MANAGING PUBLIC REAL ESTATE

A study on the Real Estate portfolio decision making of ROC organisations

CME Master Thesis
Francine van Hoeken

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Managing Public Real Estate

A study on the Real Estate portfolio decision making of ROC organisations

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Preface

This report is the result of my graduation research. Writing this thesis as the completion of my studies in Delft was interesting, fun, and sometimes difficult at the same time. The subject of public real estate is very interesting to me and I really enjoyed getting into this subject. The level of complexity of real estate decision making for ROC organisations was even higher than I initially estimated. This complexity makes it challenging to give a valuable advice. I hope this thesis can contribute to the decision making process of ROC organisations and hopefully leads to more attention and research on this subject.

There are several people I would like to thank for their guidance and support. First of all, my supervisors from TU Delft. As my first supervisor, Herman de Wolff frequently gave valuable advice and presented a critical view on my work to keep me focussed. Also the feedback of Willem Korthals Altes and Alexandra den Heijer helped me improve my thesis. I would like to thank my supervisor from DTZ Zadelhoff, Kim van Sluijs, for his practical input. A special thanks goes to the interviewees of the three ROC organisations that participated in my research, for their information and insight in the actual decision making process.

On a personal level I want to thank all the guys and girl at DTZ for a great time during my internship. I would to thank my parents and sisters for supporting me during my entire studies. Wilke, thank you for an incredible funny view on graduating, but also for your valuable advice. And last but not least, Wouter, thank you for always being there for me.

Francine van Hoeken

Delft, July 17th 2014
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Summary

Over the past few years, several news items popped up on financial and real estate issues within ROC organisations (NOS, 2012; NOVUM, 2012; Vastgoedmarkt, 2012). Because of supposedly poor real estate policies, ROC organisations got themselves in severe financial problems. Although the news items only highlighted the most extreme cases, it does raise questions about the real estate policy of ROC organisations. Especially with the prospects of decreasing student numbers and the associated decreasing income for the ROC organisations, it might be valuable to examine the organisations more closely. This research focuses on the ROC real estate policies and more specifically on the decision making process prior to this.

The goal of this research is to identify the difficulties and issues of the ROC real estate decision making process and to introduce a method to support and improve this process. The research question for this research is:

How can a method support ROC organisations in their real estate decision making in order to improve their real estate portfolio and contribute to their organisational objectives?

To answer this question, first, the context of the ROC organisation and its real estate is discussed. Then, the current models for real estate decision making are elaborated on. The current real estate decision making process will be discussed based on case studies and finally, the model for ROC real estate decision making will be presented.

The ROC organisations: Context

MBO education plays an important role in the Dutch society. Therefore, the government is highly involved. In 1992 a new law was enforced to improve the vocational education and the financing changed to a lump sum financing system. The lump sum funding brought responsibilities and organisational difficulties, MBO schools had not have to deal with before. Now, over twenty years later, there are 66 ROC organisations with 3 million square meters of real estate between them. The real estate of ROC organisations can be described as public real estate because of the public funding they receive. Even though the ROC organisations can make their own decisions, they are monitored by the Inspection of Education.

Conceptual Framework

To be able to look for possible improvements in the ROC real estate decision making process, several theories and models for real estate decision making were discussed. Also the possible application of these models on ROC real estate decision making was be elaborated on. Decision making models all have their limitations and are often not completely comprehensive. There is no model that completely represents or covers all difficulties of the real estate decision making of ROC organisations. This mainly has to do with the characteristics of ROC real estate.
Since all models have elements that can be valuable to the real estate decision making of ROC organisations, these elements were be combined into one model which was mainly based on the model for preference based portfolio design (Arkesteijn & Binnekamp, 2012).

ROC organisations: Case studies
Case studies were used to get a more practical view on the decision making process of ROC organisations. The aspects of that were discussed are; the allocation of financial resources, the decision making process and the important actors and factors in the decisions.

Because of the public funding, the financial playing field of ROC organisations is limited by the Inspection of Education. Within the organisations, the board of directors establish the overall budget, including the housing budget. The budget for housing is mainly based on the expenses from the past and the necessary investments to implement the housing policies. The ROC organisations are free to spend their money as long as they stay within the thresholds of the Inspection of Education.

The real estate decision making process of the ROC organisations is mainly determined by the management department responsible for real estate. However, the board of directors is always the deciding vote. The drawing of the housing policy plan is based on experience and ‘gut’ feeling and not very objectified. Although the different ROC organisations are not necessarily dissatisfied with the results of their housing policy plans, they do see room for improvement. A more objective approach to the important decision criteria may help to get a clearer overview of the possibilities for the portfolio and a more structured and transparent process. Convincing the board of directors of a certain idea or option can also be difficult. Using a method, the consequences of certain actions can be demonstrated to the board of directors.

To give a complete recapitulation of the ROC organisation and their real estate decision making context, a system diagram was drawn up (Enserink et al., 2010). This system diagram has two functions in this research. First of all, it gives an overview of how the organisation and the influences on the organisation work. Several aspects of the decision making process are placed in a clear context. In the diagram, the means of the ROC organisations, the external factors and the criteria are shown. All factors are connected to show how the specific decisions will change the criteria. This is also the second function of the diagram. It can be used to determine the outcome of a specific alternative. It shows how the criteria will change if a specific alternative is executed.
Model for ROC real estate decision making

The proposed improvement of the decision making process of ROC organisations is two-sided. The substance of the input for decisions as well as the form of the process could be improved. The current decision criteria of ROC organisations have been supplemented with criteria from the literature study. Considering the financial issues of some ROC organisations in the past, and the threat of declining student numbers and the associated decrease of income, it is important that the ROC organisations are going to pay more attention to the financial situation and the changing possibilities of the portfolio. By including these criteria in the decision making, future developments and unexpected changes could be coped with more efficiently. The determination of both the decision criteria and their weights are important to the decision making process. The discussions that will be held to determine the decision criteria and their weights are important to the decision making process. The decision criteria give insight in the place of real estate in the organisation and the factors that are consider important to the organisation. The weights of the criteria gives insight in the priorities.

To improve the actual process of decision making, a method for ROC real estate decision making was introduced. This model is mainly based on the model for preference based portfolio design (Arkesteijn & Binnekamp, 2012), but adjusted for the ROC organisations.

There are three different applications of this model. The most direct application of the method is selecting the best alternative from a number of different alternatives. This is a very basic application with a logical process. This outcome of the filled in schedule presents the best alternative for the ROC organisation.
This application of the method improves the structure of the decision making process significantly. It is a transparent way of decision making and it requires discussions on the decision criteria and their weights. These discussions are valuable to get all priorities in order and to think outside the box. However, this application can also have a negative effect on the decision making process. If the method is being used as a solution and the outcome is copied blind, the schedule gets too much power. Decision makers can feel ignored if the decision is only made based on the schedule. This is not the meaning of the method. The process of filling in the schedule should lead to discussions and raise questions. It is important to have all information in a clear overview to make an informed decision. Therefore, it is important that this model is only used as a support tool in the decision making process and not as a direct decision making tool.

Another application is a more controlling application and can also be used to communicate with the board of directors. The goal of this application is to show that the housing policy drawn up by the management team responsible for real estate is beneficial to the organisation. It can be quite difficult to properly substantiate a specific choice for intervention in real estate. With this model, the intervention can be tested against the current situation and the improvements can be shown. This application is more limited, but can still improve the decision making process. The model prompts discussions about the important criteria and their weights and presents the strengths and the weaknesses of a specific intervention. Thereby, using the model as a tool to substantiate decisions and communicate these decisions to the board of directors can also be an improvement to the process. The model gives a quick and comprehensive look into the housing situation. It makes the communication easier and more transparent, which is beneficial to the real estate decision making process.

The final application of this model is to use it backwards. In this application, the model is not used to test alternatives, but to draw alternatives. In order to do this, the current situation will be filled in. If the score of the current situation on the different criteria is known, the situation can be examined in order to see where there is room for improvement. Using the model backwards helps to get insight in the current situation. The strengths and weaknesses of the current real estate portfolio will become clear and options to improve the weaknesses can be sought.
This application can be very valuable to the decision making process. The schedule gives a clear and simple overview of the situation. Based on this information, it is possible to look for alternatives to improve the situation and determine a focus.

Recommendations
This research proposes a model for ROC real estate decision making that can improve the decision making process. The three suggested applications of the model can all be beneficial to the process. Whether the model is applied in a direct way to weight different alternatives or if it is used backwards to look for a suitable alternative, the process will be more structured, transparent and well-informed. Also the controlling function could help to objectify the process and improve the communication towards the board of directors.

In order to implement the model successful, first the ROC organisations need to get their information supply in order. The first step to a transparent process is knowledge about the current situation. Then, when using this method, the ROC organisations should elaborate carefully on the decision criteria and their weight. It is highly recommended to take the suggested criteria into account. Especially the criteria ‘changing possibilities portfolio’ should be included to take future developments into account.

Even though proper use of the proposed method can help to improve the current decision making process, there are some limitations to this model that should be considered. Many of the criteria are expressed in scores on a scale from 1 to 10. This is a common approach to scoring criteria that are difficult to quantify. However, the score will therefore be always debatable. Also the choice to give the management team responsible for real estate the task to draw up the alternatives could be a limitation. The optimal alternative may be overseen by this approach. However, this choice was made to keep the model easy to use.

Considering the limitations, it should be noted that the model and the outcome of this model should be used as a guideline for the decision making. It is really a support tool for the decision making process and not intended to substitute the process.

The improvements of the proposed method for the ROC real estate decision making process rises questions on the application of the model on other types of public real estate. It is difficult to answer these questions, since no extensive research has been done on other types of public real estate. The application of this model on other types of public real estate is expected to be possible and possibly even quite successful. Many of the ROC real estate characteristics are correspond to real estate characteristics of for example libraries, health care organisations and especially other educational organisations. However, more research will be necessary to give a proper prediction of the application of the model on these types of public real estate.
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1. Introduction

In the recent years, headlines like “ROC Leiden in trouble because of new building” (Vastgoedmarkt, 2012), “19 million of losses for ROC Zadkine” (NOS, 2012) and “Real estate millstone for ROC Rotterdam” (NOVUM, 2012) popped up in newspapers and on websites. The effects of the economic crisis revealed problems that had been developing for years. It became clear that the real estate policy of many educational organisations caused major problems for their financial situation. This does not only affect the quality of the real estate, but also the quality of the education (Zembla, 2012), which is a serious matter. Just looking at the annual costs for accommodation (including depreciation) as a percentage of the total benefits, an increase is visible that has consequences for the financial capabilities of the ROC organisations. The percentage in 2007 was just below 13 percent, but in 2011, this percentage has already increased to 14,26. This is an increase of over 1 percent in only 4 years. In absolute terms, this means 122 million euro’s that can no longer be spend on education or personnel (Inspectie van het Onderwijs, 2012). These numbers indicate a certain trend that is developing among ROC expenditures. The costs for accommodation cannot keep on rising. Therefore, it is important to take a good look at the real estate management and portfolio’s of these ROC organisations and to identify the cause of these increasing costs.

Problems with costs for accommodation and real estate management have not always existed amongst ROC organisations. The ROC organisations form an example of a public sector that got the responsibility over their own real estate just years ago (de Kopgroep, 2008). Up until the second half of the nineties the responsibility for real estate lay with the government (Inspectie van het Onderwijs, 2013). Suddenly, the ROC organisations were placed in the difficult position to make all real estate decisions themselves. Now, roughly 20 years later, it is time to look back to see how the ROC organisations handled this position, and look forward to see how they can manage their real estate in the most convenient way.

1.1. Public Real Estate

Real estate of ROC organisations can be categorized as public real estate. Definitions of public real estate can be found in all shapes and sizes. Before elaborating on the problems and opportunities of public real estate, it is important to have a clear description and definition of public real estate. All definitions can be represented by one of the following two general definitions.

*Public real estate is a building or area where social services are provided and that is (partially) financed by public funds (VNG, 2013).*

*Public real estate is all real estate in which activities are undertaken with the aim of welfare for mankind and society (Movisie, 2012).*
The second definition is much broader than the first, but the main difference between the two is the financing. The definition of the VNG states that public funding is a condition for public real estate, where the definition of Movisie does not state public funding as a necessity. For this research the definition of the VNG is chosen. In terms of decision making, possibilities for development and legal context, real estate financed by public funds should be treated differently from real estate without public funding. To keep the scope of this research clear and relevant, only the real estate with direct public funding will be referred to as public real estate. Within this definition, two types can be distinguished. Local and central governments have some real estate in ownership. However, the last few decades, the governments transferred large parts of their real estate to the organisation using the real estate. This type of real estate is still mainly financed by the government, but the government itself does not have direct influence on the policy concerning the real estate. Since both types are quite different, in this research the last type has been chosen to focus on.

Public Real Estate in the Netherlands covers over 85 million square meters of gross floor area. Although this is a great amount and even twice the square meters of all offices in the Netherlands (Maatschappelijk Vastgoed, 2013), public real estate has not been a very hot topic up until a few years ago. From 2003, organisations like “Kopgroep Maatschappelijk Vastgoed” arose that tried to create opportunities for cooperation between the different types of social amenities and to use public real estate to improve the development of areas (Bouwstenen voor Sociaal, 2013). These organisations could not have known that only a few years later, the financial crisis would rapidly change the view on the public real estate.

Considering the government lost their influence on the policy of public real estate, but is still the main financier, it is of great importance that the parties that do have the responsibility for the real estate have a sound policy. The government depends on the organisations to handle the funding. However, the funding still consists of public money, and therefore the government will be held accountable by the public if things go wrong (Ministerie van Onderwijs Cultuur en Wetenschap, 2012a) (Van der Schaaf, 2002). Even though the government has institutions to monitor the organisations responsible for the public real estate, they were unable to prevent issues with the real estate policy (Commissie onderzoek financiële problematiek Amarantis, 2012).

Public real estate covers many different sectors. From schools to healthcare institutions and sport facilities and from churches to libraries, all real estate funded by public funds with a social function can be referred to as public real estate. Although all different sectors have different real estate characteristics, some similarities can be found. Overall it can be said that public real estate is often represented by quite specific buildings. The buildings are designed with a specific function in mind. This makes the marketability of the real estate often relatively low. In most cases high investment costs are necessary while the utilization rate is relatively low.
1.2. Educational Real Estate

To perform a valuable study on public real estate, it is necessary to choose one specific type of public real estate. Even though all kinds of buildings like hospitals, schools, libraries and sports facilities can be referred to as public real estate, the characteristics of these buildings and organisations are too different to investigate in one research. This research will focus on schools for vocational education, and in particular ROC organisations (regional education centres).

There are several reasons to select this specific sector. Over 36% of the public real estate is represented by educational buildings (Hochstenbach, 2011). Thereby, this sector has faced many issues with their real estate policy. These issues get a lot of publicity and affect a large part of society.

Educational buildings can be found in all shapes and sizes. Some are very specific and designed especially for the school that will use the building. This real estate is not comparable to commercial or residential real estate. However, there are also schools that are located in more marketable buildings.

Different researches have been performed to identify the characteristics and problems of the educational real estate. According to the research of the Inspection of Education (Inspectie van het Onderwijs, 2013), educational real estate can be characterized by low marketability, high investment costs (because of large buildings), disproportional appearances and sometimes higher supplies than demands. Overall, it can be said that the demand according to the number of students does not match the available space and the high level of facilities. This mismatch of demand and supply will only get worse, considering that the number of students will further decrease in the next 20 years.

![Figure 1.1 Reference projection 2012 by Ministry of Education, Culture and Science (Inspectie van het Onderwijs, 2013)](image)
Since the lump sum funding is mainly derived from the student numbers (Rijksoverheid, 2013), this could lead to problematic situations in which the supply surplus of the real estate cannot be financially justified. These student numbers are much more dynamic than real estate is. A known characteristic of real estate is that real estate portfolios are quite static. This causes difficulties in developing a suitable strategy.

