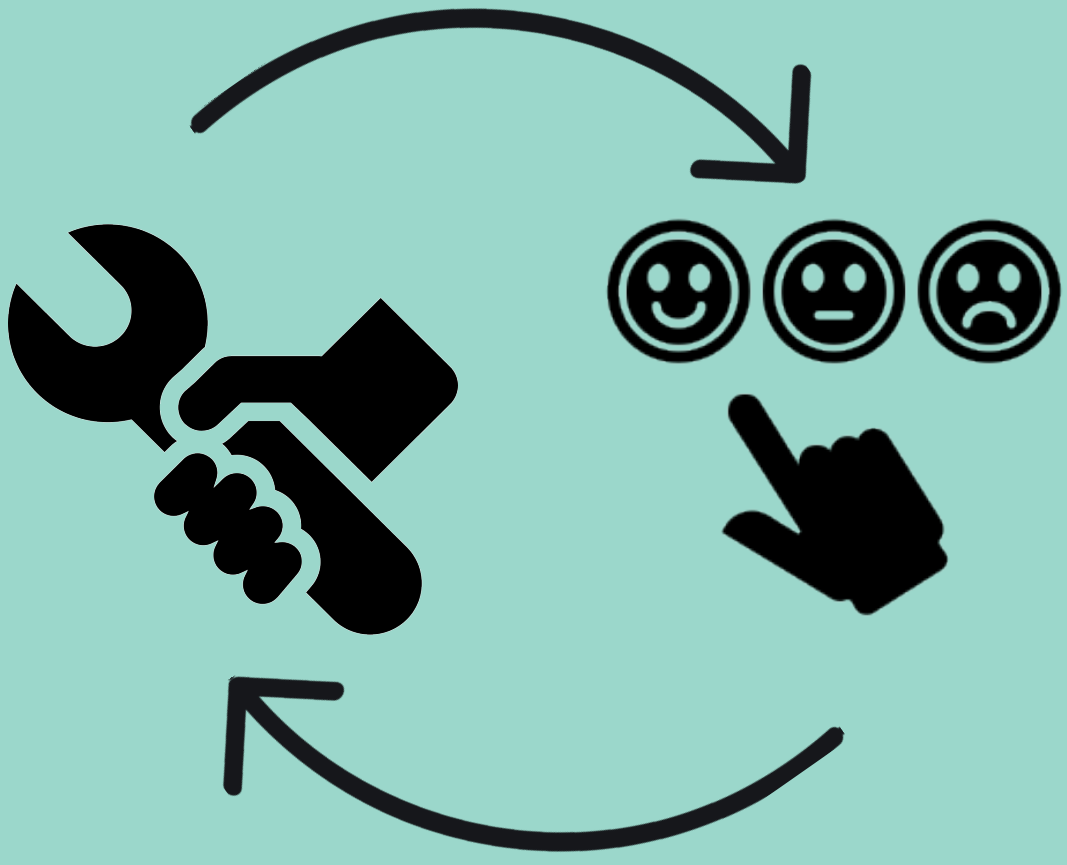
The repair maintenance cycle

Recommendations for housing associations on repair maintenance to maximize tenant satisfaction



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PREFACE

Before you lies the thesis entitled 'The repair maintenance cycle'. This thesis was written as part of my graduation from the master's program Management in the Built Environment at the Technical University in Delft. The aim of the study is to formulate recommendations that housing associations can use in their repair service to maximize tenant satisfaction.

Acknowledgements

My research would have been impossible without the aid and support of my supervisors, my family, and my friends. Therefore, first of all, I would like to express my sincere gratitude to my two supervisors Joris Hoekstra and Gerard van Bortel for their effort, time, expertise, and enthusiasm for the subject, the online guidance, and support, which were very valuable during the running of this thesis project. Secondly, I would like to thank all my respondents for their time and effort in allowing me to conduct interesting and inspiring interviews. Collecting this data enriched and was a valuable input for the research. Finally, I would like to thank my family and friends for their unwavering support and belief in me.

Hopefully, you will enjoy reading my P5 report!

My-le Tsan

April, 2022

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ABSTRACT

Social housing associations play an important role in providing affordable, adequate, and safe housing to their tenants. This requires constant maintenance of the real estate in their portfolio. There are different types of maintenance, but in this research, the focus will be on repair maintenance. Repair maintenance is carried out in response to complaints from tenants. Although housing associations often score satisfactory in the Aedes Benchmark for tenant satisfaction in the field of repair maintenance, in practice situations occur where housing associations struggle with carrying out and/ or managing repair maintenance, which leads to dissatisfied tenants. So, there are opportunities to maximize tenant satisfaction and investigate repair maintenance. The main research question of this study is, therefore: *What contributes to tenant satisfaction at housing associations in the field of repair maintenance and how can this be improved?* Based on literature research, analysis of benchmark data, case studies, and interviews, data will be collected to answer the main question. The study aims to gain insight into factors that contribute to tenant satisfaction and to create recommendations from this that can help housing associations in making choices to maximize tenant satisfaction.

Keywords
Repair maintenance, housing association, tenants, tenants satisfaction

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INTRODUCTION

1

INTRODUCTION

The first Dutch housing associations were founded between 1850 and 1860 (Elsinga and Wassenberg, 2014). The housing associations at that time were founded by better-off workers or by employers. The employers wanted to prevent unrest, promote employee loyalty and improve productivity (Elsinga and Wassenberg, 2014). In 1901, the Dutch state introduced the Housing Act with the aim of putting an end to the dangerous and unhealthy living conditions of industrial workers (Hoekstra, 2017). In addition to improving the quality of housing, the Housing Act provided financial support for housing renovations. Hereby the social rental sector was regulated and subsidized by the Dutch government for a long time.

Housing associations play an important role in the social rental sector in the Netherlands due to the long tradition of social housing for people with a lower income (Boelhouwer 2014). Housing associations own approximately 2.3 million (exactly 2.294.219) rental homes of the total housing stock (7.891.786) (CBS, 2020). This is almost one-third of the total number of homes in the Netherlands.

Although more and more homes have to be built in the Netherlands, the total housing stock grew by just over 1 percent between 2018 and 2019 (CBS, 2020). A large part of the houses therefore consists of existing buildings and they must be well maintained. Carrying out maintenance ensures that the housing stock remains in good condition, the quality is guaranteed, and the houses do not lose value (Alner & Fellow, 1990). Buildings are also kept in a safe condition for tenants by the maintenance department and remain fit for use and comply with legal requirements (Alner & Fellow, 1990). In other words, the maintenance and repair service can be seen as a series of activities that ensure that the structure of the building and the intended function of the building are preserved (Puķīte & Geipele, 2017). Performing a good maintenance service also increases tenant satisfaction and the quality of life in the neighborhood (Straub, 2012).

Maintenance can be divided into four types: repair maintenance or reactive maintancne, planned maintenance, mutation maintenancne and service mainteanance (Van Mossel, 2008).

Repair maintenance is the only maintenance in which there is contact with the tenant, since the repairs are often carried out in the home and in response to complaints from tenants (Corporatiestrateeg, 2018).

Planned maintenance can be seen as preventive maintenance. It prevents more expensive maintenance in the future and is carried out periodically per complex (Corporatiestrateeg, 2018).

Mutation maintenance takes place when a house becomes available before a new tenant can move into the house (Corporatiestrateeg 2018). This maintenance consists, for example, of plastering and/or painting walls or the ceiling, replacing the kitchen, or removing partitions and often takes place in the house itself. For service maintenance, tenants have to pay a fee, which consists of a combination of planned maintenance and repair maintenance (Van Mossel, 2008).

Housing associations annually invest 3.5 billion in maintenance, of which 23% in repair maintenance, 14% in change maintenance and the other 64% in planned maintenance (Corpodata, 2015). However, although it is an expensive business, maintenance is under-researched and often neglected (Wood, 2005 and Straub, 2012). As a result, tenants may have to deal with deferred maintenance. A survey by NOS and regional broadcasters in which more than 8,500 tenants took part showed that almost half of social tenants suffer from damp spots on the wall, drafty rooms and leaks (Julen, 2016).

1.1 Problem statement

Motivation 1: Adequate and healthy housing
According to the office of the United Nations high commissioner for human rights (n.d.), everyone is entitled to adequate and healthy housing. Unfortunately, this is not always the case.
At some housing associations, tenants often have to contend with overdue maintenance of their homes (SP, n.d.). Some examples are poor insulation, mold problems, poorly maintained central heating boilers, rotten rear doors, and damp spots on the wall (Toetenel, 2020). Some residents, therefore, carry out the maintenance themselves and hire recognized companies to repair it (Toetenel, 2020).

In addition to adequate housing, healthy housing is also very important. On average, people spend 90 percent of their time in their homes (Kort, Kok & Aydin, 2020). Health problems arise when a house is poorly maintained (Kort, 2020). As the need for maintenance increases, problems such as mold, moisture, drafts, and poor insulation become more common, which has direct consequences for the indoor climate in a home. A sample of 300,000 respondents shows that as the condition of their home deteriorates, visits to the doctor increase (Kort, 2020). This especially applies to the elderly. Respondents with good housing quality go to the doctor less often than people with a house that needs drastic renovation. In the elderly, there is a strong correlation between a moderately and poorly maintained home and a visit to a doctor. Elderly living in moderately maintained homes visit the doctor 24 percent more often, but elderly in poorly maintained homes visit the doctor about 77 percent more often than the average of their age group. People in a good home also suffer less from mental health problems. It is therefore important that homes are well maintained for human health.

Motivation 2: Tenant satisfaction
An important point of these services is tenant satisfaction. The Aedes Benchmark data (2020) shows differences between tenants' assessment of repair requests. In this research, housing associations in the Netherlands are benchmarked, resulting in a table with the individual benchmark position of housing associations in 2020. It is interesting to see that the results differ and the question arises where these differences come from. For example, is this due to how housing associations organize their repair maintenance, or do other factors (size of housing association, sustainability or costs) play a role?

1.2 Scientific relevance

This research contributes to the scientific knowledge that already exists about repair maintenance at housing associations and tenant satisfaction.

A lot of research has been done in the literature on repair maintenance from various perspectives. For example, the article ''Housing management and maintenance practice of Dutch housing associations'' by Straub (2004) looked at developments in maintenance at Dutch housing associations, with a focus on repair- and planned maintenance contracts and housing stock policy at housing associations. There are also studies abroad about repair maintenance. In 2014, for example, Tucker, Turley and Holgate conducted research into the success factors for an effective repair maintenance service, focusing on housing associations in England. El-Haram and Horner (2002) have investigated factors that influence maintenance costs for housing associations, building owners and local authorities.

With regard to tenant satisfaction, Van Mossel and Straub (2007) investigated the purchasing strategy of maintenance at housing associations in order to optimize tenant satisfaction. In a later phase it can be seen how attention is shifting to what the tenant considers important in the repair maintenance (e.g. Straub, 2012). Although much research has been done on repair maintenance, little research has been done on the way(s) housing associations deal with tenant satisfaction in repair maintenance and how this is implemented in the organization and policy to maximize tenant satisfaction. The tenant's perspective is also important and has been little researched. This research therefore focuses on factors that both housing associations and tenants consider important within repair maintenance in order to provide recommendations on how to maximize tenant satisfaction. Another important goal of this research is to provide more insight into the relationship between repair maintenance, tenant satisfaction and factors that play an important role in this.

1.3 Societal relevance

Housing associations in the Netherlands manage the largest number of social rental housing in Europe (Elsinga & Wassenberg, 2014) and thus play an important role in improving social, economic and environmental sustainability.

First, the social aspect. A well-maintained home improves the quality of life and people's health (Kort, 2020). It can lead to fewer doctor appointments and mental health problems (Kort, 2020). Maintaining homes so that people can stay in a high-quality and healthy home is also one of the core tasks of a housing association. And this quality is largely influenced by the maintenance service (Van Mossel, 2008). Maintenance and repair are often neglected (Straub, 2012). The lack of awareness about the importance of maintenance and repair and the financial and organizational constraints leads to overdue maintenance (Straub, 2012). This thesis therefore pays attention to maintenance and repair and investigates how this can be improved to contribute to a socially sustainable environment. Carrying out maintenance, such as repairs in the home, is also an opportunity for the housing association to come into contact with the tenant and show their involvement.
By providing high-quality maintenance, tenant satisfaction is also stimulated, which ensures that important issues, such as social interests of housing associations, are met and the market position of the housing stock is improved (Gruis, Elsinga and Priemus, 2005).

With regard to economic and environmental sustainability, the demand and acceptance threshold of residents is gradually increasing due to improved technologies and growing prosperity (Straub, 2012). It is therefore important to continuously improve the maintenance service in order to continue to meet the increasing expectations. This thesis therefore explores how this can be contributed to and how housing associations can implement this in their repair maintenance service to maximize tenant satisfaction.

2

RESEARCH PROPOSAL

2

RESEARCH PROPOSAL

This chapter describes the research proposal, which starts with explaining the purpose of the research. Subsequently, the scope of the research, the research output and the dissemination are described. Finally, the research questions, the conceptual model and the research structure are presented.

2.1 Research goal

The aim of this research is to investigate what contributes to tenant satisfaction and how this can be improved in terms of repair maintenance. The research also contributes to the existing scientific and practical knowledge about tenant satisfaction and repair maintenance. The ultimate goal is to formulate recommendations that housing associations can implement in their repair maintenance service to maximize tenant satisfaction. In order to do this, it is first important to understand the concepts of tenant satisfaction and repair maintenance. The first aim is therefore to formulate a clear definition for these terms with the aid of a literature review. The second aim is to investigate which factors have already been mentioned in the literature that contribute to tenant satisfaction in the field of repair maintenance. The next aim is to investigate whether the factors mentioned in the literature also contribute to tenant satisfaction in practice by carrying out case studies. The results are then compared with the literature to finally formulate advice and recommendations.

2.2 Research scope

Repair maintenance is usually carried out on the existing building stock of the housing association. It is one of the operational tasks within the housing association, for which the technical and facility management is responsible. The executive tasks are related to the strategic and tactical level. At a strategic level, it concerns strategic choices for the long term, for example, the size, composition, and spread of the portfolio (Dankert, 2017) but decisions regarding repair maintenance are also among the strategic choices of a housing association. The tactical level is about translating the strategic vision into measures for the medium term. These measures are then embedded and implemented at the operational level. Figure 1 shows the different levels and the relationship between the activities.

Figure 1: Maintenance and repair within the overall building process (own illustration, 2021 based on Wordsworth, 2001 and Smals, 2020)

2.3 Research questions

The main research question for this thesis is:

What contributes to tenant satisfaction at housing associations in the field of repair maintenance and how can this be improved?

To answer the main research question, five sub-research questions have been formulated. For each research question, it is explained what the focus is on and how the relevant research question is answered.

Theoretical subquestion:

1. What is tenant satisfaction and repair maintenance?
    - How can tenant satisfaction be defined?
    - Which activities belong to repair maintenance?
    - What is the repair maintenance process like?
    - What trends are there in the field of repair maintenance?

To begin with, it is first important to define the two main concepts of the research. This is done by investigating the literature to see which definitions already exist for tenant satisfaction and repair maintenance.

Theoretical & Empirical subquestions:

2. Which factors contribute to tenant satisfaction regarding repair maintenance?

Subsequently, it is examined which factors contribute to tenant satisfaction according to the existing literature. The results of this research form the basis, which is used as input in the empirical research. In the empirical research, the factors from the literature are tested on the basis of case studies and semi-structured interviews. The resulting results are compared with the literature study, after which the similarities and differences are described.

3. What is the role of the organization of a housing association on repair maintenance and tenant satisfaction?
- How to define an organizaion?

This question defines the concept of organization. This is then used as input in the empirical research to investigate what role the organization of a housing association plays in maximizing tenant satis faction in repair maintenance.

Empirical subquestion:

4. What role does the policy have on repair maintenance and tenant satisfaction?
- What is the policy of the housing association regarding repair maintenance?
- What role does tenant satisfaction play in the policy?

This question examines how housing associations deal with tenant satisfaction in their policy and what effect this has on repair maintenance. For this question, the policy of the case study to be studied (a housing association) is first examined and this is discussed in more detail during semi-structured interviews.

Final theoretical and empirical subquestion:

5. Which recommendations can be given to maximize tenant satisfaction regarding repair mainte nance?

This is a sub conclusion question for both the literature review and the empirical study and is answered at the end of the empirical study. The conclusions are then described, after which recom mendations can be formulated to answer the main research question.

2.4 Research output

The final output of the research are recommendations that housing associations can implement in their repair maintenance to maximize tenant satisfaction. In response to the main question and sub-questions, figure 2 provides an overview of the (expected) research output. Finally, this research contributes to scientific knowledge about repair maintenance and tenant satisfaction in housing associations.

Main research question:
What contributes to tenant satisfaction at housing associations in the field of repair maintenance and how can this be improved?

Sub- questions	Research output
RQ1 What is tenant satisfaction and repair maintenance according to theory?	Definition of tenant satisfaction and repair maintenance
RQ2 Which factors contribute to tenant satisfaction regarding repair maintenance?	Contributing factors to tenant satisfaction regarding repair mainteance and input for empirical research
RQ3 What is the role of the organization of a housing association on repair maintenance and tenant satisfaction?	Definition of an organization, which is also used for empirical research
RQ4 What role does the policy have on repair maintenance and tenant satisfaction?	Policy analysis of case studies
RQ5 Which recommendations can be given to maximize tenant satisfaction regarding repair maintenance?	Sub conclusion of literature review and empirical research

Figure 2: Research output (own illustration, 2021)

2.5 Conceptual model

Figure 3 shows the conceptual model of the research. One of the services that housing associations provide to tenants is maintenance, which consists of four types of maintenance. Repair maintenance is carried out in response to complaints from tenants about the property. After a repair, tenants can give a rating for the repair performed, which gives an indication of tenant satisfaction. The hypothesis is that various factors influence this, which can consist of factors related to how a housing association is organised, the policy of a housing association and other factors (such as service and mainteance related factors). Finally, tenant satisfaction reflects on the housing association's maintenance service. The aim of this research is to investigate what contributes to this tenant satisfaction and how repair maintenance can be improved to maximize tenant satisfaction.

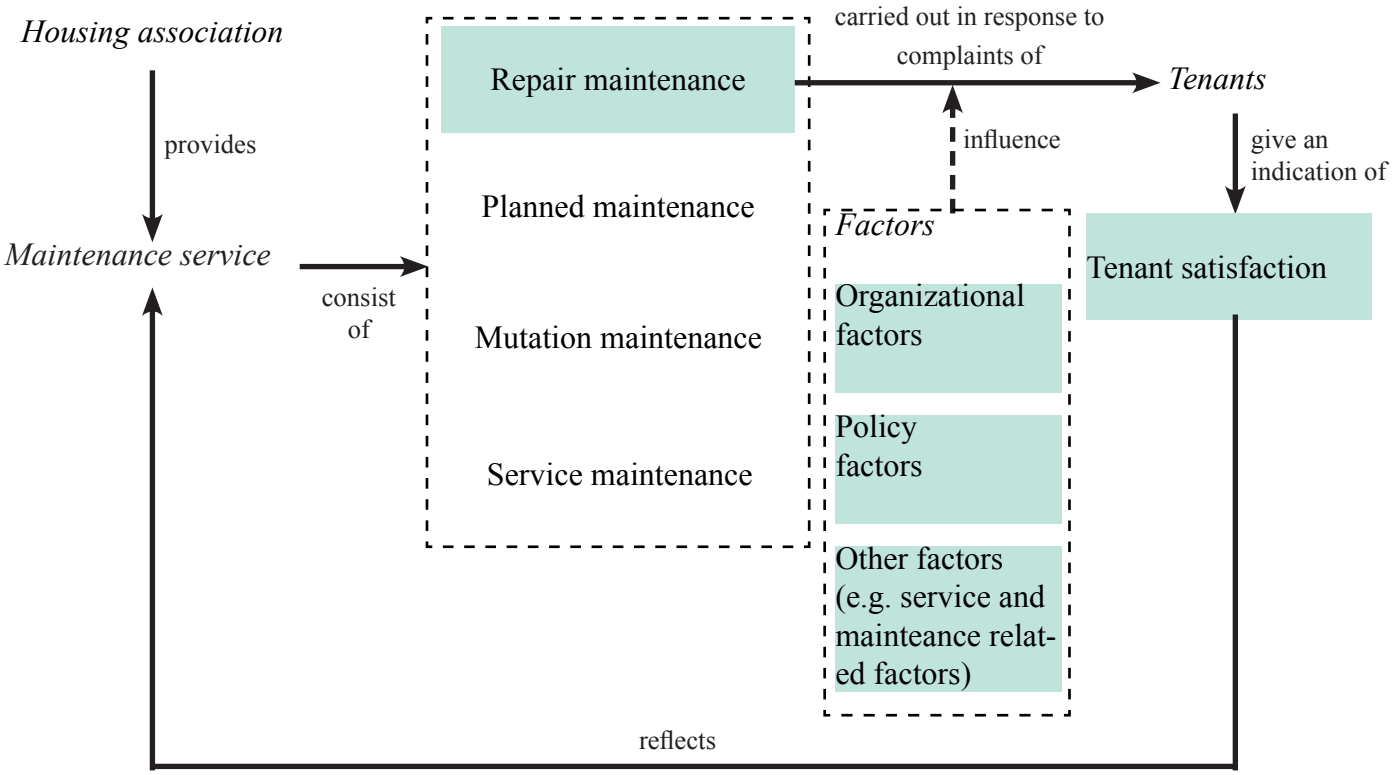


Figure 3: Conceptual model of research (own illustration, 2021)

2.6 Dissemination

The audience for this thesis can be divided into three categories. The first category is academics interested in the results that may yield more knowledge in repair maintenance at housing associations and tenant satisfaction. The second category is housing associations. These may be interested in what factors can help maximize tenant satisfaction in their repair maintenance. This thesis can then serve as an advisory or basic document for improving repair maintenance. Thirdly, it is the organizations that work for housing associations, such as the KWH. This group can use the results of the research to develop advice for their clients (housing associations). It can also contribute to the Aedes benchmark research of the KWH.

2.7 Outline of thesis report

The research is divided into five parts: concepts, analysis, theory, practice and synthesis. The first part comprises chapter 1 (introduction), chapter 2 (research proposal) and chapter 3 (methodology). In chapter 1, the theme of the research was introduced with a description of the problem statement and its social and scientific relevance. Subsequently, in chapter 2, the aim of the research, the research questions and the conceptual model are elaborated. The methods and techniques used to achieve the research goal are described in chapter 3 (methodology). Chapter 4 describes the analyzes of the Aedes Benchmark with the statistical programm SPSS. The theoretical foundation is laid in chapter 5 (literature review), which is used as input in the case studies and semi-structured interviews. For the case studies, documents, reports and articles of the relevant housing association are analyzed and described in chapter 6 (case study & interview results). This chapter also contains the analysis and elaboration of the interviews with professionals. The last four chapters are part of the synthesis. In chapter 7, the results of the interviews (fieldwork) are compared with the literature review and recommendations are then formulated. Based on these results, conclusion takes place in chapter 8 (conclusion) and discussed in chapter 9 (discussion). Finally, chapter 10 (reflection) reflects on the research process, the methods used, and the research theme.

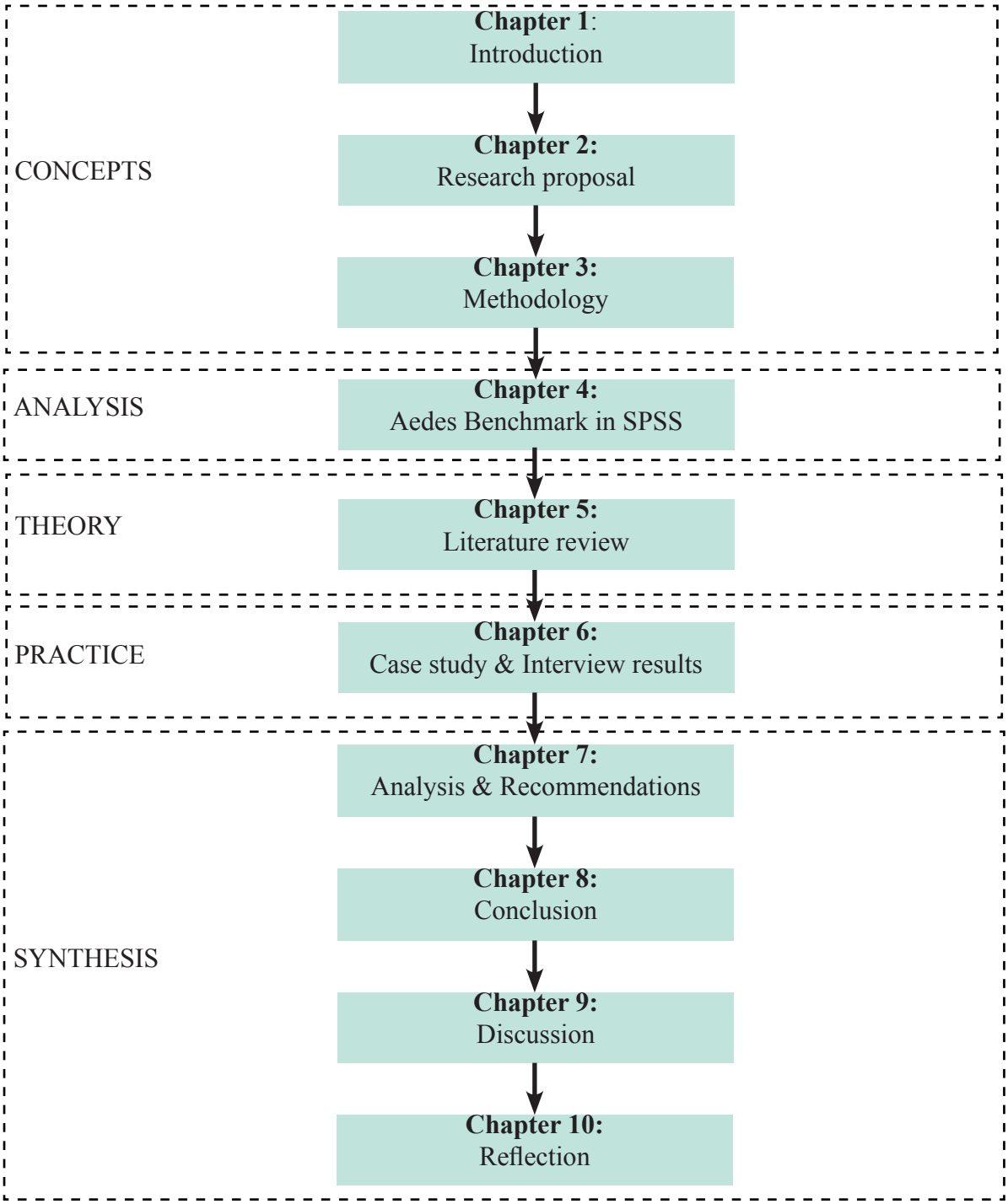


Figure 4: Thesis report outline (own illustration, 2021)

3

METHODOLOGY

3

METHODOLOGY

In this chapter, the methods and techniques used for the research are discussed. First, the type of research is described. Afterwards, a methodological framework is presented, explaining each method used from this framework for the research. Finally, it is described how the collected data will be analyzed.

