored to the concrete problems registered in the organization, they will be beneficial for the depot in Bentheim only if they lead to the improvement of the functionality of the work system. For this to happen, it is important that the employees understand and make use of the proposed changes. In this regard, it is crucial for the change plan to be reasoned and soundly communicated. Hence, the first part of the chapter focuses on explanation why the solutions included in the change plan will contribute to positive effects in the organization (6.1). The second part (6.2) focuses on the communication of the proposed changes. Then, it is also important that the seven steps proposed in the change plan are properly used. In this regard, the third part of the chapter (6.3) represents the concrete schedule putting the plan into action. Additionally, the management team should examine the effectiveness of the changes in the long term. For this reason, a post evaluation plan is for examining the effects of change plan in the depot, is developed and presented in the fourth part of the chapter (6.4).

### **6.1 Justification of the change plan**

First - it should be mentioned that when implementing the solutions explained in the change plan, the work process of the organizations will be completely released from waste. Synchronization of activities executed along sequential operational process and addition of practices supporting the workflow will lower the efforts made by the employees executing their daily jobs and reduce the mistakes that were previously observed. Second - following the instructions given in the change plan, the management team will be able to formalize specific instructions that are important for the execution of critical jobs and tasks. Establishing rules and routines that define how specific activities are to be accomplished, will allow the

standardization of the most effective work processes and help the employees to discern the normal form from the abnormal execution of work. Additionally, the development of written documentation of the instructions and methods will provide a visual reference of the work practices that is to be used to ensure adherence to the standards and for education of new employees on the job. Finally, having established concrete standards for work, organizations can continuously improve upon these existing standard. New ideas for improvement can be integrated in the already existing standards. “It’s essential to have stability before you can improve. Without stability, it is hard to determine where you are, and whether or not you have improved. It’s a bit like hitting a moving target” (Moore, 2001, p.194).

Furthermore, it should be mentioned that the improvements proposed in the change plan conform completely to the requirements introduced by the management team. On one hand, they are cost-effective and user friendly and on the other hand, comply completely with the current operational policies of the organization. Overall, the change plan will eliminate bad practices, increase the quality of work and improve the functionality of the depot. This in turn, will eliminate the waste along the work process and increase the depot’s evaluation in the category “Sorting Area” on the audit. Consequently, it is expected that the depot’s quality of service will also increase. In this context, as previous research has shown that operations performance of service delivery can positively affect customer satisfaction (Stank et al. 1999), it is also expected that the better operational performance of the depot in Bentheim will lead to higher satisfaction among the customers of DPD.

## **6.2 Communication of the change plan**

Regardless of the quality of the solutions included in the change plan, it is impossible to just implement the solution in the organization. The project should mobilize organizational support, so that the solutions are adapted through social interaction (Van Aken et al., 2007). For this reason, the change plan should be not only communicated but also introduced in such a way that makes all relevant stakeholders thinking of it as if it is their own idea. The plan should convince the depot manager and quality manager of its effectiveness and inspire the unloading employees, the scanners, the pushers and the content checkers to make use of the included prepositions in their daily work. On the way to these goals, the management team and the supervisor of the depot received the first official presentation of the change plan. As the management team and the supervisor of the depot have to decide whether and how the

change plan is to be implemented, representation of the plan should convince them of its appropriateness and make them aware of some issues concerning the communication of the interventions to the employees. In order to do so, the communication of the change plan followed three concrete phases that explain the proposed changes in the context of the operational process and make clear what is to be considered about the practical realization of the 7-Steps change plan.

### Awareness Phase

Awareness Phase was executed in the depot. In this phase the purpose of the presentation was not simply to explain the management team what kind of problems were detected and how are these to be solved, but to let the management experience the problems on their own. Me together with the depot manager, the quality manager and the supervisor followed the process of work and discuss problematic issues that I previously observed. In this discussion, the specific problems were explained with the help of real examples from the observations and data from the analysis. Here, I tried to exchange my experiences with these of the other parties of the discussion, so that all of us have a clear understanding of the situation. In the end of the Awareness phase, management team came to intersubjective agreement about the existing problems along the flow of work and began discussing possible interventions.

### Solution Phase

As I have already invested tremendous amount of time in searching for applicable literature and developing a solutions out of it, the easiest course of action would be to represent the solutions to the authorities in their end form. However, this would surely not evoke the social interaction that will mobilize the organizational support needed for the realization of the change plan. Instead, in this phase, I firstly ask the authorities for their own ideas for solutions and discuss with them what these could look like. After a period of struggling, the authorities ask me back for my ideas and we discussed these further. Because the solutions that I brought into the conversation were well structured and based on scientific literature, they were easily accepted. In addition, as these solutions come from a discussion and exchange of opinions, they were seen as a common product and not just as something coming from the outside. The small adjustments to the solutions that we all accepted made all the participant coauthors of the change plan and gave them a sense of ownership.

## Realization Phase

When one has understood his problem and has developed a solution for it, the most normal action is to make use of the solution to turn the situation in his favor. However, solving problem in organizations does not function in such a way. As it was previously said, the change plan should not just be accepted by the management authorities, but recognized and valued by all employees of the depot. Although the management team has to take the decision for the implementation of the change plan, the most important issue is that people, whose work processes, roles or vital interests are directly affected by the solutions, understand, trust and make use of them (Van Aken et al., 2009). The realization of improvements in business system performance entails effective organizational change that is based on technical-economic interventions (solution for a problem) and political and cultural ones as well. Therefore, in this phase of the communication it was important for me to make the management team aware of the importance of some cultural and political interventions needed for the development of organizational support for the 7-Steps change plan. Here I referred mostly to a theory on organizational change by Tichy (1983).

In the process of communication of the change plan, it is important for the employees to understand that they are performing not a single task in the organization, but that they are part of a holistic process in which every job or task is strongly related to the next one. For this purpose, the management team was recommended to use the simplified version of the process map illustrated in Appendix J and develop **a work plot exemplifying the whole process and the single relations of task and jobs within it**. Next, it is also important for the employees to understand what the requirements of the depot management team are and what kind of existing problems affect the current way of work. When the problems are clearly represented to the employees, the change plan and the including solutions should be sketched out as an alternative for the improving the performance of the depot and discussed. For this purpose, the management team was advised to **organize a formal meeting with the employees, on which the abovementioned issues are represented and discussed. On these meetings, the management team should call for further suggestions and be open for adjustments of the proposed solutions**. Finally, when the change plan is into force and the employees have already made use of the solutions, it is important to give them the possibility to provide a feedback on the appropriateness, effectiveness, and possible alteration of the new procedures. In this context, the management team was advised to organize **a final feedback meeting with**



**the employees and promote a possibility for informal talks between the depot manager and quality managers with single workers.**

According to Van Aken et al. (2009), the most important critical success factor for realization of the change plan is that this is well communicated. Lack of information is a potent source of resistance, producing not only uncertainty but also often also mistrust. In this context, the communication of the change plan through the three phases of Awareness-Solution-Realization assures that the plan is properly represented. Furthermore, passed on in such a way, the plan involves every single employee in its execution and provides the sense of ownership to the change agents. The integrated discussion session and possibility for feedback would avoid potential conflict of interest and give opportunity for an exchanging of different opinions. In the following text, the concrete plan for the implementation of solutions will be presented.

### **6.3 The plan for the change process**

Up to this point, it was explained what is to be changed, why these changes are beneficial and what is one to be aware of when introducing these changes. The following chapter focuses on specific actions by specific people that will realize the changes.