Society changes rapidly and due to technology and globalisation, the changes occur ever faster (Geerlings et al., 2005). While the students change simultaneously and thus the education forms, it is impossible to continuously correct the real estate portfolio to these changes. While only years ago, most education was taught in classrooms and practice premises, computer rooms are now one of the most important spaces in a school. Some schools already make use of the possibility to air courses online, so students can attend classes from their own home. Professions change and new professions arise. The education should respond to this (Geerlings et al., 2005). Since real estate has an important facilitating function for ROC organisations, the real estate should be well suited for the required education. However, in real estate it is difficult to make short-term changes.

A building is usually built with a specific purpose. Dependent of the lay-out and facilities of a building, it is usable for other functions. If a building is very specific and not suitable for other types of users, which is often the case for ROC schools, it is very difficult to lease out or sell the building. A building usually has a depreciation period of 30 years. If during this period, the building is no longer needed, the owner could end up with a large financial burden without any benefits (Evers et al., 2002).

Therefore it is essential to not only look at the current situation, but to look at the future developments too. A long-term strategy is essential to manage real estate in an efficient way (McDonagh & Nicholas, 2009). Since real estate decision making can only be achieved with long term strategy, it is important to adjust the strategy on the developments in the future (Soeter et al., 2011).

Although the challenges seem to have been identified, a solution has not yet been presented. This research will first elaborate on the problems, to see whether all difficulties have yet been discovered. For example, something that might not have been addressed enough is the starting point of the ROC organisations. Were the quality and supply of real estate suitable at the moment that the responsibilities were transferred from the government to the ROC organisations?

The issues with real estate policy in the past can be an important lesson when developing an strategy for the future. It is therefore important to look at some of the issues that occurred. On the basis of both the past experiences and existing knowledge on portfolio management, an advice will be given on how to manage the real estate portfolio in a more efficient way. By improving the real estate decision-making, hopefully it is possible to prevent problems in the future.
1.3. Possibilities for ROC Real Estate

With better real estate policy, it should be possible to create a better balance between supply and demand. For now, it seems that ROC organisations mainly have to deal with a higher supply than demand. This would mean that there is a surplus in real estate. Therefore, the main focus of real estate management will be to find possibilities to decrease the supply. Besides the importance to match supply and demand, opportunities should be explored on how real estate can contribute to the organisational objectives of the ROC organisations.

The principles and tools of corporate real estate can be applied to find these opportunities (Haynes & Nunningham, 2012). With corporate real estate management, strategies could be developed to increase the performance of an organisation (De Vries, 2007). It should be noted, however, that there are limits to the means to achieve all objectives. In the end only the necessary objectives to provide proper education should be guaranteed. The additional objectives like higher quality facilities or better location should only be considered if the means allow for it (Beckers, 2012).

To be able to decrease the supply in an existing real estate portfolio, it is important to know the different options. In theory, there are three possible options for intervention in the real estate portfolio of ROC organisations: Buy (or rent), Sell (or rent out), or transform. Transformation can be done in many different ways, but the main idea is to change the functionality to meet the requirements of other potential users. This can make a building more attractive to sell or rent.

1.4. Research question

This research will look into the situation of ROC real estate portfolios. To give more insight in the situation and to present a possible solution, some sub questions are presented as a guideline for this research. The main question of this research is:

How can a method support ROC organisations in their real estate decision making in order to improve their real estate portfolio and contribute to their organisational objectives?

As mentioned before, the research will focus on ROC organisations. This means that the case study will only include ROC organisations and the method will also focus on these particular organisations. However, it might be possible to use the proposed method for other categories of public real estate as well. To give a comprehensive advise about using the method for these other categories, more extensive research is necessary. However, the possible application of the method for public real estate in general will be elaborated on briefly at the end of this research.

Real estate decision making is, for this research, defined as the decisions that have to be made by ROC organisations to change their real estate portfolio. This means either the purchasing or rent of new real estate, investments for substantial transformation or the divestment of real estate. These particular decisions will have to be made in case of a mismatch between supply and demand or in case of fully depreciated property.
The method that will be drawn up should support this particular decision-making. In this method, the organisational objectives of the ROC organisations will be taken into account. However, it should be noted that only the factors that have a direct influence on the real estate decision making will be included in the method.

To answer the research question, several sub-questions are drawn up:

- What are the main specifics of public and in particular ROC real estate?
- Which existing models can be useful to the improvement of the real estate decision making process of ROC organisations?
  - Which models are available with regard to real estate portfolio management and the associated decision making process?
  - To what extent can these models be useful to the ROC organisations?
- What are the organisational characteristics of the real estate decision making process of ROC organisations?
  - In what way is the real estate of ROC organisations paid for and how are the subsidy flows managed?
  - What are the main organisational objectives of ROC organisations?
  - Who are the main responsible actors in the real estate policy in ROC organisations?
  - What (external) factors will influence the future situation and real estate decisions of the ROC organisations?
  - What is the place of public real estate on the (commercial) real estate market?
  - What are the main difficulties in the real estate decision making process?
- How can the decision making process be improved?
  - What are the most important factors on which the decision making is based?
  - How can a method support the decision making process?

1.5. Research Methodology

To answer the research questions, different information inputs will be used. First of all, the existing literature will be studied to find current theories and knowledge on this subject. For the missing information ROC organisations and relevant institutions will be contacted. Information from ROC organisations itself will be very valuable, since these organisations are subject to this research. To give a clear image of the current situation at ROC organisations, some of them will be studied as a case. From these organisations specific information will be asked on financial situation and management decisions. If possible, three ROC organisations will be contacted to use as a case in this research. The selection of the ROC organisations will be based on some relevant criteria. These criteria will represent the current real estate situation of the specific ROC organisations. Square meters per student, capital costs of real estate and quality of real estate will be important criteria in this. To give a more detailed view on the research approach, the research methodology per sub question is presented below.
Looking at answering the research questions, first it is important to get a good overview of the history and data of the ROC organisations. This will mainly be derived from literature and government documents. If not all important data can be found, the ROC organisations will be asked for some more specific and relevant data. Then, some theories on management and real estate decision making will be used to set a framework in which this research will be placed. These theories will be derived from literature on this subject.

To determine the main specifics of educational real estate, mainly literature will be used. To find data, actors and financial information, the literature should be sufficient. However, to determine the objectives of ROC organisations, it might be necessary to interview some of the large ROC organisations. The place of public real estate on the real estate market will be answered by literature study, but also by talking to some experts on the real estate market.

To really understand the decision making process of the ROC organisations, the interviews with the organisations will be used as an additional information input. To find out the true state of affairs, the organisational objectives and the difficulties of the real estate decision making, it is essential to talk to the persons involved in making the decisions.

To find the factors that can be optimized, systems engineering tools will be used. With these tools, the situation can be analysed and possible solutions can be found. Again, literature is important for the input of these tools.

The interviews with ROC organisations, will mainly be organised using the connections of DTZ Zadelhoff. Within the company itself, there is a lot of valuable knowledge on the real estate market and they also have good connections with the educational inspectorate and ROC organisations.

Answers on the sub questions will provide the tools to come to a solution. A method will be developed on which the decisions considering specific real estate can be based. This method will present the factors that are most important in the real estate decisions of ROC organisations. These factors represent not only the interests of the ROC organisations themselves, but also take the interests and limitations of other actors and regulations into account. For example, it is important to take the possibilities and limitations of the real estate market into account to give a realistic advise. Also interventions by the government in terms of subsidies, regulations and supervision should be part of the method. Overall, the method should contain all relevant factors for real estate decisions. Wherever possible, the factors in the method will be quantified to make the method as specific as possible.

The method will be a framework that can be used by ROC organisations in order to support their decision making. Portfolios of ROC organisations can be tested on the basis of this framework. Thereby, it will also be very valuable to give some guideline to educational organisations to prevent problems with real estate in the future. Finally, if a method is presented, some examples will be shown to test the results.
1.6. **Report structure**

The sub questions will be the guideline for the structure of this report. In chapter two, attention will be paid to the history of the ROC organisation. Over the past decades, the ROC schools have coped with many changes, as well in legal context as in social context. Also some relevant information on ROC organisations will be presented in this chapter. Chapter three will discuss the theoretical framework that will be used in this research. When both history and theoretical framework are clear, the sub questions will be addressed. Chapter four will address the main characteristics, most important actors and the financial aspects of the real estate of public real estate, and in particular ROC organisations. On the basis of the case studies, this information should become available. Also the real estate decision making process will be discussed in detail. Chapter five, the theoretical framework and information from the case studies will be used and analysed to find the most important factors in the real estate decision making of the ROC’s. With these factors, it should be able to complete the method. An extensive explanation will be included on how the ROC organisations should be able to use this method to improve their decision making process. Finally, in chapter six, the conclusions and recommendations of this research will be presented.
2. **The ROC Organisations: Context**

In this chapter, the history, relevant data and context of the ROC organisations will be presented. The first paragraph will give a brief overview of the tasks and core values of MBO schools and ROC organisations. Then, the emergence of the ROC organisation as we know it today will be described. Of course, some extra attention will be paid to the moment at which ROC organisation became owner of their own real estate. The third paragraph will present some data of the current situation of the ROC organisations that will be relevant to the research. Finally, the context will be outlined in which the ROC organisations are currently operating. Inter alia, this paragraph pays attention to the current financing system and regulations with regard to their real estate portfolio and decision-making.

### 2.1. MBO schools

High quality education is very important in The Netherlands, and subject to many political discussions. In the Dutch society, knowledge is essential to conquer a place in the labour market. The Netherlands presents itself as “a knowledge based economy”. To live up to this reputation, it is important they provide enough resources for the people to develop themselves and create a society in which the learning process gets a prominent role. Therefore, education is compulsory for all children up to 18 years of age, unless they graduate between the age of 16 and 18 (Rijksoverheid, 2014). After primary education it is very common and in most cases mandatory to attend secondary education (De Rick et al., 2006).

Overall, the education in The Netherlands has three levels. Secondary vocational education (MBO) is the lowest level and most attended form of education (Ministerie van Onderwijs Cultuur en Wetenschap, 2012b). A MBO school provides education to train students for practical professions and higher education. Transfers to higher education are always stimulated. Looking at the number of jobs available on the different professional level, it is important that there are enough people with secondary vocational education.

Figure 2.1 shows the number of jobs available in the Netherlands for the different professional levels (in Dutch). It is clear that the most jobs are at vocational level (middelbaar). To match the needs of society, it is important to have plenty educated people at the proper levels. Thereby, for the labour force it is important that they can find a job on a level that they were educated in. Overall, it can be concluded that vocational education plays an important role in the Dutch society.
Since the MBO education plays a large role in the Dutch society, the main part of the costs is covered by the government. Students do have to pay an annual tuition, but this tuition only covers a small part of the actual costs. The income of MBO schools is therefore largely dependent on the government. Overall, it can be said that the government plays an important role in the developments of education in The Netherlands. Besides their financial support, the government can influence the education in a very dominant way through legislation and regulation (Ministerie van Onderwijs Cultuur en Wetenschap, 2012b). The large influence from the government was demonstrated when they decided to make drastic changes to the MBO school system. To improve the quality of education, but also the efficiency of MBO schools, roughly twenty years ago, a new law was enforced. This was the start of the Regional Education Centres.

2.2. History

Only twenty years ago, there was no such thing as an ROC organisation. Up until 1992, vocational education was provided by local MBO schools. The schools were financed on the basis of reimbursement funding. The schools received this funding from the government based on the actual costs for personnel, material and accommodation. MBO schools could be characterized by small scale education and education tailored to the needs of the local students. (Blank et al., 2012)

Supposedly due to desired improvement of the quality of education, but more likely due to a tighter government budget, a new policy was introduced with regard to MBO schools. Main characteristics of the new approach were decentralisation and lump sum funding. The lump sum funding was introduced in 1992. From then on, the ROC organisations received a fixed sum each year. The ROC organisation were now able to make their own decisions and spending their funding. This new funding system had to encourage increase of scale, increase of autonomy and deregulation.

<table>
<thead>
<tr>
<th>Occupational Level</th>
<th>1996</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># Jobs (x1000)</td>
<td>%</td>
</tr>
<tr>
<td>Elementary</td>
<td>430</td>
<td>7</td>
</tr>
<tr>
<td>Primary</td>
<td>1579</td>
<td>26</td>
</tr>
<tr>
<td>Vocational</td>
<td>2453</td>
<td>40</td>
</tr>
<tr>
<td>Higher</td>
<td>1177</td>
<td>19</td>
</tr>
<tr>
<td>Academic</td>
<td>470</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>6109</td>
<td>100</td>
</tr>
</tbody>
</table>

**Figure 2.1 Number of Jobs on Different Professional Levels (Vink et al., 2010)**
But even though the financing of the schools changed into a lump sum funding and the ROC organisations could make their own decisions, the real estate was still owned by the government and therefore the schools could only make real estate investment decisions with the permission of the ministry of Education, Culture and Science. With the ‘WEB’ (Wet educatie en beroepsonderwijs) of 1996 and the ‘operation reversal of capital funding for accommodations’ (Operatie omkering kapitaalfinanciering van de huisvesting) of 1997 the complete responsibilities for accommodation were transferred to the organisations. In practice, this meant that the schools had to buy the real estate from the government for a symbolic sum. Hence, the schools became legally owner of the real estate and responsible for all real estate decisions and the financing of this real estate.

Interesting to see is that all schools got to buy their real estate for a symbolic sum. However, as far as is known, there was no distinction in the quality of the real estate that was transferred. Although there are no specific sources that clarify the situation, it seems like all schools paid about the same amount to get ownership of their real estate. One can imagine that this gives the schools with high quality an advantage over schools with low quality real estate. The investments that schools with lower quality real estate had to make right from the start, must have been much higher that the investments schools had to make with higher quality real estate. There is a good possibility that the schools with very low quality real estate did get some form of compensation. However, it is assumed that there has not been a proper and comprehensive valuation of all real estate to equal the starting level. If this was the case, there would be information available about this subject. So overall, it can be assumed that the starting position of the different schools, at the time the real estate was transferred, was not equal.

When the schools became owners of their real estate, increase of scale and autonomy were encouraged even more. Due to the reformations of the MBO schools, many small MBO schools merged into ROC organisations. In about six years, 400 MBO schools and another 150-200 small educational organisations were merged into only 40 to 50 ROC organisations (Blank et al., 2012). As an urgent incentive to get all MBO schools to join a ROC organisation, government regulations stated that schools that did not join a ROC organisation would no longer be entitled to receive public funding (Beckers, 2012).

This decentralisation of the vocational education increased the responsibility of the management board of the newly formed organisations. The lump sum funding meant that decisions that were used to be made by the government, now had to be taken by the management board of the ROC organisation itself. Thereby, all new ROC organisations had to deal with the newly acquired real estate. The merge of different schools often gave the new organisations a very large amount of real estate. In each case this meant that the new board immediately had to assess their real estate in order to see whether the real estate was suitable for the newly formed organisation.
2.3. Data

In the Netherlands, there are currently sixty-six ROC organisations. The nature of these ROC’s varies from large organisations with multiple locations in the large cities like Amsterdam, Rotterdam and The Hague to smaller organisations with only a few locations in provinces with significant decline in population. Figure 2.2 shows an overview of all ROC organisations in the Netherlands.

All ROC organisations are owners of real estate. Some ROC organisations own all buildings they use for housing, other ROC organisations partly rent buildings. In total, there is 3 million square meters of educational real estate in use by ROC organisations. In the past twenty years, the amount of ROC real estate has increased with 25%. This mainly has to do with the increasing number of students and the nature of the education.

The education has become increasingly focused on connecting to the labour market. More practical education is of importance to prepare the students for their future professions. In some cases, this means that larger areas are required to fit these practical courses. As an example, one can think of the training of car mechanics (Van Elp & Zuidema, 2013).
This interpretation of the increase in total number of square meters is supported by the number of square meters per student. The average space per student now is 6.3 m², compared to 5.5 m² in 1990. Although most ROC’s have self-set targets around this 6.3 m², there is no imposed target by the government.