3.1 Type of study

The main question of this research is: *What contributes to tenant satisfaction at housing associations in the field of repair maintenance and how can this be improved?* This question actually consists of two parts. The first part of the question starts with a "what" question. According to Blaikie & Priest (2018), ''what'' questions seek descriptions. The second part of the question starts with a "how" question. These kinds of questions seek interventions to bring about change (Blaikie & Priest, 2018).

The study is therefore both descriptive and exploratory. First, it is descriptive because it tries to understand what contributes to tenant satisfaction. Second, the study is exploratory as it seeks solutions to improve tenant satisfaction in the area of repair maintenance.

To understand what contributes to tenant satisfaction, the first point, it is first of all important to investigate what has already been researched and/or published about factors that contribute to this in the literature. The collected information forms a theoretical framework, which is used as input for the empirical research. To find out how tenant satisfaction can be improved, the second point, empirical research is needed. Conversations with professionals from housing associations provide insights into tenant satisfaction and repair maintenance. Conversations with tenants are also necessary to find out what tenants find important and what can contribute to tenant satisfaction. Due to the nature of the research and the methods used, this research belongs to qualitative research, because conversations with professionals and interviews are used to collect information.

3.2 Research methods and techniques

Figure 5 shows the methodological framework of the research. The research mainly consists of two methods: literature research and empirical research. A more detailed description of the methods can be found on the next pages.

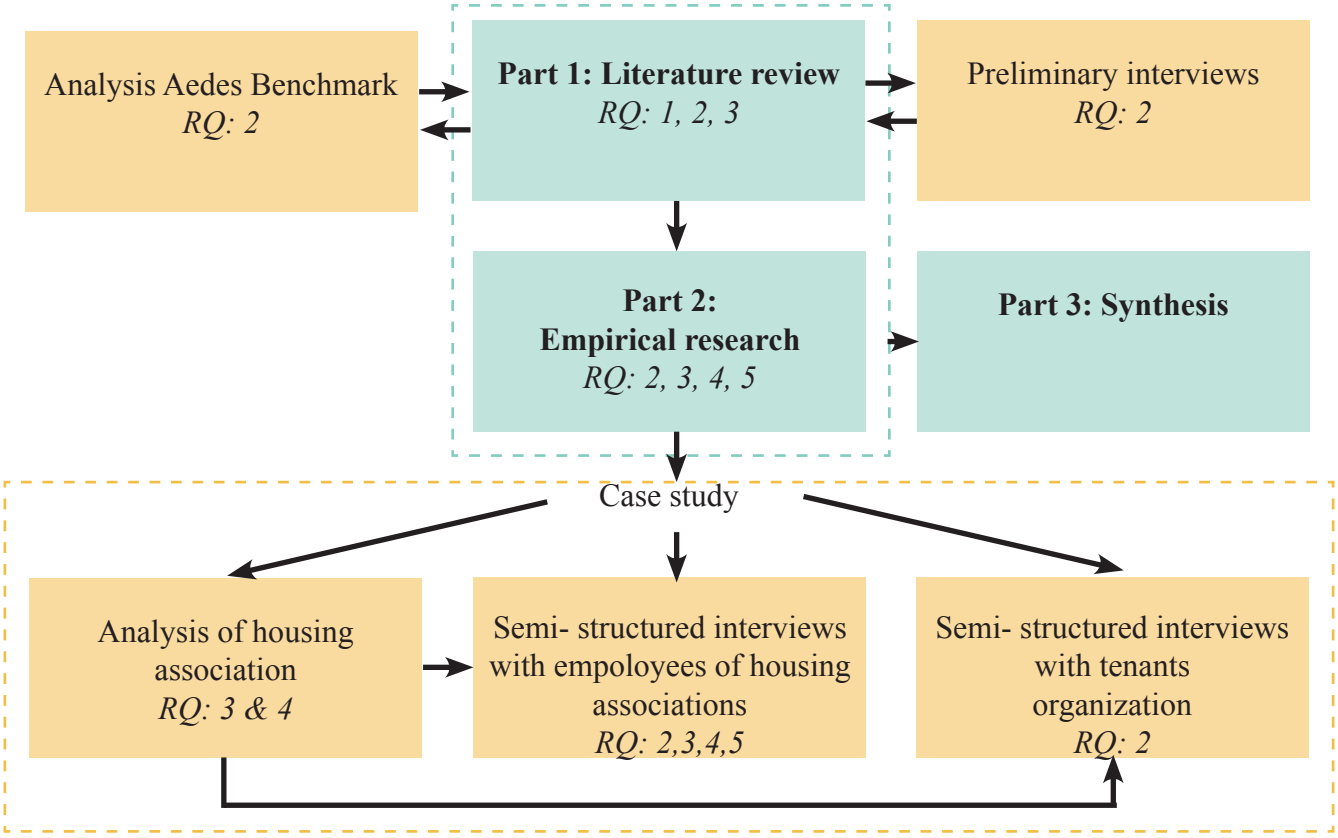


Figure 5: Methodological framework (own illustration, 2021)

The corresponding research subquestions in the figure are:

1. What is tenant satisfaction and repair maintenance?
- *How can tenant satisfaction be defined?*
- *How is tenant satisfaction measured?*
- *Which activities belong to repair maintenance?*
- *What is the repair maintenance process like?*
- *What trends are there in the field of repair maintenance?*

2. Which factors contribute to tenant satisfaction regarding repair maintenance?

3. What is the role of the organization of a housing association on repair maintenance and tenant satisfaction?
- *How to define an organization?*

4. What role does the policy have on repair maintenance and tenant satisfaction?
- *What is the policy of the housing association regarding repair maintenance?*
- *What role does tenant satisfaction play in the policy?*

5. Which recommendations can be given to maximize tenant satisfaction regarding repair maintenance?

Part 1: Literature review

The first part of the research consists of a literature review. The literature review provides answers to the first sub-question and partly answers sub-questions 2 and 3. The literature survey started with investigating tenant satisfaction and repair maintenance. The term tenant satisfaction was defined in the context of repair maintenance and the process of repair maintenance was examined.Subsequently, factors that contribute to tenant satisfaction in the area of repair maintenance were examined in order to answer the second sub-question. For sub-question three, the concept of organization has been defined. In the second phase, sub-questions 2,3 and 4 were further examined using empirical research.

Preliminary interviews

In addition to the literature review, preliminary interviews were held with experts from the field. During the literature review, subjects and authors were discussed that were important for the research. To further orientate on these topics, conversations were therefore held with experts. The discussions contributed to the literature review and, conversely, the literature review was the starting point for the discussions.
A total of four preliminary interviews were held. Each interview has been recorded and a
summary has been made with the most important statements. The interviews took place in a semi-structured manner and prior to the interview, a consent form was sent with information and explanation about the interview and permission to record the interview. The four interviewees are:

The first interviewee is an expert by KWH and conducts research into the services provided by housing associations. He also participates in the Aedes Benchmark and tries to gather new insights to strengthen the tenant relationship with the housing association.

The second interviewee works in the management department of housing corporation Woonopmaat. He started at Woonopmaat in 2017 and before that he also worked at KWH. As a result, he has both knowledge in the field of the management process at housing associations and tenant satisfaction regarding repair maintenance.

The third interviewee is an associate professor at the Faculty of Architecture at TU Delft and an expert in technical management by housing associations. He also conducts research in areas such as tenant satisfaction and repair maintenance, and publishes this in scientific articles.

The last interviewee is a real estate expert who works for Corporatiestrateeg and helps housing associations improve their services. This can be both improving repair maintenance and/or the policy of housing associations.

Analysis Aedes Benchmark

The Aedes Benchmark data was used as input in the statistical program SPSS to investigate relationships between tenant satisfaction and other factors that may influence tenants' rating of repair maintenance. The tenant satisfaction score has been compared with each other, with the size of housing associations (the number of VHEs), sustainability, operating expenses, and maintenance costs. Statistical significance tests were also performed to investigate whether the correlation is significant. The elaboration of this analysis is described in chapter 3.

Part 2: Empirical research

After the literature review, an empirical review is performed to test the results from the literature review in practice and to make comparisons with the literature review. The empirical research consists of three case studies of housing associations. For each of these case studies, the organization and policy of the housing association are first analyzed. Reports and annual reports of the relevant housing association are examined and described for this purpose. Subsequently, semi-structured interviews are held with employees and the tenants' association of the housing corporation. The data from the interviews are collected, analyzed, and added to the previous analysis. Finally, the case studies will be compared with each other and with the literature.

Case study

According to Yin (2003), a case study is defined as ''an empirical study that examines a contemporary phenomenon within its real-life context, especially when boundaries between phenomenon and context are not clearly evident''. In this case, the contemporary phenomenon is tenant satisfaction regarding repair maintenance and the real-life context is the housing association.

The aim of the case study is to collect knowledge from practice and analyzing this data can result in findings that can provide new insights in formulating recommendations regarding tenant satisfaction in repair maintenance. Other goals set for the case study are:

- investigate how a housing association keeps tenants satisfied regarding repair maintenance
- collect information on factors that contribute to increasing and/or improving tenant satisfaction
- gather insights into ways that housing associations apply in their organization or policy with regard to keeping tenants satisfied
- mapping the factors, such as organizational and policy factors
- analyzing the links between the factors, the organization and the policy of the housing association
- investigate whether the factors found from the literature review also lead to more tenant satisfaction in practice or whether housing associations use other methods and/or factors in increasing and/or improving tenant satisfaction.
- describe limitations of the case study to determine whether the findings of the case study can also be applied to other housing associations or in general.
- evaluate the case study to formulate recommendations that can be taken into account in answering the main research question.

Case study selection

A series of criteria have been drawn up to select suitable cases that can make an important contribution to the research. One of the most important criteria is that the selected housing association attaches importance on tenant satisfaction regarding repair maintenance. In this way, valuable and instructive information can be obtained about what contributes to tenant satisfaction and how this can be improved. To gain insight into this, the data from the Aedes Benchmark was used. In the Aedes Benchmark, 200-300 housing associations are compared each year and made public. One of the categories is repair maintenance and the tenant satisfaction rating for this, which is expressed as a grade between 1 and 10. Other important criteria are:

1. participates in the Aedes Benchmark research
2. has received a grade of eight or higher from tenants in repair mainteance
3. scores higher than an eight (from most recent data) or shows a certain increase in tenant satisfac tion rate for repair maintenance
4. information about the repair maintenance of the housing association is publicly available

Case study methodology

A step-by-step approach is used to carry out the case studies. This step-by-step approach is based on the model of Yin (2003), see figure 6. This approach consists of three phases. In the first phase ‘’definition and planning’’, the Aedes Benchmark data were analyzed to investigate which cases meet the selection criteria and are interesting to investigate. At the same time, the literature review is also performed, which serves as input for designing the protocol to conduct the case study. In the second phase ‘’preparation, collection and analysis’’, the organization and policy of the selected housing association is examined for more background information and as input for carrying out the case study. Subsequently, semi-structured interviews are conducted with employees of the housing associaion. The results of the interviews are then collected and analyzed, focusing on key factors that interviewees cite as contributing to tenant satisfaction, organizational factors, and policy factors. In the last phase ‘’analysis and conclusion’’ conclusions can be drawn about which factors in this case study play an important role in increasing tenant satisfaction and in what way(s) this is done. These are then compared with the literature review to identify the differences and similarities. Finally, associated recommendations can be developed and formulated.

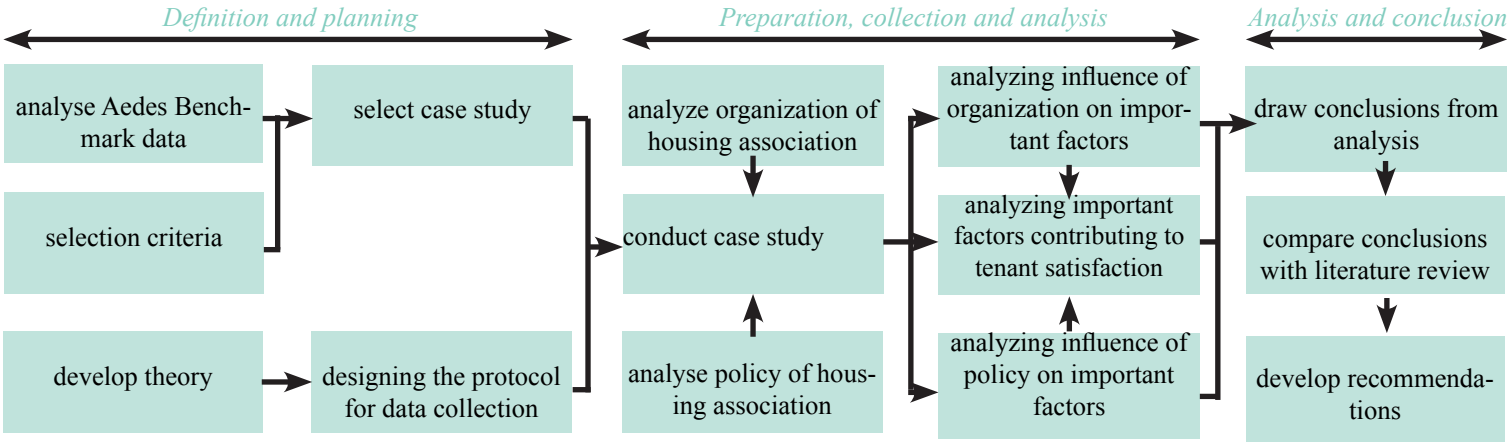


Figure 6: Case study methodology (own illustration, 2021, adapted from Yin, 2003)

Case study report structure

To provide an overview in the report of the case study, the following structure is used:

1. The history of the selected housing association
2. The policy of the housing association regarding repair maintenance
3. The organization of the housing association regarding repair maintenance
4. Important factors in tenant satisfaction and repair maintenance
5. Differences and/or similarities with the literature
6. Conclusion/discussion case study findings
7. Recommendations

In the policy, for example, the vision of the housing association is examined, and research is done into which goals and ways the housing association implements with regard to repair maintenance and tenant satisfaction. And at the organization, subjects such as the size of the housing association, the organization of repair maintenance and cooperation with other parties are examined.

Semi structured interviews

Semi-structured interviews are held with experts/professionals and tenants at the housing associations. The aim is to gain an in-depth picture of experts’ and professionals’ views and opinions about tenant satisfaction regarding repair maintenance. It was decided to conduct semi-structured interviews to give the interviewer more space and to ask emerging questions about topics that are interesting during the interview. An interview protocol will be made for the interviews with general questions, but during the interviews, the interviewer can adjust the order of the questions. A recording will be made of every interview unless the interviewee indicates otherwise. Subsequently, a summary of the main points is made, which can be used as input for formulating the recommendations and answering the main research question.

Ethical considerations
A consent form is sent to the respondent prior to each interview. In the consent form, respondents are informed about the thesis topic, the purpose of the research and information about the interview (such as the duration of the interview). Respondents can also indicate in the form what may and may not be quoted. At the beginning of an interview, each respondent will be asked whether the interview may be recorded. With regard to the privacy, it has been decided to indicate the name of all interviewees with a code. Only the organization name and expertise will be used, if permission has been given. The recordings will only be used for this thesis research and will be destroyed after the research.

Case study analysis
After conducting the case studies and conducting the interviews, the cases will be compared with each other using a cross-case analysis. The cross-case analysis compares the three case studies. See figure 7.

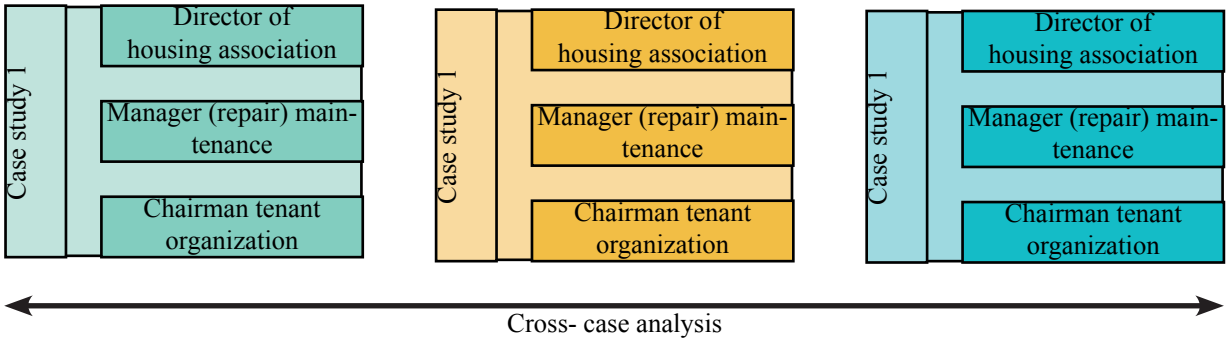


Figure 7: Case study analysis (own illustration, 2021)

Part 3: Synthesis

In the synthesis, the findings from the literature are compared with the findings from empirical research. After the comparison, the findings are evaluated and combined into final recommendations for improving repair maintenance and maximizing tenant satisfaction.

3.3 Data analysis

For the literature review, various documents, such as scientific articles, policy documents, and reports, are analyzed. Here the Aedes benchmark data is also analyzed to investigate what could lead to a higher or lower score for tenant satisfaction with regard to repair maintenance in housing associations. The results of this form the theoretical framework of the research. This framework is then used as input for creating the interview protocol for the case studies and the semi-structured interviews. For the case study, policy documents of the relevant housing association, but also annual reports are analyzed. Subsequently, the results of the case studies and interviews are analyzed, after which comparisons are made with the literature review. In this way differences and similarities can be analyzed and described. Finally, recommendations are formulated for answering the main research question.

4

AEDES BENCHMARK IN SPSS

4

AEDES BENCHMARK IN SPSS

This chapter describes the statistical analysis. The input of the statistical analysis comes from the Aedes benchmark. This data is publicly accessible through Aedes, the association of housing association. This data was imported into the SPSS program and several analyzes were performed with it. This chapter is divided into three subchapters. First, it is examined what the Aedes Benchmark entails. Subsequently, the performed analyzes are described, and finally, the main findings of this chapter can be found in subchapter 4.3.

4.1 Aedes Benchmark

Since 2014, housing associations can participate in the Aedes Benchmark (Aedes, 2021a). The Aedes Benchmark makes the most important performance and costs of housing associations transparent and comparable. It ensures that housing associations gain insight into where they stand and what could be improved. One of the main goals of the Aedes Benchmark is to facilitate collaboration between housing associations and the sharing of knowledge (Aedes, n.d.a).

In the Aedes Benchmark, participating housing associations are compared based on the five performance fields (see Figure 8). These performance fields have been determined by housing associations and interested parties, such as tenants, municipalities, Waarborgfonds Sociale Woningbouw, and the Authority for Housing Associations (Aedes, n.d.b.). Housing associations are not obliged to participate in the Aedes Benchmark and participate voluntarily. In 2020, 274 housing associations participated in the Aedes Benchmark, which represents 97% of social rental housing (Aedes, n.d.b.).

Figure 8: Benchmark model (Aedes, 2021c)

The five performance fields are tenant assessment, operating expenses, sustainability, maintenance and improvement, availability and affordability, and new construction and concerns:

- Tenant assessment concerns the satisfaction of tenants and is subdivided into the satisfaction of moving into a home (new tenants), repair requests, and leaving a home (departing tenants).
- Operating expenses are the costs that corporations spend to achieve their goals. These are costs for staff, office and IT.
- Sustainability is about the energy label value and CO2 emissions.
- Maintenance and improvement concern the investments and costs that housing associations spend on maintaining and improving homes. This is compared with the housing quality experienced by the tenant and the technical housing quality
- Availability and affordability are about the social performance that a housing association delivers to offer affordable housing
- The last performance field, new construction, concerns the quality of newly built homes.

(Aedes, 2021c)

4.2 Statistical analysis Aedes Benchmark results in SPSS

The results of the Aedes Benchmark have been published in an industry report, an infographic, and an Excel table with the individual positioning of housing associations (Aedes, 2021a). Analyzes were performed to investigate relationships between tenant satisfaction regarding repair maintenance and other categories, such as sustainability and cost. For the analyses, the data in the Excel table was imported into the SPSS program and various tests were performed.

In addition to analyzing tenant satisfaction with other categories, the analyzes were also carried out over a period of four years. The results of the Aedes Benchmark in 2021 and in 2020, 2019, and 2018 have been analyzed to investigate whether there are differences and similarities in the different years. A total of ten analyzes were performed. The first analysis looked at the average, the lowest, and highest scores that tenants give for repair requests. The following four analyzes examine the comparison between the tenant satisfaction rate for repair requests and other categories. Analyzes were not performed for all categories in the Aedes Benchmark, as not all categories were relevant for the tenant's assessment of repair requests. Finally, in the last five analyses, the correlation was investigated using the Pearson correlation test and the p-value. The analyzes were performed in the following categories:

1. Tenant satisfaction rating for repair requests in general
2. Tenant satisfaction grade for repair requests versus the size of housing association
3. Tenant satisfaction rate repair requests versus sustainability
4. Tenant satisfaction rate repair requests versus operating expenses
5. Tenant satisfaction rate repair requests versus maintenance cost
6. Correlation between tenant satisfaction rate repair requests and operating expenses
7. Correlation between tenant satisfaction rate of repair requests and perceived home quality
8. Correlation between tenant satisfaction rate of repair requests and technical housing quality (EP2)
9. Correlation between tenant satisfaction rate of repair requests and maintenance costs
10. Correlation between tenant satisfaction rate of repair requests and energy performance

Analysis 1: Tenant satisfaction rating for repair requests in general

2021

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Tenant assessment repair requests	256	6,4	8,8	7,730	,3850
Valid N (listwise)	256				

2020

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Tenant assessment repair requests	256	6,6	9,0	7,739	,3668
Valid N (listwise)	256				

2019

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Tenant assessment repair requests	270	6,7	9,0	7,681	,3593
Valid N (listwise)	270				

2018

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Tenant assessment repair requests	269	6,3	9,0	7,589	,3986
Valid N (listwise)	269				

Figure 9: Analysis 1 Repair requests in general (obtained from spss analysis output, 2021)

The highest tenant rating for repair requests in 2018, 2019, and 2020 is a 9 and achieved by Harmonisch Living in Flevoland (2018). , Stichting Woonopmaat in Noord-Holland (2019) and once again Stichting Woonopmaat (2020). In 2021, the highest score was achieved by WBV Arnemuiden in Zeeland. Over the years, there has been a slight increase in the average tenant satisfaction score for repair maintenance, reaching 7.589 in 2018 and 7.730 in 2021. Furthermore, the standard deviation is less than 0.5 in all these four years, implying that the spread around the mean is small and the numbers are fairly consistent.

It should be noted that not all participating housing associations have provided data for the tenant assessment of repair requests. There are missing values in the data. In 2020, for example, 274 housing associations participated in the Aedes benchmark, but 18 housing associations do not have a tenant satisfaction rating for repair maintenance. This is about 6.6% of the total.

Analysis 2: Tenant satisfaction grade for repair requests versus the size of housing association

2021

Report

Tenant assessment repair requests

V5	Mean	N	Std. Deviation	Minimum	Maximum
< 1.000 vhe's	7,863	16	,4225	7,1	8,8
> 25.000 vhe's	7,467	18	,3614	6,9	8,1
1.001-2.500 vhe's	7,680	46	,4145	6,4	8,4
10.001-25.000 vhe's	7,735	52	,3307	6,7	8,3
2.501-5.000 vhe's	7,768	56	,3480	6,9	8,5
5.001-10.000 vhe's	7,769	68	,4071	6,8	8,7
Total	7,730	256	,3850	6,4	8,8

2020

Report

Tenant assessment repair requests

Size class	Mean	N	Std. Deviation	Minimum	Maximum
< 1.000 vhe's	7,964	20	,3513	7,4	8,7
> 25.001 vhe's	7,522	18	,3606	6,8	8,0
1.001-2.500 vhe's	7,758	46	,3187	7,1	8,4
10.001-25.000 vhe's	7,667	49	,3362	7,0	8,3
2.501-5.000 vhe's	7,748	56	,3643	6,6	8,5
5.001-10.000 vhe's	7,762	67	,3945	6,9	9,0
Total	7,739	256	,3668	6,6	9,0

2019

Report

Tenant assessment repair requests

Size class XL=>25.000 vhe L=10.000-25.000 M=5.000-10.000 S=2.500-5.000 XS=1.000-2.500 XXS=<1.000 vhe	Mean	N	Std. Deviation	Minimum	Maximum
L	7,560	45	,3165	6,8	8,3
M	7,669	71	,4221	6,7	9,0
S	7,727	60	,3298	6,7	8,4
XL	7,517	18	,3618	6,9	8,1
XS	7,704	56	,2809	7,1	8,2
XXS	7,945	20	,3379	7,3	8,8
Total	7,681	270	,3593	6,7	9,0

Figure 10: Analysis 2 Size of housing association (obtained from spss analysis output, 2021)

The comparison of the tenant assessment of the repair requests with the size of the housing association shows in 2019, 2020, and 2021 that housing associations with fewer than 1000 rental units achieve a higher grade than all other size classes. The largest housing associations with more than 25,000 rental units achieve the lowest on average compared to all other size classes. In all three years, housing associations with more than 25,000 rental units score on average 0.4 points lower than housing associations with less than 1000 rental units. The standard deviation again shows that the grades are close to each other around the mean.