After the change plan has been communicated to the management team and the employees, it should be implemented in the work process. The implementation process should be managed in accordance to the designed solutions, the change and communication plan. The change plan defines the interventions to be realized and the schedule of the change process outlines how these should be integrated in the work process. In this regard, the change process is seen as the practical realization of the change plan in the work environment (Van Aken, 2007).

In practice, during the first two communication phases, the interventions proposed in the 7-Steps change plan were broadly discussed with the management team. Then, after company authorities concluded to make use of the proposal the depot manager took the responsibility to develop a schedule for the change process. According to the various kinds of expertise needed for the realization of every individual step included in the change plan, the depot manger developed a schedule for the change process. Here, he authorized staff members who perform different actions described in the 7-Steps change plan, according to their core qualifications

and competences in the depot. The concrete division of tasks, the termination and the responsible persons are listed in the table below.

**Table 8: Division of task in the change process (in Original)**

<u>Erfassungs-Datum</u>		<u>Zuständig</u>		<u>Beschreibung</u>	WT an	Rück Info an	<u>Termin Datum</u>
27.09.2013	Prozessoptimierung	Marc	Entladung - Arbeitsanweisung	Erstellung Arbeitsanweisung für Entladepersonal im Eingang - Entladung von Paketen aus Eurocontainern - Behandlung beschädigter Pakete			15.10.2013
27.09.2013	Prozessoptimierung	Heiko	Schulung Entladepersonal lt. Arbeitsanweisung	Arbeitsanweisung wird bis zum 15.10. von MD erstellt. Entladepersonal wird anhand der Arbeitsanweisung durch den Schichtleiter geschult.	UE	MD	30.10.2013
27.09.2013	Prozessoptimierung	Sven	Anbringen der Seitenbanden an den 3 Beladetoren	Die Seitenbanden werden zunächst an einer Seite angebracht. Absprache mit dem Schichtleiter Frühschicht.	UA	MD	15.10.2013
27.09.2013	Prozessoptimierung	Heiko	IHP-Platz / Nachverkleben	Es werden 2 Mitarbeiter als "IHP-Supervisor" eingearbeitet. Der IHP-Supervisor entscheidet am IHP-Band was mit dem beschädigten Paket passiert: - Nachverkleben - kleine IHP oder große IHP	UE	MD	15.10.2013
27.09.2013	Prozessoptimierung	Heiko	Beschädigt-scannung am Scannplatz	Das Scannpersonal wird angewiesen, beschädigte Pakete "B" zu scannen und an diese Pakete ein B-Label so anzubringen, dass man es bei Bedarf am Nachverklebeplatz wieder entfernen kann. Scanner, Pusher und IHP-Pers. werden über den Zweck der Maßnahme informiert.	UE	MD	15.10.2013
27.09.2013	Prozessoptimierung	Daniel Bedu Depot 148	Arbeitsanweisung für Scannpersonal erstellen	Erstellung Arbeitsanweisung für Scannpersonal im Eingang - Scannung von Paketen - Pushen von Paketen - Behandlung beschädigter Pakete etc.	UE		31.12.2013

27.09 .2013	Prozessoptimierung	Daniel Bedu Depot 148	Arbeitsanweisung für IHP- Nachverkleben erstellen	Erstellung Arbeitsanweisung für IHP-Personal im Eingang - Schadenbeurteilung (große IHP-kleine IHP-Nachverkleben) - Nachverkleben von Paketen	UE	MD	30.10.201 3
27.09 .2013	Prozessoptimierung	Heiko	Prüfen Rücklaufmenge	Wie viel Pakete pro Tag bleiben im Depot, die noch hätten in die Zustellung gehen können? Falscher E-Sort Code? Heiko meldet die Durchschnittsmenge pro Tag und prüft, ob hier eine Änderung des Ablaufes im Depot 144 nötig ist.	UE	MD	30.10.2013

While the schedule for the change process describes the tasks which are to be taken for the realization of the change plan, the authorized employees were also instructed to follow the advises given in the communication plan. Depending on the different changes to be done, the authorized employees should discuss the operational adjustments with the workers and be aware of their feedback. Additionally, the management team was planning with a common meeting, on which operational problems that were indicated in the analysis would be discussed with the workers in the depot. Work plots, serving for the visualization of the operational process including the work positions of the employees, should also be prepared, and hanged out in the work area. Explaining the 7-Step change plan with the help of these plots has the purpose to show the whole picture to the employees and help them recognize the importance of every individual job in the work process.

#### **6.4 Evaluation of the change plan**

Although the business problem-solving project was carried out according to the best possible standards and state-of-the-art theory, the solutions designed for the depot in Bentheim are to be further evaluated after the initial phase of their implementation. Taking into account the reasoning up to this point it could be clearly stated that the designed solutions are in accordance with the user requirements and meet the expectations that were formulated early in the project. However, as organizations are dynamic constructs that steadily exchange with

the external environment and pulse with frequencies of its own internal dynamics, the solution should not be seen as an immutable entity that is to be ‘inserted’ in a passive environment (Van Aken, et al. 2009). For the purpose of sustainability of the proposed solutions, these should be evaluated and, if needed, further adapted to the local operating conditions.

In particular, it is of importance, whether the proposed solutions lead to additional cost or efforts (that were previously not taken into account), what the employees’ attitudes towards the proposed changes are and whether some of the new methods and instructions result in collusion with the current work process. In order to gain the needed information on these questions, the effectiveness of the improvements suggested in the change plan should be evaluated in a real work environment. For this purpose, we recommend the management team of the company to examine the changes made in the depot according to the following evaluation questions.

1. Turning the damaged side of the parcels towards the scanner

- ✓ Does this activity take significant amount of time in the process of unloading?
- ✓ Does this activity result in additional efforts by the employees?

2. Providing boxes for a hardly damaged parcels direct near the unloading gates

- ✓ Are the boxes used by the employees?
- ✓ Are the boxes returned back to the places between unloading gates after their use?

3. Establishing standards for damaged parcels

- ✓ Are these standards understood by the employees?
- ✓ Do the employees follow the standards in their daily work?
- ✓ How do the amounts of scanned damages vary between the scanners after the introduction of the standards?
- ✓ What are the effects of the introduction of these standards over the subsequent activities in the workflow?

4. Using a visual indicator for the marking of damaged parcels

- ✓ Does the marking require extra time?
- ✓ Is the mark always seen by the pusher responsible for shifting of damages to Band 4?
- ✓ How do the amount of the shifted damages changes?

5. Attachment of retaining walls on Band 4

- ✓ What is the optimal position and angle of the walls?
- ✓ Do the retaining walls influence the work of the employees in terms of ergonomics?

- ✓ Do the walls hinder the moving of packages?

6. Applying new procedure for processing of damaged parcels in the place for content check

- ✓ Do the employees strictly follow the procedure?
- ✓ Does the procedure incur some unexpected complications in the work process?
- ✓ Do the activities included in the procedure result in additional efforts for the employees?

7. Correct the E-Sort codes directly at the right end of the conveyor system

- ✓ What is the amount of parcels with false E-Sort codes?
- ✓ Do the employees correct the E-Sort codes according to the procedure?

Because the termination of the project was set in the same time as implementation of the change plan began, the post-test evaluation is to be executed by the management team. Following the questions from the evaluation plan, the management team will be able to examine the effectiveness of the proposed improvements and subsequently intervene where additional adjustments are needed. Except of this evaluation, the annual audit of the depot is the final stage where the effectiveness of the 7-Steps change plan and the whole BPS project will be estimated. Depending on the audit results of category “Sorting Area”, it will be estimated how successful was the project in its purpose of improving the functionality of the depot in Bentehim.