Remarkable is the difficulty to find more data on ROC organisations and especially data concerning real estate. Whether this is because the ROC organisations are not willing to make their information public, or that they do not have all information, is not clear. Relevant information to specific ROC organisations can be their total number of square meters, the number of square meters per student, the total costs of housing, the cost of housing per student, the type of real estate, the marketability of their real estate, and so on. If ROC organisations do not spend enough attention to these kinds of numbers, it will be very difficult to draw up a suitable real estate policy.

Thereby, the ROC organisations are under the supervision of the Inspection of education. This inspection mainly assesses on the basis of the solvency of the organisations. Since the schools have to submit the necessary information themselves, it is very important to have a proper overview of all relevant data.

In this research, it is therefore important to determine the knowledge of the ROC organisations on their real estate. To which extend are ROC organisations completely familiar with their own real estate situation? Do they have targets they try to reach? And what actions do they take to reach these targets? These are questions that need to be answered to have a complete overview of the situation and possible improvements.

2.4. Context

The school buildings of ROC organisations are essential to provide education. To the ROC organisation, high quality education is the most important organisational objective. The buildings are only part of the means to achieve this goal (Beckers, 2012). Although it is important that the buildings provide enough space and facilities, there are more factors that influence the quality of the education. Therefore, the perspective on real estate of ROC organisations is expected to be facilitating. The board members of the ROC organisations are likely to have more knowledge on educational and organisational level than on real estate. Overall, it is expected that the ROC organisations develop real estate strategies subordinate to educational strategies.

As mentioned before, ROC schools can be categorized as public real estate. This brings both possibilities and difficulties. On the one hand the income is insured because the government is the main financer. On the other hand, the height of the subsidies is directly related to the number of students, which are highly susceptible to changes. Also political influences can affect subsidies.
Another aspect of public real estate is that most buildings are quite specific. The real estate is therefore even more static than real estate in general. It is almost impossible to make short-term changes. Every real estate decision will therefore be for the long term. It is very important that real estate strategies are well thought through, because the effects of a decision are in most cases for multiple decades (Oberon, 2010).

As mentioned before, the society and education forms are actually very dynamic. Education should be adjusted to political, economical and societal changes. Since real estate is so static, it can be very difficult to have a portfolio of buildings that is both facilitating in a sufficient way and is optimal in an economical way. Therefore, it is not uncommon that the school buildings still do not facilitate in a sufficient way, even though investments were made to reach this goal (Beckers, 2012). The ROC organisations face this constant challenge to create a real estate portfolio that is complies with all organisational goals.

### 2.5. Organisational goals

To give a comprehensive overview of the goals of the ROC organisation, an objective tree was drawn up based on the objectives stated in different annual reports ((ROC Aventus, 2013; ROC Mondriaan, 2013; ROC West-Brabant, 2013). In this objective tree, all organisational objectives are placed hierarchically. This objective tree (Figure 2.3) clearly shows the importance of real estate within the organisation. The blocks concerning real estate are dark-coloured. Real estate is mainly used as a mean for higher quality education. With high quality and very functional school buildings, a perfect environment for education can be created. However, high quality, functional buildings comes at a price. In the objectives tree, this contradiction is also visible.

![Objective tree ROC Organisation](image)
Besides the contradiction within the ROC organisations regarding real estate, the objective tree is also valuable to see the other objectives the ROC organisations have. High quality education is one of the most important objectives of ROC organisations. With good personnel and a suitable education portfolio, the ROC organisation can offer good education. However, the ROC organisations also have to perform as a business and therefore needs properly operations.

2.6. Conclusion

In this chapter, the history, some relevant data and context of the ROC organisations are presented and discussed. First, the place of the vocational education in the Netherlands was outlined. Since the labour force requires many vocational educated workers, it is essential that the vocational education is of a high quality. To improve vocational education, the central government enforced the WEB law. This has led to many changes in vocational education over the last years and was the beginning of the ROC organisations as we know them today.

The ROC organisation has emerged from individual MBO schools as a result from a new law that was enforced in 1992. MBO schools were forced to form ROC organisations and the new organisations got many more responsibilities. The lump sum funding brought responsibilities and organisational difficulties, MBO schools had not have to deal with before.

Now, over twenty years later, there are 66 ROC organisations with 3 million square meters of real estate between them. This means that in a short amount of time, the newly formed management teams of the ROC organisations had to make drastic real estate decisions that did not always work out that well for the organisation. Even though most ROC organisations now have real estate management teams with often trained and well informed employees, the true decision makers still do not have sufficient knowledge about real estate.

ROC organisations will always have the challenge of managing real estate. Because of the characteristics of the real estate and on-going changes in society and education, real estate policies will have to be adjusted to the changes. Clear insight into their real estate situation is essential for ROC’s to draw up a suitable strategic real estate policy. This is the first step in the real estate decision making process.

Among most ROC organisations, real estate is not seen as an instrument to improve organisational goals. In this chapter, the role of real estate in the governance of ROC organisations was presented. Since real estate is still mainly seen as facilitating, the attention for this subject is not very high. By considering real estate not only as a facility, but also as an instrument to improve organisational goals, real estate could be managed much more efficient.
The method that will be presented in this research will have to allow for insight in the role of real estate and the opportunities of using real estate to improve organisational goals. If the method that will be used can show the consequences of specific decisions, the board of directors will be able to make a more informed decision. By knowing the influence of real estate decisions on the entire organisation all consequences for the organisations can be considered when making decisions.
3. Conceptual Framework

The real estate decision-making process can be quite complex. Multiple stakeholders influence the decisions, many factors have to be taken into account and extensive strategies should be developed to make proper real estate decisions. In this research, a method will be presented that might offer some support for this decision-making process. Studies have been performed on many aspects of real estate decision making. The knowledge from these studies can be very useful to this specific research. Therefore, in this chapter, existing literature, theories and views on this subject will be analysed. Also the applicability of these theories on the real estate decision making of ROC organisations will be elaborated on. With all this information, a conceptual framework will be set up, which will be the starting point for the further research.

This chapter focuses on the corporate real estate management strategies that are presented in the literature. In this research, these strategies will be used to see whether they can be applied to the real estate portfolios of ROC organisations. There are four aspects and strategies that will be considered. First of all, strategies to match real estate supply and demand on the basis of the DAS framework (De Jonge et al., 2009). Second, theories on how to determine and fill out the different steps in the DAS framework will be presented. In order to achieve this, the literature and theories regarding the relation between performance and real estate will be analysed. The goal of this part of the framework is to establish the performances that are relevant to ROC organisations. Then, corporate real estate management strategies in general and particular strategies for public real estate will be considered. Some important aspects that should be included are the stakeholder approach to decision-making and the place of public and educational real estate on the real estate market. Finally, the real estate decision-making process will be discussed. A recently developed model for portfolio design (Arkesteyn & Binnekamp, 2012) will be presented and elaborated on.

In each paragraph, the application of the theories on ROC organisations will be considered. There will be determined to which extend the theories match the situation of the ROC organisations and are valuable for their real estate decision-making process.

3.1. Matching supply and demand: DAS framework

To help ROC organisations in their real estate decision making, first, the matching of supply and demand should be considered. Matching supply and demand is the starting point for real estate decisions. Determining supply and demand can be seen in a very broad way. It does not only have to consider square meters, but can also consider the demand for facilities or technology, lower costs or other important aspects (Beckers, 2012).
3.1.1. The DAS framework

Research by the Real Estate and Housing department of the TU Delft resulted in a framework that provides a tool for creating a strategy to match supply and demand. The DAS framework, or Designing an Accommodation Strategy framework, considers current demand and supply and future demand and supply, and gives the essential points for drawing up a strategy to match these two.

The strategy that this framework (Figure 3.1) describes can be summarized in 4 steps:

- Determine the mismatch between current demand and current supply
- Determine the mismatch between future demand and current supply
- Analyse the alternatives: design, evaluate and select solutions for the mismatch
- Step-by-step plan to transform the current supply into the desired future supply

This framework offers a good starting point in developing a strategy. It considers not only the current situation, but also looks at the future developments. As mentioned before, it is very important in real estate strategies to consider these future developments, since it is difficult to make short term adjustments to strategic real estate plans. The framework describes the steps that have to be taken in order to create a strategy that will fit the future demand very clearly. However, filling out this model is more difficult than it may look. For instance, it is not always easy to determine the future demand. Thereby, the mismatch between demand and supply could suddenly become a lot larger than anticipated. A good example is the emerge of computers. The education changed rapidly and less space was needed. A large mismatch is difficult to resolve. Nevertheless, this framework does offer a good overview of the situation. To draw up an efficient strategy, proper corporate real estate management is essential. In the next paragraphs, attention will be paid to the possibilities to determine the different steps from the DAS framework.
3.1.2. The application of the DAS framework on ROC organisations

The DAS framework is a broadly applicable framework, which can also be valuable to ROC organisations. This framework will mainly be used to get a good overview of the situation of the portfolio. It describes the (mis-)match between supply and demand on the basis of which a strategy can be developed. This will also be the way ROC organisations should form their strategy. However, there are some difficulties within this framework, which should be overcome by the ROC organisation. Especially the future demand is difficult to predict and dependent on factors that cannot be influences by the ROC organisations themselves. Demographic trends and government decisions can have a huge impact on the future demand. Therefore, it is important to take these into account and determine some margins to correct for unexpected changes in demand.

The DAS framework also mentions the weighing and selection of different alternatives to determine the most sufficient future supply. A step-by-step plan has to describe the transformation of the portfolio from current to future supply. However, all difficulties that appear in this alternative selection and step-by-step plan are not included in this model. Therefore, it is essential to understand that this framework only offers a schematic approach to get more insight in the situation. The model alone is not sufficient to develop a proper real estate strategy for ROC organisations.

3.2. Relation between real estate and performance

To determine the demand of a ROC organisation, it should be clear what factors form this demand. These factors can be derived from the performance indicators. Performance indicators represent the real estate specifics that can be influenced by real estate decisions (De Vries, 2007). In describing the demand of an organisation, the performance indicators can be seen as the possible demand factors. An overview of all performance indicators can help to create a complete overview of the important factors and the actual demand of the ROC organisations.

In this paragraph, the key performance indicators for ROC organisations will be presented. When these key performance indicators are clear, the link can be established with the demand.

3.2.1. Organisation Performance Indicators

Jackie de Vries presented a schematic model of an organisation in her research (De Vries, 2007). In this model (Figure 3.2), the performance of an organisation is presented. The input of an organisation are the five resources they can use to potentially add value to the organisations’ performance (Joroff et al., 1993). Besides corporate real estate, these resources are people, technology, ICT and capital. Research shows that real estate cannot be considered separately in defining the performance of an organisation and often has interdependences between the other resources (Joroff et al., 1993) (De Vries, 2007). It will therefore be quite difficult to exactly determine the influence of a specific intervention in the real estate on the organisational objectives. Nevertheless, this model gives a good insight in the possibilities for real estate interventions that can help to comply with the organisational objectives.
In Figure 3.2 the real estate aspects in the model are explained in more detail. In the input section the possible changes of real estate are presented. These are the real estate interventions that can be part of a strategy to influence the organisational objectives. The process section shows which factors can be directly influenced by these changes. These factors are very important to the organisational objectives. If these factors are influenced in a positive way, this means that the organisational objectives will be approached.

![Figure 3.2 Theoretical Framework of Organisations (De Vries, 2008)](image)

Finally, the output section shows the financial consequences and constraints of the interventions. This part represents the financial potential of the interventions. Even though some interventions may have a very positive influence on the organisational objectives, as soon as the intervention is way too expensive, it is no longer an option. It is important to keep in mind that interventions have to be financially realistic.

Based on the performances that are presented in the model: productivity, profitability and competitive advantage; the performance indicators can be derived. These performance indicators will be different for each organisation. Not only because the characteristics of the organisations are different, like the number of students, but also because the decision-makers of the organisations might have different priorities (Van der Voordt & Van der Zwart, 2011). In this theoretical chapter, the performance indicators that are applicable to all ROC organisations are presented without prioritising them, or giving them a weight.
3.2.2. ROC Performance Indicators

Assuming that the real estate decision making of ROC organisations has great similarities with the real estate decision making of Universities, the research of Alexandra den Heijer will be consulted to draw up the ROC performance indicators. The performance indicators that were presented in her research were mainly based on the performances that Jackie de Vries also mentioned: productivity, profitability and competitive advantages. Den Heijer expanded these performances with indicators in the field of sustainable development, since this is a topic that becomes more and more important in accommodation issues. The main difference between the performance indicators of ROC organisation in comparison to Universities, are the indicators concerning the scientific research. Delivering publications is one of the core businesses of Universities. However, this is not the case for ROC organisations. The indicators focussed on publications will therefore not be included in this research. Also ROC organisations are not as international orientated as Universities. Therefore in these indicators, some adjustments will be made.

The performance indicators for ROC organisations that can be derived from the research of Den Heijer are presented in Table 3.1. As mentioned before, these indicators are an important guideline in determining the demand of an ROC organisation. As an example, the number of square meters per student can be considered. Every ROC organisation has its own norms for these indicators. As mentioned in chapter two, the average value is 6.3 m² per student, so it is likely that the norms of the different ROC organisations lie around this average. The total demand for space is established by simply multiply this norm with the expected number of students.

<table>
<thead>
<tr>
<th>Key performance indicators to measure an ROC organisation’s performance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Productivity</strong></td>
</tr>
<tr>
<td>m² per student</td>
</tr>
<tr>
<td>m² per employee</td>
</tr>
<tr>
<td>Output per m²</td>
</tr>
<tr>
<td>Energy costs per m²</td>
</tr>
<tr>
<td>Turnover (total costs of ownership as % of total costs)</td>
</tr>
<tr>
<td>Etc.</td>
</tr>
</tbody>
</table>

**Table 3.1 Key performance indicators ROC Organisations**
Although it can be assumed that there is a relation between real estate decisions and the performance of an organisation, it is very difficult to measure the contribution from a specific intervention in real estate. The framework of de Vries is therefore not directly applicable to develop a strategy. However, the performance indicators that are derived from this framework can be very valuable in the process, since the factors that form the performance are presented. In developing a real estate strategy, it is important to consider these performance indicators to develop a strategy that approaches the desired norms as close as possible. These indicators can also be used in selecting alternatives. Looking at the DAS-Framework (Paragraph 3.1.1) at a certain point, alternatives have to be weighed and selected. The performance indicators can be used as criteria to guide this selection.

3.3. Corporate Real Estate Management

In the DAS framework (Figure 3.1), the final step is to develop a real estate strategy in order to realize a portfolio that suits the demand of the ROC organisation. To develop this strategy, corporate real estate management can be helpful. Corporate real estate management is basically about using real estate to serve organisational objectives and to add value to the organisation (McDonagh & Nicholas, 2009). Corporate real estate management focuses on alignment of real estate strategy to corporate needs and objectives (Jensen et al., 2013). In order to achieve this, the strategic and operational level should be connected (De Jonge et al., 2009).

3.3.1. CREM Framework

In his research, De Jonge created a framework for corporate real estate management (Figure 3.4a) in which attention is paid to the four domains that play an important role in the alignment of the real estate to the organisational objective (De Jonge, 1997). On a strategic and operational level, both real estate and organisational objectives are presented. In theory, all relevant factors for real estate decisions should be represented in this model.

Alexandra den Heijer included a stakeholder approach to this framework in her research (Den Heijer, 2011). Stakeholders are a very important link in the decision-making process. All aspects in a real estate decision-making process can be represented by the people that have an interest in one or more of these aspects. Real estate decisions are influenced by many stakeholders. Each stakeholder has a personal view on the situation and has different criteria. This makes the decisions very complex (Harputlugil et al., 2011). Real estate decision making should therefore always incorporate the interests of the important stakeholders (De Jonge et al., 2009).

Figure 3.4b shows the stakeholders associated with the four domains. To the users of a building, the functionality is essential, a technical manager will focus on the physical aspects, the finances will be elaborated on by the controllers and finally, the policy makers are responsible for creating an integrated strategy for the total organisation.
To make sure all important parties and interests are included in the real estate decision making, the CREM framework linked to stakeholders can be very useful. Therefore, this framework is a starting point for developing a strategy. For this research, a method will be created with real estate decision making factors. To create such a method, it is important to include the most important interests of all of the stakeholders presented in the method and the aspects representing the domains. Using this framework makes sure that not only the demand of the ROC organisation will be input for the decision making, but also the external factors and interests of other actors, that can be just as important.