Note: in 2018, the size class of the housing associations is not included in the Aedes benchmark data.

Analysis 3: Tenant satisfaction rate repair requests versus sustainability

2021

Report

Tenant assessment repair requests

Letter sustainability	Mean	N	Std. Deviation	Minimum	Maximum
	7,721	24	,4393	6,4	8,3
A	7,827	71	,3325	7,0	8,8
B	7,734	98	,3866	6,9	8,7
C	7,621	63	,3956	6,7	8,5
Total	7,730	256	,3850	6,4	8,8

2020

Report

Tenant assessment repair requests

Letter sustainability	Mean	N	Std. Deviation	Minimum	Maximum
	7,828	18	,3232	7,1	8,3
A	7,820	99	,3162	7,1	8,7
B	7,755	51	,3396	7,0	8,5
C	7,622	88	,4145	6,6	9,0
Total	7,739	256	,3668	6,6	9,0

2019

Report

Tenant assessment repair requests

Letter sustainability	Mean	N	Std. Deviation	Minimum	Maximum
	7,805	20	,2438	7,3	8,5
A	7,694	97	,3889	6,7	8,8
B	7,774	58	,2971	7,2	8,4
C	7,585	95	,3626	6,7	9,0
Total	7,681	270	,3593	6,7	9,0

2018

Report

Tenant assessment repair requests

Letter sustainability	Mean	N	Std. Deviation	Minimum	Maximum
	7,688	27	,3601	6,8	8,2
A	7,682	94	,4129	6,3	9,0
B	7,598	57	,3774	6,4	8,3
C	7,457	91	,3758	6,4	8,9
Total	7,589	269	,3986	6,3	9,0

Figure 11: Analysis 3 Sustainability (obtained from spss analysis output, 2021)

Legend

Score	Class boundaries letter A	Class boundaries letter B	Class boundaries letter C
energetic performance	up to 192.9 kWh/m2	193 to 210 kWh/m2	from 210,1 kWh/m2
insulation performance	up to 42,9 kWh/m2	43 to 51 kWh/m2	from 51,1 kWh/m2
CO2 emissions	up to 18,4 kg/m2	18,5 up to and including 19,7 kg/m2	from 19,8 kg/m2

Figure 12: Sustainability class limits (Aedes, n.d.c)

Explanation:
The energetic performance or the energy label value (EP2) is an indicator of the average energetic quality of the property and is expressed in kWh/m2 (Aedes, n.d.f). This value is a measure of the energy efficiency of a building. The following applies the lower the number, the better the energy performance. The EP2 values come from the SHAERE export and are supplied by corporations via the software package Vabi Energy Assets.

The insulation performance is a measure of the quality of the building envelope (insulation and ventilation) of a house, expressed in kWh/m2 in comparison with the standard (Aedes, n.d.f). The standard is a maximum heat demand per home in kWh/m2, depending on the year of construction, construction type, and the compactness of the home. In 2021 this partial score will be included for the first time in the Aedes Benchmark (Aedes, 2021b). The insulation performance is calculated from the supplied SHAERE export and is supplied by corporations via the software package Vabi Energy Assets.

The CO2 emissions provide insight into reducing the CO2 emissions of the home (Aedes, n.d.f). This partial score is calculated based on data from Statistics Netherlands (CBS). Statistics Netherlands receives this data per address from the energy network companies. The CO2 emissions are calculated over the surface of all homes through the use of gas and expressed in kg/m2/year.

There is a positive increasing relationship between the tenant's assessment of the repair requests and the sustainability. With a higher sustainability class, it can be seen that the average rating of the tenants is higher than with a lower sustainability class. This applies in 2018, 2020, and 2021. The only difference is that in 2019 sustainability class B has a higher tenant rating than sustainability class A. The difference is 0.08.

In addition, the minimum grades increase over four years. In 2018, for example, tenants gave a 6.3 for sustainability class A. In the following year, this increased to 6.7. And in 2020 and 2021 this has become a 7.1 and 7.0.

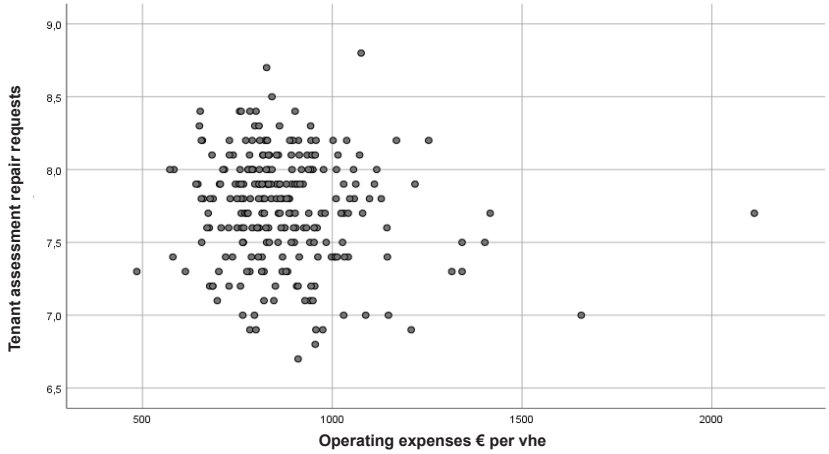
Analysis 4: Tenant satisfaction rate repair requests versus operating expenses

2021

Report

Tenant assessment repair requests

Letter operating expenses	Mean	N	Std. Deviation	Minimum	Maximum
	7,550	8	,5606	6,4	8,1
A	7,745	83	,3765	6,9	8,4
B	7,810	84	,3210	7,1	8,7
C	7,652	81	,4202	6,7	8,8
Total	7,730	256	,3850	6,4	8,8

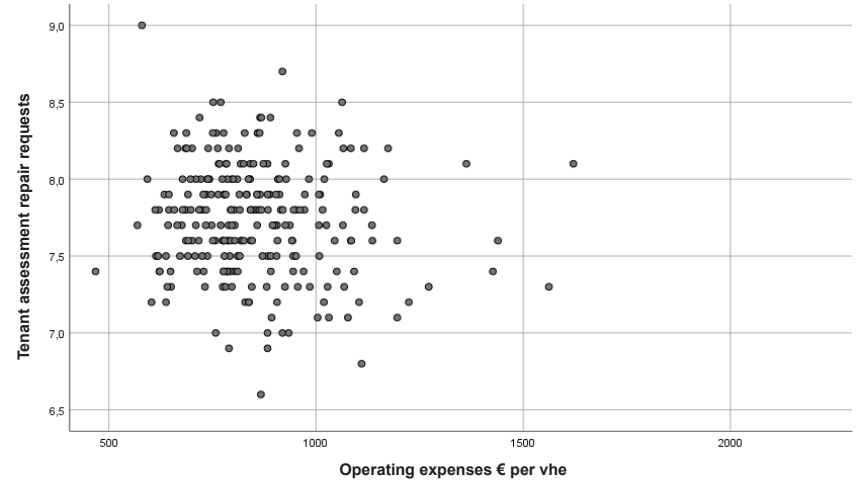


2020

Report

Tenant assessment repair requests

Letter operating expenses	Mean	N	Std. Deviation	Minimum	Maximum
	7,920	5	,2683	7,7	8,3
A	7,788	88	,3473	7,0	9,0
B	7,723	91	,3630	6,6	8,4
C	7,689	72	,3952	6,8	8,7
Total	7,739	256	,3668	6,6	9,0



Legend

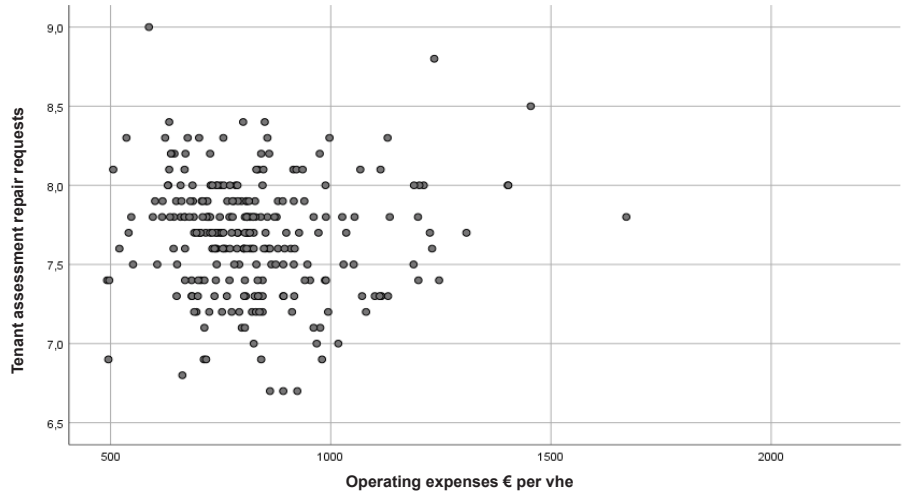
A to 803 euros
B 803 to 908 euros
C from 909 euros
(Aedes, n.d.g)

2019

Report

Tenant assessment repair requests

Letter operating expenses	Mean	N	Std. Deviation	Minimum	Maximum
	7,755	11	,2876	7,2	8,1
A	7,731	93	,3638	6,8	9,0
B	7,663	96	,3245	6,7	8,4
C	7,629	70	,4029	6,7	8,8
Total	7,681	270	,3593	6,7	9,0

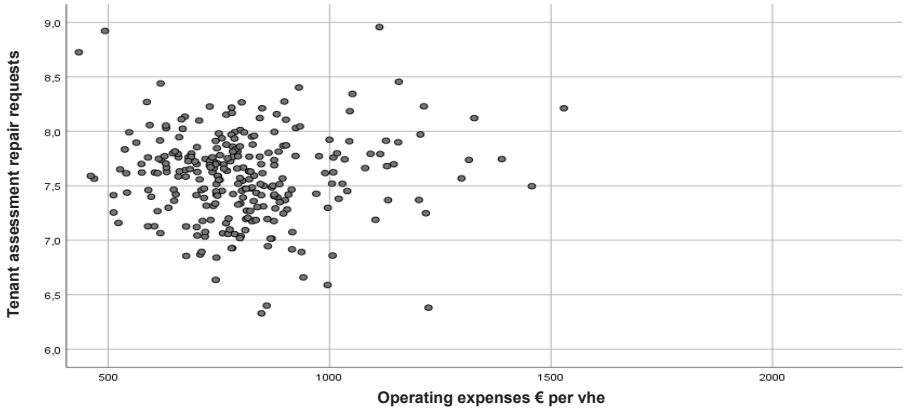


2018

Report

Tenant assessment repair requests

Letter operating expenses	Mean	N	Std. Deviation	Minimum	Maximum
	7,650	6	,3795	7,2	8,1
A	7,626	89	,3725	6,9	8,9
B	7,536	98	,3760	6,3	8,3
C	7,608	76	,4545	6,4	9,0
Total	7,589	269	,3986	6,3	9,0



Legend

A to 803 euros
B 803 to 908 euros
C from 909 euros
(Aedes, n.d.g)

Figure 13: Analysis 4 Operating expenses (obtained from spss analysis output, 2021)

Explanation:
Operating expenses are the total (in euros per weighted rental unit) of the corporation's primary activity. These are costs for management costs due to the operation of the real estate portfolio, organizational costs allocated to the sale of existing property, the costs of quality of life, and other organizational costs (Aedes, n.d.e.).

In 2018, the operating expenses per VHE are largely between 500 and 1000 euros. In the following years, a slow increase can be seen in these costs, and more and more is being spent on operating expenses, with operating expenses in 2021 largely between 650 and 1150 euros. On the other hand, however, it can be seen that the average tenant satisfaction grade is not always higher for housing associations that spend more on operating expenses. There is a negative relationship. Housing associations that spend the most on operating expenses have the lowest grade on average compared to housing associations that spend less (except the year 2018). The standard deviation in all years again shows that there is a small spread around the mean, which can also be seen in the graphs.

Analysis 5: Tenant satisfaction rate repair requests versus maintenance costs

2021

Report

Tenant assessment repair requests

Letter maintenance index	Mean	N	Std. Deviation	Minimum	Maximum
	7,529	7	,6020	6,4	8,1
A	7,777	79	,3741	6,9	8,8
B	7,707	99	,4114	6,7	8,5
C	7,731	71	,3298	6,9	8,7
Total	7,730	256	,3850	6,4	8,8

2020

Report

Tenant assessment repair requests

Letter maintenance index	Mean	N	Std. Deviation	Minimum	Maximum
	7,920	5	,2683	7,7	8,3
A	7,743	99	,3780	6,9	8,7
B	7,711	91	,4054	6,6	9,0
C	7,761	61	,2877	7,2	8,5
Total	7,739	256	,3668	6,6	9,0

2019

Report

Tenant assessment repair requests

Letter maintenance index	Mean	N	Std. Deviation	Minimum	Maximum
	7,755	11	,2876	7,2	8,1
A	7,706	101	,3624	6,7	8,5
B	7,641	91	,3786	6,7	8,8
C	7,687	67	,3393	7,0	9,0
Total	7,681	270	,3593	6,7	9,0

2018

Report

Tenant assessment repair requests

Letter maintenance index	Mean	N	Std. Deviation	Minimum	Maximum
	7,563	7	,4165	7,0	8,1
A	7,584	102	,4296	6,4	8,7
B	7,595	91	,4233	6,3	9,0
C	7,590	69	,3153	6,9	8,2
Total	7,589	269	,3986	6,3	9,0

Figure 14: Analysis 5 Maintenance costs (obtained from spss analysis output, 2021)

Legend

Score	Class boundaries letter A	Class boundaries letter B	Class boundaries letter C
Maintenance costs	maintenance index is <80	maintenance index is between 80 and 100	maintenance index is > 100

Figure 15: Class limits for maintenance costs (Aedes, n.d.d)

Explanation:
The maintenance costs are the total costs and expenses (in euros per weighted vhe) for maintaining and improving the housing of the corporation, including the operating costs allocated by the corporation to maintenance and improvement (Aedes, n.d.g). These costs consist of costs for mutation maintenance, planned maintenance, repair maintenance and investments in home improvement (Aedes, 2021b).

In the maintenance costs, the most important characteristics of the home (housing type and construction period) per corporation are linked to a reference table per housing type and construction period (Aedes, n.d.g.). This creates an individual reference value per housing association. Dividing the maintenance costs by this reference value then produces a maintenance index. A low index means that the housing association spends less on housing than the average is spent on housing with the same housing characteristics. Conversely, a higher index means that a housing association spends more on comparable homes.

In addition, for the maintenance costs, the costs are placed in a multi-year perspective. The maintenance costs and reference value are based on a period of five years (Aedes, n.d.g.). However, to calculate the maintenance index, the average of the maintenance costs over three years is divided by the reference value built up over the three years. For example, the conservation index in 2020 is calculated by dividing the maintenance costs for 2017, 2018 and 2019 (average) by the reference value for these years.

There is no clear picture when comparing the tenant assessment of repair requests and the maintenance costs, and the differences are small. In 2018, housing associations with a maintenance index B achieved slightly higher than the other two class limits. The following year, 2019, housing associations with a maintenance index A have on average a higher tenant satisfaction rating regarding repair requests than the other two class boundaries. However, the difference between the class boundaries A and C is 0.019. In 2020, on average, housing associations with a maintenance index C will score higher than the other two classes. And in the most recent year, 2021, housing associations with a maintenance index A are slightly higher than the other two class boundaries. It can be stated, however, that the average grade for the tenant assessment of repair requests differs slightly within the three types of class boundaries in the period 2018 up to and including 2021.

Analysis 6: Correlation between tenant satisfaction rate repair requests and operating expenses

2021

Correlations

		Tenant assessment repair requests	Operating expenses € per vhe
Tenant assessment repair requests	Pearson Correlation	1	-,117
	Sig. (2-tailed)		,064
	N	256	249
Operating expenses € per vhe	Pearson Correlation	-,117	1
	Sig. (2-tailed)	,064	
	N	249	257

2020

Correlations

		Tenant assessment repair requests	Operating expenses € per vhe
Tenant assessment repair requests	Pearson Correlation	1	-,088
	Sig. (2-tailed)		,165
	N	256	252
Operating expenses € per vhe	Pearson Correlation	-,088	1
	Sig. (2-tailed)	,165	
	N	252	262

2019

Correlations

		Tenant assessment repair requests	Operating expenses € per vhe
Tenant assessment repair requests	Pearson Correlation	1	-,023
	Sig. (2-tailed)		,707
	N	270	260
Operating expenses € per vhe	Pearson Correlation	-,023	1
	Sig. (2-tailed)	,707	
	N	260	271

2018

Correlations

		Tenant assessment repair requests	Operating expenses € per vhe
Tenant assessment repair requests	Pearson Correlation	1	,008
	Sig. (2-tailed)		,891
	N	269	263
Operating expenses € per vhe	Pearson Correlation	,008	1
	Sig. (2-tailed)	,891	
	N	263	280

Legend:

Pearson correlation:
Direction: positive or negative

Strength:
$0 < r \leq 0{,}19$ = no or very low correlation
$0{,}2 \leq r \leq 0{,}39$ = low correlation
$0{,}4 \leq r \leq 0{,}59$ = moderate correlation
$0{,}6 \leq r \leq 0{,}79$ = high correlation
$0{,}8 \leq r \leq 1{,}0$ = very high correlation
(Selvanathan, 2020)

Significance: 0,05 or less = significant

Figure 16: Analysis 6 Correlation operating expenses (obtained from spss analysis output, 2021)

The p-value (sig. 2-tailed) is greater than 0.01 and 0.05 in all years. There is therefore no statistically significant relationship between the tenant's assessment of repair requests and the operating expenses per VHE. The Pearson correlation shows a negative correlation in the years 2019, 2020, and 2021. Only in 2018 is the Pearson correlation positive. However, the result of 0.008 shows that there is no or very low correlation between these two variables. Higher or lower operating costs, therefore, do not affect the tenant's assessment of the repair requests.

Analysis 7: Correlation between tenant satisfaction rate of repair requests and perceived home quality

2021

Correlations

		Tenant assessment repair requests	Perceived quality of the home tenant
Tenant assessment repair requests	Pearson Correlation	1	,364**
	Sig. (2-tailed)		,000
	N	256	236
Perceived quality of the home tenant	Pearson Correlation	,364**	1
	Sig. (2-tailed)	,000	
	N	236	236

**. Correlation is significant at the 0.01 level (2-tailed).

2020

Correlations

		Tenant assessment repair requests	Perceived quality of the home tenant
Tenant assessment repair requests	Pearson Correlation	1	,332**
	Sig. (2-tailed)		,000
	N	256	235
Perceived quality of the home tenant	Pearson Correlation	,332**	1
	Sig. (2-tailed)	,000	
	N	235	236

**. Correlation is significant at the 0.01 level (2-tailed).

2019

Correlations

		Tenant assessment repair requests	Perceived quality of the home tenant
Tenant assessment repair requests	Pearson Correlation	1	,334**
	Sig. (2-tailed)		,000
	N	270	243
Perceived quality of the home tenant	Pearson Correlation	,334**	1
	Sig. (2-tailed)	,000	
	N	243	243

**. Correlation is significant at the 0.01 level (2-tailed).

2018

Correlations

		Tenant assessment repair requests	Perceived quality of the home tenant
Tenant assessment repair requests	Pearson Correlation	1	,343**
	Sig. (2-tailed)		,000
	N	269	239
Perceived quality of the home tenant	Pearson Correlation	,343**	1
	Sig. (2-tailed)	,000	
	N	239	239

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 17: Analysis 7 Correlation perceived home quality (obtained from spss analysis output, 2021)

Explanation:
The perceived quality of the home is the assessment of tenants about the perceived quality of the home, expressed in a score (Aedes, n.d.g). These grades are measured via a random sample of tenants spread over the homes in a housing association's real estate portfolio. Housing associations hire a research agency for this or carry out this research themselves.

There is a significant positive relationship between the tenant satisfaction score and the tenants' experience of the quality of a home. Tenants who experience the quality of a home positively are therefore associated with a higher tenant satisfaction score for repair requests. However, the results of the Pearson correlation are between 0.2 and 0.39 for all years. This means that as the score on one variable changes, the other changes an amount considered to be weak in magnitude.

Analysis 8: Correlation between tenant satisfaction rate of repair requests and technical housing quality (EP2)

2021

Correlations

		Tenant assessment repair requests	Technical housing quality (EP2)
Tenant assessment repair requests	Pearson Correlation	1	-,142*
	Sig. (2-tailed)		,030
	N	256	233
Technical housing quality (EP2)	Pearson Correlation	-,142*	1
	Sig. (2-tailed)	,030	
	N	233	244

*. Correlation is significant at the 0.05 level (2-tailed).

2020

Correlations

		Tenant assessment repair requests	Technical housing quality (Energy Index)
Tenant assessment repair requests	Pearson Correlation	1	-,210**
	Sig. (2-tailed)		,001
	N	256	239
Technical housing quality (EP2)	Pearson Correlation	-,210**	1
	Sig. (2-tailed)	,001	
	N	239	251

**. Correlation is significant at the 0.01 level (2-tailed).

2019

Correlations

		Tenant assessment repair requests	Technical housing quality (Energy Index)
Tenant assessment repair requests	Pearson Correlation	1	-,230**
	Sig. (2-tailed)		,000
	N	270	251
Technical housing quality (Energy Index)	Pearson Correlation	-,230**	1
	Sig. (2-tailed)	,000	
	N	251	260

**. Correlation is significant at the 0.01 level (2-tailed).

2018

Correlations

		Tenant assessment repair requests	Technical housing quality (Energy Index)
Tenant assessment repair requests	Pearson Correlation	1	-,298**
	Sig. (2-tailed)		,000
	N	269	242
Technical housing quality (Energy Index)	Pearson Correlation	-,298**	1
	Sig. (2-tailed)	,000	
	N	242	253

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 18: Analysis 8 Correlation technical housing quality (obtained from spss analysis output, 2021)

Explanation:
The technical quality of homes is made clear in the subscore technical housing quality. The energy indicator EP2 is used to operationalize this partial score (Aedes, n.d.g.). The EP2 is a new measure for the energy efficiency of a building in 2021, expressed in a number. The following applies: the lower the number, the better the energy performance.

The significance test between the tenant assessment of repair requests and the technical housing quality shows a statistically significant negative relationship in all four years. A negative Pearson correlation means that when the scores on one variable decrease, the scores on the other variable increase. A lower value for the technical quality of a home (which means a better energy performance) is therefore accompanied by a higher tenant rating for repair requests. However, the correlation is weak, meaning that the relationship is not very strong between these variables.

Analysis 9: Correlation between tenant satisfaction rate of repair requests and maintenance costs

2021

Correlations

		Tenant assessment repair requests	Maintenance costs 5-year € per vhe
Tenant assessment repair requests	Pearson Correlation	1	-,119
	Sig. (2-tailed)		,060
	N	256	250
Maintenance costs 5-year € per vhe	Pearson Correlation	-,119	1
	Sig. (2-tailed)	,060	
	N	250	258

2020

Correlations

		Tenant assessment repair requests	Maintenance costs 5-year € per vhe
Tenant assessment repair requests	Pearson Correlation	1	-,034
	Sig. (2-tailed)		,589
	N	256	252
Maintenance costs 5-year € per vhe	Pearson Correlation	-,034	1
	Sig. (2-tailed)	,589	
	N	252	262

2019

Correlations

		Tenant assessment repair requests	Maintenance costs 4-year € per vhe
Tenant assessment repair requests	Pearson Correlation	1	-,075
	Sig. (2-tailed)		,230
	N	270	260
Maintenance costs 4-year € per vhe	Pearson Correlation	-,075	1
	Sig. (2-tailed)	,230	
	N	260	271

2018

Correlations

		Tenant assessment repair requests	Maintenance costs 3-year € per vhe
Tenant assessment repair requests	Pearson Correlation	1	-,090
	Sig. (2-tailed)		,146
	N	269	262
Maintenance costs 3-year € per vhe	Pearson Correlation	-,090	1
	Sig. (2-tailed)	,146	
	N	262	279

Figure 19: Analysis 9 Correlation maintenance costs (obtained from spss analysis output, 2021)

The Pearson correlation test and the p-values over all years indicate a negative and statistically insignificant relationship between the tenant's assessment of repair requests and the maintenance costs. These tests, therefore, show that there is no effect or relationship between these two variables. The maintenance costs, therefore, have no statistical effect on the tenant's assessment of repair requests.

Analysis 10: Correlation between tenant satisfaction rate of repair requests and energy performance

2021

Correlations

		Tenant assessment repair requests	Energy performance (EP2)
Tenant assessment repair requests	Pearson Correlation	1	-,142*
	Sig. (2-tailed)		,030
	N	256	233
Energy performance (EP2)	Pearson Correlation	-,142*	1
	Sig. (2-tailed)	,030	
	N	233	244

*. Correlation is significant at the 0.05 level (2-tailed).

2020

Correlations

		Tenant assessment repair requests	Score Energy Index (EI)
Tenant assessment repair requests	Pearson Correlation	1	-,210**
	Sig. (2-tailed)		,001
	N	256	239
Score Energy Index (EI)	Pearson Correlation	-,210**	1
	Sig. (2-tailed)	,001	
	N	239	251

**. Correlation is significant at the 0.01 level (2-tailed).

2019

Correlations

		Tenant assessment repair requests	Score Energy Index (EI)
Tenant assessment repair requests	Pearson Correlation	1	-,230**
	Sig. (2-tailed)		,000
	N	270	251
Score Energy Index (EI)	Pearson Correlation	-,230**	1
	Sig. (2-tailed)	,000	
	N	251	260

**. Correlation is significant at the 0.01 level (2-tailed).

2018

Correlations

		Tenant assessment repair requests	Score Energy Index (EI)
Tenant assessment repair requests	Pearson Correlation	1	-,298**
	Sig. (2-tailed)		,000
	N	269	242
Score Energy Index (EI)	Pearson Correlation	-,298**	1
	Sig. (2-tailed)	,000	
	N	242	253

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 20: Analysis 10 Correlation energy performance (obtained from spss analysis output, 2021)

Explanation:
The energetic performance is about the average energetic quality of the property (Aedes, n.d.f). This partial score was measured with the Energy Index, but from 2021 this will be measured by the new energy label value: the primary fossil energy demand in kWh/m2 (Aedes, 2021b).