Despite of the fact that at this point the direct outcomes of the project could not be measured, its deliverables can be summarized. The BPS project includes the problem statement, problem analysis and diagnosis, and the exploration of alternative solutions. In its final part, the project provides the change plan and the accompanying instructions for its practical realization. Independent from the effectiveness of the project, these deliverables can be reused and adapted by the management team if some conditions change. The Management team can return to the problem definition or the alternative solutions and assess whether some adaptations might produce better results in the new situation. In abstract, BPS project is also useful not only for these who have to solve the problems in the organization but also for these who are interested in the topic of problem solving in organizations in general. Therefore a short reflection on the project, summarizing what can be learnt from the project what are the main shortcomings of it and how the project contributes to the current scientific knowledge, is done in the next chapter.

## **7. Reflection on the BPS project**

The final step of this thesis refers to the careful observation of the process and the execution of a business problem-solving (BPS) project. This reflection has the purpose to look from a distance on the project and elaborate on the two major aspects: First, some specific points that came across by execution of the project will be discussed and second the quality of the project will be evaluated against the research-oriented quality criteria of controllability, reliability, and validity. The reflection part ends with a brief conclusion.

### **7.1 Learning from the BPS project**

“For the purpose of learning, it does not matter whether a project has been successful or not. One can learn from successes and failures from mindful actions as well as mistakes” (Van Aken et al. 2009, p.119). In this part, I refer to some important issues that are not explicitly mentioned in the traditional literature on BPS projects, but are still valuable to be taken in consideration, when one takes the route of solving problems in business establishments.

The first thing, which I learned in the execution of my project, was that it is possible the problems in companies are not previously defined or even recognized as such. The fact that the company representatives are displeased with some insufficiency in the performance of their organization does not automatically mean that they could define specific problems as potential topics for a problem-solving project. In reality, it is possible that the student hearing about insufficient conditions in the organization and reflecting on previous knowledge is the first to define the topic of the BPS project. Exploring the situation of DPD, I hear a lot about “delivery problems”, problems with “exceptions”, late delivered parcels and reducing merges. Therefore, I first have to find a topic for a BPS project and second - persuade the company representatives that an investment in such kind of project on exactly this topic will be worthwhile for their organization. The trickiest issue here was to define the scope of the topic in such a way that it is, on the one hand, interesting for the company to be tackled as an overall problem, but in the same time to be also resolvable within a reasonable amount of time and with the spending of acceptable amount of resources.

The problem with the low audit results of the depot in Bentheim was seen by the company management as a very interesting topic to be worked on and accepted by my university supervisors. The difference to normal projects was that the problem with the low audit results was not an issue that could be defined based on single insufficient performance or operational condition (returning on innovation, maintenance of knowledge etc.). Low audit results are numbers indicating that something is going wrong in the organization by representing the whole picture. Therefore, I have to analyze what were the most important problems leading to the low results. First, I have to find the connection between specific phenomena and the insufficient audit, before I could start searching for their potential causes. Later in the analysis, it was realized that the low audit results are caused by a poor performance of three different operational categories. Subsequently, I could further detect a number of tiny causes responsible for the low performance on each category. However, focusing on these causes and working on them, would surely not lead to improving the overall audit performance. For that reason, I assign the individual causes to common general issues according to common characteristics. Consulting with the theory on organizational design, I could define 'formalization' 'specialization' and 'professionalism' as major problems leading to the low performance in the abovementioned operational categories. Taken together, the method I used to resolve the problem is different from the cause and effect diagram proposed by Van Aken et al. (2009). The aggregation of causes to common problem categories was a complicated and extensive approach. However, this approach allowed me to discern single shortcomings and tackle broad operational issues with a direct influence on the audit results of the depot.

Improving the performance of one business organization is something that requires very specific understanding of the work system involved, but also abstract knowledge of various scientific disciplines and methods. Executing my project, I have experienced how complicated for one is to make the link from the specific to the abstract and then again, implement the abstract for the purpose of the specific. It is true that the conveyor system in the depot in Bentheim is itself different from this in the depot in Muenster and because of this one cannot implement the effective processes from the one production area to the other. On the other hand, practices used previously in casinos, pin factories, auto production facilities etc. seemed very useful for the division of tasks into jobs, training of the employees and the developing of formal documentation for my project. Referring to my experience it could be said that independent from how sure the managers of the companies are in their peculiar problems, one

has always to look at previous experiences documented in the scientific literature. Although every company has its specific problems, it is always useful for one to use accumulated knowledge instead of trying to reinvent the wheel. Considering chapter two of the thesis, I would say that there is no gap between rigor and relevance. There are not many people spending sufficient amount of time for closing it.

## **7.2 Quality of the BPS project**

The project starts with a problem and ends with an evaluation of the proposed solution. The quality of the solution is strongly depended on the quality of the process leading to this solution. A research result is valid when it is justified by the way it is generated (Audi, 1998). In order to deliver a valuable solution, the process should meet associated quality criteria. Valuable in this context does not mean truth. As we try to improve the performance of the organization, there are no true or false solutions. There are solutions that will lead to better audit results and such that will fail doing so. Before the implementation of the solution, no one could say whether the solution proposed in the BPS project will work. However, when the process in which the solutions came into being meets the most important research-oriented quality criteria, the probability that these solutions work is much higher. When the process leading to the solution is replicable, relies on qualitative methods, and is well reasoned, inter-subjective agreement on research results is also easier to be achieved. The more a research meets these criteria, the less reason there is to question its results (Van Aken et al. 2009, p. 155). In the following sub-chapters, the controllability, reliability, and validity of the research process will be discussed.

### **7.2.1 Controllability**

In order to persuade the target group of one project in the quality of its results, the researcher should firstly be able to reveal how the results came into being. From the methods used for the data collection to these applied in the process of drawing conclusions, all of them should be described so that they could be replicated by everyone who wants to check the outcomes of the study (Van Aken et al., 2007). In the BPS project, I referred to interviews, performance analysis, document analysis, and participatory observations in order to get to the data that I needed. In the appendix, full interview transcriptions are provided. The data used in the qualitative analysis could be retrieved from the organizational handbook (OHB) and the



organizational audit reports from the last three years. Additionally, the numbers validating the conclusions made after the participatory observations could be taken from the organizational statistics and video archives. In respect to the conclusions that I made, most of them are based on quantitative methods that are easy to be replicated with the available data. All of the analysis that were made, are described in detail, and based on methods previously applied in a scientific literature. Considering this, it could be concluded that the research process executed in the study fulfils the scientific norms for controllability and could be replicated by other researcher.

### **7.2.2 Reliability**

According to Babbie (2010), reliability is prevention of subjectivity in a research. Research results should be independent from the researcher, so that a repetition of the study by another researcher, with a different research instrument, with different respondents or in another situation, should yield the same results. Problems with reliability occur often because the researchers have a tendency to pay more attention to evidence that confirm their beliefs than to evidence that contradicts them (Weick, 1995). In particular, it could be the case that because I believed that ‘formalization’, ‘specialization’ and ‘professionalism’ are the major problems in the organization, only the evidence for these problems was taken in consideration. This could have been the case, if I had diagnosed the situation considering only the interview with the quality manager. In the BPS project, however, I limited the personal interpretation by combining qualitative and quantitative research methods. The abovementioned problems were defined only after the analysis of the documents and the audit reports backed up the conclusions of the interview. Moreover, the problems that were initially defined were also confirmed by the participatory observations made in the next phase of the project.