3.3.2. Public Real Estate

The real estate of ROC organisations is considered to be public real estate. Since public real estate has some important differences from corporate real estate, it is important to take a closer look at the characteristics of public real estate and the consequences for the management of this type of real estate.

A major difference between corporate and public real estate is the fact that public organisations are not driven and familiar with making a profitable return on investments. Thereby, the sometimes very specific nature of the buildings causes an economic value of zero. Specific buildings often have the disadvantage of being non-marketable. It is for public organisations very common to have a portfolio with non-marketable buildings. The ratio marketable and non-marketable buildings differs per organisation.

Whether or not a building is marketable is dependent of many factors like location, building characteristics and the market. To create a flexible portfolio, it is important to consider the marketability of the buildings in the portfolio. A portfolio with only non-marketable buildings can cause major difficulties when changes need to be made. In such a case it will be very difficult to sell or rent out buildings. It is therefore very important in public real estate management to keep in mind how suitable a building can be for potential future users.
Even though it seems obvious public organisations should create a portfolio of marketable buildings, this is easier said than done. Since the activities of the public organisations are often not very standard, they need buildings that can support these activities. This may mean that they need more specific, and therefore less marketable buildings. The public organisations face a challenge to create a balanced portfolio with buildings that suit their needs, but also can be suitable for the needs of future users. (Evers et al., 2002; Van der Schaaf, 2002)

An second difference can be found in the other type of goals in a public organisation. Within public organisations the costs are less important than in corporate organisations. In a public organisation there are other goals that are considered just as important as, or even more important than costs.

These goals can be social or political goals in the field of economy, culture, employment, environment etc. In the last 25 years, the view on public real estate management has changed quite a bit. In the first place, the amount of attention for the subject has increased. Previously, there was not a lot of actual management of public real estate. Every case was assessed separately. There was no overview of all public real estate and the interactions of the different buildings. (Van der Schaaf, 2002)

This situation has changed in the past few years. Public real estate management, as we know it today, looks at the complete portfolio. Thereby, the priority goes to meeting the needs of the occupants by adding value to core business processes. Overall, the focus is more and more on all aspects of real estate. In a way, this complies very well with CREM. However, the application of CREM on public real estate works a bit differently. In CREM it is common that only actors within the organisation influence the decision making. Looking at the characteristics of public real estate, it can be concluded that there are more actors involved than just the actors within the organisation. (Evers et al., 2002)

The multiple actor environment of public real estate is probably the largest difference between public real estate and corporate real estate. Besides the goals of the organisation itself, they have to consider the political goals. These political goals can be forced by law or regulation, but can also be a more voluntarily policy. Either way, a public organisation, like the ROC organisations, benefit from achieving political goals. Since, in the end, the government is responsible for the major part of the financing of the ROC organisations, they will have to comply with the government’s wishes.

In many ways, public organisations face the challenge to balance their portfolio. They need buildings that make it possible to reach their own organisational goals, political goals and are financially viable. Thereby, they need to consider the future needs of their own organisation or possible other users. Overall, it can be said that the characteristics of public real estate create more difficulties compared to corporate real estate.
3.3.3. **Real Estate Management ROC organisations**
Looking at both corporate real estate management and public real estate management, it can be concluded that the characteristics of ROC organisations suit parts of both profiles. Although ROC schools are considered public real estate, since they are financed by government funds, the organisations can make autonomous decisions. Therefore, they will pay attention to their organisational goals. Whether these goals are very corporate and economically driven or more focussed on users satisfaction does not matter in terms of approach. Overall, CREM can be quite suitable and valuable for ROC organisations.

However, there is a very important aspect of public real estate that is applicable to ROC organisations and that influences the approach to real estate management. Because many school buildings are quite specific buildings and thus often non-marketable. A building that is very functional for a school, is often not very functional for other functions. This makes the buildings non-marketable. Non-marketable buildings limits the possibilities and flexibility of a portfolio. ROC organisations will have to find a way to deal with this aspect. In the same time they have to be beware that they do not compromise too much on the functionality. ROC organisations have to try to create a portfolio that is balanced on both marketability and functionality. This can be quite a challenge and requires proper management.

3.4. **Real Estate Decision-Making Process**
In the previous paragraphs, the input for the decision-making process is discussed. Important in this decision-making process is the future demand of ROC organisations. In principle, the portfolio should be adjusted to meet this demand. Besides looking at the demand of the organisation, it is also important to include the interests of other stakeholders involved and to create a balance between functionality and marketability. In this paragraph, some attention will be paid to the decision making process as such. The way a decision making process is shaped, could be an influence on the final decisions made. Proper real estate decision making is essential to corporate success (Grabowski & Mathiassen, 2013). Therefore, it is valuable to present some theories on proper decision making and some issues that often occur in the process.

It might sound logical that a real estate decision is always a rational decision, based on facts. However, for various reasons, this is not always the case. For example, research shows that smaller firms are more likely to make location decisions based on “gut feeling”. The reason behind this is that smaller firms often have little resources. A detailed evaluation is for these firms not easy to reach (Nunnington & Haynes, 2011). It is not to say that a rational decision is always better than decisions based on instinct and gut feeling. However, bringing some rationality into the decision making process can help to get better insight in the situation, make the process more transparent and to have well informed decision making. Therefore, in this paragraph two approaches to portfolio decision making will be presented. Both models could contribute to rationalising the real estate decision making.
3.4.1. Preference Based Portfolio Design

A recently developed approach to real estate portfolio decision making, is a combined study of Monique Arkestijn and Ruud Binnekamp (Arkestijn & Binnekamp, 2012). The technique used is based on Multiple Criteria Analysis, in which different alternatives are tested against predetermined criteria. The weight of the criteria and the scores of the alternatives on the criteria together, form the total score. In a Multi Criteria Analysis, the best scoring alternative would be most satisfying considering the criteria used (Malczewski, 1999). This method is used in many types of decision making and is designed to select the best alternative for a specific problem or situation. Since a real estate decision maker of a ROC organisation also faces many alternatives, a Multiple Criteria Analysis can be quite useful to select the best option.

Since real estate portfolio decisions are a bit more complicated than decisions that are usually addressed with a multiple criteria analysis, Arkestijn en Binnekamp used previous research (Binnekamp, 2010) to adjust this commonly used method to real estate portfolio decision making. The most important specifics of this adjusted model will be discussed in this sub paragraph.

**Alternatives**

The first issue that should be addressed when using this model is the determination of the alternatives. In theory, the different alternatives of a real estate decision on portfolio level, are represented by the possible combinations of interventions in the buildings within the portfolio. One alternative will then be one possible combination. In the simplest case there are three options for one specific building: keep, remove or transform. When an organisation has 10 buildings, the number of options already add up to 59049 (3^10). Testing all alternatives requires calculations with complex algorithms and often a large amount of time. Thereby is this option not even very useful. Due to limited possibilities, or based on knowledge from information or experience, there are always some options that are clearly not the best, and therefore not worth investigating.

![Table 3.5: Multi Criteria Analysis](image-url)
However, another approach is also possible. Assuming there are ways to predict the best option for the different buildings (like presented in paragraph 3.4.2), only a few realistic alternatives can be created. Using only a few alternatives, thus a few combinations of interventions for the portfolio, makes the decision making more clear and understandable. The downside of this approach is that there is a possibility that the ‘best alternative’ is not included. However, this approach indirectly makes it possible to make insightful which interventions can improve the portfolio and where the possibilities for improvement lie. This means that the model can also be used in the opposite direction, where based on the scores of the 0-option, it is examined on which criteria gains can be made to the overall scores.

**Criteria**

When the alternatives are clear, it is important that the proper criteria are determined. Criteria should represent the goals of an organisation and should lead to a good decision. An alternative that scores optimal on all criteria should be the optimal alternative for the organisation. Since criteria for decision making are dependent of perceptions, Arkestijn and Binnekamp choose to use a stakeholder approach in determining the criteria. The most important stakeholders in the decision making process are linked to one or more criteria. Using this method, all stakeholders get a say in the decision making. In case of the ROC organisations, the stakeholders and their criteria resulting from previous research (Den Heijer, 2011) can be used.

The scoring of the alternatives on the criteria will be presented by preference ratings. The use of preference ratings were chosen because of the stakeholder approach. It is quite difficult to use objective scoring, especially for scores on functionality or user satisfaction. Every stakeholder has a different view on this. The preference rating that is assigned is based on the preference of the representing stakeholder for a specific criteria. To create a proper scale, LaGrange curves are used. The goal of drawing up this LaGrange curve for each criteria is to objectify the preferences. Input for a LaGrange curve is the preference of the decision maker. The curve is drawn up before scoring the alternatives. In order to draw this curve up, the stakeholder will have to assign three points of the preference.

For every criteria that is part of the final model, a LaGrange curve will be drawn up. These curves will present the preference of the stakeholder for the value of a criteria. These curves will finally be used to fill in the Multi Criteria Analysis. In some cases this will mean that the entire portfolio is assessed on the basis of the curve. A good example for such a criteria is the number of square meters. For an ROC organisation, the total number of square meters of all buildings together is relevant. However, for example, the functionality and quality of the portfolio will be assessed per building. It is quite difficult to assess the overall quality of a portfolio. Since it is easier to assess the quality of a building, it is more common and convenient to choose this approach. For the overall score, the average of all buildings will be considered.
To give more insight in the use of the LaGrange curve, an example is presented. In this example, the preference ratings of the percentage of buildings serving societal goals within a portfolio are presented. As one can see in the graph, the desired score of the relevant stakeholder is that 100 percent of the buildings in the portfolio will serve a societal goal. If the percentage of buildings serving a societal goal is below 40 percent, the preference rating is zero. This means that is important to have more buildings serving a societal goal than 40 percent, or this stakeholder will be very unsatisfied.

As soon as the percentage is above 80 percent, the preference rating is 50. Between 80 and 100 percent, the score rises rapidly. The stakeholder will probably be satisfied with a percentage between 80 and 100. Summarizing, from this graph, it can be concluded that the percentage buildings within the portfolio serving a societal goal must be as high as possible.

Result
In the final model as described by Arkesteijn and Binnekamp, the criteria are based on the stakeholders involved. The alternatives are represented by the possible combinations of interventions in the buildings in the portfolio’s. The scores are derived from the LaGrange curves with preference ratings.

The result of this model will be a preference rating for each of the analysed alternatives. The alternative with the highest score should be the alternative that is most satisfying for the stakeholders. The total model of preference based portfolio design is presented in Figure 3.7 Preference based portfolio design. In the column to the right, the total score of the alternatives is presented. This is the weighted preference rating of a portfolio, and the score that is used to select the best scoring alternative.
This research focuses mainly on the larger real estate decisions. The goal of this research is to offer ROC organisations a tool to support their real estate decision-making in case of a significant mismatch in supply and demand. This comes down to decisions on changing the portfolio by purchasing new real estate, investments for substantial transformation or the divestment of real estate. In case of divestment, the question arises what real estate should be disposed and what real estate should be maintained.

DTZ Zadelhoff created a concise, market oriented, schematic matrix (Figure 3.8). For ROC organisations, the real estate market is a major limitation for the possibilities for real estate decision making. Since schools are often not highly marketable buildings, proper attention for market possibilities is very important in the real estate decision making. This matrix consists of strategies for both owner-occupied and rented premises. The marketability of the premises and functionality for the core business of the organisation are the factors on which the strategy is based. Of course, the marketability and functionality should be determined. The functionality is mainly based on the performance indicators presented in paragraph 3.2.
This matrix could be used as input for the portfolio decision method. In determining the alternatives, it is very useful to look at the realistic options to create alternatives with a higher likelihood for success. However, it had to be noticed that this matrix mainly influences the financial criteria.

### 3.4.3. Real estate decision making process for ROC organisations

A model for preference based portfolio design was presented in this chapter. Interesting part of this model is that it covers many aspects of the real estate decision making process of ROC organisations. All important actors and factors can be represented. When taking a closer look at the model and considering the possible criteria in the case of ROC organisations, it is noticeable that all other models presented in this chapter can be used as input for this method. The DAS-framework can be used to determine the (mis)match between supply and demand, the performance indicators are important to determine the desired quality and functionality, and to determine the most important stakeholders, the CREM model can be used. All models contribute to the process, but none of them covers the complete situation.

The models that are presented in this paragraph are applicable to the ROC real estate decision making. However, question is whether or not the models are easy to use in practice. The model for preference based portfolio design seems to cover a large part of all actors and factors involved. However, the complexity of the model could be too high. If a model is quite difficult to use, question is whether such a model is valuable to the process. The goal of this research is to improve the process and not to make it even more complex. During the case research, the models will be presented to the ROC organisations to test their feeling toward the different models presented.

### 3.5. Conclusion

In this chapter, several theories and models were presented for real estate decision making. All models address a specific part of real estate decision making. Overall, it can be concluded that all models and theories can be valuable to real estate decision making. However, all models also have their limitations and are often not completely comprehensive. There is no model that completely represents or covers all difficulties of the real estate decision making of ROC organisations. This mainly has to do with the characteristics of ROC real estate.

For ROC organisations, the portfolio decision making is complex due to the public character of the real estate and the inability to make short term changes to this real estate. Considering all models that can be used in real estate portfolio decision making, there are a few important aspects of decision making that determine the success of the decisions made. First of all, insight in the supply and demand of the organisation creates a clear situation. Proper decision can only be made if the current and desired situation are known. Besides, the stakeholders that can have influence on the decision making should be considered. Without cooperation of these actors, strategic plans might not be executable. Thereby, the ROC organisations should think carefully about their decision criteria. Properly considered decision criteria will make the decision making more rational.
**Figure 3.9 Combined models for real estate decision making**

The diagram illustrates combined models for real estate decision making, focusing on stakeholder analysis, supply vs. demand, financial situation, quality, functionality, sustainability, and alternative usability. The table outlines key performance indicators to measure an ROC organization's performance, including productivity, profitability, competitive advantages, and sustainable development.

- **Productivity** metrics include:
  - m² per student
  - m² per employee
  - Output per m²
  - Energy costs per m²
  - Turnover (total costs of ownership as % of total costs)

- **Profitability** metrics include:
  - Revenue minus costs
  - Market share of students
  - Student satisfaction
  - Energy use per user

- **Competitive advantages** metrics include:
  - Natural rankings
  - CO₂ emission per m²
  - Real estate satisfaction

- **Sustainable development** metrics include:
  - Energy labels of buildings
  - Footprints m² per user

The table also lists criteria such as C1 (Supply vs demand), C2 (Financial situation), C3 (Quality), C4 (Functionality), C5 (Sustainability), and C6 (Alternative usability), along with weightings for each criterion for stakeholders 1, 2, and 3.
Finally, all external factors should be taken into account. The best example is the real estate market. Changes in this market can have a major influence on the real estate situation.

Since all models have elements that can be valuable to the real estate decision making of ROC organisations, it is interesting to see how all elements can be combined into a model that is especially designed for these organisations. If all elements that can contribute towards improving the decision making process, a model can be drawn up that will be more applicable to ROC organisations than any existing model. Figure 3.9 shows how all models can be combined. For now, the model has been filled out according to the expectations for important factors. It may very well be the case that during this research it becomes clear that other factors represent the actual decision criteria for ROC organisations.

The criteria chosen for this first drawn of the model are largely based on the models that were presented and complemented by some criteria that seem important as a result of the literature study. The first criteria, supply versus demand is derived from the DAS framework. If the input for this criteria is difficult to establish, the DAS framework can be consulted to fill determine the score for this criteria. The criteria Quality, Functionality and Sustainability can be derived from the performance indicators. In the table of performance indicators, there is also attention for the profitability and competitive advantages.