There is a negative and statistically significant relationship between the tenant's assessment of repair requests and the energetic performance of the property. Lower values for the energetic performance (meaning a better energy performance) are therefore related to a higher number for the tenant's assessment of repair requests. However, the relationship is weak with values between 0.1 and 0.39.

4.3 Main findings of Aedes Benchmark analysis

The tenant's assessment of the repair requests was examined in ten analyzes in the SPSS program. This was done on various topics and over a four-year time frame (2018, 2019, 2020, and 2021).

The first analysis shows that on average tenants give an increasing appreciation for repair maintenance over a four year time frame and that the grades are largely around the average. It can be concluded from the second analysis that housing associations with less than 1000 rental units achieve a higher tenant satisfaction rate than any other size class. Another conclusion is that the majority of housing associations achieve near average and housing associations with more than 25,000 rental units have the lowest score. About sustainability, tenants' grades for repair maintenance increase with a higher sustainability class. This is confirmed by the significance test of the energy performance (one of the topics of sustainability) with the tenant rating, whereby a higher energy performance is related to a higher grade for tenant satisfaction rating in repair maintenance. However, the relationship is not very strong, which means that there is a minimal relationship between the variables. The fourth analysis shows that housing associations have started to spend more and more when it comes to operating expenses. However, the significance test shows that there is no statistically significant relationship between the tenant satisfaction grade and operating expenses. For the maintenance costs, the costs, and expenditure on the maintenance and improvement of homes, there are almost no differences between the average tenant satisfaction grade and the different class boundaries. The Pearson test shows that there is again no statistically significant relationship between these two variables.

Categories where the p-value does show a statistical significance is in the perceived housing quality of the tenant. The positive value of the Pearson test shows that a higher experience of the housing quality by the tenant, the tenant satisfaction rating for repair maintenance is also higher. The next category where significance has been demonstrated is in technical housing quality. It can be concluded that a better energy performance is associated with a higher tenant rating of the repair requests and vice versa. The same applies to the energetic performance, where a better energy performance is also accompanied by a higher tenant rating. In all three comparisons, there is a weak relationship between the tenant assessment and the categories. So there is a relationship, but the relationship is weak. The variables are therefore hardly related to each other.

This could mean that tenant satisfaction regarding repair maintenance is influenced by factors other than the factors examined in the Aedes benchmark. To investigate this, the literature review is examined in the next chapter.

5

LITERATURE REVIEW

5

LITERATURE REVIEW

The literature review answers the first sub-question and partly answers sub-questions 2 and 3. For the overview, this chapter is divided into four sub-chapters. The first subchapter examines what tenant satisfaction and repair maintenance entail. The second sub-chapter examines which factors contribute to this. In the third sub-chapter, the concept of organization is defined, which are also used as input for the empirical research at a later stage. Finally, in the last subchapter, main findings of the literature review are described.

5.1 Tenant satisfaction & repair maintenance

5.1.1 Definition

According to Gubbay (1999), tenant satisfaction is the satisfaction that arises as a result of solving tenant needs. Tenant satisfaction can also be understood as an individual's interaction with a service (Cronin & Taylor, 1992). It is not a one-time experience, but a sequential process of a series of events that ultimately lead to an individual's evaluation of his or her experience with the service provided (Jones & Suh, 2000). Therefore, it will not only be about an individual's experience with the service providers but also about the result of that service. Kotler (1982) defined tenant satisfaction as residents' feeling of being helped in fulfilling an expected outcome. There are several definitions of the term tenant satisfaction, but many of the definitions contain words such as the response to an evaluation process and the fulfilment of an expected outcome (Oliver, 2010; Fornell, 1992; Cote & Buckley, 1988). There is some debate as to whether tenant satisfaction is an intellectual (Tes & Wilton, 1988; Bolton & Drew, 1991) or emotional response (Halstead et al., 1994; Peterson & Wilson, 1992) to the evaluation process. To demarcate the concept of tenant satisfaction, most researchers have limited the concept to a response to the evaluation process (Giese & Cote, 2002). However, since the repair maintenance consists of both intellectual (e.g., plumbers' knowledge) and emotional (e.g., taking into account a tenant's schedule before making an appointment) events, both concepts are defined in the concept of tenant satisfaction. The concept of tenant satisfaction will be defined as follows for this thesis:

Tenant satisfaction is the evaluation of tenants on the repair maintenance service, which consists of a series of sequential events, both intellectual and emotional, in fulfilling an expected outcome.

5.1.2 The importance of tenant satisfaction

Measuring tenant satisfaction can initially provide insight into what satisfies tenants and adjust their products (homes) and services (such as repairs) accordingly (Birks & Southan, 1992). Satisfying tenants can help a housing organization achieve its own goals, such as improving the quality of life of tenants. The relationship between tenant satisfaction and the goals of an organization can be seen as a balance, in which the degree of tenant satisfaction determines the extent to which an organization can meet its goals (Birks & Southan, 1992). However, tenants in the social rented sector often have less choice to choose another home or service if they are not satisfied (Birks & Southan, 1992; Gubbay, 1999). This is because social housing systems are bureaucratic systems and not market-oriented systems (Centre for Housing Research, 1989). If the balance between tenant satisfaction and the goals of an organization cannot be achieved, this can lead to dissatisfied tenants.

The result can be diminished tenant loyalty, adverse advertising for tenants' housing associations, neglectful care of the home and surrounding area, and spending of income on things other than rent. It can be more difficult for housing associations to satisfy tenants because it is less possible to tailor a product or service for every tenant (Birks & Southan, 1992). All tenants and the environment must be taken into account. Nevertheless, housing associations should satisfy tenants as public objectives force housing associations to be more efficient and effective in maintenance expenditure (van Mossel & Straub, 2009). Improving tenant satisfaction in the maintenance process can also ensure that the maintenance performed meet tenant expectations.

5.1.3 Measuring tenant satisfaction

Surveys
Tenant satisfaction is measured by surveys (Satsangi & Kearns, 1992). In these surveys, tenants can indicate how satisfied they are with the service that has been provided. The satisfaction score is used as an indicator of the effectiveness or success of an organization. The results of the surveys provide insight into the wishes and needs of tenants. With this information, housing associations can further improve the quality of their services (Wilson, 2019). It also shows that they listen to their tenants in order to become more demand-driven.

Surveys were prepared according to the status framework before 2011 (Wilson, 2019). The problem with this method was its limitations. Certain questions had to be asked in a certain order and sent by post. The quality of the questionnaires was questioned. Later, housing corporations used the STAR (Survey of Tenants And Residents) method, which is still used by many corporations. The STAR method consists of a number of key questions about overall satisfaction, the quality of the home and satisfaction with repairs and maintenance. The surveys are sent to a random sample of tenants. The results are then compared and benchmarked. The STAR method appears to be an effective method to measure and benchmark tenant satisfaction due to its high degree of consistency.

However, the question remains what housing associations do with the results of the surveys (Wilson, 2019). Seventy percent of the housing associations believe that they do not make optimal use of the feedback from tenants and eighty-one percent of tenants do not know what the housing association is doing with the results of the surveys. To make optimal use of this, the collected information should be combined with tenant behavioral data to create a profile to gain insight into how residents interact with a housing association.

KWH rental label

The KWH rental label is a quality mark that housing associations can receive after an investigation into their services (KWH, n.d.b; KWH, 2019). This survey takes place every year and for housing associations that participate, it is determined on the basis of their results whether or not they will be awarded or renewed the quality mark. If awarded, the quality mark is valid for two years.

For the study, the service provision of a housing association is examined on five different aspects (KWH, 2019): general service provision, search for a home, new home, cancel rent, repairs and maintenance.
Tenants are invited through questionnaires to participate in the survey and to rate each of these five components. A 5.5 or higher is considered a pass and indicates that tenants are satisfied. In order to be awarded the KWH rental label, two requirements have been set: (1) a minimum score of 7.0 on all five components and (2) a minimum of 85% satisfied tenants per component.

With the KWH rental label, housing associations show that they offer good services and continue to investigate the valuation of their tenants (KWH, n.d.b.). If tenants do not value the service sufficiently, a housing association can also lose the KWH rental label.

5.1.4 Visitations

As previously described, tenant satisfaction plays an important role in achieving public objectives. Visitations are carried out to assess whether housing associations comply with these requirements. During a visitation, a housing association is assessed on their social performance (SVWN, n.d.). According to the Housing Act (Article 53a. of the revised Housing Act 2015), housing associations are obliged to have a visitation carried out at least once every four years (VTW, n.d.). During a visitation, a housing association is assessed in a number of social areas (SVWN, n.d.). The Foundation Visitation Housing Associations the Netherlands (SVWN, in Dutch:Stichting Visitatie Woningcorporaties Nederland) is an independent body and supervises visitations' quality and independent performance (Aedes, 2016). For this, SVWN has developed the assessment method, which is carried out for each assessment. Visitations can then be compared.

The visitation methodology assesses each housing association from four perspectives: (1) Tasks and Ambitions, (2) Stakeholders, (3) Assets, and (4) Governance (Corporatiestrateeg, 2018).

- In Tasks, the social performance is assessed compared to the corporation's social tasks in the past four years. Subsequently, the housing association's ambitions are assessed for its social performance.
- In Stakeholders, municipalities, tenant organizations, and care and welfare organizations can indicate how satisfied they are with the housing association in terms of social performance, the relationship and method of communication, and the degree of influence they have on policy.
- From the Assets perspective, it is examined whether the housing association makes optimal use of its financial resources to realize the social challenges. For this, it is important that the housing associations properly substantiate their financial choices and do not jeopardize the corporation's continued existence.
- Finally, in the case of Governance, a housing association is assessed on the quality of management, internal supervision, and external legitimacy.

The visitation method represents the demands that society places on housing corporations. Over the years, demands have grown, especially in the area of governance.

All findings are summarized by the assessment panel on a scorecard (Corporatiestrateeg, 2018). The visitation reports are public and can be found on the site of the Stichting Visitatie Woningcorporaties Nederland (SVWN, n.d.).

5.1.5 Tenant satisfaction and service quality

According to Bolton & Drew (1991), tenant satisfaction depends on the quality of service. There is a linear relationship between service quality and tenant satisfaction, meaning that as the quality of a service increases, tenant satisfaction will also increase and vice versa (Cronin & Taylor, 1992; Parasuraman et al., 1985). To measure the quality of service, Parasuramen et all. (1985) developed the SERVQUAL model. In this model, the service consists of five different perspectives, all of which can contribute to tenant satisfaction. The five different perspectives are tangible, reliability, responsiveness, assurance and empathy. See figure 21 for more explanation of the perspectives.

Perspectives	Explanation of perspectives
Tangible	tangible things, such as the staff, the facilities, appearance
Reliability	the ability of staff to perform services accurately
Responsiveness	the willingness of staff to help customers/tenants and to respond to problems tenants have
Assurance	the skills and knowledge of the staff to perform a service/repair and the courtesy of the staff
Empathy	efforts made to find out what the needs of tenants are and whether consideration has been given, for example, to stop by during suitable hours

Figure 21: Five perspectives of SERVQUAL model (own illustration, 2021, based on information from Parasuramen et all. (1985))

The SERVQUAL model is an effective tool to measure the quality of service (Bebko, 2001; Parasuraman et al., 1998; Zeithaml et al., 2006) due to the different perspectives (Gronroos, 1993).
The model is applied not only for general service analysis but also for repair maintenance service (Straub, 2006).
The five perspectives are also referred to as the quality dimensions of service delivery (Parasuraman, Zeithami & Berry, 1988).

5.1.6 Repair maintenance service

The repair maintenance service consists of a number of successive phases. The first phase is reporting, then planning, followed by execution (KWH, 2016). The last phase is the evaluation on the repair maintenance service (personal interviews, 2020 & 2021).

Reporting a repair can be done both digitally and by telephone. Still, most people prefer to report a repair over the phone (75% versus 8% via the website) (KWH, 2016). The other ways to report a repair are via email (7%), personally with an employee (8%) and in writing (2%). Despite the fact that most people use the telephone to report a repair request, there is an increasing appreciation for reporting online (KWH, 2016). If tenants opt for online reporting, traditional methods such as telephone and face-to-face contact are more highly valued, especially when the channel is user-friendly.

Scheduling is about scheduling an appointment. A study by the KWH (2016) shows that a quick settlement and keeping track of the date and time play an important role in tenant satisfaction. Satisfaction is highest when both factors have been taken into account. It is striking that taking into account the date and time receives a slightly higher rating than quickly handling a repair (6.9 versus 6.5) (KWH, 2016).

For repairs, housing associations have their own maintenance service or outsource this to companies. According to van Mossel and Straub (2007), 82% of daily maintenance is outsourced to external parties and 18% is carried out by housing associations' own maintenance services.

In the evaluation phase, questionnaires are sent to tenants where repairs have been made to collect data on satisfaction (Aedes, n.d.).

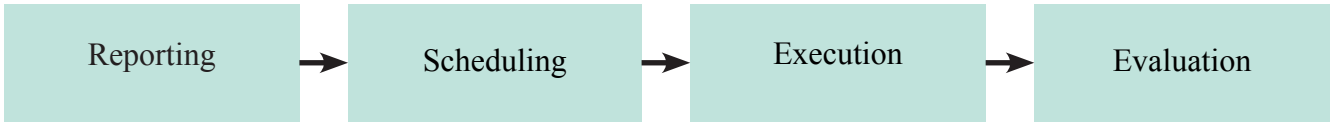


Figure 22: Repair maintenance service phases (own illustration, 2021, based on information from KWH (2016) and (personal interviews, 2020 &2021)

4.1.8 Combining tenant satisfaction and repair maintenance service

Besides that the SERVQUAL model measures the quality of a service, this model also makes it possible to analyze a service, such as the repair maintenance service, from five different perspectives. Combining the five perspectives with the phases of the repair maintenance service ensures that at each phase it can be determined what contributes to tenant satisfaction.

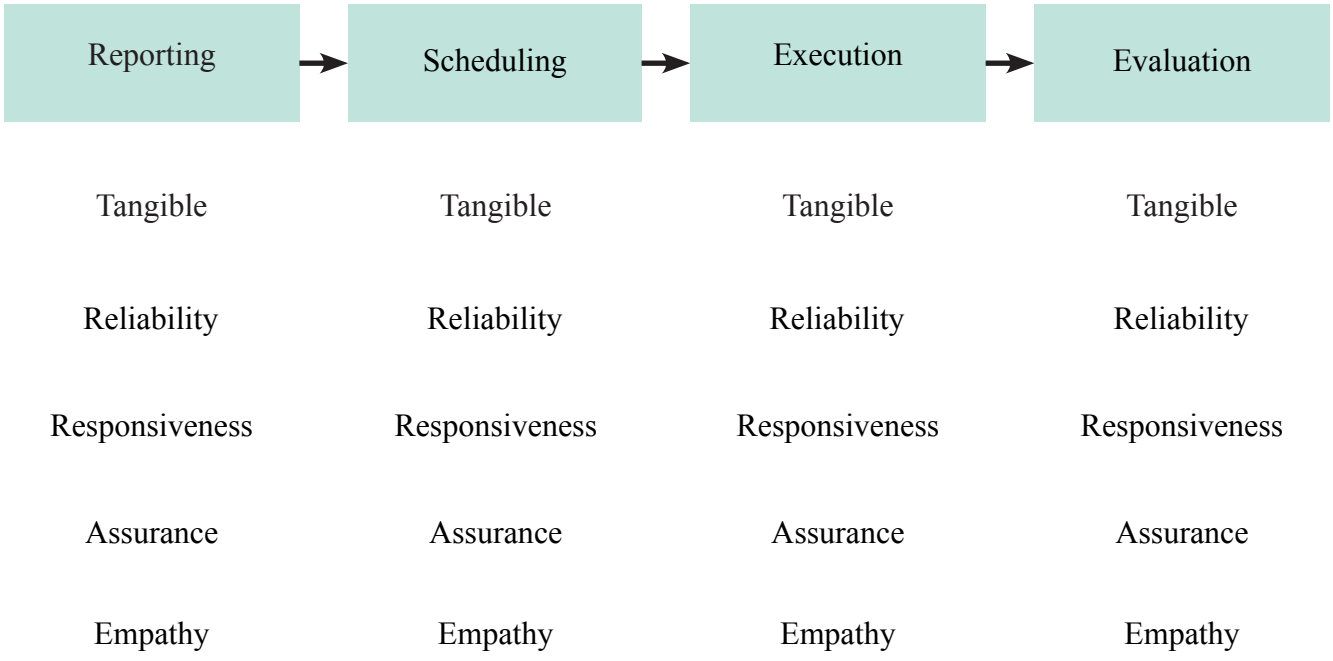


Figure 23: Analysis model teanant satisfaction regarding repair mainteannce (own illustration, 2021)

5.1.7 Responsibilities within repair maintenance

Housing associations are not responsible for all maintenance in and around their homes. In the ‘’ Small repairs decree ‘’ (in Dutch: Besluit kleine herstellingen), the responsibilities between the housing corporations and the tenant is stated with regard to maintenance (Rijksoverheid, n.d.).

If the tenant
is unable to carry out the minor repairs, it is possible to ask for help from the housing corporations. This is part of the service maintenance. Repairs are then carried out against payment (Van Mossel, 2008). In 1999, the ‘’arrangements relating to defects’’ (in Dutch: gebrekenregeling) were introduced to encourage housing corporations to carry out maintenance (Van Mossel, 2008). An independent rent committee can then lower the rent in case of a certain defect. This committee resolves disputes between the tenant and housing corporations.

5.1.8 Recent developments

Digitization
More and more housing associations are giving tenants the opportunity to submit a repair request online (Van Bortel, Zijlstra and Gruis, 2013). At some housing associations, it is even possible to follow a repair via face-time (Aedes, 2017). A study by Van Bortel et all. (2013) found that larger corporations give higher priority to online reporting and tracking repair requests than smaller housing associations. This is probably because small housing associations focus more on personal contact between the tenants. Larger housing associations more often opt for digitization because of the efficiency benefits due to the larger number of tenants. Making an online appointment is possible at 21% of the housing associations, which is less than reporting and following a repair request. Still, many housing associations want to give tenants the opportunity to submit repair requests and make appointments online.

Result-oriented maintenance
Although result-oriented collaboration or maintenance is not new and has been around for about twenty years (RGS, 2015), more and more housing associations are opting for this to improve their maintenance service (Aedes, 2019). In result-oriented collaboration, a housing corporation works together with partners for a long time (Aedes, 2019). A housing association does not make specifications, but agreements are made with the parties about the end result. The desired quality is recorded and the contractor is given more freedom to carry out the work.

Customer journey
Whereas the focus was on improving the internal organization and improving the digital service, the focus is now shifting towards the tenants (KWH, n.d.a). Housing associations discovered that the process was often focused on the organization instead of the tenant. As a result, unnecessary steps were often taken for the tenants and expectations were not clear. For this reason, more and more housing associations are conducting customer journeys in order to gain more understanding of the empathy of tenants. In a customer journey, the journey of a tenant is followed step by step. In this way, housing associations can quickly identify where quick wins can be made and improve their services to offer tenants the best possible service (KWH, n.d.b.). An additional trend is that housing associations are also more often inviting their chain partners when making a customer journey. Going through this process together ensures that all parties are involved in the service provided by the tenant.

In addition, the customer journey can be carried out for different target groups (e.g. starters, families, seniors) (KWH, n.d.a). This allows housing associations and chain partners to take into account the repair needs per target group. For example, a starter may have a different preference for reporting a repair than a senior.

5.2 Factors contributing to tenant satisfaction

5.2.1 Service related factors

Several factors can contribute to tenant satisfaction. To find out what contributes to this, it is important to know what tenants considers important when carrying out repairs. A study by Veuger and Straub (2006) identified 14 factors that tenants consider important in repair maintenance. The factors are:

1. the quality of the result of maintenance
2. fulfilling agreements about the planning of implementation
3. the professional competence of maintenance workers
4. the accessibility of information and complaints
5. first time fixed (performing maintenance correctly the first time)
6. preventing damage to personal property
7. flexibility in making appointments
8. limiting and cleaning up mess and dust around the workplace
9. participation through choice options in maintenance
10. limitation of the duration of work
11. the courtesy of maintenance workers
12. addressing it in your own language
13. limiting noise and vibration
14. the wearing of neat, recognizable company clothing by maintenance workers

These factors are also referred to as the determining factors of service quality in repair maintenance (Van Mossel & Straub, 2009). The factors are ranked according to the degree of importance of tenants (Veuger & Straub, 2006). This means that tenants consider the quality of the maintenance result to be the most important and that maintenance workers wear clean, recognizable company clothing as least important.

This is also confirmed by the tenant surveys of the KWH (n.d.a), which lists six factors that tenants consider important in repair maintenance, ranked according to the degree of importance of tenants:

1. that the result of the repair is good (44%)
2. that the repair is carried out quickly after reporting (18%)
3. that the executive employees work neatly and take account of me (15%)
4. that the repair is performed on a date and time that suits me (9%)
5. that the repair is performed in one go (5%)
6. that reporting repairs is easy (2%)

The above 6 factors can more or less be found in the 14 factors of Veuger & Straub (2006) and therefore form an extension of the factors already mentioned. Based on the above, the
following factors therefore contribute to tenant satisfaction:

- the quality of the result of maintenance
- fulfilling agreements about the planning of implementation
- the professional competence of maintenance workers
- the accessibility of information and complaints *(ease of reporting repairs)*
- first time fixed (performing maintenance correctly the first time)
- preventing damage to personal property
- flexibility in making appointments (*taking into account the date and time*)
- limiting and cleaning up mess and dust around the workplace
- participation through choice options in maintenance
- limitation of the duration of work (*the speed of performing the repair after reporting)*
- the courtesy of maintenance workers

- addressing it in your own language
- limiting noise and vibration
- the wearing of neat, recognizable company clothing by maintenance workers

Additional information about the first time fixed
The first time fixed means that a repair has been carried out correctly the first time and it is no longer necessary for a maintenance worker to come by a second time for the same repair. (KWH, 2016). Research by the KWH (2016) shows that tenants appreciate it when this is achieved. Tenant satisfaction grades drop as maintenance workers have to come in multiple times to fix the repair. The first time fixed can not only lead to a higher tenant satisfaction, but also to a (cost) efficient customer process.

Nationally, only sixty percent of repairs are carried out in one go (KWH, 2016). The other forty percent is not remedied at once or not at all. This leads to a situation where the tenant has to go after the problem himself to get the repair fixed. Also, it is then often not clear to the tenant who the contact person is within the housing association.

From a study by Tucker, Turley and Holgate (2014), eleven critical success factors have been identified that play an important role for an effective repair maintenance service, see figure 24. These factors are claimed to be necessary for an effective maintenance service the housing association. The success factors are not arranged in any particular order

Succes factor	Focus
Stakeholder opinion	Opinion of both tenants and staff must be considered
Value for money	Operational and strategic choices must be made with commercial awareness
Sustainability	Social, ecological and financial aspects must be considered
Service standards	Requirements must be clear, achievable and regularly reviewed
Performance	Must be monitored and measured robustly
Continuous improvement	Targets for improvement must be in place
In-house skills	Capabilities must be developed trhrough education and training
Procurement strategy	Correct approach must be investigated and adopted
Quality assurance controls	Vigorous procedures must be implemented
Efficient working practices	Efficiency must be reviewed and wast minimised
Innovation	Information technology and pioneering ideas must be embraced

Figure 24: Critical succes factors (own illustration, 2021, adapted from Tucker, Turley & Holgate (2014)

5.2.2 Other factors

Other factors that makes a major contribution to the living enjoyment of tenants are the type of mainteance (OTB, 2006). It shows that the maintenance of heating and water installations is the most important, followed by the maintenance of the hinges and locks of windows and external doors, and the maintenance of elevator installations. In general, tenants are relatively positive about this. Factors that score high for the living enjoyment of the tenants, but low for satisfaction, concern the maintenance of ventilation systems, the bathroom, communal areas such as galleries, porches, and corridors, but also the cleaning of communal areas.

5.3 Organization

5.3.1 Definition of organization

The term organization can be defined in several ways. According to Keuning and Eppink (2001), an organization is a complex of resources for achieving certain objectives. And according to Schein (1997), an organization is the rational coordination of activities of a number of people who try to achieve a certain common goal through division of labor and hierarchy of authority and responsibility. A slightly different definition is given by Katz and Kahn (1978): an organization is an open social system that withdraws resources from its environment, then changes these resources and finally returns them to that environment.

A more dynamic approach to the phenomenon of an organization is given by Morgan and McKinsey. According to Morgan (2011), an organization can be viewed from different perspectives: a machine, an organism, a cultural whole, or, for example, a psychological prison. It is a dynamic, but unstructured approach.

A more dynamic and structured approach is the 7S model of McKinsey, founded by Waterman, Peters & Philips (1980). In this model, there are seven elements that can be used to analyze an organization. The seven elements are: strategy, structure, style, staff, skills, systems and shared values. See figure 25.

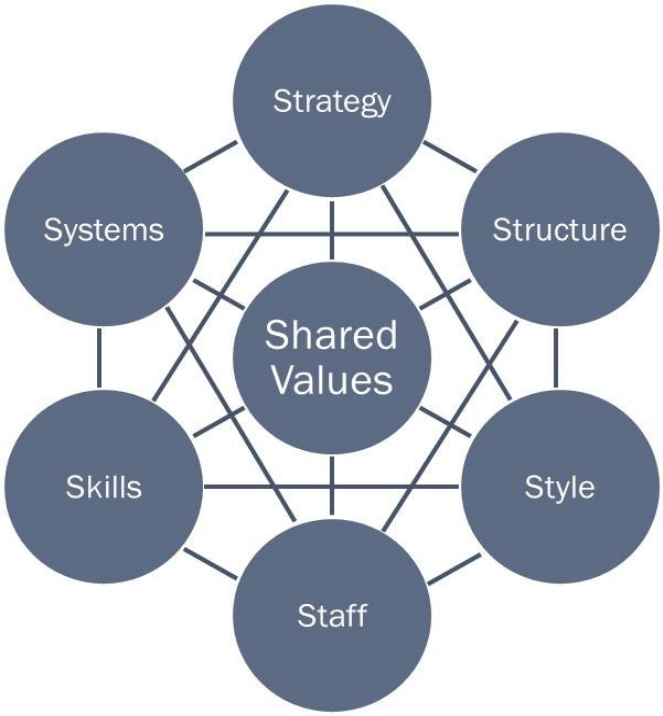


Figure 25: 7S model (adapted from Waterman, Peters & Philips, 1980)

The seven elements are generally divided into hard elements (structure, strategy and systems) and soft elements (staff, key skills, style and shared values). Because of the shared values, all elements are interconnected. When all elements are in harmony, an organization can be effective.