Considering the solutions and the 7-Steps change plan, I suppose that everyone who tries to tackle problems with an operational process in a given organization, can make different propositions on how are these to be solved. Nevertheless, I am still holding the opinion that the solutions that I propose are not subjective. The interventions that I recommend are procedures previously explained in the theory on operations management. Procedures, verified as effective in the scientific literature, were adjusted to the needs of the organization and recommended for the improvement of its functionality. Application of specific theories was made after a broad review of the scientific literature and in discussions with the internal

and external supervisors of the thesis. Moreover, as the purpose of the project is to improve the situation in the depot, subjective attitudes, which do not contribute to this goal are of no value to the researcher. In this regard, it is to be concluded that the research and the resulting solutions are independent from the researcher and his personal attitudes.

### **7.2.3 Validity**

Validity is the third major criterion for the evaluation of research results. According to Van Aken et al. (2009), validity refers to the relationship between a research result and the way it has been generated. Research results are valid when the subject of research is completely studied (construct validity), when conclusions about relationships in the study are justified and complete (internal validity) and when the results of the research are generalizable to other situations (external validity).

In the BPS project, the focus was on problems leading to the low audit results and on designing solutions that tackle these problems. Beginning with the aggregated result of the audit evaluation, I search for the operational shortcomings leading to these results first. Looking at the all operational categories evaluated in the audit, I became aware of all insufficiencies leading to the poor evaluations during the last three years. Through statistical analysis, I could assess the relative influence of the registered drawbacks and focus on these that had contributed most to the poor audit performance. Combining statistical analysis with analysis of documents and direct observations, allowed me to fully cover the object of research and focus on the most important aspects of it. In respect to the change plan, that was recommended to tackle the operational problems, additional literature that could be useful for its development and utilization was reviewed. Nevertheless, theories on operational management and control systems are sources that provided the most valuable information in respect to the encountered problems. Reflecting on the executed steps in the project it can be concluded that the subject of research, namely the low audit results of the depot in Bentheim, was completely studied. It is questionable, whether using additional literature for the designing of the proposed in the 7-Steps change plan interventions, would improve the internal validity of the project.

According to Van Aken et al. (2009), in the BPS projects internal validity is high when the relationship between the actual causes and the business problem are both adequate and complete. Studying the problem area from multiple perspectives can facilitate the discovery of

causes and outline unknown causalities. As mentioned above, conclusions about the relationship between the determined problems, namely insufficient level of ‘formalization’, ‘specialization’ and ‘professionalism’, and the low audit results was made only after this was validated by the interview, performance, and document analysis. Furthermore, these relationships were confirmed later in the exploration of the problem. Lack of formal rules, inconsistent specialization of tasks into jobs and lack of training on the job caused specific operational problems in the depot. Considering this, it can be concluded that the identified relationships between the causes and the problem with the low audit results are justified and complete.

External validity of BPS project, on the other hand, reflects on the level of generalizability of the research results to other organizations. Since such kind of projects focus on specific organizational problems, external validity is generally less important in BPS projects. In the case of DPD’s depot in Bentheim, the project has been conducted in a single production facility, and therefore it would be invalid to generalize its outcomes to other organizations. However, as the network of DPD includes depots working according to the same principles, the methods of analysis and the proposed solutions can be used in order depots. The solutions represented in the 7-Steps change plan can be implemented to other facilities that do not by rule perform bad, but still need some improvement in their operations.

### **7.3. Conclusion**

Unsatisfactory performance is something that is highly undesirable in business organizations. Low productivity, suboptimal operational processes, high turnover rates etc., should be immediately improved as they occur. However, problem solving in organizations is often undertaken in a craftsman-like fashion, based on business experience and informed common sense. We try to solve our problems using methods that we already know applying approaches that have previously worked. In real life context, however, millions of other people and companies have experienced the same problems. Some of them have succeeded and some of them failed. There are millions of pages describing the success and discussing the failure. It is true that scientific knowledge do not tells you how to make your customers happier, how to motivate your employees, or how to optimize your process. The theory, however, provides you with the knowledge that you need to think out of your box and be creative. The more facts and ideas you have at your disposal, the better you will be at coming up with new ideas

and solutions for your problems. The process of developing possible solutions for generating functional and operational improvements in the company's depot in Bentheim, Germany, was my attempt to close the gap between theory and practice. In order to improve the performance of a specific business system on one or more criteria, I learned how to use the scientific literature in a real business context. During my project, I also realized that the things that I do not know yet, are far more important than the things that I already know. I am thankful for the possibility to work in real business environment and be part of a business organization like Dynamic Parcel Distribution GmbH & Co (DPD).

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# Appendences

## Appendix A: Interview with the Quality Manager of the company

**Würden Sie sagen, dass Sie in Bad Bentheim mit einem realen Problem zu tun haben?  
Und wenn ja, wie würden Sie es kurz beschreiben?**

In Bezug auf die Frage nach einem konkreten Performance Problem, das die Funktionalität des Depots beeinträchtigt sehen wir **kein übergreifendes Problem**, mit dem die Performance des Depots erklärt werden könnte. Für uns sind **mehrere Punkte relevant**. Als Beispiel sind die **Quote der Differenzpakete und den Umgang mit diesen Differenzen** in den Depots als konkretes Problem zu nennen. Wir haben festgestellt, dass trotz der unmittelbaren Kontrolle oft viele Fehler in diesem Bereich auftreten.

(Um das detaillierte Eingehen auf bestimmte Punkte zu vermeiden wurden die Befragten gebeten sich auf das Wesentliche zu beschränken)

Unserer Meinung nach existieren zwei weitere grundsätzliche Punkte, die die Funktionalität der Depots beeinträchtigen. Die **Vermittlung von Prozessen an Mitarbeiter** und die **Interpretation der Systemregeln aus dem Organisationshandbuch** sind übergreifende Probleme, die die Funktionalität des Systems in unserer Depotgruppe beeinträchtigen. Unser **Organisationshandbuch ist sehr allgemein gehalten** und bietet dementsprechend sehr viel **Interpretationsspielraum zur Auslegung der Regeln**. Das führt dazu, dass bestimmte **relevante Themen nicht genau beschrieben** sind und **viele Einzelfälle ungeregelt bleiben**. Allgemein sind die wagen Systemregeln und deren Vermittlung und Umsetzung als Problematik zu **sehen**.

Die **Vermittlung von Neuerungen** und die fehlende **Anpassung des Handbuches an die neue Einführung von Produkten** und damit erforderliche Prozesse sind weitere Problempunkte mit denen wir zu tun haben. Die ungeordneten Verfahrensanweisungen zum Handbuch sorgen für weitere Unübersichtlichkeit. Es gibt allgemein kein Buch, das Prozesse genau beschreibt. **Ein neuer Mitarbeiter wird von einem alten Mitarbeiter geschult, der zum Teil auch nicht die genaueren Verfahrensanweisungen kennt**.

In Bezug auf das Organisationhandbuch sind wir uns einig, dass eine vollkommene Spezifizierung aller relevanten Prozesse in einem Buch nicht möglich und erwünscht wäre. Wir sind aber auch der Meinung, dass für die 85% der betriebsrelevanten Prozesse eine genauere Beschreibung möglich ist.