The profitability is implemented in the criteria financial situation. In order to give a proper overview of the financial situation of a ROC organisation when choosing a specific alternative, a cost benefit analysis can be in order. Using only performance indicators will probably be not sufficient. Therefore, the financial situation is included separately from the performance indicators in this method. Since this is just a first drawn of the method, the exact details or quantification will not be discussed yet. More attention will be paid to these details in chapter five.

Finally, the alternative usability is part of the criteria. This criteria is based on the necessary balance that needs to be found between functionality and marketability, as discussed in paragraph 3.3.2 Public Real Estate.
4. The ROC organisations: Case studies

Based on available information, a method for real estate decision making was created during the literature study. However, the only way to be able to create a method that is really applicable for the real estate decision making process of ROC organisations, is to understand the organisation and its goals. Since it is impossible to get a comprehensive view of an organisation just through literature, three ROC organisations were contacted. The three organisations agreed to participate in an interview about the goals and the current decision making process of their ROC organisation. Besides the interviews, for each of these ROC organisations research has been done by the consultation of the annual reports and documents on the housing policy of the ROC organisations. In this chapter the studies on the three ROC organisations are discussed. Eventually, the case studies will be used to improve the method and adjust it for practical use.

First, an introduction will be given on the ROC organisations that were subject to the case studies. The specifics of the organisation will be discussed to give the organisations a place within the context of the ROC organisations in the Netherlands. It is important to know in what way the specific organisations differ from the average to make a proper generalisation of the method.

Then, the aspects of the organisations that are important to the decision making of ROC organisations will be discussed. For every aspect, the results of the interviews will be elaborated on and the relevant documents will be consulted to understand the organisations as good as possible and to get a comprehensive overview of their processes. The aspects that will be discussed are; the allocation of financial resources, the decision making process and the important actors and factors in the decisions.

Combining the results of chapter three and chapter four, there should be a comprehensive answer to some of the sub questions of this research. The characteristics of the ROC organisation should be clear and the factors that are most important to the real estate decision making of these organisations should be established.

4.1. The cases

As mentioned before, three different ROC organisations were contacted. In selecting the specific organisations, the aim was to select three organisations that differ in some aspects. The organisations are located in different parts of the country and also differ in size and objectives. In this paragraph the three organisations are presented.
4.1.1. ROC Mondriaan

The first organisation that was interviewed was the ROC Mondriaan, located in the Haaglanden region. Mr Van Wegberg, head of the facility office of ROC Mondriaan, provided the information on the real estate decision making of this organisation. The summarized results of the interview can be found in Appendix A.

ROC Mondriaan is one of the larger ROC organisations in the Netherlands and provides education to roughly 18,000 students (ROC Mondriaan, 2013). This organisation is a clear result of the new law enforcements in the nineties. In the year 2000, many MBO schools in The Hague and surroundings were merged into ROC Mondriaan. On the subject of housing, this meant that all MBO schools brought real estate to the merger. The new organisation immediately became owner of a large amount buildings. Therefore, this was quite an important issue in the first stages of the merge. The new organisation drew up an overall policy for the organisation. From this policy, the housing policy was derived. In this housing policy, the objectives of the organisation prevailed, and it was most important to create accommodations that suited the new organisation and provided the desired level of facilities and quality. After many changes, ROC Mondriaan now has seven locations in total scattered over The Hague, Delft, Leiden and Naaldwijk. They are using 17 buildings from which most of the buildings are owned by the organisation itself, some of them rented by means of a long-term lease agreement. In the next paragraphs, the housing policy of ROC Mondriaan will be elaborated on in more detail.

An aspect that ROC Mondriaan will have to deal with less than many other ROC organisations is the expected shrinking number of students. The number of students remained quite the same over the last few years. Due to the location of ROC Mondriaan in the ‘Randstad’, they are not threatened by declining population. Therefore it is expected that the number of students will remain about the same in the coming years as well.

4.1.2. ROC Aventus

ROC Aventus is a medium-sized ROC organisation with roughly 10,000 students spread over four locations in Apeldoorn, Zutphen and Deventer (ROC Aventus, 2013). On behalf of ROC Aventus, Mr Dieckmann (manager of facilities and operations) and Mr Bosgoed (head of finance) gave the interview (Appendix A). Although ROC Aventus had similar starting issues with the real estate portfolio as ROC Mondriaan, these issues were not as large. They did have a surplus in space, but the required reforms were not as substantial. In practice, for only one building a new allocation was necessary. In total, ROC Aventus has 6 buildings from which only four are used for education. One of the buildings in Deventer is rented out and because of the new main building in Apeldoorn, the old building is now empty. A new destination for this building still needs to be found.

Although the starting position of ROC Aventus was not that challenging as some of the other ROC organisations, they do face problems due to declining population. Even though ROC Aventus is not located in the area with the most extreme population decline, they are not completely off the hook.
It is even quite possible that ROC Aventus will face declining student number in the short term. Therefore, it is essential that the organisation can respond to this phenomenon to prevent financial issues. From the interview, it becomes clear that ROC Aventus is very aware of the possible changes. At the moment, the organisation is working on developing a strategic plan for the future.

### 4.1.3. ROC West-Brabant

On behalf of ROC West-Brabant Mr Machielse (Head of the housing and facility department) gave the interview (Appendix A). ROC West-Brabant is a large ROC organisation with a little over 20,000 students in the MBO education. Although the number of students closely corresponds to the number of students of ROC Mondriaan, there are some substantial differences between the organisations.

While Mondriaan, located in the Haaglanden region, has competition of other ROC organisations operating in the same region, ROC West-Brabant has a large area covered where they are the only MBO education provider. Thereby, the area covered by ROC West-Brabant is a lot bigger than the area covered by ROC Mondriaan. The reason for these differences are the characteristics of the areas. While the region Haaglanden is densely populated, West-Brabant is sparsely populated. For ROC West-Brabant, which had a similar merge at the start of the century, this meant a lot of real estate scattered across the area. Thereby, they had the difficulty to decide whether to centralize the different study programs, or keep providing all sorts of study programs across the area. These issues will be elaborated on in more detail in the next paragraphs.

The annual report of ROC West-Brabant offers more explicit information about the housing situation. From the 59 buildings they are using, 83% is owned by the organisation and the other 17% is rented. 12% of the floor space owned by ROC West-Brabant is rented out to other parties.

### 4.1.4. Conclusion

The ROC organisations chosen for the case studies are different in several aspects. Although ROC Mondriaan and ROC West-Brabant have about the same number of students, their approach to real estate is completely different. The area covered by ROC West-Brabant is many times larger than the area covered by the other two ROC organisations. As a result, ROC West-Brabant has much more buildings to provide education to nearly the same amount of students as ROC Mondriaan. This mainly has to do with the accessibility of the courses for the students.

<table>
<thead>
<tr>
<th>ROC organisation</th>
<th># Students</th>
<th># Buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROC Mondriaan</td>
<td>18,000</td>
<td>17</td>
</tr>
<tr>
<td>ROC Aventus</td>
<td>10,000</td>
<td>6</td>
</tr>
<tr>
<td>ROC West-Brabant</td>
<td>20,000</td>
<td>59</td>
</tr>
</tbody>
</table>

**Table 4.1 General information ROC Organisations (2012)**
This difference in real estate also requires different policies. Where ROC Aventus has chosen to be represented by one or two large buildings in each of the cities where they are located, ROC Mondriaan has spread the different education branches across their locations. ROC West-Brabant has to spread the schools across their area to reach all students in the area. If they would only have a few large buildings, the time the students have to travel to go to school would be long. It is difficult to say which approach makes the real estate decision making more complicated. Even though ROC West-Brabant has many more buildings to maintain and consider in their policy, they do have more flexibility in their portfolio. With only four buildings in use, it is very difficult for ROC Aventus to create a little more or a little less supply in space. They will have to operate within their existing space.

4.2. Allocation of financial resources

ROC organisations have different ways of collecting funds. Government funding is by far the largest source of income for the ROC organisations. Over 75% of the total income of ROC organisations is coming from the government funding (100 bv, 2005). Other forms of income are tuition fees, income from projects for third parties and special government funding or subsidies for special projects. The government funding comprises a lump sum. This lump sum is determined based on the number of students enrolled with the ROC organisation and the number of diplomas awarded by the organisation (Rijksoverheid, 2013). The allocation of the resources can be determined entirely by the ROC organisations themselves. Therefore, each ROC organisation can determine their own budget for housing. Overall, this budget is roughly 8-10% of the total lump sum. Since in most reports of the ROC organisations little attention is paid to housing, there is no extensive information available on how this budget is determined. In the interviews, the allocation of the financial resources was therefore an important subject. Also the importance of financial aspects in decision making is not clear. Because of the enhanced supervision of the Inspection of Education as a reaction to the recent problems with the financial situation of some ROC organisations, the financial side of the ROC real estate should become a more pressing issue. Overall, the financial allocation of resources and the specific role of the finances in the real estate decision making is an important aspect in this research and the interviews.

4.2.1. Context

Since the financial situation of ROC organisations is often complicated, it is important to know about the financial constraints from the inspection and the possibilities of financing before looking at the role of the financial situation within the decision making process. This subparagraph will describe the financial playing field of ROC organisations, specifically for real estate.

As mentioned before, the main part of ROC income is provided by government funding. Since this funding consists of public money, ROC organisations will have to comply with the rules set by the government. Although there are no specific rules on how to spend the money, the overall financial situation of the organisations is monitored and reviewed by the Inspection of Education.
The Inspection of Education is an executive agent of the government and has the task of monitoring all schools in the Netherlands. Besides monitoring the finances of the schools, they also monitor the quality of education. For this research, only the rules regarding the financial situation and real estate investments will be considered.

The financial monitoring by the Inspection of Education is based on financial risks. These financial risks are derived from the solvability, liquidity and viability of the organisation. From these figures, solvability is the most important when it comes to real estate decision making, since it considers the long term financial conditions of the organisation. Table 4.2 explains the thresholds set by the Inspection of Education. When a ROC organisation end up under the thresholds of the Inspection of Education will be placed under supervision of the Inspection. The Inspection will then investigate the financial situation of the ROC organisation extensively to determine the issues and financial problems. The Inspection will advise the ROC organisations on how to improve their financial situation and the organisations will be supervised until they are above thresholds again (Inspectie van het Onderwijs, 2012).

<table>
<thead>
<tr>
<th>Description</th>
<th>Formula</th>
<th>Threshold inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvability</td>
<td>Equity/Total capital</td>
<td>0,3</td>
</tr>
<tr>
<td>Liquidity</td>
<td>Current assets/Current liabilities</td>
<td>0,5</td>
</tr>
<tr>
<td>Viability</td>
<td>Operating income/Total income</td>
<td>&lt; 0 (For 3 years)</td>
</tr>
</tbody>
</table>

**Table 4.2 Financial thresholds Inspection of Education**

As mentioned, when focussing on real estate decision making, the solvability of the ROC organisations is an important figure. For real estate investments, often large sums are involved for which debt capital is usually inevitable. The solvability is in these cases important to consider. If the investment will cause a drop of solvability under thresholds, the financial risks of the investment will be too high and the ROC organisation can end up with large financial problems.

For financing, ROC organisations usually went to commercial financers. Now, more and more ROC organisations switch to treasury banking with the ministry of finance. There are several advantages to treasury banking. Besides a lower interest rate, the ministry of education guarantees the loan to lower the risks. Even though treasury banking seems to be the safest and cheapest type of financing, the majority of the ROC organisations still have commercial loans (MBO raad, 2013b).
Until recently, investing in ROC real estate was quite attractive to commercial banks, since the schools usually had a very secure income. Since the financial crisis this has changed, so interest rates go up and commercial banks are not that interested in financing anymore. This may be the reason for the upcoming use of treasury banking (Inspectie van het Onderwijs, 2012).

4.2.2. ROC Mondriaan

The first aspect discussed during the interview was the allocation of financial resources. In case of ROC Mondriaan, the decision of the allocation is with the board of directors. However, the department responsible for the real estate management gives an indication of the expected costs for real estate. This indication is mainly based on information from the past. The main part of the costs for real estate are the costs for maintenance and depreciation. Both financial items can be estimated quite well based on information from the past.

Besides these financial items, in the estimation are some investment costs included for new projects such as renovations or complete new buildings. These investments costs are not completely random, but usually indented for the execution of the housing plan. Overall, the budget is sufficient to accomplish the housing goals. Of course, the housing plan is drawn up with the financial possibilities in mind. For investments, financing is necessary. ROC Mondriaan has used treasury banking to finance the recent real estate investments. With Treasury banking they are able to keep the risks low as well as the interest rates. Because of the savings during the build of the new locations, 15 million of the loan could be repaid earlier to even lower the interest expenses. Also the solvability of the organisation benefitted from the early repayment. The solvability of the organisation of 0.57 is relatively high compared to the average solvability of 0.51 (Inspectie van het Onderwijs, 2012).

Another important question on the financial subject is the importance of the financial aspects in decision making. More specific, to which extent the financial aspects are taken into account during the development of the housing policy and the specific decisions concerning real estate investments. For ROC Mondriaan, financing is really a boundary condition. Housing has a facilitating role in the organisation. The goal of the housing policy is therefore to provide housing that suits the learning activities as effectively as possible. The management team that is responsible for housing gives an indication of what they think is necessary to achieve this goal. The board of directors decide on that base how they can allocate the funds and determine the housing budget. As long as the total costs for housing stays within this budget, all possible investments can be made to improve housing. In practice, this means that to the real estate management team, the budget can be seen as a boundary condition. Of course, they are always looking for ways to reduce the costs. Examples can be to choose for durable materials and ways to save costs on energy. As mentioned before, the maintenance costs are quite important to the budget. If they can be kept low, there are more opportunities for investments.
4.2.3. ROC Aventus
For ROC Aventus, the determination of the housing budget, and therefore the allocation of financial resources, proceeds quite similar to the process of ROC Mondriaan. The decision on the housing budget lies with the board of directors, with input from the management team responsible for housing. The budget is mainly based on data from previous years and actually on what they ‘need’. The role of housing is for ROC Aventus again quite similar to ROC Mondriaan. It is mainly facilitating and little room for very strategic moves. However, ROC Aventus did try to reach more goals with their real estate besides facilitating for education. Their main building in Apeldoorn shows how the building is supposed to connect the area’s on both sides of the building by creating a large walk through lobby. At the same time, in this lobby, there are several companies located. Goal of this extra space was to establish a connection between the students and the business community. Even though the entrance looks impressive, the lobby never really accomplished the goals that ROC Aventus was trying to reach with it. Either way, this is a good example of how ROC Aventus uses real estate to reach organisational goals. This idea had to be financed, and since the board of directors supported this plan, they made the resources available. Instead of treasury banking, ROC Aventus has a loan with a commercial bank. They did choose this bank carefully and selected a bank with an AA-rating and a fixed interest rate to reduce the financial risks. But, because of the high investment costs, the solvability dropped to 0,47.

Looking at the importance of financial aspects in decision making, ROC Aventus explained that for them, the financing is mainly a boundary condition. They will have to make sure that the project they had in mind fits within this budget. During projects they do look for ways to save money and to get more out of their budget. But when they were asked to give the financial aspects in a decision a place amongst other criteria, the financial aspects were placed as least important. Of course, when finances are clearly going bad, necessary measures will be taken. An example is renting out a location in Deventer. In this decision they did look at the best possible solution to improve their financial position.

4.2.4. ROC West-Brabant
Opposed to the other two ROC organisations that were interviewed, ROC West-Brabant states that they have a more strategic policy. Mr Machielse emphasises in the interview that the facilitating look on real estate has to change. Especially the last few years, this has become more and more important. In making a housing plan, the finances should be an important factor. It is clear that ROC West-Brabant has a more corporate look on real estate. They first determine the goals that what to reach with the entire organisation and then look at how they can use real estate to reach these goals. These goals go beyond facilitation for education, but can also be about strengthening their financial position.