The structure refers to the organizational structure, such as the division of tasks and responsibilities within an organization. Strategy is about how the organization wants to achieve its objectives. The system includes all formal and informal ICT systems, communication systems, working methods, procedures and agreements within an organisation. The staff element is the employees within an organization. This concerns the motivation, flexibility, absence and diversity of the staff. The style is the leadership style of managers towards the employees. The last element, the shared values, concerns the vision and mission of an organization and relates to the culture of an organization. It is also known as the DNA of the organization.

5.4 Main findings of literature review

The definition for tenant satisfaction regarding repair maintenance is: *Tenant satisfaction is the evaluation of tenants on the repair maintenance service, which consists of a series of sequential events, both intellectual and emotional, in fulfilling an expected outcome.* Tenant satisfaction is important because it provides insight into which adjustments are needed to satisfy tenants, which is important in meeting social goals and the own goals of a housing association. Tenant satisfaction is also a kind of yardstick that indicates the extent to which an housing associaiont can meets its own goals. Tenant satisfaction is generally measured with surveys. In the Aedes benchmark, the tenant satisfaction is measured with regard to repair maintenance. this is compared with all participating housing assocaiotns. visitations are conducted to investigate whether housing associaionts meet the social objectives, such as satisfying tenants in repair maintenance.

Tenant satisfaction depends on the quality of the service provided, which is measured by the SERVQUAL model. This model consists of five perspectives, all of which play a significant role in tenant satisfaction. The repair maintenance service consists of four phases: reporting, scheduling, execution and evaluation of a repair. To investigate what contributes to tenant satisfaction, the five perspectives have been combined with the phases of the repair maintenance service in an analysis model.

Recent developments in the repair maintenance service is the digitization for the submission of repairs, result-oreinted maintenance and the customer journey to gain insight into the tenant's perception.
Several factors contribute to tenant satisfaction. To provide an overview of the factors within the repair maintenance process, these factors are combined and implemented with the four repair maintenance processes and the five perspectives, resulting in the literature framework of factors (see figure 26).

In order to investigate which factors contribute more or in practice to tenant satisfaction with regard to repair services, further research will be carried out with the empirical research. This will be done using the analysis model, which combines the five perspectives and the four phases of the repair maintenance service (see figure 22). The analysis organization model will be used to analyze the organization.

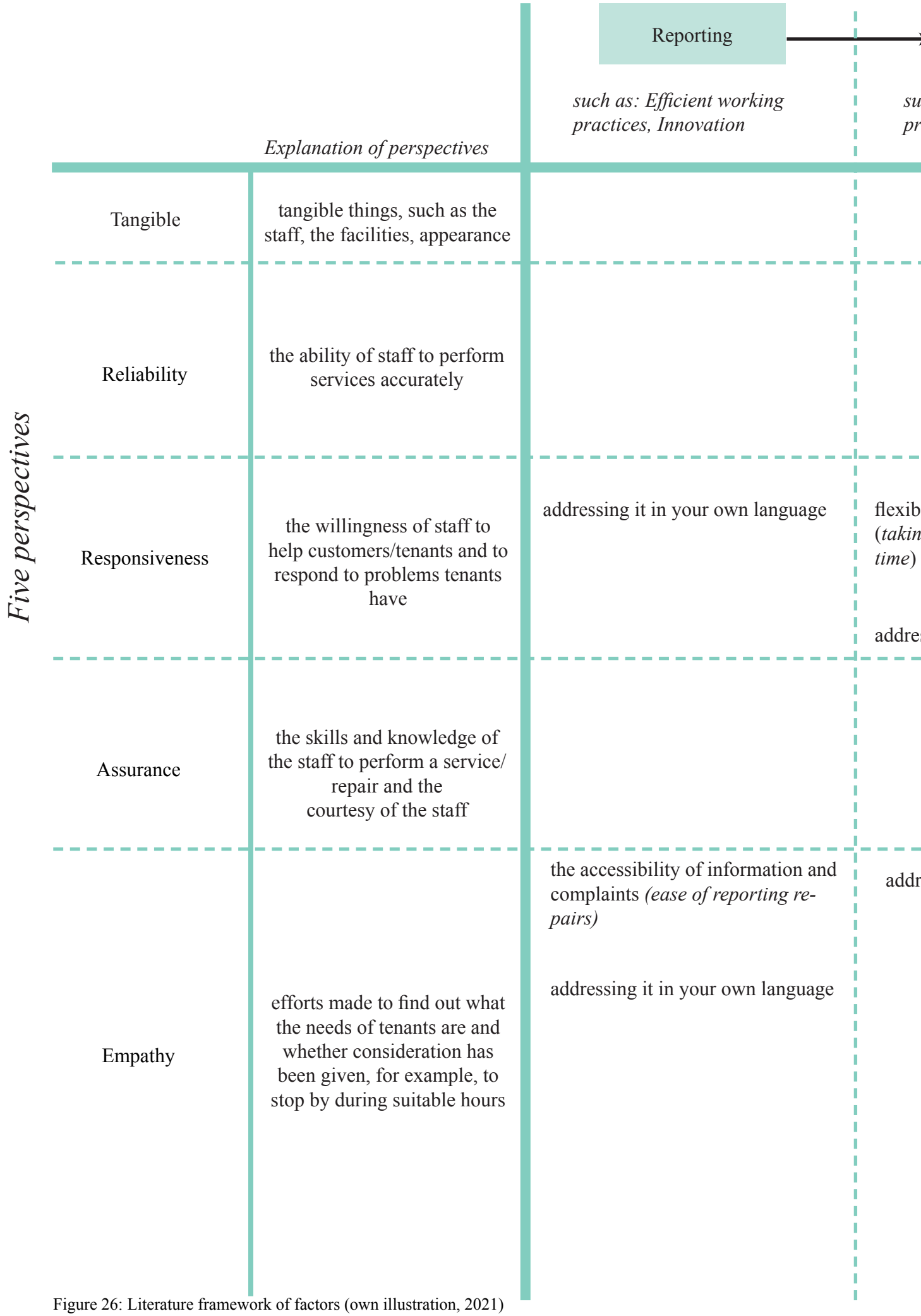
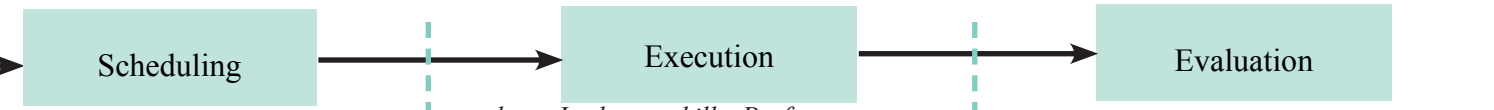


Figure 26: Literature framework of factors (own illustration, 2021)

Repair maintenance service phase(s)



Scheduling	Execution	Evaluation
ch as: Efficient working actices, Innovation	*such as: In- house skills, Performance, Procurement strategy, Efficient working practices, Quality assurance controls, Value for money, Sustainability, Service standards*	*such as: Stakeholder opinion, Continuous improvement*
	the wearing of neat, recognizable company clothing by maintenance workers	
	fulfilling agreements about the planning of implementation	fulfilling agreements about the planning of implementation
	first time fixed (performing maintenance correctly the first time)	
ility in making appointments *g into account the date and*	limitation of the duration of work (*the speed of performing the repair after reporting)*	addressing it in your own language
ssing it in your own language	addressing it in your own language	
	the quality of the result of maintenance	
	the professional competence of maintenance workers	
ressing it in your own language	preventing damage to personal property	addressing it in your own language
	limiting and cleaning up mess and dust around the workplace	
	participation through choice options in maintenance	
	the courtesy of maintenance workers	
	addressing it in your own language	
	limiting noise and vibration	

6

CASE STUDY & INTERVIEW RESULTS

6

CASE STUDY & INTERVIEW RESULTS

The previous chapter (chapter 5) examined what contributes to tenant satisfaction concerning repair maintenance in the literature. This resulted in the literature framework in which the phases of the repair maintenance, the perspectives of the repair service, and the most important factors are summarized in a table. In the current chapter, the factors in the literature framework are re-examined to find out how housing associations try to maximize tenant satisfaction in practice. This is important because expert experience can provide valuable input on how repair maintenance can be organized to provide the best possible service to tenants.

This chapter adds information based on case studies. Each case consists of a housing association, in which interviews took place with representatives of the housing association and document analysis of the relevant housing association.

6.1 Outline of this chapter

Section	Topic	Content summary
6.2	Interviewed case studies	provides an overview of the interviewed housing associations and their representatives
6.3	Structure of case description	explains how the cases will be described in the next section
6.4 - 6.9	Case studies - Case 1: Woonopmaat - Case 2: Portaal - Case 3: Stichting Woonwaarts - Case 4: SWZ - Case 5: deltaWonen	describes the main features of each case study based on data obtained from interviews and documentation

Figure 27: Outline chapter 5 (own illustration, 2022)

6.2 Interviewed case studies

Based on the selection criteria (see section 3.2) and the Aedes Benchmark, six housing associations were ultimately interviewed to carry out the case studies. A total of fourteen semi-structured interviews were held for this purpose. For each housing association, the starting point was to speak to the director, the manager of the repair maintenance, and the tenants' organization. This was successful in two of the six housing associations. In the other four cases, it was possible to speak to either the housing association director or the repair maintenance manager. The interviewed housing associations and participants are summarized in the table below (see figure 28):

Housing association	Representatives of housing association	Code
Woonopmaat	Director	Participant 1A
	Manager repair maintenance	Participant 1B
	Secretary tenant organisation	Participant 1C
	Member tenant organisation	Participant 1D
	Member tenant organisation	Participant 1E
Portaal	Director	Participant 2A
	Director of VOC, independent maintenance company of housing association Portaal	Participant 2B
	Program manager	Participant 2C
	member of tenant organisation of Portaal Utrecht region	Participant 2D
Stichting Woonwaarts	Manager repair maintenance	Participant 3A
	Operational manager service and communication	Participant 3B
SWZ	Director	Participant 4
deltaWonen	Director	Participant 5

Figure 28: Selected case studies & interviewed representatives (own illustration, 2022)

6.3 Structure of cases description

In order to be able to analyze the cases at a later moment for a cross-case analysis, the description of the cases will be written according to the same structure. First, each case study starts with general information about the relevant housing association. This information shows, among other things, the number of rental units of the housing association, the location and the tenant satisfaction grade. Secondly, the interviews are transcribed and analyzed on the basis of eleven analysis variables within the four phases of maintenance: (1) reporting, (2) scheduling, (3) execution and (4) evaluation (see Figure 29). The content of this description comes from data collected from the interviews and documentation of the housing association in the field of repair maintenance. The latter contains both information about the policy of the housing association and the organization of the housing association in the field of repair maintenance.

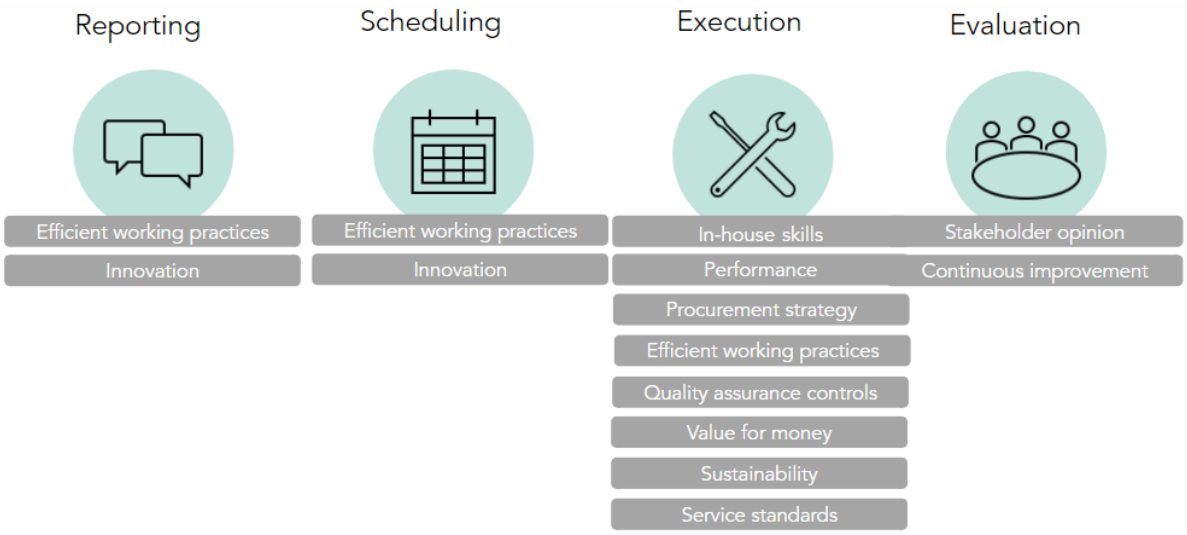


Figure 29: Phases of repair maintenance and the eleven variables (own illustration, 2022).

6.4 Case study 1: Woonopmaat

6.4.1 General information

Woonopmaat is a local housing association in Heemskerk, Beverwijk and Wijk aan Zee (Woonopmaat, 2021). This housing association has 9,274 rental units (VHEs) and 78 employees. Woonopmaat also participates in the Aedes Benchmark and in both 2019 and 2020 tenants gave an average of nine for repair maintenance (Aedes Benchmark, 2020).

Woonopmaat has a one-man board and a supervisory board with five members (Woonopmaat, 2021). The Supervisory Board supervises the board and the general course of affairs internally.

6.4.2 Collection of data

Three semi-structured interviews were held for the Woonopmaat case. The first interview was held with participant 1A. Participant 1A is the managing director of Woonopmaat. Participant 1A leads the organization and ensures that all objectives of the organization are achieved, including in the field of repair maintenance. Participant 1A also takes board decisions (often in consultation with the management team) and conducts administrative consultations with the tenants' organization and other stakeholders on behalf of the housing association.

The second interview was held with participant 1B. Participant 1B is a housing manager and is responsible for housing management and developing hospitable services for repair, maintenance and in general.

The third interview was held with participants 1C, 1D and 1E. All these three persons are members of the tenants' association of Woonopmaat, the Huurdersplatform. Together with other members of the Huurdersplatform, they represent the interests of tenants/residents and contribute ideas to the policy of the housing association in the field of maintenance, sustainability and other matters, such as quality of life and finances.

6.4.3 Policy & organization regarding repair mainteance

Seven themes

The policy at Woonopmaat consists of seven core themes, including (1) hospitable services, (2) a suitable home, (3) an affordable home, (4) sustainable living, (5) a pleasant neighbourhood, (6) together and (7) house in order (Woonopmaat, 2019). Of all these themes, theme 1 and theme 6 go deeper into the repair maintenance process. These are therefore further described below.

Theme 1: Hospitable services

In the 2019-2023 Koersplan, one of the goals of the housing association are offering optimal customer contact and ensuring proper maintenance. This translates into offering tenants various options to reach the housing association, such as submitting repair requests (personal interview 1A, 2021). In the future, for example, young people can submit a repair request via an app. Another option is to report malfunctions live in the evening to the call center, where an appointment is made immediately when it suits the resident (Woonopmaat Koersplan, n.d.).

Theme 6: Together

To increase the involvement of residents, Woonopmaat has drawn up the principle of actively collaborating with the Huurdersplatform (Woonopmaat course plan, n.d.). Every resident can and is allowed to contribute ideas about the policy choices. Together with the Huurdersplatform, Woonopmaat has drawn up a vision on resident involvement, which leads to a mix of formal and informal ways of contacting each other and becoming acquainted with each other's expectations in order to arrive at choices and solutions together. To this end, Woonopmaat will continue to work with working groups and sounding board groups (in Dutch: klankbordgroepen). New forms, such as a senior panel and a customer panel, will be added to this. Residents are represented in this and actively contribute ideas.

In the maintenance process, blockchain technology also involves collaboration in the chain with suppliers (Woonopmaat course plan, n.d.).

Financial
With regard to the financial aspect, the maintenance of housing is controlled on the basis of an annual budget. The aim is to use a maximum of 25% of the rental income on maintenance. In 2020, 24% of the rental income will be used for this. Due to the pandemic, some maintenance work has been postponed and fewer housing changes have been carried out, which has resulted in this result.

6.4.4 Organization regarding repair maintenance

Repair requests can be submitted by telephone, but also via the Woonopmaat website by completing a repair form (Woonopmaat, n.d.a). You will then be contacted within five days to make an appointment. And the repair request is processed within ten days. Urgent requests are handled within twenty-four hours.

In the Maintenance ABC, Woonopmaat has summarized the repairs that fall under the responsibility of the housing association (Woonopmaat, n.d.b). The Maintenance ABC is part of the lease.

6.4.5 Successfactors in the four phases of repair maintenance from interviews

Reporting & Scheduling

Efficient working practices
For an efficient working method for reporting a complaint, the emphasis is on personal telephone contact. Although digitization plays an increasingly important role, most repair requests are passed on by telephone at Woonopmaat. Participant 1A does indicate, however, that this is likely to change because younger tenants want to be served in a different way than older tenants. Older people have a greater need for personal contact, while younger tenants make more use of online channels. That is why it is important to have multiple channels for reporting a repair, such as via the website, over the phone and probably via whatsapp in the future. According to the secretary of the tenants' organisation, participant 1C, direct contact with the contractors plays a major role in addition to good accessibility. This allows tenants to be connected directly to the contractor of the repair request and to explain their complaint. This is done via a menu, where tenants can choose from eight options. Each option is responsible for some kind of repair maintenance. If tenants do not give a choice in this menu, they will automatically be connected to the service desk, where they will be assisted further.

Innovation
The customer persona system is one of the developments within Woonopmaat. With the customer persona system, tenants are clustered into a group of a tenant type. The types of tenants can consist of tenants with a younger age, tenants with an older age, singles, families and tenants with care needs. The customer persona system helps with tailor-made services. The customer persona has been created in collaboration with a specialized agency and contains data such as: personal data, the age of the person, type of home where he/she lives, what is important to him/her. This system is used to improve the service and developments related to the service, such as the repair maintenance service. For example, for repair maintenance, tenants are divided into different types of tenants and it is examined how they want to be helped.

Execution

In-house skills
The repair maintenance is outsourced at Woonopmaat to the company Huipen B.V. So there are no in-house skills with regard to repair maintenance.

Procurement strategy
A performance contract has been concluded for the repair maintenance. This contract includes agreements made about for example, how quickly repairs should be resolved or accessibility and customer satisfaction. Agreements on tenant satisfaction include how quickly tenants must be helped, within what period appointments are scheduled and how long it takes before someone comes to carry out the repair. For this contract, an amount is paid once for a whole year for the resolution of all technical defects within the repair maintenance.

Performance
In order to keep track of performance, agreements have been made in the contract about the number of meetings per year. Meetings are held every two weeks between Woonopmaat and employees of Huipen B.V. who deal with repair maintenance on a daily basis and meetings are held every three months at board and management level. With this, Woonopmaat tries to monitor the repair maintenance process and to discuss developments with the contracted party. Results are also evaluated and, if necessary, discussed how things can be improved.

The contract also includes a reward mechanism for the performance of Huipen B.V. A bonus is paid if the service goes well and a penalty discount if it does not go well.

Efficient working practices
Woonopmaat has agreed a fixed amount per year with the service partner for carrying out the repairs, but also for the expected service. For example, a separate invoice is not sent for every repair. The contracted party therefore tries to look at what else they can immediately solve during an appointment, so that they do not have to visit several times if they can solve this immediately or have material that can solve this immediately.

Another important working method is about minor repairs (in Dutch: kleine herstellingen) within repair maintenance. According to participant 1B, part of the minor repairs is also included in the repair maintenance. This is called the maintenance ABC and in this a number of repairs that are actually the responsibility of the tenant, would fall under the responsibility of Woonopmaat.

Quality assurance models
To guarantee quality, data is monitored with a dashboard. This dashboard contains requirements set for the repair maintenance service, which are expressed in KPIs. There are two types of KPIs: qualitative performance indicators and quantitative performance indicators. The first type is divided into a number of categories: telephone accessibility, customer contact and repair requests, response time, realization, customer satisfaction (survey) and surveys not completed. For the quantitative performance indicators, the numbers of calls accepted per week, orders scheduled per maintenance worker per week, notifications received by e-mail per week and inspections are examined.

The dashboard is updated daily and re-evaluated monthly within the organization.

Value for money
By outsourcing the maintenance, making clear agreements with the service partner about the expectations regarding the repair maintenance and costs and conducting periodic evaluation interviews, Woonopmaat tries to provide the best possible service to tenants.

Sustainability
During the interview no information was recorded about sustainability regarding the repair maintenance.

Evaluation

Stakeholder opinion
After a repair, tenants receive an email for evaluating the repair performed and their satisfaction. For any disputes between the tenant and the housing corporation, tenants can ask help from the tenant platform. If there are complaints about the repair maintenance, the tenant platform can enter into a discussion with the housing

association for the tenant to see how this can best be solved. The tenant platform then first of all states the complaint in the system with the tenant's details, such as name and address and forwards this to the housing association. The file with all the complaints is sent prior to a meeting with the housing association. Every six weeks there are meetings with the housing corporation, in which these complaints can also be discussed.

Continuous improvement
In order to continuously improve service and repair maintenance, Participant 1A emphasizes following the trends in society, such as offering different ways to submit a repair request (e.g. whatsapp) and also asking tenants explicitly what they find important in order to meet the expectations and needs of tenants. For the latter, for example, Woonopmaat organizes several meetings to talk to tenants and involve them in the developments of Woonopmaat.

''...try to have a good conversation with tenants, so monitor very carefully what they think, but sometimes also just go talk to tenants either one-on-one or with groups and try to understand what tenants find important. Because we always think that you as a housing association know this, but very often that is not the case at all. '' - Participant 1A, personal interview, 2021

6.5 Case study 2: Portaal

6.5.1 General information

Portaal is a housing association with 53,423 housing units spread over five regions: Utrecht, Leiden, Eemland, Arnhem and Nijmegen (Portaal, 2020). A total of 522 employees work at Portaal, including VOC employees. In both 2019 and 2020, this housing association received an eight from tenants in the field of repair maintenance in the Aedes Benchmark (Aedes Benchmark, 2020).

Portaal has a two-member board, consisting of Dirk Jan van der Zeep (chairman of the board) and Sander Heinsman (director) (Portaal, n.d.a). The board of directors is in charge of the day-to-day management and determines the long-term strategy. Furthermore, Portaal has its own maintenance company Vastgoed Beheer Centrale (VOC) (Portaal, n.d.b.). The VOC is an independent maintenance company and a 100 percent subsidiary of Portaal (VOC, 2022). In addition to repair maintenance, VOC is also responsible for the mutation maintenance, home improvement, medical adaptations to homes and breakdown services.

6.5.2 Collection of data

Four semi-structured interviews were held for the Portaal case.
The first interview was held with participant 2A. Participant 2A is one of the members of the two-member board at Portaal.
The second interview was held with participant 2B. Participant 2B is the director of the Real Estate Maintenance Center (VOC). Participant 2B is in charge and coordinates maintenance, including repair maintenance, at VOC.
The third interview was held with participant 2C. Participant 2C is program manager at Portaal and responsible for resident satisfaction and collaborating with contract partners for Portaal's maintenance needs.
The last interview was held with participant 2D, who is a member of the Portaal tenants' association in Utrecht.

6.5.3 Policy & organization regarding repair maintenance

A repair request can be submitted via the site or via Portaal's customer service department (VOC, 2022). After submitting a request, the work will be carried out by the VOC. A team is responsible for repair maintenance for each of the locations (Utrecht, Amersfoort, Nijmegen and Oegstgeest) (personal interview, 2021). This means that there are four teams: team Utrecht, team Amersfoort, team Nijmegen and team Oegstgeest. Each team is headed by a team manager. The team manager, together with his team, consisting of an administrative employee and maintenance employees, takes care of the repair maintenance. The four team managers are also managed and led by the director.

The VOC employs its own personnel. This also means that most of the repair maintenance is carried out by own staff. External companies have only been hired for specific work, such as sewers or elevators (personal interview 2A, 2021).

Customer satisfaction surveys

Portaal conducts a large-scale customer satisfaction survey every two years (Portaal, 2019). These surveys consist of: general services, the residents' panel, maintenance and new and departed tenants and the Aedes Benchmark.

In 2019, 7364 tenants took part in the survey on general services (Portaal, 2019). A 6.4 was scored for this part. This shows that tenants believe that the agreements are not being kept (there is no call back). Furthermore, tenants do not feel heard because the answer is not forthcoming for too long or their question is insufficiently answered. To improve this, Portaal has started a new customer satisfaction survey, which is conducted immediately after a customer question has been reported as ready (Portaal, 2020). In this way an attempt is made to intervene more quickly if necessary. All employees with outstanding customer questions also receive a reminder at the start of the working week. This will have had a positive effect on the number of questions answered and the processing time. Accessibility was also a point of attention in 2019 (Portaal, 2020). It is therefore planned to go live in 2021 with a new telephone exchange to improve this accessibility.