### **Warum ist das ein Problem für das Depot und die Firma?**

Bei jeder Fehlinterpretation der Systemregeln leiden die Kunden. Wenn die Regeln nicht eingehalten werden leiden als erstes die Kunden, dann entsprechend das Image und die ganze Firma. **Das Nichteinhalten der Systemregeln führt zu Fehlinformationen und Fehlversprechen.** Dies führt dazu, dass der Service von der Firma schlechter wird, was wiederum für Unzufriedenheit bei den Kunden sorgt. Bei einer Differenzquote von 3,6% sind 96,4% der Pakete richtig zugestellt worden. Dieser Fakt ist aber für den Kunden irrelevant, wenn sich das Paket, das sie bekommen müssten innerhalb der 3,6% nicht zugestellten Pakete befindet. Diese geringe Prozentzahl von Paketen bei denen Komplikationen auftreten sind das einzige was uns interessiert. Um Fehlinformationen zu vermeiden müssen sich die Depots an die Systemregeln halten.

### **Seit wann existiert das Problem in Bad Bentheim?**

Es ist ein täglicher Prozess Organisationsanweisungen und Prozesse in verschiedenen Depots gleich zu halten. Die angesprochenen Probleme sind nicht spezifisch für das Depot in Bad Bentheim, sondern haben Gründe, welche bei der Zentrale liegen. Seit 3 Jahren **erweitert das Unternehmen sein Portfolio und fügt neue Sonderregelungen ein. Die Komplexität** wird deutlich erhöht.

In den Audit fließt nicht nur die Bewertung der Funktionalität des Depots sondern auch die Qualität der **Zustellung**. Was auf der Straße passiert macht 30% von dem Audit aus, das kann aber von uns nicht direkt kontrolliert werden. Seit zwei Jahren existiert das Problem, dass die Subunternehmer **keinen vernünftigen Zusteller** finden. Wir sehen, dass der **personelle Engpass** dazu geführt hat, dass die Qualität der geleisteten Arbeit sich verschlechtert hat. Ferner kann man auch sagen, dass zwei Mitarbeiter von den Zustellern für die schlechten Ergebnisse des Depots in Bad Bentheim zum Großteil mittverantwortlich sind.

Allgemein hat sich in den letzten drei Jahren **die Komplexität** im Depot erhöht und der **personelle Engpass** verschärft. Dadurch hat sich die Qualität der geleisteten Arbeit verschlechtert.

### **Wie sind Sie auf das Problem aufmerksam geworden?**

Die Problematik mit den **Zustellern hat sich an den Kosten** bemerkbar gemacht. Die Summen, die die Subunternehmer verlangen sind in letzten drei Jahren deutlich gestiegen. Allgemein ist der **Leistungswille der Zusteller zurückgegangen**. Alle Probleme, die in unserer täglichen Arbeit aufgefallen sind, wurden auch von den Audits bestätigt. Die Probleme fallen nicht erst in den Audits auf, das Audit misst das Ganze.

### **Welche sind für Sie die Hauptursachen des Problems und wer ist für das Problem verantwortlich?**

Da ist keine klare Ursache der Probleme. Man kann sich nicht auf eine Baustelle konzentrieren und den Rest außer Acht lassen. Es ist vielmehr eine **Mischung aus dem Einfluss mehrerer** Punkte. Als erstes sind die **Zustellerproblematik und der personelle Engpass in diesem** Bereich zu erwähnen. Hier ist das System gefordert eine nachhaltige Lösung zu erarbeiten. In Bezug auf die Handbücher ist die Zentrale gefragt diese Bücher zu optimieren. Falls es nicht passiert, müssen die zuständigen Mitarbeiter an mehreren Stellen an einer **Interpretation der Regeln** arbeiten. Man muss es entweder selber machen oder einfach so lassen.

Das Problem mit dem allgemein formulierten Handbuch ist auf die Art und Weise der Entwicklung von DPD als Unternehmen zurückzuführen. Die Zusammenschließung mehrerer Speditionen und die Entstehung von weiteren Depots wurden nicht mit einem systematischen Ausgleich der Regeln und Standardisierung der Prozesse kombiniert. Aus diesem Grund sind immer noch **enorme Unterschiede bei der Ausführung einzelner Prozesse** und bei der **Interpretation der Regeln** zu registrieren. Wir versuchen seit zwei Jahren Abläufe in den Depots abzugleichen und es ist erstaunlich welche **Unterschiede in den simpelsten Arbeitsabläufen** immer noch existieren. Und diese Unterschiede sind nicht zwischen Melle und München sondern das sind Unterschiede in den drei DPD Depots unserer Gruppe.

Die Arbeit an sich wird gemacht, es fehlt aber an **klaren Anweisungen für die Ausführung**. Das ist eins von den größten Problemen in unseren Depots. Wenn eine genauere

Prozessausführung vorgeschrieben wäre, hätten sich die Mitarbeiter immer daran gehalten. Da es aber das nicht gibt, müssen die Mitarbeiter selbst Entscheidungen treffen und Verantwortung übernehmen. Viele von den Mitarbeitern würden sich lieber an einem exakt vorgeschriebenen Schema für die Ausführung zugewiesener Jobs halten. Viele wollen ihren Job gut machen, die **wollen aber nicht entscheiden**. Wenn man Mitarbeiter hat, die keine Verantwortung übernehmen wollen oder können, dann muss man klare Anweisungen aussprechen können. Es ist aber in vielen Fällen **nicht möglich klare Verfahren für die Ausführung von bestimmten Prozessen festzusetzen**. Lagerscannung ist ein Beispiel dafür. Wenn man bei so einem Prozess in dem Organisationhandbuch nachschaut, stellt man oft fest, dass viele Interpretationen möglich sind. Bei solchen Fällen müssen die QB der Depots auf eine gemeinsame Interpretation einigen.

Es besteht aber auch die Gefahr, dass die Mitarbeiter, bei genauerer Spezifizierung jedes einzelnen Prozesses, nur auf die Vorschriften achten würden. So werden Kleinigkeiten, die nicht genau definiert sind, außer Acht gelassen. Das wird auch dazu führen, dass wir auch an Qualität verlieren. Man will auf der **einen Seite möglichst Vieles fest vorschreiben** und auf der anderen Seite **erwartet man aber auch, dass die Mitarbeiter selbst auch mitdenken**.

Hier basiert genau unsere Problematik. Wir müssen es schaffen die 85% der Prozesse fest zu schreiben und bei den anderen 15% die Mitarbeiter zum Mitdenken zu animieren. Man erhofft sich auch, dass sich die Mitarbeiter die eignen Aufgaben als einen **Teil des gesamten Prozesses vorstellen** und über die Auswirkungen ihrer Tätigkeit auf das gesamte System nachdenken.

Dazu kommt, dass **genauere Beschreibungen eines einzelnen Prozesses sehr aufwendig und oft nicht einfach zu formulieren sind**. Die Infrastruktur ist in den Depots gleich und erlaubt eine Vereinheitlichung der Prozesse. Das Problem liegt darin, dass man **die Abläufe so definieren muss, dass diese deutlich und fix ausfallen aber auch gleichzeitig einen Interpretationsspielraum für Mitarbeiter zulassen**.

Man kommt immer wieder auf das Wort Prozesse zurück. Prozesskostenanalyse ist ein Punkt bei dem oft Depots verglichen werden. Da aber in verschiedenen Depots die Prozesse unterschiedlich verlaufen oder verlaufen müssen, ist so ein Vergleich jetzt nicht sinnvoll. Sinnvoller wäre es zu analysieren welches der Depots am effektivsten die Prozesse ausführt und unter welchen Bedingungen die effektivste Art und Weise der Ausführung in anderen

Depots implementierbar sind. Wenn jetzt die Mitarbeiter gefragt werden warum sie ihre Jobs so machen wie sie das jetzt machen, antworten die meisten, dass sie es so machen, weil sie das immer so gemacht hätten. Unter diese Bedingungen fällt die Vermittlung von Neuerungen sehr schwierig.