This new approach is also visible in the importance of financial aspects in decision making. An example is that ROC West-Brabant has rented 17% of the space. This means that when they have to cope with declining student numbers, it is easier to decrease their space without having to deal with high depreciation or other costs. The solvability of ROC West-Brabant is completely average at 0,51.
4.2.5. Conclusion

The allocation of financial resources and the financial policy of the three ROC organisations are quite similar. The budget for housing is mainly based on the expenses from the past and the necessary investments to implement the housing policies. The ROC organisations are free to spend their money as long as they stay within the thresholds of the Inspection of Education. Table 4.3 shows some financial information of the ROC Organisations. The ratios between the different costs are relatively the same. However, the viability of the ROC organisations do show significant differences. Although ROC Aventus has the lowest solvability of the three organisations, they do have good viability over the past three years. The drop in viability of ROC West-Brabant indicates that the financial situation of the organisation should improve in the coming years to avoid financial problems. ROC West-Brabant overall has the weakest scores, even though they indicated to be very financially aware.

<table>
<thead>
<tr>
<th>ROC organisation</th>
<th>Government funding (x1000 €)</th>
<th>Housing costs (x1000 €)</th>
<th>Depreciation (Real estate) (x1000 €)</th>
<th>Solvability 2010</th>
<th>Solvability 2011</th>
<th>Solvability 2012</th>
<th>Viability (%) 2010</th>
<th>Viability (%) 2011</th>
<th>Viability (%) 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROC Mondriaan</td>
<td>119.944</td>
<td>8.616</td>
<td>11.412</td>
<td>-0.1</td>
<td>-2.8</td>
<td>3.6</td>
<td>-0.1</td>
<td>-2.8</td>
<td>3.6</td>
</tr>
<tr>
<td>ROC Aventus</td>
<td>73.939</td>
<td>5.689</td>
<td>4.619</td>
<td>5.42</td>
<td>1.85</td>
<td>-4.34</td>
<td>5.42</td>
<td>1.85</td>
<td>-4.34</td>
</tr>
<tr>
<td>ROC West-Brabant</td>
<td>121.920</td>
<td>11.144</td>
<td>12.626</td>
<td>0.2</td>
<td>0.6</td>
<td>-4.4</td>
<td>0.2</td>
<td>0.6</td>
<td>-4.4</td>
</tr>
</tbody>
</table>

4.3. Decision making process

In the previous paragraph, the allocation of financial resources and the importance of financial aspects in the decision making were elaborated on. In this paragraph, the decision making process as a whole will be discussed. It is important to this research how the current decision making process takes place. If a method should be implemented in the decision making process, the current process should be considered. Only then, the current difficulties will become visible and possible improvements can be suggested. If the method is too similar to the current process, it will not be valuable. However, a method will be quite difficult to implement if it is too different from the current process and if it is too difficult to work with. During the interviews, the concept of the method was presented to the interviewees. Their reaction was very valuable to the research, because they can immediately assess the usability in practice. The substance of the method was discussed as well, but the specific criteria of the decision making will be addressed in the next paragraph.

All ROC organisations that were subject to the case studies have about the same decision making process in which the board of directors is always the deciding vote. Each ROC has a policy plan for the organisation. In this policy plan all goals of the organisation are mentioned. The plan that is drawn up is dominated by education policy. Usually, the real estate management team is given the task to translate this policy into a specific housing policy plan. This housing policy plan then has to be approved by the board of directors so they can check whether the plan fits within their overall policy.
4.3.1. ROC Mondriaan

The nature of the decision making process with ROC Mondriaan in the past can be described as the utilization of opportunities. Looking at the example that was given of the build of the new main location in The Hague, it becomes clear that ROC Mondriaan was given some very interesting opportunities by the municipality of The Hague. The municipality had its own reasons to offer these opportunities and ROC Mondriaan made good use of it. Asking for the real decision making process and the rationality of the process, Mr Van Wegberg pointed out the soft character of this process.

When important real estate decisions have to be taken, there is some research to the different possibilities. However, there is never really extensive research to the exact figures or consequences of the different possibilities. Most of the real estate decisions are based on ‘gut feeling’ and of course the experience of the decision makers. Something that is always thoroughly considered are the (financial) risks of the specific plans. It is important to keep the risks as low as possible and to keep the contingency costs as low as possible. Mr Van Wegberg considers this not to be a very bad way of decision making. There are quite some experienced members of the real estate management team and until now, the decisions made worked out quite well for the organisation. The goals that were mentioned in the housing plan of 2003 have been largely achieved and the financial situation of ROC Mondriaan is in order. Nevertheless, ROC Mondriaan was quite positive about the suggested method (Figure 3.9). Especially the structure that the method could offer to the decision making process could contribute to the process. Mr Van Wegberg also saw a good controlling task for the method. He thinks that decisions that are made based on ‘gut feeling’ could be tested to see whether they will really be beneficial to the organisation.

4.3.2. ROC Aventus

Also ROC Aventus bases most decisions on feeling and experience. Looking at the possibilities, they always try to assess which option is the best for the organisation. However, they do not perform extensive research for the different options. Again, the approach of ROC Aventus is comparable to the approach of ROC Mondriaan. However, ROC Aventus does have some more issues with real estate and will therefore benefit more from a new approach to real estate decision making. An important reason is of course the fact that they face a much larger decline in student numbers than ROC Mondriaan. At the moment they try to find ways to improve their real estate. They started to identify their own numbers. For example, they never really knew the exact floor space of their locations. The first step to make a proper assessment of new plans is to know what you have available now and what you need. In this case, the DAS framework can be referred to. When presenting the method, it was clear the ROC Aventus was quite in favour of such a method. A good overview of the criteria, demands and current situation can help them to improve the decision making process.
4.3.3. ROC West-Brabant

According to Mr Machielse, ROC West-Brabant is working on improving the decision making process. They have a more strategic approach to real estate. However, he could not exactly explain how they draw up the strategic plan. On a higher level, feelings and experience are still very important. On a lower level, the approach is more rational. When showing the method, Mr Machielse agreed on the approach and thinks that this is the way decisions should be made. They use a similar approach, but a bit less extensive.

4.3.4. Conclusion

Although the decision making process of the different ROC organisations is very similar, they all have a different view on the proposed method and the function of such a method within the process. While ROC West-Brabant already uses such a method, ROC Mondriaan and ROC Aventus explained that they have never used a method to objectify the criteria for decision making. ROC West-Brabant also does not see room for improvement in their current decision making process. The other two ROC organisations do see room for improvement. ROC Aventus is looking for ways to use their space more sufficient and realize that with a more objective approach to the important decision criteria, they will be able to have a clearer overview of the possibilities. Also ROC Mondriaan thinks that a more structured decision making process can improve the decisions.

<table>
<thead>
<tr>
<th>ROC organisation</th>
<th>Room for improvement</th>
<th>Role for the Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROC Mondriaan</td>
<td>More structure and objectivity</td>
<td>- Structure in decision making process - Controlling decisions</td>
</tr>
<tr>
<td>ROC Aventus</td>
<td>More knowledge and structure</td>
<td>- Clearness of information - Structure in decision making process</td>
</tr>
<tr>
<td>ROC West-Brabant</td>
<td>-</td>
<td>- Objective appraisal of alternatives</td>
</tr>
</tbody>
</table>

Table 4.4 View of the ROC organisations on the model for real estate decision making

Something that has not been said directly, but can be derived from the interviews is that it is sometimes difficult to convince the board of directors of a certain idea or option. Using this method, the managers responsible for housing can demonstrate the consequences of certain actions to the board of directors. This will improve the communication towards the board of directors. Better communication can again help to improve the decision making process.

4.4. Important decision factors

In this research, the substance of the proposed method should be suitable for the ROC organisations. The main input for the method are the criteria and the weight of these criteria. The criteria will be derived from the objectives of the ROC organisations. Besides that, the actors involved in the decision making are also important. Sometimes it is necessary to take into account some of the wishes of other parties involved, so they will help you accomplish your own goals. These three things will be addressed in this paragraph. First, the actors will be discussed. Then the criteria and their weights will be elaborated on.
4.4.1. Actors

Except for the actors directly involved in the ROC organisation such as the users, managers, board of directors etc. there are two actors that also play a very important role in the organisation which directly influence the real estate decisions. However, there are some actors that should be taken into account to create more possibilities for changes in the real estate portfolio.

The first actor are the businesses in the area of the ROC organisation. Since ROC organisations mainly educate for practical professions, an important part of the education are internships and practical experiences. In terms of real estate, this means that the schools should be located near areas with businesses to be able to offer this type of education. It also influences the space necessary for the ROC schools, since part of the education will take place with the businesses. During internships, the students do not attend classes, so classrooms are not necessary during these internships.

ROC Aventus gave a good example of the importance of cooperation with the businesses. In their own main building they have reserved spaces for businesses. They have, for instance, a hairdressing salon in the school. They also offer the hairdressing course in their education programme. The students can therefore do the practical part of their education in their own school.

However, there is also another very important aspect of the relationship with the businesses. Since almost all ROC courses require practical education and internships, this can also have influence on the housing policy. A large number of students have periods in which they do not attend school, but go to their internships. For the students in internships, there are no classrooms necessary. A proper alignment of the internships can make sure that there is less education space needed. The schedule of the different courses should be aligned, but the businesses will also have to cooperate to make this possible. It is therefore important to make good arrangements with the businesses in the area.

The second important actor are the municipalities. Although the municipalities do not have the means to have a direct effect on the ROC organisations, they do have the means to create possibilities, or influence the possibilities in a negative way. The most important instrument of the municipalities is the possibility to change the land use plan (bestemmingsplan). The land use plan can be very important to the ROC organisations when drawing up their housing policies. In order to build a school, the land they want to build it on, should be assigned as such. But also if an ROC organisation is looking for other possible uses for a specific building, the land use plan is important. If a ROC organisation wants to rent out a building to a company to use as an office, the land use plan has to be changed. Besides changing the lands use plan, the municipality can also have a more active part in the decision making by, for example, offering specific plots of land if they have a strong interest in a school location. Therefore, ROC organisations can be very dependent on the municipality.
ROC organisations should maintain a good relationship with the municipality to keep them on their side. If a ROC organisation gets into a situation where a land use plan needs to be changed in order to execute the housing policy, they will benefit from a good relationship. ROC Mondriaan did benefit a lot from their good relationship. Just after the merge, the municipality offered their cooperation in building the new main building. They changed the land use plan of the Laakhaven area, but also bought some of the old buildings that became empty. To ROC Mondriaan, this was essential. If they were not able to sell their old buildings, they would not have had the budget to build the new building.

The last actor the ROC organisations have to take into account are the other ROC organisations in the surroundings. They are competition and the ROC organisations will have to make sure their image and competitive position should remain well or get better to avoid students from going to the other ROC organisation(s).

4.4.2. Objectives

Now all important actors are clear, it is time to take a look at the most important objectives. Objectives represent the goals the ROC organisations try to reach in order to improve their organisation as a whole. The annual reports of the ROC organisations were consulted to see which objectives the ROC organisations defined with regard to their real estate. Then, the results of the interviews are elaborated on to see whether in practice, these objectives are really representative, or that there are other objectives that are important as well. With all objectives in order, the objectives can be made operational to find the decision criteria of the ROC organisations. Finally, the criteria that were chosen based on the literature study in chapter three will be compared to the objectives mentioned by the ROC organisation to see the difference or the similarities.

In order to get a proper overview of the objectives of the ROC organisations, a objective tree was drawn up (Enserink et al., 2010). In a objective tree, the objectives are placed in a hierarchical order. On top, the most general objective regarding housing can be found. Below, more specific objectives are derived from the general objective. The starting point for the objective tree were the annual reports of the ROC organisations (ROC Aventus, 2013; ROC Mondriaan, 2013; ROC West-Brabant, 2013). Some important objectives are the location of the school buildings and the educational coherence of the buildings. Besides these objectives, also the affordability is mentioned.

Based on the interviews, a few objectives have been added. As interpretation of the improvement of the educational coherence, the flexibility of space was added. This flexibility is considered important in order to adapt to changing educational demands. Since buildings are static, it is important to bring some flexibility in the buildings. The possibility to adjust the space to the size that is necessary to the specific situation can provide enough space without having to compromise on the advantages of small-scale education. Also the different type of demand by different types of courses can be provided for with flexible spaces.
Also the efficient use of space was added based on the interviews. The example of scheduling the courses in such a way that internships and classroom teaching are interspersed and aligned can lower the demand for space. But there are also other ways to use the available space more efficiently so less space is needed. The ROC organisations can, for instance, change the form of education so there will be more practical education outside the schools or organize the classrooms more efficient, so they can educate more students in the existing spaces. Overall, this objective focuses on the alignment of supply and demand.

Although it seems like lowering the demand for space is presented as a way to improve the affordability, it was also presented as an issue. This is however only the case is the supply is too large. In general, a lower demand for space should improve the affordability, especially on long-term base.

Finally, looking at the criteria that were established in chapter three (Table 4.5), one more objective was added. Although none of the ROC organisations had mentioned alternative usability, including such a criteria can help to develop a long-term strategy with more possibilities for the portfolio. The alternative usability in itself is not really an objective for the ROC organisations. However, this is translated to the possibilities to change the portfolio. More factors can influence this objective, like the possibilities to change the land use plan. The influence of the land use plan was discussed in paragraph 4.4.1. When it is easy to have the land use plan changed, there will be more possibilities for the ROC organisations. This objective can become a very important one. When paying attention to this objective in making the housing plan, a certain form of flexibility is introduced. When there are possibilities to disinvest in real estate, it is easier to make (short-term) changes, what can be very important to ROC real estate planning.
4.4.3. Criteria

To establish the decision criteria that will be used in the method for ROC real estate decision making, criteria from both the literature study and the case study will be used. Table 4.5 shows the criteria from the different stages and the criteria that are chosen for the final method. With regard to the criteria from the literature study, one of the initial criteria was removed. This criteria, sustainability, is actually a part of the quality of the building. During the interviews, the initial method was presented to the ROC organisations. They all agreed that the sustainability of a building does become more and more important. However, sustainability does not play an important role on the strategic level. During the design phase of a building or renovation, they try to make the building as sustainable as possible. However, the sustainability of a building does not influence the decision making.

Another criteria from the literature study has been adjusted. Alternative usability has been changed into 'Changing possibilities of the portfolio'. Reason to change this criteria is that there are some more factors that are included with this new criteria. For the changing possibilities of a portfolio, alternative usability, but also the situation on the real estate market and the land use plan are important factors. By using the changing possibilities of a portfolio as a criteria, all these factors will be taken into account.

There are also two new criteria introduced based on the case study. All ROC organisations indicated the importance of a good location of the school buildings. Also the flexibility of the spaces was a factors that was mentioned. Therefore, these criteria have been added to the decision criteria in the method.

Finally, the weight of the criteria in the decision making method have to be determined. Because the weights can differ for each ROC organisation, during the interviews the ROC organisations have been asked to give an indication of the most important decision criteria for their organisation.
The criteria that were mentioned by all three ROC organisations were the location and functionality. They all consider these criteria as most important. Two out of three considered the flexibility of the spaces as important as well. While the financial situation has been considered a boundary condition, the organisations do realize that this becomes more and more important and that they might need to give this criteria more weight in decisions. They did however all agree on the necessity to match supply and demand as close as possible to prevent vacancy or deficient space. The quality of the buildings did not seem to be an essential criteria to the ROC organisations. It is much more important that the building is functional. Of course, they do need to comply with building regulations, but they consider this to more of a boundary condition. In the next chapter, the weight of criteria is elaborated on further and an example will be given with exact assigned weights to the criteria.

4.5. Conclusion

Three ROC organisations have been studied to get an overview of the organisational specifics and preferences of ROC organisations in practice. With this case study the sub questions of this research: What are the organisational characteristics of the real estate decision making process of ROC organisations? And What are the most important factors on which the decision making is based? Are answered.

The allocation of the financial resources is determined by the board of directors. They determine the housing budget. This budget is often based on past expenses and is not strongly subject to change. However, the prospect of declining student numbers is not positive to the budget. The ROC organisations may have to implement their housing policies on a lower budget. It is important to consider this now, because a real estate portfolio is not easy to change.