The residents' panel is a digital questionnaire, which was used twice in 2020. This research consists of two parts. In the first part, input was obtained from 425 panel members on themes in the new business plan (2021-2028). These themes are: the relationship between Portaal and its tenants, the service provision, inclusive neighbourhoods, sustainability and suitable living. In the second part of the study, 21 telephone interviews were conducted with residents aged 55 or older about their considerations about moving or not and what Portaal can do about this. For the first part, it appears that more than eighty percent find it (very) important to be able to contact Portaal with questions via digital means. For questions, tenants prefer to call (37%) or ask the question online (30%). About 8% of the respondents prefer personal contact via the front desk or district manager. The majority of respondents prefer to report simple matters online and in person in case of questions. Opinions are divided on the possibility of reaching Portaal in the evenings or at weekends. Slightly more than half think this is not important and slightly less than half do. 67% do not mind possible nuisance due to appointments in the evenings or weekends (Portaal, n.d.c).

With regard to maintenance and the Aedes Benchmark studies, the maintenance company VOC scores an 8.3 for the service in 2019. The satisfaction with the external companies for maintenance is 7.5 in 2019. In the Aedes Benchmark, Portaal scores in both 2019 and 2020 an 8 in the area of repair requests. Furthermore, last year 10.4 million euros was spent on repair maintenance on a budget of 10.5 million euros (Portaal, 2020).

6.5.4 Successfactors in the four phases of repair maintenance from interviews

Reporting & Scheduling

Efficient working practices
At Portaal, tenants can online schedule a repair themselves instead of having an employee schedule it. This allows tenants to choose the day and time that they want someone to come by for a repair. Another efficient working practice is that an appointment is not canceled if a maintenance worker is ill. The appointment is then scheduled with another maintenance worker, so that the tenant can be helped. With this, Portaal tries to prevent repairs that can no longer be carried out if a maintenance worker is ill.

Innovation
One of the innovations at Portaal is the automation system, whereby the maintenance worker can schedule an appointment himself on his telephone if he has to come by again for the repair. It is then not necessary to contact the Vastgoed Onderhoud Centrale (VOC) by telephone and to report this, but this can be done immediately after the repair if necessary.

Another innovation is that tenants receive a text message for a repair, so that the tenant knows when the maintenance worker will come by and is reminded to stay at home. On the one hand, Portaal tries to keep the tenant informed about the repair and, on the other hand, to prevent failure costs if, for example, the maintenance worker has arrived at the house for a repair, but the tenant turns out not to be at home. The costs incurred for the journey are then an example of failure costs.

Execution

In-house skills
As said before, the repair maintenance is the responsibility of the VOC. This has been chosen so that one party is responsible for the entire maintenance process, from reporting to implementation. In addition, VOC employs skilled people who carry out maintenance efficiently and correctly. This company has 270 employees, 170 of whom are maintenance workers. The other employees are responsible for the customer contact center. At the VOC, maintenance workers are selected on the basis of their technical skills, but also their customer-friendliness. At the VOC academy, maintenance workers are trained and educated to become all-round maintenance workers.

Performance
Performance is tracked with a dashboard. This dashboard contains all performance from employees to subcontractor level. With this dashboard, if necessary, discussions are held with subcontractors if there is a lower tenant satisfaction grade from tenants.

Efficient working practices
In each region (Utrecht, Leiden, Eemland, Arnhem and Nijmegen), a team is responsible for carrying out maintenance. A team consists of a supervisor, administrative employee and maintenance workers. People have been set up for the repair maintenance who only carry out minor repairs all day long. These maintenance workers have a bus with materials and tools and drive around the neighborhood to carry out the repair requests. Other parties are called in for more complex repairs. These are often parties with whom contracts have been concluded.

Quality assurance models
A dashboard, as described under the heading performance, is used to keep track of the quality and to monitor this.

Value for money
To reduce failure costs, the service is continuously improved, as described previously by sending a text message and working with maintenance workers who are responsible for a certain neighborhood in a region. The long-term contact between the maintenance workers and the tenant ensures reliability. There is often a permanent maintenance worker responsible for every neighborhood in a region. The maintenance worker then becomes a familiar face to the tenants in that neighborhood. As a result, the maintenance worker knows the tenants well and this ensures that tenants have confidence in the maintenance worker.

Sustainability
During the interview no information was recorded about sustainability regarding the repair maintenance.

Evaluation

Stakeholder opinion
After a repair, tenants receive an online questionnaire, where they can give their assessment of the maintenance performed. In addition, feedback is also tracked with a customer panel. This is an online customer panel for all Portaal tenants. Tenants can give their opinion on all kinds of topics here. In addition to maintenance, it is also possible, for example, to give your opinion about customer service, the website, and so on. Tenants receive an email with a link for the online survey.The unsatisfactory grades are called after and the tenants are asked what did not go well and the reason for giving an unsatisfactory mark. With this information VOC tries to improve the service.

Continuous improvement
For this topic, the emphasis is on managing expectations. Previously, maintenance schedules were not shared with the resident. But now, for example, replacing a shower, which can take a week, the work schedule is shared. The resident is then aware of the work and does not have to take an extra day off from work, because he/she knows when the maintenance worker will come by. For repair maintenance, Woonopmaat tries to inform tenants by sending text messages when they are almost there or by reminding tenants of the upcoming appointment.

6.6 Case study 3: Stichting Woonwaarts

6.6.1 General information

Woonwaarts managed 11,847 homes in Beuningen, Druten and Nijmegen (Woonwaarts, 2020). The staff consists of 115 employees. In 2019, Woonwaarts achieved a 7.7 in the area of repair maintenance from tenants (Aedes Benchmark, 2020). This has risen to 8.1 in 2020. Woonwaarts was created in 2019 from a merger between Housing Association De Community and Stichting Standvast Wonen (Woonwaarts, 2019).

6.6.2 Collection of data

Two semi-structured interviews were held for this case. The first interview was held with participant 3A, who is the (repair) maintenance manager. The second interview was held with participant 3B, who is the operational manager of service and communication.

6.6.3 Policy & organization regarding repair maintenance

Woonwaarts has five policy objectives: (1) sustainability/transformation in neighbourhoods, (2) socially sustainable neighbourhoods, (3) participation structure and policy, (4) accessibility, local anchoring and visibility and (5) transformation and renewal. With regard to tenant satisfaction, topic four discusses this in more detail. For this purpose, the aim is to gain visibility in the neighborhood in order to provide tailor-made solutions and improve services. To this end, continuous research is conducted into tenant satisfaction and employees are trained and facilitated. The housing association is also in talks with tenant organizations to further shape the collaboration and to have more contact with the tenants.

6.6.4 Successfactors in the four phases of repair maintenance from interviews

Reporting & Scheduling

Efficient working practices

Reporting a repair request goes through the call center. Woonwaarts tries to help residents with the repairs within five working days. To ensure that the appointment runs as smoothly as possible, a repair is first scheduled for a time block to keep the planning flexible. Two days before the appointment, the tenant will receive a message with the definitive time, so that a tenant does not have to wait unnecessarily on the day itself. The moment the professional starts driving, the resident receives another text message that they are on their way and approximately what time they will arrive.

Innovation

The work was previously scheduled as standard for three quarters of an hour, but nowadays that has become one hour. Because of this change, it is rare that the repair is not completed or that maintenance workers do not have enough time for the repair and that they have to visit more often. As a result, the repair can be completed more often in one visit. Another innovation is the investment in an automation system for scheduling appointments, so that more time can be spent on communicating with residents.

Execution

In-house skills

Most repairs are solved by their own maintenance service. For some activities, Woonwaarts has contracts with external companies. After making a repair, if the repair is not successful, the resident will be informed of the reason for the failure, what will be done and how it will be done to resolve the repair.

Procurement strategy

One of the requirements for choosing a third-party company to work with is to have the same mindset regarding helping the resident and achieving goals together, such as solving a repair within five days.

The social involvement of an external company is also examined, such as offering internships and workplaces for people with a distance to the labor market.

Performance
The in-house maintenance service achieves a higher customer rating than the hired contractors due to the recognisability and involvement of the maintenance worker. As a result, the maintenance worker has become a permanent point of contact. These workers also often know the homes and people better because they have visited more often or sometimes for years.

Efficient working practices
After carrying out a repair, the maintenance worker also looks at what can be repaired immediately, instead of making a new appointment. And if a repair takes place several times in the same complex, it is scaled up and put into project form so that several residents do not have to call.

Quality assurance models
During the interview no information was recorded about quality assurance models regarding the repair maintenance.

Value for money
It was considered to outsource all repair maintenance, but because of the higher customer appreciation of the in-house maintenance service compared to the external companies, it was decided to keep the in-house maintenance service. On the other hand, it has been decided to cooperate with external companies for repair maintenance in connection with the costs. If all maintenance is carried out by our own maintenance service, the costs would be too high. At the moment it has therefore been decided to retain the in-house maintenance service, but also to work together with external companies.

Sustainability
During the interview no information was recorded about sustainability regarding the repair maintenance.

Evaluation

Stakeholder opinion
After a repair, tenants receive a survey, in which residents can indicate what they are satisfied or dissatisfied with. Dissatisfied tenants are called back to investigate what can be improved. This sometimes shows that tenants give a low score for other matters that are not always related to repair maintenance, such as the way in which a resident was addressed by a maintenance worker. By calling after the call, the reasons for giving a low grade are found out more quickly and a faster response can be made.

Continuous improvement
At the moment there is little contact with the tenants' association and the contractors about the repair maintenance because of the satisfied results. The next step is therefore to make periodic agreements with external parties to investigate what can be improved.

6.7 Case study 4: SWZ

6.7.1 General information
SWZ is a housing association in Zwolle with 8503 rental units and 89 employees (SWZ, 2019).

6.7.2 Collection of data
A semi-structured interview was held for the SWZ case. The interview was held with participant 5, who is the director of SWZ. Participant 5 has recently started working at SWZ as director and involved in repair maintenance in the policy and organization.

6.7.3 Policy & organization regarding repair maintenance
The SWZ has its own maintenance service and tenants can conclude a service contract for an amount of 5.24 euros per month (SWZ, 2020). In 2020, 6207 tenants made use of this option. With this contract, tenants are entitled to a number of free repairs and a maintenance worker visits every two years to carry out preventive maintenance. On the one hand, SWZ wants to have a contact moment with the resident once every two years and, on the other hand, to reduce repair maintenance.

Direct telephone numbers are available for some repairs, which can be reached both in the evenings and on weekends. These are the services for a clogged sewerage, broken window, water pipe leakage and central heating (SWZ, n.d.).

6.7.4 Successfactors in the four phases of repair maintenance from interviews

Reporting & Scheduling

Efficient working practices
Residents can submit a repair request by logging into the account on the site. Little use is made of this yet. The aim is to encourage tenants to make more use of this option. Most of the tenants now submit a repair request over the phone.

Innovation
Digitizing the submission of a repair request is one of the developments at SWZ. The advantage of this is that a tenant can describe the complaint himself, so that it can be checked which type of home the complaint comes from and it provides more clarity about the repair.

Execution

In-house skills
The own staff is technically skilled and also receives training and courses to further develop.

Procurement strategy
SWZ has no contracts with external parties, but a team of twenty-five professionals is responsible for repair maintenance.

Performance
The repair maintenance workers have the technical knowledge and skills, but improvements are needed in terms of communication skills. This will further improve the service.

Efficient working practices
In addition to carrying out the repair that was planned, the maintenance worker also looks at repairs that are not on the schedule, such as a leaking tap. The maintenance workers also consult with each other about the time for the repairs. For example, if the times between repairs are not convenient, the maintenance workers consult with each other and switch appointments so that the maintenance worker is not late for the appoint-

Quality assurance models
During the interview no information was recorded about quality assurance models regarding the repair maintenance.

Value for money
During the interview no information was recorded about value for money regarding the repair maintenance.

Sustainability
During the interview no information was recorded about sustainability regarding the repair maintenance.

Evaluation

Stakeholder opinion
Most tenants are satisfied with the repair maintenance. Although there are sometimes situations where it is not clear whether the work is the responsibility of the tenant or of the housing association. In this case, it is possible that a tenant goes to the complaints committee to still want the work to be carried out by the housing association. To improve this, the housing association tries to provide clear information at the beginning of the work.

Continuous improvement
Improvements lie in the system of reporting and scheduling repair requests. There is still work to be done in this regard. An attempt is made to improve this with digitization. Another improvement that is needed lies in the handling of messages from tenants. It often happens that the message from the tenant ends up at the bottom of the mailbox after a while and is not picked up.

6.8 Case study 5: deltaWonen

6.8.1 General information

deltaWonen is a housing corporation in the municipalities of Zwolle, Kampen and Oldebroek (deltaWonen, 2021). This housing association manages a total of 15,541 rental units.

In 2020, deltaWonen achieved an 8.3 in the Aedes Benchmark in the field of repair maintenance. This has increased compared to the previous year, where deltaWonen achieved a 7.9 regarding repair maintenance (Aedes Benchmark, 2020).

6.8.2 Collection of data

A semi-structured interview was held for the deltaWonen case. The interview was held with participant 5, who is the director of the housing association.

6.8.3 Policy & organization regarding repair maintenance

Sessions were organized together with employees and tenants to formulate customer promises (deltaWonen, 2020). The purpose of this is to let tenants know what they can expect from deltaWonen in terms of services. The five customer promises and strategic objectives that have been formulated from this are: (1) customer first, (2) at home in the neighborhood, (3) CO2-neutral, (4) fit and financially healthy and (5) employee satisfaction. Of these points, the first point mainly concerns the service provision for repair requests as well as for resolving complaints.

To keep tenants satisfied, deltaWonen aims to pick up telephone conversations within thirty seconds (deltaWonen, 2020). The aim is to achieve a KPI of eighty percent for this purpose. In 2019, this was achieved for 87 percent of telephone calls. The year before, this percentage was 83 percent. A second aim is to deal with first-line, which means that incoming customer questions are handled in one go by telephone. The aim is also a KPI of eighty percent. In 2019, this was successful in 77 percent of the cases.

In addition, deltaWonen tries, in addition to the telephone, to offer other channels for tenants to report requests or complaints (deltaWonen, 2020). Tenants are assisted live via the desk and telephone and online via the website and email. In 2019, the channels were expanded with a chat function. In 2020 this will be expanded with Whatsapp.

Another development of the service is the tenant portal (deltaWonen, 2020). In 2019, tenants can find chat conversations and telephone contacts with deltaWonen in the tenant portal and read what has been discussed.

DeltaWonen also works with a digital customer panel, whereby questions are asked through this panel several times a year about the opinion and experience of tenants about projects and activities that have been undertaken. The results of this are used to improve the service. The Business Intelligence Tool and dashboards are used to monitor the progress of the strategic goals.

With regard to the organization, deltaWonen has its own maintenance service (deltaWonen, 2020). The maintenance workers also receives training in communication/personal responsibility to help tenants better.

6.8.4 Successfactors in the four phases of repair maintenance from interviews

Reporting & Scheduling

Efficient working practices
Participant 5 emphasizes the way in which questions are answered during the first telephone contact with the housing association. With repair requests, tenants get to speak to an employee at the first telephone contact who immediately tells them when someone will come by and how they will solve the problem. Other points that are mentioned are: speaking to the customer properly, recording the correct information about the repair and quickly solving the repair. For the latter, the starting point is to resolve the repairs within 24 hours.

Innovation
The first innovation in this is improvements in the planning system. Tenants are given the opportunity to choose their own moment for when the maintenance worker can come by. The second innovation concerns the possibility of taking a photo and/or sending a video of the repair to be solved. The latest innovation concerns a new software that can recognize a certain type of crane, so that it can be checked which type of crane it is and whether it is in stock, for example.

Execution

In-house skills
For this point, participant 5 emphasizes that they want maintenance workers to go beyond technical skills, such as providing communication training to them. In addition, their own maintenance service has all-round maintenance workers. This means that a maintenance worker can solve the majority of complaints on his own and in one go without bringing in several people to carry out the repairs. This applies to all repairs and in particular to fixing minor repairs, such as faucet leakage.

Procurement strategy
For this, deltaWonen started with just-in-time delivery. This means that maintenance workers have their own bus with the necessary materials and tools. As a result, it is not necessary to keep stock with maze and racks full of stuff.

Performance
For performance, the basic principle is that repairs must be resolved within 24 hours, with the exception of the weekend. At the weekend there is a crisis service and maintenance workers are present for complaints about flooding.

Efficient working practices
With regard to this point, the maintenance workers ask afterwards what may still need to be repaired, for example complaints that have not been reported. Another point is that maintenance workers are classified by area. This means that tenants often see the same maintenance man coming for the repairs. In this way, the maintenance man is recognized and creates a bond with the tenant. Sometimes contractors are also called in for specific repairs and they often do not come from the same region or come to the tenants less often, which results in less bonding.

Quality assurance models
In addition to the dashboard, deltaWonen also works with the software smart agent for developing customer profiles. With this program, profiles are created at the neighborhood level.

Value for money
For efficient repair maintenance, maintenance men from their own service are involved in discussions about the new building in order to reduce repairs in the future. With the neighborhood tables project, both people from their own maintenance workers and other stakeholders sit around the table to discuss what type of

equipment, for example, is best chosen to get as little maintenance as possible or which parts are easily and cheaply available. Furthermore, the collected data from tenant surveys is analyzed, whereby common complaints in repair maintenance are listed and used in new construction. For example, a type of faucet that often receives complaints from tenants such as leakage is then considered for a different type of faucet.

Sustainability
During the interview no information was recorded about sustainability regarding the repair maintenance.

Evaluation

Stakeholder opinion
In addition to the Aedes Benchmark, continuous customer research is carried out via customer panels and the sending of an evaluation email after the repair. Tenants are also called by telephone to ask how the contact went and whether the service went as expected.

Continuous improvement
The emphasis here is on involving tenants in the maintenance policy and in the experience surrounding maintenance. In the new construction, for example, tenants can choose a type of kitchen or bathroom. The effect of this is that tenants feel more responsible for their own home and prefer to be able to influence the process of which they themselves are part of. Specifically for repair maintenance, for example, it has recently become possible to choose your own date and time for scheduling a repair request. In this way an attempt is made to give the tenant more freedom of choice.

7

ANALYSIS & RECOMMENDATIONS

7

ANALYSIS & RECOMMENDATIONS

The literature review and case studies provided extensive insight into how housing associations try to maximize tenant satisfaction within the repair maintenance process. Although every housing association organizes the repair maintenance in a different way, there are also similarities. The similarities and differences are examined using cross-case analysis. The similarities are used to compile the main lessons learned from the case studies. The latter is then used as input for drawing up the recommendations in answering the last sub question.

In this chapter the repair maintenance process of the five case studies is compared. The similarities and differences will thus emerge to draw conclusions about how the repair maintenance process can be organized to satisfy tenants. The following aspects are compared: (1) contributing factors to tenant satisfaction regarding repair maintenance, (2) role of the organization, (3) role of the policy.

The cross case analysis answers the following sub-questions:

2. Which factors contribute to tenant satisfaction regarding repair maintenance?
3. What is the role of the organization of a housing association on repair maintenance and tenant satisfaction?
4. What role does the policy have on repair maintenance and tenant satisfaction?

7.1 Cross case analysis

7.1.1 Comparison: contributing factors to tenant satisfaction regarding repair maintenance obtained from case studies

A) Similarities & Differences

Reporting
In the reporting phase, quickly helping the tenant and understanding the reported complaint are mentioned as the most important success factors, as these are mentioned in most of the cases.

Every housing association deals with this in a different way. Woonopmaat does this by offering the tenant various channels to report a repair. In addition to the telephone, tenants can also report a repair request online and via the app. For the latter, tenants can choose from a selection menu and get in touch with the contractors. At Portaal, tenants immediately receive a confirmation message after a report so that tenants know that their complaint has been reported and they are kept informed of the appointment. The same happens at Woonwaart, where tenants receive a message a few days before the appointment to tell them exactly what time the maintenance worker will arrive at the home. SWZ tries to help the tenant quickly by offering to submit repair requests online, so that tenants can describe the complaint themselves and add photos if necessary. This will give more clarity to the maintenance worker what the complaint is exactly and how it can be resolved. However, most housing associations indicate that most repair requests are nevertheless reported by telephone. The majority of tenants would prefer to speak to someone and then immediately make an appointment. For this reason, deltaWonen is strongly committed to telephone accessibility. deltaWonen has set goals, such as answering the phone in thirty seconds and extracting as much information as possible from the first call.

Scheduling
For scheduling a repair request, an automated system is recommended by all five cases. On the one hand, tenants can choose their own date and time that suits them and, on the other hand, the system can automatically schedule an appointment, taking into account the maintenance worker's schedule for carrying out the repairs.

The only differences in this regard is that an interviewee at VOC (Portaal) and Woonwaarts stated that the housing association sends tenants an extra message a few days before the repair appointment. The advantages mentioned are: 1) keeping the tenant informed about the appointment, 2) reminding the tenant of the agreement to prevent the tenant from not being home and the maintenance worker has come for nothing, 3) preventing failure costs.

Execution
When carrying out the repair, extra service, the quality of the result of the repair and first time fixing are mentioned as the most crucial success factors, as these are mentioned in all case studies, followed by communication and the friendliness of the maintenance worker.

The extra service concerns the fact that a maintenance worker asks what else can be repaired immediately. Most interviewees indicate that tenants greatly appreciate it when the maintenance worker checks whether they can solve the unreported repair or whether a new appointment has to be made. Tenants often do not expect that complaints in the home will be looked at other than the reported repair. If this does happen, it contributes to tenant satisfaction.

The quality goes hand in hand with the first time fixed. VOC (Portal) and deltaWonen mentions the hiring and/or training of all-round maintenance workers to solve repairs as quickly as possible the first time. These are maintenance workers who master the basic skills and are able to do most repairs themselves. Sometimes it is not always possible to solve the repair in one go. Communication then plays an important role. This translates into 1) explaining why it failed, 2) what the problem is and 3) what will be done next to fix the repair.

Evaluation

In all cases, the interviewees indicated that making contact with tenants has great added value. By entering into discussions with tenants, both in groups or in one-on-one discussions, housing associations can find out more about what tenants find important and how to comply with this. Not yet in all cases there is sufficient contact with tenants about repair maintenance, but they do understand the importance of this and are committed to connect more with tenants and tenant organizations.

The only difference is that in the Woonopmaat case, tenants are closely involved in all kinds of themes that the housing association is involved in and that they also have several discussions with the housing association. It often deals with topics such as sustainability and rent, but repair maintenance is also discussed. On the other hand, Woonwaarts indicates that more contact with tenant organizations and tenants is needed. This is one of the needed areas for improvement.

In addition to collecting the evaluations, it is also important to actually do something with the results, such as setting goals for frequently reported complaints and investigating how this can be improved in the process.

B) Synthesis: contributing factors to tenant satisfaction regarding repair maintenance

By analyzing the similarities and differences, a number of important factors have been found that contribute to tenant satisfaction with regard to repair maintenance. These are summarized in Figure 30. Each housing association is of course different, but after the above analysis it turns out that there are more similarities than differences in the aforementioned contributing factors in repair maintenance.

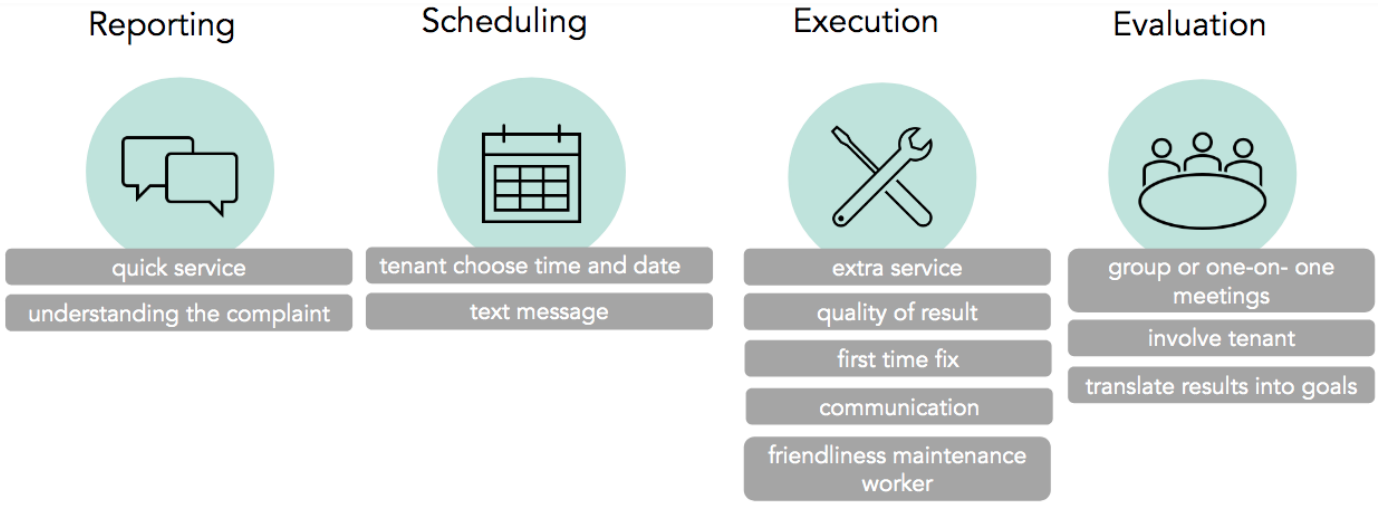


Figure 30: Cross case analysis: contributing factors (own illustration, 2022).

7.1.2 Comparison: lessons learned of the role of the organization obtained from case studies

A) Similarities & Differences

In four of the five cases, most repair maintenance is performed by an in-house maintenance service. Only at Woonopmaat is the entire repair maintenance outsourced to a third party.

When outsourcing repair maintenance, making good agreements with the other party, to strive for the same goals and to agree contact moments/meeting moments in the contract are mentioned. When making the agreements, the housing association and the other party should share the same mindset with regard to maximizing tenant satisfaction and want to work towards the same goals together. The agreements about tenant satisfaction translates into agreements about customer-friendliness, quality in solving the repairs, having all-round professionals, delivering the performance in a short time and flexibility in solving repairs. The contact moments/ meeting moments are necessary to periodically evaluate the process and to apply improvements to the process if necessary.