Grobe Vergleiche der Depots sind möglich, man strebt aber nach Vergleichen von Details der Prozessausführung.

### **Wurden bereits Maßnahmen zur Lösung des Problems ergriffen? Und wenn ja, was haben diese bewirkt?**

Probleme werden festgestellt und Korrekturmaßnahmen ausarbeitet. Oft werden neue Prozesse, die die Fehler beheben eingeführt. Bei der Einführung von neuen **Prozessen muss auch auf die Kontrolle** von der Umsetzung geachtet werden. Wir bereiten eigene Audits so vor, dass wir möglichst viele Fehler aufdecken und Korrekturmaßnahmen überlegen können. Es wurden auch viele Maßnahmen ergriffen wie z.B. der eigene Audit. Bei dem fortlaufenden eigenen Audit wird festgeschrieben, wo die Ergebnisse des fortlaufenden Audits herkommen. Es wird analysiert wie bestimmte Fragen geprüft werden und wie eine Vergleichbarkeit unter den Depots hinzubekommen ist. Wir versuchen Regelungen für die Lagerscannung die für die ganze Depotgruppe gelten zu entwerfen.

Es ist aber auch festzustellen, dass mit den **Ergebnissen unserer Kontrolle** zu wenig gemacht wird. Wir registrieren bestimmte Problempunkte, stellen aber auch fest, dass darauf oft sehr wenig Aufmerksamkeit gerichtet wird. Es wurden **Qualitätskontrollprozesse festgelegt, es wurde aber nicht festgelegt was die kontrollierte Abteilung mit den Ergebnissen dieser Kontrolle machen soll. Wir erhoffen uns, dass die betroffenen Mitarbeiter selbst auf diese Punkte eingehen, stellen aber oft fest, dass das nicht gemacht wird.** Wenn auf Probleme eingegangen wird, **passiert das sehr punktuell und nicht übergreifend.** Wenn man an **einer Stelle etwas repariert, bricht woanders etwas anderes.** Man stellt das Problem so ab, dass die neue **Lösung woanders neue Probleme bereitet** oder nur kurzfristig hält. Die **Reparaturmaßnahmen sind nicht nachhaltig** und werden oft nach einer gewissen Zeit von den Mitarbeitern ignoriert.

Man versucht die Nachhaltigkeit von den Problemlösungsinitiativen über langfristige Projekte hinzubekommen. Ein solches Projekt ist das „Bonus-Malus“ System das wir implementiert

haben. Wir arbeiten an **Systematiken in der Depotgruppe, die übergreifend funktionieren sollen und nicht unbedingt auf ein bestimmtes explizites Problem hinzielen**. Man arbeitet sowohl an Lösungen für individuelle Probleme als auch an langfristigen, systemübergreifenden Initiativen. Sobald ein Kontrollmechanismus eingerichtet und regelmäßig gepflegt wird, bleibt dieses den Mitarbeitern im Bewusstsein. Man erhofft sich durch ständige Wiederholung der Kontrolle bestimmter Punkte die Verinnerlichung von bestimmten Prozessen voranzutreiben.

Der fortlaufende eigene Audit ist auch der Versuch langfristig auf bestimmte Prozesse einzugehen und nicht nur das Loch zu stopfen. Es wird versucht eine Kultur der Selbstverantwortung und Eigeninitiative zu erschaffen.

Wir müssen eigentlich auch beides machen. Wir müssen Probleme, die da sind, kurzfristig lösen aber auch daran arbeiten, dass wir als Depotgruppe Jahr für Jahr besser dastehen. Wir müssen uns auch **auf strategische Änderungen, die die langfristige Funktionalität** der bestimmten Bereiche verbessern, konzentrieren. Dadurch aber, dass sich das **System schnell ändert und Komplexität zunimmt** werden auch oft viele Lösungen irrelevant. Man muss sich **ständig anpassen** und die Bereiche neu prüfen.

### **Welche ist Ihre Rolle hinsichtlich der zukünftigen Lösung des Problems?**

Wir müssen die operativen Abteilungen, die die Lösungsalternativen umsetzen müssen, beeinflussen. Dabei sind wir aber nicht weisungsbefugt. Wir sorgen für Informationen und Bewertungen über die Funktionalität des Depots. Wir sind Dienstleister für die operative Abteilung. Es wird bemessen wie bestimmte Prozesse funktionieren und es wird bei der Umsetzung von Verbesserungsvorschlägen geholfen. Jeder Fehler den wir vermeiden ist ein Ersparnis.

Man muss in dem Bereich von Abläufen, die die Qualität betreffen von den Mitarbeiter als Spezialist gesehen werden. Man muss sich durch eigenes Fachwissen Respekt verschaffen.

### **Zu welchen möglichen Lösungsalternativen tendieren Sie persönlich? Was wird allgemein benötigt um das Problem zu beseitigen?**

Man denkt ständig an Verbesserungsvorschläge und Lösungsalternativen für die Fehler, die man im Alltag sieht. Wir sehen die klare und einheitliche Interpretation der Regelungen für



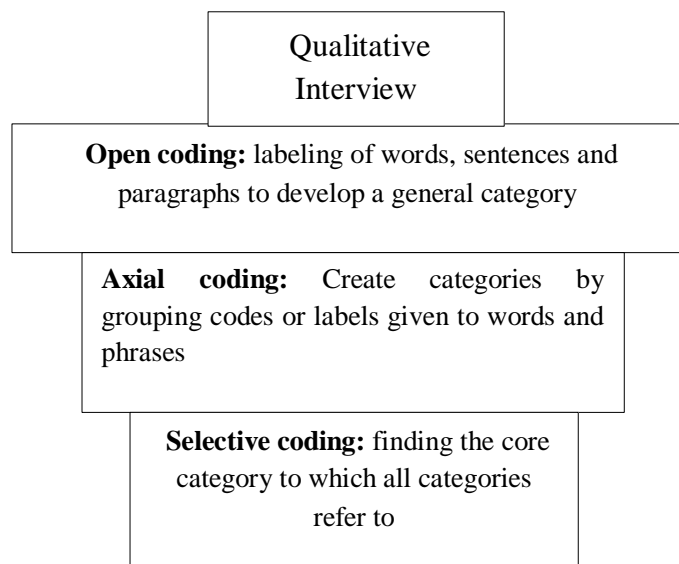
unsere Depotgruppe als eine mögliche langfristige Alternative. Ferner denken wir, dass eine **Prozessgestaltung**, die Sinn macht, implementierbar ist und gleich von den Mitarbeitern akzeptiert wird, uns sehr viel bei unseren Problemen helfen würde.

Im Weiteren wird uns der Vergleich des Depots und die Kommunikation unter den Standorten dabei helfen gute Praktiken auszutauschen. So werden sich direkt erprobte Lösungen aus der Praxis ergeben. Man kann aus jedem Depot das Beste rausziehen indem man sich austauscht. Durch fehlende Kommunikation entstehen Spannungen und Reibungen in dem System.