The decision making process of the interviewed ROC organisations seem to have quite some room for improvement. Even though in some cases the decision made were quite successful, the process to come to these decisions is not very structured. Most real estate decisions are based on ‘gut feeling’ and experience. Although housing decisions are never completely objective because of subjective criteria, some structure in the process can probably be beneficial to the final decisions. In order to structure the process, the decision making possibilities for ROC organisation were identified.

To give a complete recapitulation of the ROC organisation and their real estate decision making context, a system diagram was drawn up (Enserink et al., 2010). This system diagram has two functions in this research. First of all, it gives an overview of how the organisation and the influences on the organisation work. Several aspects of the decision making process are placed in a clear context. In the diagram (Figure 4.2), the means of the ROC organisations, the external factors and the criteria are shown. All factors are connected to show how the specific decisions will change the criteria. This is also the second function of the diagram. It can be used to determine the outcome of a specific alternative. It shows how the criteria will change if a specific alternative is executed. This second function of the diagram will be discussed more extensively in the next chapter.
As shown in the system diagram, besides the actual changes ROC organisations can make to the portfolio by investing or disinvesting, they have two more means to influence their criteria. Keeping a close relationship with the municipality can help them as soon as they need changes to be made to the land use plan. It is important to the ROC organisations to keep the municipalities on their side, so they will help them where they can.

Also contact with the businesses in the surroundings should be kept. When mutual agreements can be reached on the internships of the ROC students, and the schedules are aligned properly, this could lead to less demand for space. Also placing the practical parts of the education with businesses makes that the ROC organisations do not have to have all the facilities in their own building.

The criteria that are shown in the diagram are the criteria that were chosen for the final method for the decision making process and are based on important decision factors from the literature study corrected by the case studies. These criteria will be taken to the next chapter to complement this method.
5. **Method for ROC Real Estate Decision Making**

In the previous chapter, the ROC organisation and its current decision making process were discussed. The case studies confirmed that there is room for improvement in this current process. The decision making process should be more structured, so an informed and deliberated decision can be made. In order to do this, a method is drawn up, which is presented in this chapter. This method will allow for the structure that is required. The consequences of the alternative interventions in the real estate portfolio will be rated to see what alternative will be best for the ROC organisation. In this chapter, the final sub question of this research will be answered: How can a method support the decision making process?

First, the method and the application of the method will be presented. All aspects of the method will be addressed and the necessary input will be explained. After a brief description of the overall method, first the alternatives will be discussed and how they can be drafted. Then, the criteria that were drawn in the previous chapters and the quantification of these criteria will be addressed. After that, the possible uses of the method will be elaborated on. Finally an example will be given by filling in the method for some specific cases.

5.1. **Method**

The method that has been chosen to use as a real estate decision making method for ROC organisations is mainly based on the model for preference based portfolio design (paragraph 3.4.1, (Arkesteijn & Binnekamp, 2012)). This method (Figure 5.1) is designed to weigh different possible real estate interventions against the most important decision criteria. The interventions that will be beneficial to the ROC organisation as a whole will come up and the decision makers can select the alternative that suits the goals of the organisation best.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>C1 Match supply and demand</th>
<th>C2 Financial situation</th>
<th>C3 Location</th>
<th>C4 Quality</th>
<th>C5 Functionality</th>
<th>C6 Flexibility of Space</th>
<th>C7 Changing possibilities portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternatives Portfolio</td>
<td>Weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1</td>
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<td>P2</td>
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<td>P3</td>
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<td>P4</td>
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<td>P6</td>
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<td></td>
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<td></td>
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</tbody>
</table>

*Figure 5.1 Real Estate Decision making model for ROC Organisations*
A small change has been made to the original preference based portfolio design model (Figure 3.7) to make it a more applicable method that is easy to use for the decision makers of the ROC organisations. The specification of criteria based on the stakeholder who presents the criteria is left out. Although it is important to consider the preferences of stakeholder like the students, businesses or municipality, it will not be necessary to explicitly include them in the method. It might be a bit confusing if all stakeholders get their own place in the method. Thereby, as mentioned earlier, there are not many stakeholders with direct influence. The ROC organisation itself is mainly responsible for their decisions. Within the ROC organisation it is possible to distinguish different stakeholder, like the policy makers, financial controllers, users and technical managers (Den Heijer, 2011). However, all stakeholders from within the company are already represented in the overall policy of the ROC organisation. Since the policy plan of the organisation is used to determine the real estate policy, the interests of the stakeholders are automatically taken into account. Thereby, they all serve the same purpose in the end, namely increase the educational performance of the organisation (Figure 2.3). The contradictory objectives to achieve this ultimate goal are represented in the criteria. So the leaving out the stakeholders does not mean they should not be considered anymore, but their objectives are represented in the criteria.

Other than leaving out the specific stakeholders from the method, not much has changed from the original method. As mentioned in chapter three, it is important to look carefully at the completion and interpretation of the method. If necessary, other methods and models can still be consulted for proper input for the method. In the end, the most important job is to get all the criteria in order and make a careful and properly considered decision by weighing the alternatives against the criteria.

An issue that still needs to be kept in mind, but is not included in the method is the fact that not only the current situation should be considered. Because of the static character of real estate it will always be important to take future demands into account when filling in the method.

5.2. Alternatives

To use the method, first alternatives have to be established. To draw up alternatives for a real estate portfolio and therefore suggest changes, there has to be cause. There could be different reasons for ROC organisations to want to change their real estate portfolio. During the changes because of the new laws in the nineties, the merges of the MBO schools to ROC organisations gave a lot of reasons to change the portfolio’s. Most ROC organisations had a portfolio with too much real estate and too expensive real estate. Also new arrangements were made in the courses and the distribution of the different courses in specific areas. Now, roughly twenty years later, the significant changes to the ROC real estate portfolios are mostly completely implemented and the ROC organisations have created a portfolio suitable for the organisation. However, there will always be occasions in which the real estate portfolio requires changes.
An issue that has been addressed throughout this research is the threat of the declining student numbers due to demographic changes. Some ROC organisations will have to decrease their supply of space significantly to be able to keep a suitable portfolio for their organisation. It is also possible that there are other reasons for decline student number, by for example new rules and regulations concerning education. If students will not receive any student allowance anymore, it is likely that less students will choose to extend their education or start a course at all. Whatever reason for declining student numbers, this will always lead to a lower demand for space. If this demand decreases considerably, the real estate portfolio should be changed.

Of course, it is also possible that the demand increases. Based on demographic trends, it now looks like the ROC organisations will mainly have to deal with declining student numbers. It is however possible that, in some years, the population changes again and the number of students is rising again. Since the method that is presented in this research should be able to support real estate decision making at this moment, but also in the future, it is important to also consider the possibility of increasing students numbers.

Changes in education forms can also lead to changes in demand. As an example, the rise of the computers was mentioned before. But also changes in rules on internships can make a big difference. If the government decides that the internships should take a larger or smaller part of the education programme, this will have consequences for the necessary space for the ROC organisations.

Besides changes in demand, it is always necessary to evaluate the current portfolio. Buildings are being depreciated. At the end of the depreciation period, decisions will have to be made on the future of the specific building. The ROC organisation can choose to invest in the building to make it suitable for a few more years, or to divest the building and create the necessary space somewhere else.

Depended on the reason for changing the real estate portfolio, the alternatives can be established. In general, the management department responsible for real estate decisions will draw up a few realistic alternatives. In the model for preference based portfolio design (Arkesteijn & Binnekamp, 2012), an algorithm is used to draft every possible alternative. In case of ROC organisations this complex algorithm will not add much to the results of the method, but will make it very difficult to use. Therefore, for this method, the ROC organisations will draw up their own alternatives. It is possible that the most optimal alternative will be overlooked. But since this is a method designed to support the decision making process and not substitute it, this way of selecting alternatives should be sufficient. Moreover, there is never such a thing as the most optimal alternative. However quantified the method is, there will always be a discussion on the more subjective criteria. For these reasons, the alternatives of the final method of this research will be established by the real estate department of the ROC organisation. More specifics on the establishment of the alternatives will be elaborated on in the next paragraph, since the proposed method offers opportunities to establish alternatives in an effective way.
In what specific way the real estate department will establish the alternatives will be up to them. In practice, there are three possible interventions to change the real estate portfolio. For each building there are the options:

- Keep the building the same and do not change anything
- Change the tenure status; this could mean buy, sell, rent or rent out
- Transform the existing building

The more buildings a ROC organisation uses, the more alternatives they can draw. When drawing up the alternatives, the decision criteria should already be kept in mind. For example, it is advisable to first fill in the entire scheme for the current situation. It will then become clear which criteria should be improved and the alternatives can be aligned with the necessary improvements.

In the literature study, the example of the market orientated alternatives were mentioned. When considering changes to the real estate portfolio, it is important to think ahead and try to find an option that will also suit the organisation in the future. Thereby, it is important to consider the possibility that the demand for space drops and buildings have to be sold or rented out. In that case, the buildings should be attractive to other types of users.

So, in drawing up alternatives the current situation has to be improved first. In order to do this, the current situation has to be assessed and based on the scores, the room for improvement will become clear. Then, the expected future demand should be considered to design alternatives that will also suit the organisation in the future. Finally, possible unexpected changes should be taken into account. This does not mean that all possible scenario’s have to be investigated and considered, but that there needs to be some clearance space to be able to adapt to unexpected events. This last factor is also represented in the criteria in ‘Changing possibilities portfolio’.

When all factors mentioned above are considered, the real estate managers will be able to draw up some alternatives, possibly with consulting some of the other actors. When the alternatives have been drawn up, the necessary information can be collected to determine the scores of the alternatives on the decision criteria.

### 5.3. Criteria

During the literature study and the case studies, the most important decision criteria of ROC organisations were established. The criteria that have been chosen to define the decision criteria in the method are presented in Table 5.1. These criteria have been selected carefully by consulting the ROC organisations on what factors are important to them, and consulting literature on what factors are important to successful real estate decision making. Even though these specific criteria are substantiated by both literature and cases, it is still possible that there are ROC organisations that cannot agree with these criteria. They might have some additional criteria that are essential to them. The method allows for changes, so if ROC organisations want to add or remove criteria, this is possible.
The determination of the decision criteria in itself can already be valuable to the decision making process. Thinking about the most important criteria for the organisation as a whole, allows for thinking outside the box and discussions about the organisations. For this research, it has been chosen to determine the decision criteria that are important to ROC organisations in general. However, like mentioned before, ROC organisations that will be using this method should take sufficient time to elaborate on these decision criteria and determine the criteria for their own situation.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 Match supply and demand</td>
<td>The difference between supply and demand</td>
</tr>
<tr>
<td>C2 Financial situation</td>
<td>Represented by the Net Present Value</td>
</tr>
<tr>
<td>C3 Location</td>
<td>Combination score of accessibility and reached areas/possibilities for growth</td>
</tr>
<tr>
<td>C4 Quality</td>
<td>Score for quality of the buildings (building and climate requirements)</td>
</tr>
<tr>
<td>C5 Functionality</td>
<td>Score for functionality of the building as an education facility</td>
</tr>
<tr>
<td>C6 Flexibility of Space</td>
<td>Score for the possibility to change the spaces within existing buildings</td>
</tr>
<tr>
<td>C7 Changing possibilities portfolio</td>
<td>Score for the possibility to make changes to the portfolio</td>
</tr>
</tbody>
</table>

When the alternatives have been established, the method has to be filled in by determining the scores of the alternatives on the criteria. In Table 5.1 the exact meaning of the criteria are described. In the method, preference ratings will be used to make the scores of the different criteria comparable. Looking at the criteria, the scores will be in different units of measurement. It will therefore be very difficult to compare the scores. Another reason to use preference ratings is the fact that the scores on the criteria are often not linear desired. A good example is the quality of the buildings. Between a score of 6 and 10 the preference will be linear; the higher the score, the better. However, as soon as the score drops below 6, the quality will be inadequate. There are rules regarding the quality of school buildings. If the quality is inadequate, the school is at risk for a large penalty. The preference of a score below 6 will therefore drop much faster. The preference of the quality score is therefore not linear between 1 and 10.

To use the approach of preference ratings in this method, the decision maker has to define three points, relating decision criteria values to preference ratings. These three points will be used to draw a LaGrange curve (Arkesteijn & Binnekamp, 2012). The preference ratings will be between 0 and 100 for each criteria. Using the LaGrange curve, the exact preference rating for a specific score on the criteria can be determined.
In addition to this established method, a boundary condition is set. If any of the preference ratings reach zero, the alternative will be rejected. The reason for this addition is the limitation of the model in which there are no negative preference ratings. This means that as soon as the preference rating drops below zero, it stays zero. This can bias the outcome. Assuming that ROC organisations want a real estate portfolio that is balanced and considers all criteria, this addition makes it clear that as soon as one of the alternatives scores below preferable on a criteria, this alternative is not desired and not suitable for the organisation. In this paragraph, each of these criteria will be elaborated on in detail to explain how the preference rating can be established.

5.3.1. C1: Match supply and demand

This criteria is all about the supply and demand for space. The demand for space has been discussed extensively throughout this research. To an ROC organisation it is important to have a proper balance between demand and supply of space. Vacancy is never desired because of the ongoing costs of vacant buildings. However, a shortage of educational space can have a negative effect on the organisation. The ROC organisations should be able to provide education to the students that enrol. It will be very bad to the image of the organisation if they are not able to house the students and give them the desired education. It is therefore important that a ROC organisation achieves a good balance between demand and supply.

The preference rating (Figure 5.2) for the match between supply and demand is determined base on the percentage of match between supply and demand. A percentage below 100 means that the demand is higher than the supply and a percentage above 100 means that the supply is larger than the demand. As shown in Figure 5.2, it is assumed that for ROC organisations is more damaging to the organisation is there is insufficient space to educate the students. Therefore, a match lower than 90% will always get the preference rating 0. More supply than demand is not a very large problem, if it stays limited. As soon as the match is above 120%, the preference rating will also be 0. The LaGrange curves indicates that the match between supply and demand should be between 90% and 120% and preferably 100%.

![Figure 5.2 LaGrange curve C1: Match supply and demand](image)
5.3.2. **C2: Financial situation**

The financial situation of a ROC organisation is a very broad term. It is however an important factor in the decision making process. It is difficult to find one figure that expresses the financial situation of an entire ROC organisation. Nevertheless, the Net Present Value has been chosen to represent the criteria ‘Financial situation’.

Although this figure does not present the effect of a decision on the organisation as a whole, it is the most suitable figure. For each alternative, a Net Present Value calculation can be made. In this calculation, investment costs, maintenance costs and the interest expenses can be included. Using the Net Present Value also gives the possibility to compare, for instance, the options of rent or buy a building.

![Figure 5.3 LaGrange curve C2: Financial situation](image)

Figure 5.3 shows the LaGrange curve for this criteria. The financial situation is expressed as the NVP as a percentage of Equity. This means that the NPV of an alternative is related to the Equity of a ROC organisation. If for example, the NPV for an alternative is minus 20 million, and the equity of the ROC organisation is 100 million, the financial situation is minus 20%. This approach was chosen to be able to properly compare the alternatives mutually, but still make the consequences for the organisation visible. For an organisation, a positive NPV is always preferable. However, since ROC organisations are still public organisations, it is not realistic to always have a positive NPV.

5.3.3. **C3: Location**

The location of ROC schools is an important factor in the decision making. It is essential that many students are able to reach the school within an acceptable travel time. If the time the students have to travel to their education is too long, they will look for other schools in the surrounding that might be more accessible. Therefore, many ROC organisations try to locate their schools on highly accessible locations, like near train stations. MBO students usually travel by public transport, so it is important to have as many possible public transport facilities in the near surroundings.
In looking for new locations ROC organisations often also look forward to see if they can reach new target areas. By choosing a building near the borders of their recent target area, they have a potentially new target area with new students.

The location score is expressed on a scale from 1 to 10. The preference rating of the location score is almost linear. However, when the score becomes insufficient, the preference will drop faster. A location score of 3 or lower gets a preference rating of zero.