In the other four cases, small differences can be found in the way in which repair maintenance is organised, but also similarities in maintaining an own maintenance service. The latter would entail a number of advantages, such as more insight into the organization of the repair maintenance process and bonding with tenants. In all four cases, the bond with tenants is mentioned because the maintenance worker often lives in the same neighborhood, often visits the tenants and thereby builds up a relationship and trust. Unreported repairs are therefore looked into if the tenant requests this and/or the maintenance worker asks about this, which has a positive influence on tenant satisfaction.

The only difference here is that Portaal has warehouses in neighborhoods to ensure short arrival times. Maintenance workers who need material can then drive back to the warehouse in a short time and get the necessary material. deltaWonen, on the other hand, works with just-in-time delivery and has closed the warehouses. For just-in-time delivery, this means that all the necessary materials for the repairs are available in the vans on that day and that no more warehouses are needed.

B) Synthesis: role of the organization

In Figure 31 the organizational factors are combined with the contributing factors from section 6.1.1.

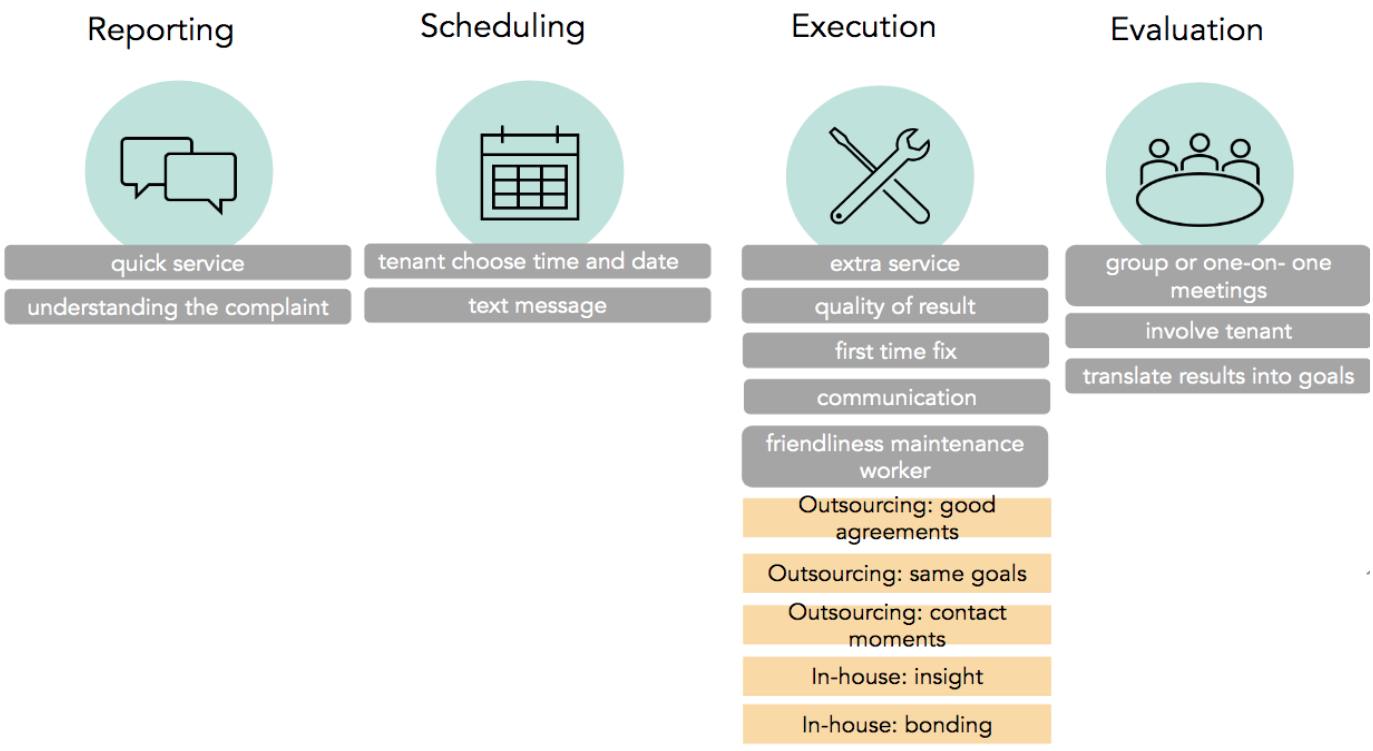


 Figure 31: Cross case analysis: organization (own illustration, 2022).

7.1.3 Comparison: lessons learned of the role of the policy obtained from case studies

A) Similarities & Differences

All case studies have included goals regarding tenant satisfaction in the policy. These objectives are often related to the service and not so much to repair maintenance. However, It emerged from the interviews that the policy is a common thread for tenant satisfaction within repair maintenance.

The objectives often differ in the manner and level of detail in policy reports. DeltaWonen has included in its policy, for example, to answer the telephone within thirty seconds and to handle telephone conversations in one go as core objectives for theme 1 of the service. At Woonopmaat, they are committed to multiple channels for reporting a complaint, a call center in the evening and collaborating with the tenants' organisation. Another difference is that not every housing association has set tenant satisfaction as its number 1 policy objective. For example, Woonwaarts has sustainability/transformation in neighborhoods as number 1 and Woonopmaat and deltaWonen has the tenant as number 1.

According to the case studies, the policy not only plays an important role in setting the goals, but also shows what a housing association considers important and which goals are being pursued. After that, it is important to discuss the goals with the internal organization in order to come up with concrete plans.

B) Synthesis: role of the policy

In the figure below the aforementioned factors are combined with the policy factors.

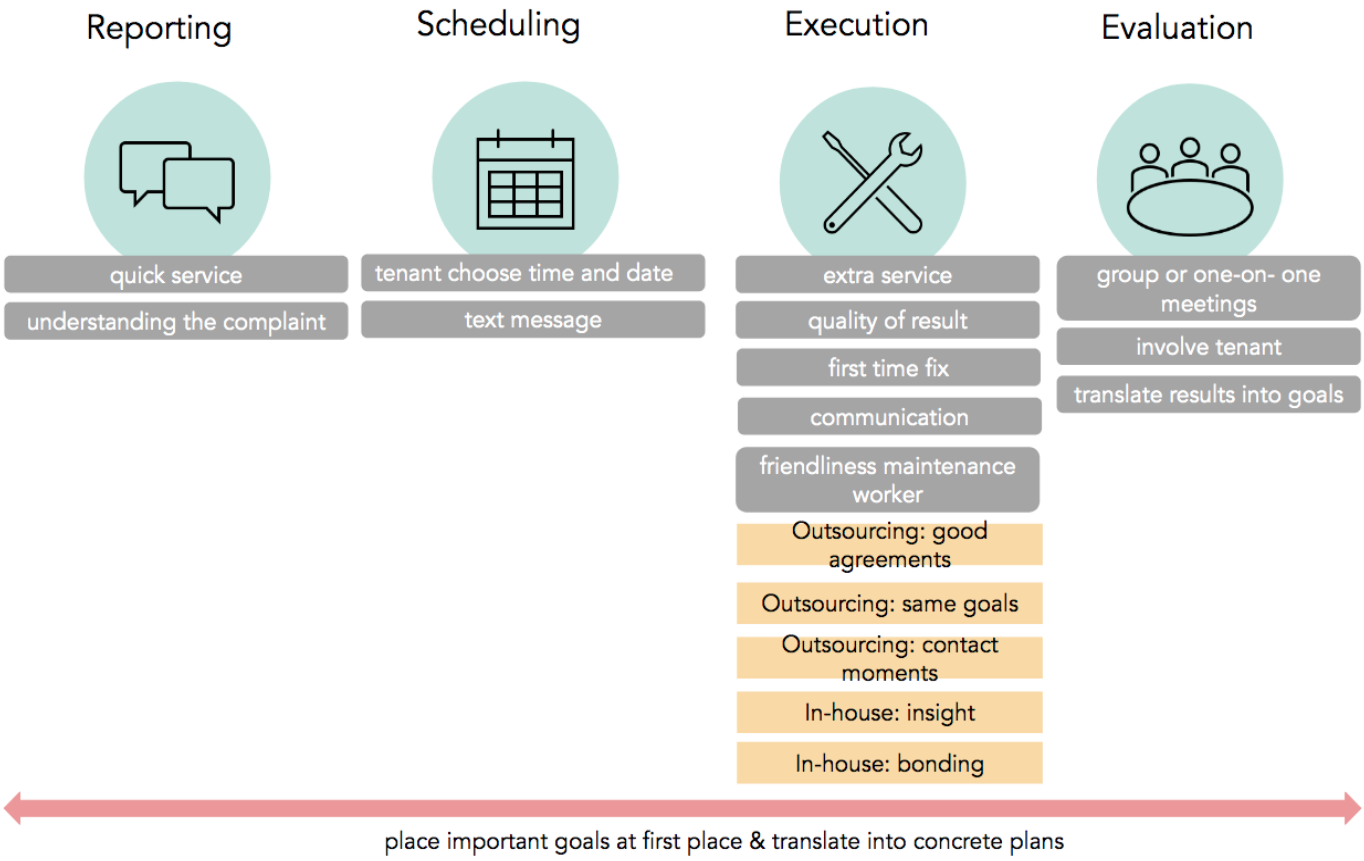


Figure 32: Cross case analysis: policy (own illustration, 2022).

7.2 Comparison: Theory versus Empirical research

In this section, the theory is compared with the findings from the empirical research. This is done step by step and according to the structure with which the sub-questions were asked. In the first comparison, therefore, the theory is compared with the empirical research on the question:

1. Which factors contribute to tenant satisfaction regarding repair maintenance?
Then the theory is compared with the empirical research on the question:

2. What is the role of the organization of a housing association on repair maintenance and tenant satis faction?

7.2.1 Contributing factors

According to the literature, fourteen factors have been identified that contribute to tenant satisfaction (see section 4.2.1). The top three are: (1) the quality of the result of maintenance, (2) fulfilling agreements about the planning of implementation, and (3) the professional competence of maintenance workers.

Most interviewees from the empirical study agree that the factors mentioned in the literature indeed contribute to tenant satisfaction. Although the degree of importance differs somewhat per case study, most indicate that solving the repair correctly the *first time (first time fixed*), which is often associated with the *quality of the result of the maintenance and the fulfilling agreements* contribute a lot to tenant satisfaction. The professional competence of maintenance workers is a factor that can help to achieve a first-time fixed as much as possible. Some housing associations work with all-around professionals for this, who are selected when hiring staff. In order to increase maintenance workers competence, some housing associations also have an academy to train staff to become all-around professionals or courses where knowledge can be exchanged between one maintenance worker to another.

Another important factor that is often mentioned in the interivews but not in the theory is *making unreported repairs*. The latter means that a maintenance worker, in addition to the reported repair, also looks at a complaint that has not been reported by the tenant (for example, a leaking tap) and immediately resolves it.

Responding quickly to complaints and ensuring that the complaint is resolved in the short term also plays a major role. As soon as a repair request comes in, it is important to respond quickly and to make an appointment that suits the tenant best. The automated system in many case studies tries to respond to this. In the past, it would not have been possible to choose a date or time yourself, but by providing the option to submit repair requests online, this option is available, which contributes to tenant satisfaction. However, little use is made of this and most repair requests are reported by telephone.

Although most case studies aim for a *first time fixed,* in practice it sometimes happens that this is not always possible. It is then important to make a follow-up appointment quickly and to keep the tenant informed about the progress of the repair. It can also be checked whether it is necessary to engage external parties to resolve the complaint. Incidentally, keeping the tenant informed is another point of improvement within repair maintenance that is not yet applied everywhere, but which can contribute to tenant satisfaction.

The other factors, such as *preventing damage to personal property and limiting and cleaning up mess and dust around the workplace* are factors about which there are often few complaints from the tenant. The limiting noise and vibration and courtesy of maintenance workers are contributing factors, but often not the most important. Also, not all professionals in the case studies have recognizable company clothing and Dutch (addressing it in our own language) is often spoken.

Furthermore, *the limitation of the duration of work* is not the most important factor. Most interviewees indicated that it is more important that the complaint is finally resolved properly, even if this takes a little longer. For the last factor, participation through choice options in maintenance hardly plays a role in repair maintenance as tenants have no choice options within repair maintenance to participate in the maintenance process. This has more to do with renovation projects or new construction projects, for which the interviewees do understand the importance of including tenants. Their opinion can then help in the development of homes according to the wishes of residents.

In addition to the fourteen contributing factors in the literature, eleven critical success factors have been identified that ensure efficient and effective repair maintenance (see section 4.2.1).

During the empirical research, questions were asked about the eleven critical success factors. Each housing association or case study has a different interpretation of these success factors. Also, not all success factors are equally important or are given the same amount of attention within repair maintenance.

The stakeholder opinion is seen in most case studies as something very important, which provides insight into what can be improved. On the other hand, not all case studies involve the same amount of contact with tenants or tenant organizations and attempts are made to get more contact with tenants.

Value for money is often not mentioned as the most important, because achieving a higher tenant satisfaction and solving the complaint are more important.

For *sustainability*, some interviewed housing associations are investigating what can be done with the reuse of material. Although this is still in the early stages.

The *service standards* are for most a very important success factor. These must be clear and it is important to know at what level the service is to be provided.

Performance is also one of the most important success factors, which must be continuously monitored in order to improve the service by drawing up improvement actions.

*Continuous improvemen*t is also seen by most as one of the most important success factors. In order to keep the service at a high level or to achieve a higher level, most emphasize that it is important to keep up with the developments in society regarding the provision of services. Developments are changing tenants' expectations, which means that tenants have increasingly higher expectations of the services provided. It is then important for housing associations to develop with them.

In-house skills are also an important success factor that contributes to solving complaints in one go. For the next success factor, the *procurement strategy*, often concerns the implementation, such as matters related to purchasing materials and the arrival times of the professional to get the necessary items to solve a repair.

Each case study has a slightly different way of doing this. For example, Portaal owns warehouses, deltaWonen uses just-in-time delivery and Woonopmaat outsources all maintenance.

The *quality assurance controls* must be performed, but are also related to continuous improvement. The *efficient working practices* are a little different for each case study as not every organization organizes repair maintenance in the same way.

Finally, for the last success factor, i*nnovation*, is not one of the most important success factors for most case studies. Although it is of course important to continue to innovate and to see how the repair maintenance process can be improved by, for example, learning from other companies.

7.2.2 Role of the organization

In the literature, the 7S model has been formulated for analyzing the processes within an organization. In comparison with the practical findings, it can be concluded that all these seven elements play an important role in repair maintenance and are related to each other.

It can be concluded from the case studies that the policy or vision must be clear about what an organization wants and what an organization considers important in terms of tenant satisfaction. If an organization considers tenant satisfaction very important, then actions must be formulated on how this should be done. The personnel must then be selected, the skills must meet the requirements and the systems must contribute to the process, such as quickly solving a complaint. Every organization has its own style and often depends on what the director of an organization or the organization as a whole considers important. This results in a structure or choice to outsource maintenance entirely, partly outsource it or do it entirely in-house.

7.3 Recommendations

In this section, recommendations are formulated based on the comparisons in the previous sections, the literature review, and the case study findings.

7.3.1 Reporting

Respond quickly to the submitted repair request

It is recommended that as soon as a tenant calls a housing association to report a repair, they are helped quickly and that they do not have to queue too long to speak to an employee.

Offer sufficient opportunities to report a complaint

To help a tenant quickly, it is recommended to offer tenants various options to report a repair. This can include reporting a complaint by telephone, but also via Whatsapp, via the site or an (online) my environment.

Having staff with knowledge about the complaint facilitates the process

Since the employees of customer service are the first point of contact at a housing association, it can make a major contribution if the employee also has more understanding and knowledge of the repair. In this way, a tenant can be helped more quickly and the correct description can be noted.

7.3.2 Scheduling

Schedule an appointment when it suits the tenant best

Both in the literature and in practice, this point contributes greatly to tenant satisfaction, because a tenant can choose when a professional can come by at the time available to him/her. For the most part, this has already been implemented in the online repair request submission system, but when submitting by phone it is also recommended to ask when it is most convenient for the tenant instead of when the professional has time to come by.

7.3.3 Execution

Resolve unreported repair immediately if possible

From the empirical research and the interviews, this point is the most frequently mentioned and is one of the most important contributing factors in repair maintenance. Checking whether, in addition to the repair that has been reported, there are other repairs that can be solved immediately not only ensure a high tenant satisfaction but costs can also be saved as the complaint is immediately resolved and no new appointment is made. must be made to resolve the complaint. After all, the repair must eventually be solved. It can then be prevented that another professional has to drive to the same home again to resolve the complaint. It is therefore recommended that in addition to the repair that the professional has come for and as soon as this has been solved, you should ask if there is anything else that can be looked at and solved immediately.

Make sure that a repair is solved in one go as much as possible

This is referred to as the first time fixed in both literature and empirical research. It is recommended that repairs be solved in one go as much as possible, without coming back for the same repair again. In order to solve repairs in one go as much as possible, it is recommended to train or select all-round professionals for repair maintenance.

Keeps the tenant informed of the repair

It is recommended to inform the tenant about when a professional will come and what time a professional will come. This can be done by sending a text message a few days before a professional comes by and again on the day itself before a professional starts driving to the home. This way the tenant can be reminded to stay at home. If the professional is then present in the home, it is of added value if the professional tells what he has done and that the complaint has been resolved or that a follow-up appointment must be made and how the complaint will then be resolved.

Keep the appointment made

Both in the literature and in empirical research it is recommended to keep to the agreements made. In practice, this can mean that in the event that a professional is ill, another professional must be scheduled quickly to allow the appointment to go ahead and the tenant is helped.

7.3.4 Evaluation

Evaluate the repair maintenance process with subcontractors

It is recommended to meet periodically with contractors to investigate what can be improved and/or to quickly identify problems that are not going well, so that they can be responded to quickly and can be discussed, for example, why things are not going well. is going well and what needs to be done to improve it. If the maintenance is outsourced, it is recommended to agree on times in the contract when the discussions will take place.

Formulate improvement actions if needed

In addition to evaluating and collecting the data from tenant surveys, it is recommended that you actually do something with the results. This can be done by drawing up improvement actions for the service within repair maintenance. If the maintenance is outsourced, improvement actions must be drawn up with the collaborating party.

Investigate with parties what could be done even better

It is recommended that the parties involved in the repair maintenance work together to select parties that share the same vision of tenant satisfaction and pursue the same goal. In this way, it can be jointly investigated how to continuously improve repair maintenance and how to contribute as optimally as possible to tenant satisfaction.

Talk to tenants and tenant organizations

Repair maintenance is the only type of maintenance in which housing associations come by and come into contact with tenants. If something does not go well in the repair maintenance, tenants quickly show this on the basis of letters of complaint, unsatisfactory scores on surveys, or emails. It is therefore recommended to enter into discussions with tenants to find out exactly what tenants are not satisfied with, what exactly is not going well within repair maintenance, in order to be able to draw up more targeted improvement actions.

8

CONCLUSION

8

CONCLUSION

This research sought an answer to the question: “What contributes to tenant satisfaction at a housing association in the field of repair maintenance and how can this be improved?”. For this, five sub-questions have been formulated and literature and empirical research has been carried out. The empirical research consisted of studying five different case studies and interviewing representatives of housing associations. To answer the main question, all sub-questions are answered first.

Subquestion 1: What is tenant satisfaction and repair maintenance according to theory?

In this study, tenant satisfaction with regard to the repair maintenance is defined as Tenant satisfaction is the evaluation of tenants on the repair maintenance service, which consists of a series of sequential events, both intellectual and emotional, in fulfilling an expected outcome. The term evaluation refers to the individual experience of tenants after performing the repair maintenance service. The words series of sequential events refer to the repair maintenance process. In this research, this process is divided into four phases: reporting, scheduling, execution and evaluation. In each of these phases, a tenant comes into contact with repair maintenance, which influences tenant satisfaction. It is therefore not a one-time experience, but a series of events that are linked together that lead to a satisfied or less satisfied tenant. These events can be both intellectual and emotional matters. Finally, tenant satisfaction is about fulfilling an expected outcome of the tenant on the one hand and the housing association on the other.

Subquestion 2: Which factors contribute to tenant satisfaction regarding repair maintenance?

For this sub-question, both a literature review and an empirical study were conducted. From the literature review, the following factors contribute to tenant satisfaction with regard to repair maintenance (from the tenants’ perspective):

- the quality of the result of maintenance
- fulfilling agreements about the planning of implementation
- the professional competence of maintenance workers
- the accessibility of information and complaints (ease of reporting repairs)
- first time fixed (performing maintenance correctly the first time)
- preventing damage to personal property
- flexibility in making appointments (taking into account the date and time)
- limiting and cleaning up mess and dust around the workplace
- participation through choice options in maintenance
- limitation of the duration of work (the speed of performing the repair after reporting)
- the courtesy of maintenance workers
- addressing it in your own language
- limiting noise and vibration
- the wearing of neat, recognizable company clothing by maintenance workers

In addition to the above factors, the following eleven critical success factors contribute to an effective repair maintenance service:

- stakeholder opinion
- value for money
- sustainability
- service standards
- performance
- continuous improvement
- in- house skills
- procurement strategy
- quality assurance practices
- efficient working practices
- innovation

The empirical research found seventeen factors that contribute to tenant satisfaction in the area of repair maintenance, which can be classified into the four phases of the maintenance process. In the reporting phase, these are 1) quick service and 2) understanding the complaint. In the scheduling phase, these are 1) tenants choose time and date and 2) text messages. In the execution phase, the contributing factors are 1) extra service, 2) quality of result, 3) first time fix, 4) communication and 5) friendliness of the maintenance worker. In addition to these factors in the execution phase, several factors are also included that are more specific about outsourcing maintenance and having your own maintenance service. Factors that contribute to the repair maintenance process when outsourcing maintenance are 1) good agreements, 2) same goals and 3) contact moments. The following factors contribute to having your own maintenance service: 1) insight and 2) bonding. And in the evaluation phase, the following factors are important: 1) group or one-on-one meetings, 2) involve tenants, and 3) translate results into goals.

Subquestion 3: What is the role of the organization of a housing association on repair maintenance and tenant satisfaction?

The organization plays an important role in how a housing association shapes repair maintenance in achieving its objectives. The organization consists of the seven elements of the 7S model. The soft elements (staff, skills, style, and shared values) outweigh the hard elements (structure, strategy, and systems) when it comes to tenant satisfaction within repair maintenance. The hard elements then occupy the second position and are supporting instruments. The core instruments are soft elements.

Organizing often starts with the first contact of a tenant with the housing corporation, reporting a repair request. In this phase, it is mainly about the knowledge and skills of the staff in recognizing the complaint and recording this properly, so that the maintenance worker has the correct information. The next phase involves resolving this complaint at the tenant's home, or execution. This is the most important phase of all four phases. During the reporting phase, it may happen that the complaint turned out not to have been properly recorded or that it concerns a different complaint than expected. Properly solving the complaint is then the solution. The technical skills of the maintenance worker in resolving the complaint, but also the communication skills, such as explaining what has been done, asking if other complaints should be looked into, and possibly giving tips and advice on how to resolve the complaint can be prevented next time are crucial.

Style refers to the leadership style of the managers towards the employees (Waterman, Peters & Philips, 1980). The leadership must be clear in what a manager or director of a housing corporation considers important for tenant satisfaction, take concrete steps in the implementation, and continuously monitor this. Monitoring is important to see whether what has been achieved meets expectations or whether adjustments need to be made in the repair maintenance to meet the predefined requirements. Consultation must also take place with staff or the external party (if outsourced) to see whether expectations have been met on the one hand and to continuously monitor where mistakes have been made or what could be improved on the other.

The shared values concern the vision and mission of an organization and relate to the culture of an organization (Waterman, Peters & Philips, 1980). It can be concluded that an unambiguous vision and approach are important in this regard. To achieve this, firstly, consultation must take place with the staff or the external party to discuss which requirements and/or steps the housing association wants to take in meeting the expectations regarding tenant satisfaction within the repair maintenance. Secondly, it is important to record this in concrete rules and agreements, such as in the policy or the contract with the (sub)contractors. These agreements and rules must then be implemented consistently.

The other three elements (structure, strategy, and systems) are supporting instruments to carry out the above.

The organizational structure follows from the choice made by a housing association to outsource the repair maintenance or to have it carried out by its own maintenance service. When outsourcing maintenance, the responsibility for repair maintenance is placed with an external party. It is then important to discuss with the external party what the expectations are concerning tenant satisfaction and the services provided for this. The agreements should then be included in the contract and meetings should be organized to periodically evaluate the performed repair maintenance service. In housing associations with their own maintenance service, this responsibility often falls with two departments: 1) the customer contact center and 2) the maintenance service. The customer contact center takes care of answering the phone, registering requests, and scheduling appointments. This information is then forwarded to the maintenance service, after which the maintenance workers carry out the repair.

In terms of strategy, a customer-centric approach is important in repair maintenance. Finally, the chosen systems contribute to a smoother course of the process.

Subquestion 4: What role does the policy have on repair maintenance and tenant satisfaction?

The policy gives direction to how a housing association deals with tenant satisfaction within the repair maintenance. The policy documents often do not contain a separate chapter with objectives for repair maintenance or how exactly the housing association wants to achieve tenant satisfaction concerning repair maintenance. For tenant satisfaction, the objectives often translate into basic principles in the service provision. It is not always clear whether these targets are specific to repair maintenance or general service. However, it has become clear from the case studies that these objectives also apply to repair maintenance. Several factors are also discussed that ensure tenant satisfaction within the repair maintenance, which is not always included in the policy. These factors can be found in sub-question 2.

Subquestion 5: Which recommendation can be given to maximize tenant satisfaction regarding repair maintenance?

The recommendations are divided into the four stages of repair maintenance. Recommendations have been formulated for each phase. For the reporting phase, the recommendations are 1) to respond quickly to the submitted repair request, 2) to offer sufficient opportunities to report a complaint, and 3) to have staff with knowledge about the complaint facilitate the process. For the scheduling phases, the recommendation is: to schedule an appointment when it suits the tenant best. The following recommendations have been formulated for the execution phase: 1) resolve unreported repair immediately if possible, 2) make sure that a repair is solved in one go as much as possible, 3) keep the tenant informed of the repair, 4) keep the appointment made. For the final stage, evaluation is recommended to 1) evaluate the repair maintenance process with subcontractors, 2) formulate improvement actions if needed, 3) investigate with parties what could be done even better, and 4) talk to tenants and tenant organizations.