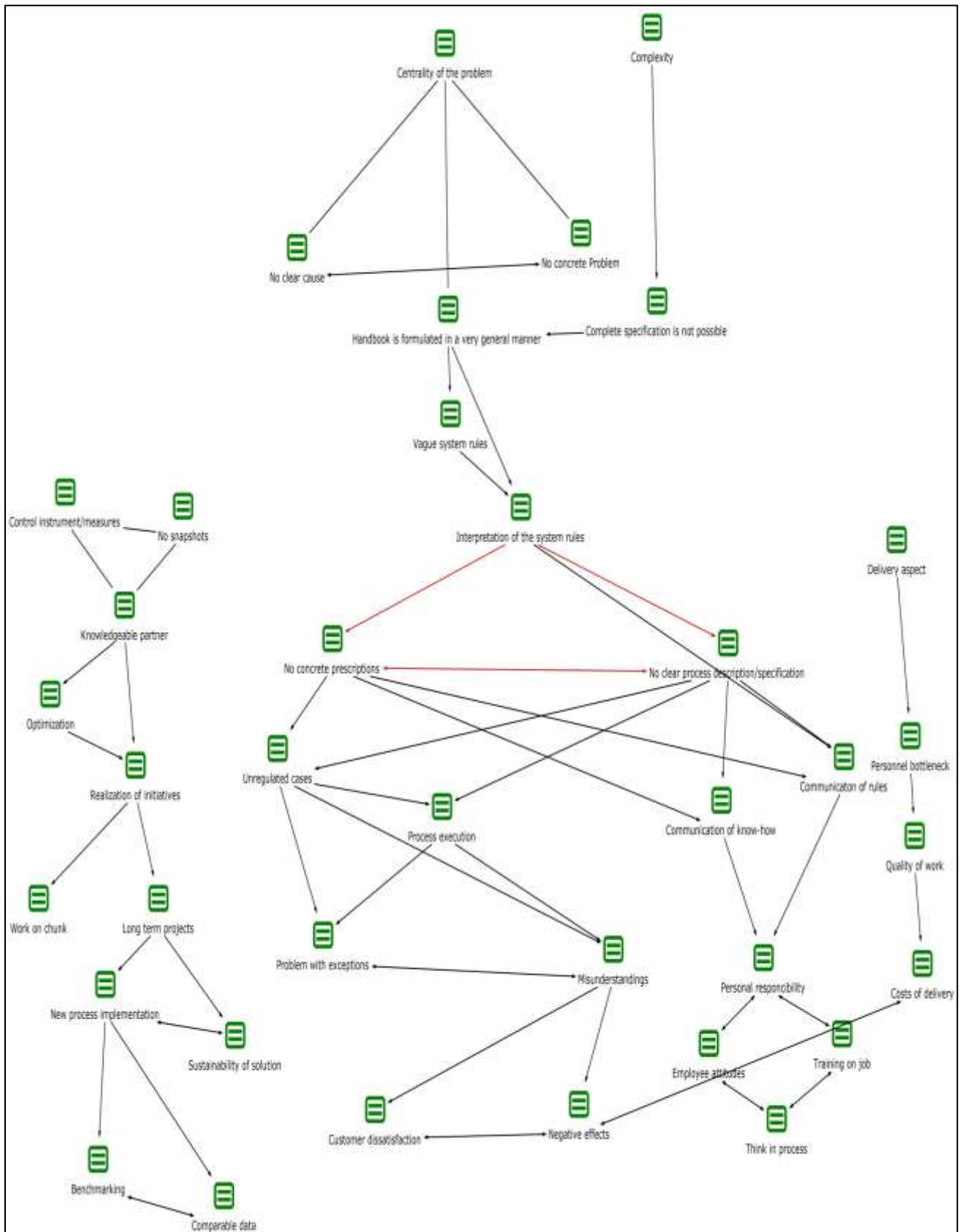
Was das Thema Nachhaltigkeit in Prozessen angeht ist die Maßnahme des fortlaufenden eigenen Audits das Mittel Arbeitsprozesse messbar zu machen. Wie kann ich Prozesse dauerhaft messbar machen? Es gilt der Spruch „was nicht gemessen wird, wird auch nicht gemacht“. Wir wollen eine dauerhafte Aufnahme von unseren erzielten Ergebnissen und von den Resultaten unserer Maßnahmen haben. Das Ziel ist Kontinuität in unsere Arbeit zu bekommen. Wir brauchen ein vergleichbares Messinstrument in den verschiedenen Depots mit dem wir die Änderungen in der Qualität messen können. Dieses Instrument wird uns erlauben, kontinuierlich und zeitnah unsere Qualität zu messen. Das wird uns ein Feedback über unsere Arbeit liefern. Durch die Kontinuität wollen wir die Nachhaltigkeit erreichen. Wir wollen keine Momentaufnahme des Zustands, die uns der offizielle Audit liefert. Wir wollen wissen wie die Prozesse im Alltag laufen. Mit dem „Bonus-Malus“ System prüfen wir die Zustellung, durch das fortlaufende eigene Audit wollen wir auch das Depot öfter prüfen. Für unseren Audit versuchen wir bei einigen Fragen, wo in offiziellen Audit subjektive Bewertungen stehen, klare Zahlen zu hinterlegen. Wir wollen die Vergleichbarkeit der aufeinanderfolgenden Audits eines Standortes aber auch die Vergleichbarkeit unter den Standorten erreichen. Dafür müssen an allen Standorten gleiche Parameter eingesetzt werden. Ein komplettes eigenes Audit ist jeden Monat nicht möglich. Das Ziel ist es, den Audit auf bestimmte Punkte zu richten um den Arbeitsaufwand pro Depot zu reduzieren.

## Appendix B: Coding procedure

Being aware of the fact that the important statements would not rise on their own out of the data, a systematic process for subsequently isolating codes to categories that could be further grouped in thematic statements was seen as useful for the further analysis of the interview. In this context grounded coding method that builds codes out of the data itself instead of using pre-defined (a priori) codes, was seen as appropriate method for the purpose of the study. In this line, Strauss and Corbin (1990) recommend coding procedure including two major types coding: axial coding and open coding. Whereas open coding refers to going through the data and marking sections, axial coding creates categories by grouping the already marked sections. In the analysis of the interview with the quality manager we refer to the axial coding procedure, based on the work of Strauss and Corbin (1990) used by Fischer (2012) in his research of the evolution of the personal business model. The coding procedure was executed as follows. At first, through the process of open coding each sentence or paragraph was assigned to a label, which was further put into a newly organized category. As the whole text was revised and any new categories appear, it was being concluded that the set of codes is full. Following this procedure, it was very important to understand the essence of the statements and not just to rewrite often occurring words from the text. The second part of the coding was referred to finding relationship between the codes. In the axial coding step, codes should be related to each other. Where relationships have been founded, these should be further defined as undirected causal, mutual or dependent and visualized via lines. Having formulated the codes and the relationships between them, the codes were assigned to core categories. This phase of selective coding outlined core categories of codes as each of these categories should give answer of the question “why” a certain relationship between codes exists (Verschuren et al., 2010).



## Appendix C: Codes resulting from the interview with quality manager



**Appendix D: Audit questionnaire list used for the evaluation of the category “Sorting area”**

4.1	<b>50</b>	Condition after departure of delivery drivers	Is the sorting area clean and tidy?	Subjective assessment must be proved/documentated by the auditor. If the sorting area is used as a materials store/archive without physical separation, this is evaluated negatively because the overall functioning of the operation is affected by this. Are the areas of the small parcel handling clean and tidy?	yes/partly/no
4.2	<b>52</b>	Boxes	Are the held-over parcels (with non-deliverable parcels separate) in the correct boxes and are there arrangements for follow-up loading?	Parcels which are waiting for follow-up loading must be located separately. The time of follow-up loading should be indicated on a supplementary notice or should at least be known to the transport manager. The follow-up loading/loading date should be checked, because there could be "hidden held-in-depot parcels".	yes/partly/no
4.2	<b>53</b>	Boxes	Are the held-over parcels provided with information stickers?	Parcels held-in-depot and parcels out of driver's return should be marked with an information sticker in accordance with the DPD sample; the delivery round number and exception code must be shown. In general all parcels should be marked. An exception can only be made if a number of parcels are destined for the same addressee. In this case it is sufficient if one of these parcels is marked with an information sticker.	yes/partly/no
4.3	<b>54</b>	Storage of exception parcels	Are exception parcels in a separate area and can this area be locked?	This area must only be accessible to authorized personnel and must also be locked when no work is taking place in the exception parcel area (e.g. during breaks, after end of	yes/partly/no

				shift ...). If quantities are small, secure lockers can also be used as an exception parcel area (not the amount of the secure lockers is relevant, but the organization/structure of the depot - even spatially). Video observation is not enough.	
4.3	<b>55</b>	Storage of exception parcels	Is there a system of organization (corresponding to the circumstances)?	The question refers to an organization which can easily be checked or understood (sorting according to code, date for feeding back into the system). If driver's returns/held-in-depot parcels are arranged on a swap body and stored with correct identification (e.g. during holiday periods), this is acceptable as an exception parcel area. However, it must be organizationally ensured that the swap body is not accessible to unauthorized persons and that delivery is made on the correct date.	yes/partly/no
4.3	<b>56</b>	Storage of exception parcels	Is the correct period of storage observed?	If this question will be confine, so is it possible to confine the previous question of the system of organization.	yes/partly/no
4.3	<b>325</b>	Storage of exception parcels	Are the process and time limit of storage by cross border parcels observed?	If this question will be confine, so is it possible to confine the previous question of the system of organization.	yes/partly/no
4.4	<b>57</b>	Processing of exception parcels	Are address exceptions processed correctly and on same day (if with post-card, with information entered in data base)?	Check 11 parcels from the warehouse, which are shortly before returning as well as 11 parcels from the first and second delivery try. If 11 parcels are returned directly, the depot must provide written information from the sending depots. The used media for clarifying	yes/partly/no

				<p>addresses must not be older than 1 year, otherwise the question must be answered with "no". When information is provided per telephone, it must be documented/comprehensible (e.g. info entry in the database).</p> <p>Current procedure considerat to Cockpit.</p>	
4.4	<b>58</b>	Processing of exception parcels	Are routing/loading/postcode exceptions processed correctly and on same day?	<p>These parcels must be processed, scanned and forwarded on the day of the inbound scan (Organizational Manual Mn 638). Any routing error/routing labels must be removed or hidden. Correct processing does not take place, for example, if routing/loading/postcode exceptions are confused and are not processed accurately. Take a random sample (e.g. by checking the life cycles in the system return scanning for a particular day).</p> <p>Check 50% of the daily parcels 02/03/07 but maximum 50 parcels.</p> <p>&lt; 2 % yes, &gt; 2 % &lt; 4 % partly, &gt; 4 % no</p> <p>The fixed times of handling is valid also for lead-depot of the HUB´s.</p>	yes/partly/no
4.4	<b>120</b>	Processing of exception parcels	Are routing labels checked daily by test printout?	<p>The daily check has to be documented by the depot as they administrate the printed labels in an appropriate way. If a print quality is bad the depot must have initiated measures, if not the question must be answered with NO.</p> <p>The test printouts must be stored for 4 weeks.</p>	yes/partly/no

4.4	<b>406</b>	Processing of exception parcels	Are non-identified parcels recorded in the NI database correctly and in time?	Check the recording in time according OM 546 in the depot.  The last 4 weeks are to be checked,  Request of the first 4 digits of the parcel number (= Depot number)	yes/no
4.4	<b>59</b>	Processing of exception parcels	Are damage exceptions processed correctly and immediately?		yes/partly/no
4.4	<b>60</b>	Processing of exception parcels	Is depot-specific adhesive tape used?	The depot-specific adhesive tape must be used for all parcels which are secured with tape at the depot.	yes/partly/no
4.4	<b>61</b>	Processing of exception parcels	Is the depot-specific adhesive tape only in the possession of the depot?	The depot-specific adhesive tape must be kept locked up and not accessible for everyone. Use should only be permitted to DPD resp. authorized personnel.	yes/partly/no
4.4	<b>390</b>	Processing of exception parcels	Are the correct exception codes used in drivers return?	"Check on site respectively with scanquery.  Subjective assessment which must be proved/documentated by the auditor. "	yes/partly/no
4.4	<b>407</b>	Processing of exception parcels	Are the correct exception codes in Scan type 14 in use?	Check at depot using local scan server (usage of specific codes as for instance 17;	yes/partly/no
5.1	<b>368</b>	Delivery/punctual	Total percentage of the exception parcels in the period of evaluation	From 2012:  If Depot account $\leq 3\%$ than 100% of the points  If depot account = average of the country (current evaluation period) than 80% of the points will be given  The difference depot account to average of the country (current evaluation period) are divided into 20 equal evaluation 1%-steps.  Worse than average of the country (current evaluation period) the evaluation goes down in linear 0, 01% steps.	percent

## Appendix E: Categories of damages

<h1 style="margin: 0;">Schadenprotokoll</h1>		von Depot: _____	
<b>Paketscheinnummer:</b> _____		<b>Ersatzpaketscheinnummer:</b> _____	
<b>Absender</b>	<b>Empfänger</b>		
Name	Name		
Straße	Straße		
PLZ/Ort	PLZ/Ort		
Länderkennzeichen	Länderkennzeichen		
<b>Außenverpackung Material</b>	<b>Zustand</b>		
<input type="checkbox"/> geprüft (Prüfnr.: _____) <input type="checkbox"/> nicht geprüft			
<hr style="border-top: 1px dashed black;"/>			
<input type="checkbox"/> Holzkiste <input type="checkbox"/> in Folie verschweißt <input type="checkbox"/> Pappkarton <input type="checkbox"/> Sack <input type="checkbox"/> unverpackt <input type="checkbox"/> Wellpappe	<input type="checkbox"/> Hülsen <input type="checkbox"/> Metallbehälter <input type="checkbox"/> Plastikfolie <input type="checkbox"/> Styroporformen <input type="checkbox"/> Verkaufsverpackung	<input type="checkbox"/> befleckt/durchnässt <input type="checkbox"/> durchstoßen <input type="checkbox"/> Karton offen <input type="checkbox"/> leerer Karton <input type="checkbox"/> Umreifung gelöst <input type="checkbox"/> Verklebung unzureichend <input type="checkbox"/> zerdrückt <input type="checkbox"/> unzureichend (Bild beifügen) Bild-Nr.: _____	
<hr style="border-top: 1px dashed black;"/>			
<input type="checkbox"/> Kanister: <input type="checkbox"/> Plastikeimer-/dose: <input type="checkbox"/> Metalleimer-/dose:			
<input type="checkbox"/> ohne Umverpackung <input type="checkbox"/> ohne Deckel <input type="checkbox"/> ohne Deckelsicherung	<input type="checkbox"/> mit Umverpackung <input type="checkbox"/> mit Deckel <input type="checkbox"/> mit Deckelsicherung	<input type="checkbox"/> beim DPD nachbearbeitet <input type="checkbox"/> eingebeult <input type="checkbox"/> kein Defekt <input type="checkbox"/> lose Verschlüsse <input type="checkbox"/> Verkaufsverp. beschädigt <input type="checkbox"/> Ware nur teilverpackt <input type="checkbox"/> zerrissen	



## **Appendix F: Map of the process of work in the early work shift**