Main research question: What contributes to tenant satisfaction at a housing association in the field of repair maintenance and how can this be improved?

For repair maintenance, it can be concluded that the policy, the organization, and the factors mentioned in sub-question two contribute to tenant satisfaction. However, the extent to which it contributes differs. The policy is more a way of presenting the goals of a housing association and offering guidance on what the organization wants to strive for, how and what a housing association wants to achieve in terms of tenant satisfaction. Organizing and implementing this contributes the most to tenant satisfaction. Organizing the repair maintenance and its implementation is then not just the standard process, such as picking up the phone, making an appointment, and then carrying it out. But there are specific factors at each phase that make the difference. These factors can be found in sub-question 2.

Every housing association is different and therefore there is not a perfect approach for the repair maintenance at each housing association, but the factors and recommendations mentioned are a tool that can help housing associations in improving tenant satisfaction within the repair maintenance. In addition, it is important to continue to develop, to constantly look for new solutions about how things can be done better, smarter and try to implement this in the repair maintenance to continue to meet the expectations of tenants as best as possible.

In order to provide a complete overview of important factors in maximizing tenant satisfaction within repair maintenance, a model has been compiled on the next page to give housing associations direction.

Repair maintenance process model

Reporting
- Strive for quick telephone service in answering the phone and making an appointment. An example of fast telephone service is to answer the telephone within thirty seconds.
- Offer different channels for reporting a repair request, such as 1) by phone, 2) online, 3) via a login page or MY environment or 4) via Whatsapp. This gives the different target groups (elderly, adults, and young people) the opportunity to pass on their repair in a way they prefer. Note: Currently, most repair requests are still reported over the phone, but this may change in the future. By already responding to this, one keeps up with the developments.
- Try to understand the complaint well and to note down the correct information as much as possible with the reported repair. This can be done by training or selecting personnel with knowledge and experience in recognizing the repair. It may also be considered to put a tenant in direct telephone contact with the contractor.

Scheduling
- Give preference to schedule an appointment for a date and time that is most convenient for the tenant. It can help to give a number of options and to ask when it will suit the tenant best. This can be done by telephone, but also online via a menu with dates and times.

Execution
- After solving the repair, ask the tenant if there are any other complaints that should be looked into. This extra step (or service) on the one hand promotes tenant satisfaction and on the other hand, it can prevent a maintenance worker from driving to the same house several times to solve a repair. It can help to be more flexible with time and, for example, to schedule a little more time for carrying out a repair.
- Try to solve repairs in one go as much as possible, without having to return a second or third time for the same repair. To increase the chance of a first-time fix, it is recommended to train maintenance workers to become all-round.
- Communicate with the tenant about the exact time when a professional will come by. This can be done by sending a message a few days before the appointment and/or on the day itself (once again).
- Explain to the tenant what will be repaired, what has been done and whether the repair has been resolved, or whether a follow-up appointment must be scheduled.

Outsourcing: selection criteria
- service: discuss with the external party what the housing association considers important in terms of tenant satisfaction in the service provision, what the expectations are and how these goals will be achieved.
- knowledge and experience: examine whether the external party is professionally able to solve a range of various repairs, employs all-around maintenance workers, and can deliver the desired performance.
- evaluation: arrange periodic contact moments with the external party to jointly evaluate the repair, maintenance process, and service and take action if something goes wrong. Then try to formulate improvement steps and implement them in the process.
- continuous improvement: discuss and consider together with the external party what could contribute to a better service to tenants.

Evaluation
- Evaluate the repair maintenance process with subcontractors to be able to quickly respond to issues that require more attention and to ask questions about what went wrong and how this can be prevented in the future.
- Formulated improvement actions or goals from the outcomes of the tenant surveys. Then implement these in the repair maintenance process and carry out.
- Organize group or one on one meetings to understand what tenants find important and/or any adjustments that need to be made in the repair maintenance process.

Figure 33: Repair maintenance model (own illustration, 2022).

9

DISCUSSION

9

DISCUSSION

In this chapter, the results of the study are discussed. First, the research output is discussed, followed by the research methods used. Thereafter, the limits of the study and recommendations for further research are described. Finally, the research is validated against the framework of Lincoln & Guba (1985).

9.1 Research output

The research output and thereby the answer to the main research question resulted in the recommendations, which are summarized in the repair maintenance model. This model is divided into four phases to help housing associations to maximize tenant satisfaction within repair maintenance. Recommendations have been formulated for each phase, which housing associations can apply in their repair maintenance. The recommendations include an explanation of the importance of each factor and how it can be applied. The basis of this model and the recommendations are based on the comparisons between the case studies and the comparison with the literature.

A limitation of the research output is that the recommendations arise from the five investigated case studies. As a result, it cannot be guaranteed that this will also work for other housing associations and will lead to higher tenant satisfaction. This requires further research. Nevertheless, it can be concluded that the recommendations mentioned can increase the chance of tenant satisfaction since these factors have been applied in practice at several housing associations in repair maintenance.

9.2 Research methods

9.2.1 Aedes Benchmark analysis

The performed statistical analyzes with the Aedes benchmark data provided interesting insights into the relationship between tenant satisfaction regarding repair requests and other topics in the benchmark. However, the analysis showed that there is little spread around the average in the tenant satisfaction rate for repair requests, but the differences in the other subjects were also often small (mean) and largely with a standard deviation below 0.5. Most statistical tests also showed no significance. On the other hand, this also shows that tenant satisfaction is unrelated to operating expenses and maintenance expenses and depends on other factors. Therefore the literature research and empirical research gave valuable findings in the research.

9.2.2 Literature review

In practice, housing associations are constantly improving their repair maintenance to increase tenant satisfaction. However, repair maintenance is a complex process, where many factors can influence tenant satisfaction. It is both an intellectual and an emotional process, in which a series of sequential events lead to the score that tenants give to the repair maintenance. This was one of the obstacles when analyzing scientific papers. Few scientific articles have been found in the literature that specifically deal with research into tenant satisfaction within repair maintenance. The most important scientific sources in this master thesis are therefore the sources of Veuger and Straub (2006) and Tucker, Turley and Holgate (2014). In addition to scientific articles, academic reports and reports from organizations such as KWH and Aedes have also been analyzed. These analyzes show what tenants find important in repair maintenance and the differences between the housing associations in terms of tenant satisfaction scores. However, it is not known how housing associations organize their repair maintenance and which success factors lead to achieving the score. Case studies and semi-structured interviews were therefore conducted to answer these questions.

9.2.3 Empirical research

- case studies

The case studies made it possible to learn from practice and to gather new insights on the subject. The case studies were selected based on the predefined criteria. Ultimately, five case studies were analyzed and investigated. However, the case studies were not completely ideal for comparison. This is because at Woonopmaat the repair maintenance is completely outsourced and in the other four cases, the repair maintenance is carried out by its maintenance service. In addition, the housing associations differ in size and the number of rental units differs. As a result, the organization of repair maintenance is not the same for every case, but on the other hand, this also leads to interesting findings. These differences mean that there are several ways to achieve an above-average score. For example, Portaal has its maintenance service VOC that is responsible for the entire repair maintenance. Woonopmaat outsources the repair maintenance, but makes clear agreements about this with the external party about customer focus and agrees periodic moments with the party to evaluate the process together. Woonwaarts reminds the tenant of the appointment by sending a message, SWZ sees the importance of improvements in service provision and deltaWonen focuses on fast telephone coverage.

During the cross-case analysis, interesting similarities and additions from one case to another can also be found. This leads to a more complete picture of how to maximize tenant satisfaction. All surveyed housing associations mention, for example, the extra service. This means that this is an important factor that can lead to tenant satisfaction not at one, but several housing associations. Concerning the additions, both VOC (Portaal) and Woonwaarts will send a text message to the tenant for the appointment. Woonwaarts does this by first planning a time block when scheduling. Closer to the appointment, the housing association sends another text message with an exact time. However, the reason for this method has not been fully explained. Through the interview with the director of the VOC, it was learned that failure costs can be avoided as a result. This could also be the reason for Woonwaarts. In this way, the cases complement each other and it is possible to learn more about working methods that contribute to a more efficient service.

- semi-structured interviews

The semi-structured interviews made it possible to hold extensive conversations with directors and managers of housing corporations and representatives of tenants' associations. This led to valuable and interesting findings. First, more is learned about the work practices that housing associations have implemented in their daily repair maintenance and have resulted in an above-average score for tenant satisfaction in the Aedes benchmark. Secondly, it was possible to investigate what housing associations focus on and which success factors contribute to tenant satisfaction in practice. In general, it can be said that the surveyed housing associations mostly focus on customer service and execution. To understand more about what led to the obtained tenant satisfaction score, it was asked which factors in customer service and execution are important. This led to new success factors, such as answering the phone within thirty seconds and performing extra service after a repair. This made it possible to collect specific information about the process and how housing associations apply it.

The aim was to analyze three cases and to speak to the director, a maintenance manager and a representative of the tenants' association for each case. This was successful in two of the three cases. Since participants are free to participate in the study, in the other cases it was only possible to speak with the director of the housing corporation or the manager of repair maintenance. Another aim of the research was also to interview different housing associations based on the predefined selection criteria in order to compare the success factors in repair maintenance. On the one hand, this gave new insights and working practices, but on the other hand, it also made comparisons a bit more difficult. For example, in case studies where only the director was interviewed, it was not possible to investigate whether the aforementioned success factors also apply to the manager and the tenant. These cases were ultimately included in the analysis, as there are other case studies where discussions were held with the director and comparisons could be made with them.

9.3 Research limitations and future research

A limitation of the study is that not the same number of respondents were interviewed for every case study. In some cases, it was therefore not possible to compare or confirm the collected data of a respondent with other respondents from the same organization. However, the findings also form a valuable basis for recommendations within repair maintenance. In the future, this research can be expanded by interviewing several employees of different housing associations and expanding the model.

For further research, it can also be examined whether applying the recommendations in repair maintenance at other housing associations leads in practice to an improvement in tenant satisfaction.

9.4 Validity and trustworthiness

To validate the reliability of this study, the framework of Lincoln & Guba (1985), as described previously, is used. This framework consists of four criteria: credibility, confirmability, dependability and transferability.

9.4.1 Credibility

Credibility concerns the question of to what extent the findings correspond to reality (Shenton, 2004). This is also known as internal validity. In other words, this means whether the research methods used are suitable for formulating correct conclusions.

Multiple methods and data sources were used to develop a comprehensive understanding of tenant satisfaction and repair maintenance and to increase the validity of the research. In addition to the literature review, case studies were therefore also analyzed and semi-structured interviews were held. The data collection of the literature search consisted of scientific articles by recognized publicists and reports from other organizations, such as KWH and Aedes. For the analysis of the case studies, annual reports and reports of the selected housing associations were used, which are publicly accessible documents.

To increase credibility, selection criteria were drawn up before carrying out the case studies that the selected housing associations must meet. Second, the respondents were chosen based on their expertise concerning repair maintenance and tenant satisfaction. Before the semi-structured interview, a consent form was sent to the respondents participating in the study. This consent form explains what the research is about. And to ensure respondents are fair and free in providing data, each person approached was also allowed to decline to participate in the interview to ensure data collection only involves individuals who are genuinely willing to cooperate with the investigation and be willing to share data freely. All interviewed respondents received the same consent form and were free to sign it. Most respondents signed and returned this form. The form also provided the option to indicate what could or could not be quoted, such as the name, title, and organization. Most respondents permitted to cite for their name, title, and organization. For those who did not want to sign the form, the research was explained again at the beginning of the interview and indicated that participants were free to participate and asked for permission. All interviewed respondents agreed with this.

9.4.2 Confirmability

This concerns the objectivity of the researcher about the research. To increase objectivity in the research, the interviews were analyzed and described in chapter 5, using also quotes from the respondents. In addition, in the previous part (the discussion), the shortcomings of the research output, the methods used, and the limits were discussed.

9.4.3 Dependability

Dependability concerns whether the correct research practices have been followed. In other words, this refers to the process in which the research was conducted. About this point, before conducting the research, the goals and expected output of the research were considered. This led to the drafting of the research proposal. It was then considered how to achieve these goals and which research methods would best suit them. The main question and sub-questions gave direction to this. With the literature review sub-questions 1, 2, and 3 could be answered. To compare the results with the empirical research and to increase reliability, it was decided to include sub-questions 2 and 3 when conducting the interviews. To collect correct information about the policy of repair maintenance and tenant satisfaction at the various housing associations, sub-question 4 was answered by analyzing and studying the policy documents of each housing association. For sub-question 5, a cross-case analysis was carried out based on three themes: contributing factors, organization, and policy. Figure 32 emerged from this analysis with the most important findings from the empirical research. Subsequently, these findings were compared with the theory, and recommendations were formulated based on this. The recommendations are based on both the literature review and empirical research.

9.4.4 Transferability

Transferability can be defined as "to which the findings of one study can be applied to other situations" (Shenton, 2004). For this, it was decided to investigate several housing associations as case studies to collect different perspectives and to get a more stable picture of repair maintenance and tenant satisfaction in reality. The different perspectives were then analyzed and compared to identify the differences and similarities to formulate reliable recommendations.

To increase transferability, the following was considered before the interviews:

The selected respondents were chosen based on predefined criteria. Before the study, the criteria were set to interview at least one director, manager, and representative of the tenants' association who works for the same organization. This was successful in the Woonopmaat case and the Portaal case, as respondents were free to participate in the survey.

Second, several managers and representatives of tenants' associations at the same organization were invited to participate in the survey. As a result, in some case studies, two managers were interviewed or three representatives of a tenants' association and a broader perspective of data could be collected.

Finally, all participating respondents were informed of the duration of the interview in the consent form and at the beginning of the interview. The duration of the interview was 45 minutes to an hour and was conducted during the same period. To collect reliable data from the respondents, all respondents were interviewed in the same way (semi-structured way) based on a pre-prepared questionnaire. The questionnaire is categorized by themes and several sample questions have been devised for each theme.

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REFLECTION

10

REFLECTION

This last chapter reflects on the choice of subject of the master's thesis, its relevance in theory and practice, and the methods used. Secondly, the research position is described and finally, the graduation process is reflected.

10.1 Research subject

When choosing the subject for the graduation project, I was initially in doubt about several topics. In my master's program, I followed many interesting courses that I wanted to know more about. I was both curious about the challenges and obstacles in the housing market for middle-income people, such as starters and graduates, tiny houses, the influence of covid on the housing market, construction projects in other countries, and the repair maintenance process at housing associations. I found all topics interesting, but of course, it was not possible to research all these topics. I then decided to choose a topic that I found most interesting and where I could contribute to problems that many people face. The research also had to be not only theoretically relevant but also practical and applicable to real-life problems. With these criteria in mind, I opted for the repair maintenance process at housing associations. Another reason is that I am also a tenant at a housing corporation and can relate to problems that tenants sometimes have to deal with. As a researcher, I am of course aware of objectivity and I also realize the side of the housing association. To find out more about this, I held interviews with the director of KWH, director of Corporatiestrateeg, and Ad Straub of TU Delft while conducting the literature review.

These conversations were an enormous motivation and gave me many interesting insights about the importance of tenant satisfaction within repair maintenance at housing associations and the importance of more research. In practice, more and more housing associations are participating in the Aedes Benchmark, but an above-average score does not always lead to satisfied tenants. Housing associations are also always trying to look for better solutions and constant improvement within repair maintenance. To bring this gap closer together, I saw the perfect opportunity to get started.

10.2 Relevance

10.2.1 Scientific relevance

Although much research has been done into repair maintenance and tenant satisfaction, little research has been done into how housing associations deal with tenant satisfaction in repair maintenance and how this is organized. These two points have therefore been taken as the starting point at the beginning of this thesis as the scientific gaps. To contribute to this, case studies and semi-structured interviews were used to investigate which working methods housing associations apply in repair maintenance to maximize tenant satisfaction. A second contribution is researching the success factors and their implementation in the organization. Finally, this research contributes to the existing knowledge about repair maintenance and tenant satisfaction.

10.2.2 Sociatal relevance

The societal relevance can be classified in the social, economic, and environmental side. On the social side, the recommendations provide important insights that can help housing associations improve repair maintenance to maximize tenant satisfaction. Maintenance and repair are often neglected (Straub, 2012). This thesis can therefore help to create more awareness about the subject. In practice, and especially in the social sector, tenants have less choice in choosing another home if they are not satisfied with the service during repair and maintenance. Concerning the economic and environmental side, this research reflects the most recent developments that housing associations have implemented in their repair maintenance. Due to technological developments, tenants' expectations of the service are changing. The recommendations can help promote more efficient and effective repair maintenance.

10.3 Research method

10.3.1 Literature review

The literature review went well and ensured that important success factors were discovered. The success factors could be divided into two types. The first type of success factor came from tenant surveys. These were factors that tenants consider important in repair maintenance and that can promote tenant satisfaction. This aided in drafting the interview protocol for tenants in the empirical study. The second type of success factor was factors that play an important role in the internal management of housing associations. The latter helped draft the interview protocol for housing association directors and repair maintenance managers to gain a deeper understanding of the organization and process.

However, there was only one reliable source that had divided the repair maintenance into phases. The KWH report contained three phases in which the repair maintenance is classified. However, there is a final stage, the evaluation process. This phase was added by asking in interviews whether the repair maintenance process is also being evaluated. This turned out to be the case and is also an important phase. Figure 22 has therefore been made for a clear overview, in which the repair maintenance is divided into four phases. To investigate whether this is also the case for other housing associations and to validate Figure 22, questions were asked about the figure and the phases during the interviews. Ultimately, this led to specific recommendations for each phase.

10.3.2 Case studies and interviews

Studying the case studies and conducting the semi-structured interviews was the most enjoyable and interesting part of the research, but also the most challenging. The interviews allowed the theory to be tested in practice and at the same time to learn more about the process and organization of repair maintenance at housing associations.

However, collecting the interview data also came with several challenges.
The first challenge had to do with inviting participants to the interviews. This was done by analyzing LinkedIn profiles and then sending an invitation message. In addition, e-mails were also sent to potential respondents based on an analysis of the site of the housing associations. However, the response was low, and not all housing associations wanted to participate in the survey. This was to be expected as respondents are free to participate in the survey. Approaching the tenants' associations was the most difficult. Unfortunately, I did not receive a response from many. Tenant associations that did send a message back supported the survey and recognized the importance of this, but do not have sufficient data to enter into discussions, as the survey on tenant satisfaction has only just started. Other reasons that were given were: no specific data on the subject or permission needed from the housing association to participate in the study. A second challenge is that several respondents canceled the interview at the last minute.

This created stress and concerns about whether the empirical research could be completed on time as planned. In order not to delay the empirical research further, I continued to send invitations to potential respondents. The discussions with my supervisors also gave me extra motivation, for which I am extremely grateful for their help, and ideas for approaching respondents differently. I therefore also called the potential respondents and visited housing associations to increase the chance. However, it was not possible to visit everywhere due to the COVID pandemic. Respondents who have accepted my invitation via LinkedIn, but have not yet responded to the interview, I have sent another message. In total, more than fifty respondents were therefore approached. In retrospect, I should have sent reminders or called housing associations sooner. I had underestimated the invitation of respondents slightly, assuming that respondents needed more time to consider whether they wanted to participate in the survey and/or hadn't been able to read the message yet due to their busy schedules.

Due to the COVID, it was also not possible to conduct interviews on location. All interviews, except for the interview with the housing association of Woonopmaat, were online. This interview took place on location as the respondents had a strong preference for this. Conducting interviews online has brought about several advantages and disadvantages. The biggest advantage is that several interviews could be conducted in one day. In addition, the interviews could easily be recorded with zoom or teams. A disadvantage, however, is that a bad internet connection can end a conversation abruptly and you have to switch to the phone as soon as possible to not lose time. As a result, some parts of information were lost. Some respondents also sent a team's invitation out of privacy, which made it impossible to start the recording after the respondent permitted the recording. To be able to record the interview, several interviews were therefore recorded with zoom and by telephone. After listening back to the recording, however, it turned out that the sound was of lower quality and it was not always possible to understand what was being said. Thanks to the extra backup of the phone, it was often possible to find out what was meant.

On the other hand, I also realized that things don't always go as expected and you have to act flexibly, but by not giving up, you can eventually reach your goal. All in all, it was a valuable learning process.

10.4 Research position

This master's thesis was written in the context of graduation from the master's track management in the built environment (MBE). This master's thesis is mainly part of process management at housing corporations. Repair maintenance is a process that must be continuously monitored and managed at housing associations. Repairs are also carried out to provide tenants with an adequate home so that the investigation is also part of housing management.

10.5 Personal reflection

The master's program management in the built environment has given me valuable lessons and insights into the various aspects of the built environment.

Looking back on the process, I still took courses in the P1 and P2 periods, which made the graduation process very intensive. At the end of P2, I had completed my literature review which gave me a good understanding of the subject. During this period it was also possible to find an internship. Ultimately, this was not chosen because I wanted to compare cases with each other and gain a broader perspective of insights.

The P3 period was the most challenging part of the graduation process. This was due to several components. First, there was little response from potential respondents at the start of this period. This led to delays in the process and concerns about the planning of the graduation project. By continuing to send invitations, I subsequently received a lot of responses and enthusiastic messages for participating in the interview. This gave me confidence in the progress of the research. However, to make up for the time, I sometimes had to schedule three interviews in one day and had much less time to work out and analyze the transcripts.

Working out more than ten transcripts in a short time gave me a lot of stress and worry about whether it could all be completed in time. Third, COVID had a major impact on my productivity and anxiety. Due to the greatly reduced contact with fellow students and not being able to play sports or carry out activities, I felt isolated and lonely. In the final stages on the way to P4 it got better and gave me hope because it was again possible to go to the faculty and meet people.

After all, this process has also taught me that graduation can be very diverse and one has to be flexible to adapt to the changes around us. I would like to thank my family and friends once again and my supervisors for their valuable lessons and unlimited support! Thank you Joris and Gerard!

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APPENDIX

1. Interview protocol (NL)

Interview inleiding

Welkom heten en bedanken voor de tijd
Goedemorgen/middag, allereerst bedankt voor uw deelname aan dit interview.

Mezelf voorstellen
Mijn naam is Myle en ik studeer MBE, ook wel management van de gebouwde omgeving genoemd, aan de Technische Universiteit in Delft. Momenteel doe ik onderzoek voor mijn thesis naar het reparatieonderhoud bij woningcorporaties.

Introduceren van het onderzoek
De hoofdvraag van het onderzoek is: Wat draagt bij aan huuderstevredenheid bij woningcorporaties en hoe kan dit worden verbeterd?

In de Aedes Benchmark zijn vaak bovengemiddelde scores te zien voor huurderstevredenheid met betrekking tot reparatieonderhoud, maar in de praktijk doen zich soms situaties voor waarbij woningcorporaties moeite hebben met het uitvoeren en/of beheren van reparatieonderhoud. Dit geldt natuurlijk niet voor elke woningcorporatie. Daarom ben ik geïnteresseerd naar de verschillen en wat zorgt voor meer/minder huurderstevredenheid en welke factoren hierin een rol spelen.

Uitleggen hoe het interview zal gaan
Ik zal u verschillende semigestructureerde vragen stellen. Er is uiteraard geen goed of fout antwoord en u kunt zo eerlijk mogelijk zijn. Hiervan kan ik het meest van leren!

Het interview zal ongeveer 45 minuten tot een uur duren.

Vragen of het interview mag worden opgenomen
Om de antwoorden goed te kunnen verwerken voor de data- analyse, zou ik uw willen vragen of u het goed vindt als ik het interview opneem? U antwoorden zullen strikt vertrouwelijk behandeld worden.

Gaat u akkoord met het opnemen van het gesprek?

Vragen

Inleidende vragen
- Kunt u allereerst iets meer over uzelf vertellen? (werkervaring, functie binnen de organisatie?)
- Hoe zou u de organisatie beschrijven?

Hoofdvragen

- Beleid
    - Wat is uw visie omtrent reparatieonderhoud en welke rol speelt huurderstevredenheid hier in?
    - Hoe vertaalt zich dit in het beleid van uw organisatie?
    - Wat vindt u belangrijk om hierin op te nemen met betrekking tot reparatieonderhoud?
    - Zoekt u ook naar een soort balans tussen het beleid van het reparatieonderhoud en andere plannen (zoals duurzaamheidsplannen?)

- Organisatie
    - Hoe is het reparatieonderhoud georganisaeerd in uw corporatie?
    - Bestaat dit ook uit de volgende fases (TOON FIGUUR 22)?

- Het meldingsproces
    - Hoe worden de meeste reparaties gemeld binnen uw corporatie? (telefonisch, online?)
    - Welke factoren dragen volgens u bij aan de huurderstevredenheid in het meldingsproces?

- Afspraak maken
    - Hoe worden afspraken ingepland?
    - Welke factoren dragen hier volgens u bij aan de huurderstevredeneheid?
    - Wordt er tijdens het maken van een afspraak ook contact gezocht met de aannemer? (bijv. bij complexe vraagstukken?)
    - Wordt er rekening gehouden met agenda's van huurders?

- Uitvoering
    - Worden reparaties uitbesteedt aan externe bedrijven?
        - Zo ja, waar let u op bij het kiezen van een extern bedrijf?
        - Zo ja, welke afspraken worden er gemaakt rondom het uitvoeren van reparaties?
        - Zo nee, waarom besteedt u het werk niet uit? Wat zijn de voordelen?
    - Welke factoren spelen hier een belangrijke rol voor de huurderstevredenheid?

- Evaluatie
    - Wordt er nog contact opgenomen met de huurder na het uitvoeren van een reparatie? (via de email of telefonisch?)
    - Hoe wordt geevalueerd op het proces? (alleen binnen de organisatie of ook met aannamers?)
    - Hoe worden de resultaten vervolgens bijgehouden (via een dashboard?) en geimplementeerd in het reparatieonderhoudsproces?
    - Welke inzichten geeft dit u?

Interview beëindiging

Aankondigen dat we het einde van het interview hebben bereikt

Vragen of hij/zij nog iets wil toevoegen aan het interview

Bedanken en uitleggen dat de gegevens geanonimiseerd worden