5.3.4. C4: Quality
As mentioned before, the quality of the school buildings is in a certain way a boundary condition. The quality of the buildings cannot be insufficient, because the organisation then faces large penalties. Still, the quality will be included in the method as a criteria. It is possible to say that the quality should just be ok, but this is a bit too short-sighted. There are several aspects of the quality of a building that can improve the overall organisation. For example, good climate control is beneficial to all users of the building. And a building with a lot of natural daylight can improve the working atmosphere.
These are all aspects that have nothing to do with the functionality of the building, but are important to the users. Therefore, this criteria is included in the method. As shown in Figure 5.5, the preference rating drops very fast if the score becomes insufficient. This has to do with the boundary condition that the quality of the buildings should be sufficient according to the building codes. From 6 to 10, the preference rating increases linear.

5.3.5. C5: Functionality

The functionality of the school buildings is considered most important by all interviewed ROC organisations. Literature on public real estate also describes school buildings as a facility to support the education process. Since it is quite difficult to quantify the functionality of a school building, again a scale from 1 to 10 was used to score the quality. In this score, all aspects of the functionality can be included. A list of important aspects of functionality can be conducted by the ROC organisations itself. They can determine what aspects should play a role in the functionality of a building. Points that could be taken into account are; number of classrooms, size of classrooms, number of places for self-study, lunch facilities etcetera.

Since the functionality of a building is so important, it is desirable to have a high score on functionality. This can also be found in the LaGrange curve for this criteria (Figure 5.6). Between scores 6 and 10, the preference rating increases linear. When the functionality drops below 6, the preference decreases much faster and below 4, the preference rating will be zero.

5.3.6. C6: Flexibility of Space

The flexibility of space is a criteria that indicates the possibilities within the existing buildings. To what extend the spaces can be rearranged and adjusted to different demands. A building with a high flexibility of space will especially be beneficial in case of changing demands because of changing forms of education.
If policy requires smaller, or larger school classes, this could be a problem if there is only one type of classrooms. If, for whatever reason, the courses are sifting and there is, for example, suddenly a much higher demand for the course of auto mechanic instead of administrative assistant, the spaces will need to be adjusted. If the schools have the possibility to make some minor changes in their existing buildings, the costs of adjusting to the new demand will not be that high. However, if a school does not have such possibilities, they will have to take much more drastic interventions with all the consequences.

Although have very little flexibility of space could lead to problems in the future by rapidly changing demands, this does not have to mean that this has to be extremely undesired. As long as the building suits the demand, there is no problem at all. Therefore, there are no drastic drops in the LaGrange curve of this criteria. The curve is practically linear, since the more flexible the space is, the more desirable.

5.3.7. C7: Changing possibilities portfolio
This last criteria is added to the method only based on the literature study. The changing possibilities were never considered by the ROC organisations. However, since the financial crisis, it has become clear that it is very important to think ahead and consider the possibility that at a certain point the real estate portfolio will have to change. Especially if buildings have to be divested in order to ensure the continuation of the organisation, it is essential that the buildings are suitable (or can easily be made suitable) for other types of users. This alternative usability is one of the main indicators of this criteria. But, this criteria is also dependent on the possibilities to get the land use plan changed by the municipality. Overall, this criteria indicates how easy it will be to make changes to the composition of the portfolio.

![Figure 5.7 LaGrange curve C6: Flexibility of Space](image-url)
The scores of this criteria are again expressed on a scale from 1 to 10. The LaGrange curve shows the preference rating of the different scores on this criteria. There are no extremes to this graph. Overall it can be said that the more possibilities to change the portfolio a ROC organisations has, the better. If they score really insufficient on this criteria (3 or lower) the preference rating will be zero.

5.3.8. Weights
Now all criteria are explained and the alternatives can be scored, the weights of the criteria in the method need to be determined. This is probably the most debatable part of the method. The weights of the criteria can be established by the decision maker. The decision maker expresses the importance of the different criteria in the decision. Even though it is very difficult to reach an agreement about the weights, for the decision making process it is good to reflect on these weights. At least, the decision makers will get a good overview of the priorities of all involved.

For this research the weights of the criteria have been established based on both the literature study and the case studies (Figure 5.9). Since during the case studies, all ROC organisations emphasized the importance of the functionality, this criteria has gotten the greatest weight. This is supported by the literature which describes public real estate as facilitating (Evers et al., 2002).

The match between supply and demand is also quite important in real estate decision making. This is usually the starting point of real estate management, since it describes the amount of real estate necessary and provided.
The other two criteria that got assigned the same weight as the match between supply and demand are the financial situation and the changing possibilities of the portfolio. These criteria were not mentioned by the ROC organisations as really important. However, looking back at past decisions, the organisations may well have benefitted from including these criteria in their decision making. Also considering the financial crisis and the developments on the real estate market make these criteria even more important.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 Match supply and demand</td>
<td>0.15</td>
</tr>
<tr>
<td>C2 Financial situation</td>
<td>0.15</td>
</tr>
<tr>
<td>C3 Location</td>
<td>0.1</td>
</tr>
<tr>
<td>C4 Quality</td>
<td>0.1</td>
</tr>
<tr>
<td>C5 Functionality</td>
<td>0.25</td>
</tr>
<tr>
<td>C6 Flexibility of Space</td>
<td>0.1</td>
</tr>
<tr>
<td>C7 Changing possibilities portfolio</td>
<td>0.15</td>
</tr>
</tbody>
</table>

**Figure 5.9 Criteria Weights**

The other three criteria; location, quality and flexibility of space have the lowest weight of 0.1. These criteria are considered equally important, but less important than the criteria mentioned above.

Establishing the weights of criteria is a very determining part in the application of this method. A slight difference in the weights can lead to completely different outcomes. It is important to consider this in using the method. Nevertheless, the discussion prior to establishing the weight can already be very valuable. Such a discussion gives insight in the priorities of the decision makers.

**5.3.9. Conclusion**

In this paragraph, the decision criteria, the way to score them, and their weights have been discussed. The management team responsible for real estate can use the LaGrange curves to determine the preference ratings of the alternatives and with the weights they can calculate the final scores. With these scores an alternative can be chosen. It might be difficult to determine the exact score of an alternative on a specific criteria. In that case, the system diagram can be used (Figure 4.2). Based on the changes that are made to the portfolio, the effects on the criteria can be deduced. This diagram will not give a value or score, but does help to see the possible effects of an intervention. The determination of both the decision criteria an weights of these criteria are already valuable to the decision making process. The decision criteria give insight in the place of real estate in the organisation and the factors that are consider important to the organisation. The weights of the criteria gives insight in the priorities.
5.4. Possible applications of the method

Besides using the presented method only for selecting an alternative from a number of alternatives, this method has more possible applications. The application of selecting an alternative is the direct function of this method. However, the case studies revealed that there may also be some other ways in which this method can be beneficial to the ROC real estate decision making process. In this paragraph the possible applications of the method will be discussed.

As mentioned, the intended application of the method is selecting the best alternative from a number of different alternatives. This is a very basic application with a logical process. First, a change of real estate portfolio is required. The reason for this required change could be from scheduled depreciation to a sudden drop in student numbers. Then, the different alternatives have to be drawn up. As mentioned, the management team responsible for real estate will get this task. When the alternatives are known, they have to be scored based on the LaGrange curves. Finally, the method has to be filled in and the weight can be applied to get an outcome. This outcome presents the best alternative for the ROC organisation.

Another application is a more controlling application and can also be used to communicate with the board of directors. The goal of this application is to show that the housing policy drawn up by the management team responsible for real estate is beneficial to the organisation. It can be quite difficult to properly substantiate a specific choice for intervention in real estate. With this method, the intervention can be tested against the current situation and the improvements can be shown.

This application is actually more limited than the first, but can still improve the decision making process. The method prompts discussions about the important criteria and their weights and presents the strengths and the weaknesses of a specific intervention. It may well be possible that an intervention will be adjusted a bit based on the outcome of the method. Thereby, using the method as a tool to substantiate decisions and communicate these decisions to the board of directors can also be an improvement to the process. The board of directors are the final decision maker. However, they are not always familiar with real estate decision making. This method gives a quick and comprehensive look into the housing situation. It makes the communication easier and more transparent, which is beneficial to the real estate decision making process.

The final application of this method is to use it backwards. In this application, the method is not used to test alternatives, but to draw alternatives. In order to do this, the current situation will be filled in. Then, the score of the current situation on the different criteria is known. From that point, the current situation can be examined in order to see where there is room for improvement.

If the current situation scores very low on a specific criteria, the real estate portfolio could be improved significantly if the focus will be on this criteria. Using the method backwards helps to get insight in the current situation. The strengths and weaknesses of the current real estate portfolio will become clear and options to improve the weaknesses can be sought.
An important note to make about the applicability is that the method does not always have to include the entire portfolio. The method is also very suitable to look at the consequences of different interventions on one building. This means that the alternatives will be confined and will only present portfolio’s with changes on one building. Still, the scores will be based on the entire portfolio. If, for instance, a decision has to be made on whether to keep, sell or rent out a building, the effects of these three interventions on the total portfolio will be tested in the method.

5.5. Example cases

In this chapter, the working of the method for ROC real estate decision making was presented. To clarify the working even more, some examples will be given in this paragraph. The examples that will be presented in this paragraph are all based on real decisions from the cases that have been studied. However, because of the difficulty to find exact data on previous decision making of ROC organisations and the confidentiality of the documents that were available for this research, most of the data used for these examples will be fictive. Also the fact that this method was never used in the decision making process of the presented examples, sometimes there is no information available at all. In those cases estimations of the situations has been made to come to a representative score. Three examples will be given to demonstrate all three possible applications of the method.

5.5.1. Direct use of the method to select an alternative

As an example to demonstrate the direct use of the method, a situation of ROC Aventus was chosen. The figures in this example are mainly fictive. ROC Aventus did provide some information on this decision. However, most figures are confidential and therefore only orders of magnitude were used. Because of financial and spatial reasons, ROC Aventus considered to divest one of their buildings in Deventer. This was not an easy decision, since the building was still in use for education. There were two difficulties to this decision. First of all, if the building would be divested, the students had to move to the other building in Deventer with all consequences. Investments would have to be made to make the building suitable for all the extra students and employees. Thereby, they might lose some students in the process if those students were not willing to move. The second issue was the tenure status that had to be changed. The main question was whether it would be more beneficial to the organisation to sell the building or to rent out the building.

If the method for ROC decision making would have been used, the first step was to draw up the alternatives. In this case, the alternatives are quite clear and not very complex. The alternatives used in this example are:

- Keep the building as it is
- Rent out the building and make the other building in Deventer suitable for the extra students and employees
- Sell the building and make the other building in Deventer suitable for the extra student and employees.
As mentioned in the previous paragraph, it is not always necessary to have alternatives with interventions throughout the entire portfolio. This is an example of this type of application. Only interventions in one specific building will be presented in the alternatives. Still, the scores will include the entire portfolio.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Keep</th>
<th>Rent out</th>
<th>Sell</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Score</td>
<td>Preference rating</td>
<td>Score</td>
</tr>
<tr>
<td>C1 Match supply and demand</td>
<td>111</td>
<td>45</td>
<td>103</td>
</tr>
<tr>
<td>C2 Financial situation</td>
<td>0</td>
<td>75</td>
<td>10</td>
</tr>
<tr>
<td>C3 Location</td>
<td>8</td>
<td>80</td>
<td>7</td>
</tr>
<tr>
<td>C4 Quality</td>
<td>7</td>
<td>85</td>
<td>8</td>
</tr>
<tr>
<td>C5 Functionality</td>
<td>6</td>
<td>60</td>
<td>7</td>
</tr>
<tr>
<td>C6 Flexibility of Space</td>
<td>6</td>
<td>60</td>
<td>5</td>
</tr>
<tr>
<td>C7 Changing possibilities portfolio</td>
<td>6</td>
<td>70</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 5.2 Scores and Preference ratings Example 1: direct use of the model

Now the alternatives are clear, the scores of the alternatives on the criteria have to be established and the associated preference ratings. The LaGrange curves of paragraph 5.3 will be used to determine the preference ratings. All scores and preference ratings of the three alternatives are presented in Table 5.2. A brief description of the determination of the scores will be given.

The demand for space was determined based on the number of students and number of square meters desired per student. The total demand for space was set at 65000 m². When the building would stay, the total supply of space would be 72000 m². When the building would be sold or rented out, the total supply of space would be 67.000 m². This leads to a match of supply and demand of 111% in case the building is kept and 103% in case the building is divested. The corresponding preference ratings are 45 and 85. The match of supply and demand will therefore score much better in case the building will be divested.

The NPV for the situation in which the building would stay an educational building is zero, since no changes are made to the current situation. In case the building would be rented out, the NPV would be positive, since the yearly income would increase. Although there will be more resources available to repay the debt, an investment would have to be made to make the other building in Deventer suitable for the extra students and employees. In case the building would be sold, the NPV would be significantly higher, since the building would yield more than the investment in the other building would cost.

The score on location would decrease slightly if the building would be divested. An extra location increases the total accessibility and target area.
The score on quality would increase slightly if the building would be divested because of the condition of the building to be divested. The condition of this building is below the average of the other buildings. Divesting this building would therefore increase the average score.

The functionality would increase in case of divesting the building. Again, the building to be divested is not the most functional, so the average will increase if this building is not taken into account. Thereby, the centralisation of different courses can increase the functionality, because the facilities of the building can then be used by more students.

The flexibility of space will decrease if the building would be divested. In the current situation, there is the possibility to rearrange different courses between the buildings. If the building is divested, they will not have this possibility anymore.

The changing possibilities of the portfolio will mainly be effected if the building will be sold. As long as the building is only rented out, ROC Aventus will still keep the possibility of taking back the building in case of an increasing number of students. And if the financial situation of the organisation becomes close to critical, they still have the option of selling the building. Therefore the score on this criteria drops significantly if the building is sold. The debatable point in the scoring of the alternative is whether the score should also decrease in case of renting out the building. In theory, the score should decrease slightly since the possibility of renting out the building is already applied. However, since the new possibility of using the building again in case of an increase in student numbers, the score has been kept the same.

If all scores and preference ratings are clear, the method can be filled in (Figure 5.10 Decision Making model Example 1: direct use of the model). The preference scores from Table 5.2 are filled in and the weights (Figure 5.9) have been applied. This leads to the total scores in the last column of the method. Although all scores are sufficient, it is clear that renting out the building is the best option. According to the method, ROC Aventus should choose the second option and rent out the building.
Even though the direct application of the model seems to lead to an unambiguous outcome, in which the best alternative for the ROC organisation is chosen, this application can also have a negative effect on the decision making process. If the method is being used as a solution and the outcome is copied blind, the schedule gets too much power. Decision makers can feel ignored if the decision is only made based on the schedule.

This is not the meaning of the method. The process of filling in the schedule should lead to discussions and raise questions. It is important to have all information in a clear overview to make an informed decision. Therefore, it is important that this model is only used as a support tool in the decision making process and not as a direct decision making tool.

5.5.2. **Controlling use of the method**

To give an example of the use of the method to check whether the proposed plan for housing is beneficial to the organisation, the housing plan of ROC Mondriaan is used. In the first years of the existence of ROC Mondriaan, the management team responsible for real estate was given the task to develop a housing plan that would create a real estate portfolio suitable for the new organisation. ROC Mondriaan is a merger of many small MBO schools. Therefore, just after the merge, ROC Mondriaan owned many small buildings including some in a very poorly condition. In 2003, ROC Mondriaan developed an extensive housing policy plan. In this example, the situation at the very beginning of the merge is compared to the situation if the housing policy plan is completely implemented. This way, the consequences of the housing policy plan are tested to see if this plan will be beneficial to ROC Mondriaan. For this example, again confidential documents are used, so only orders of magnitude will be mentioned.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Starting situation</th>
<th>Housing Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Score</td>
<td>Preference rating</td>
</tr>
<tr>
<td>C1 Match supply and demand</td>
<td>140%</td>
<td>0</td>
</tr>
<tr>
<td>C2 Financial situation</td>
<td>-10</td>
<td>75</td>
</tr>
<tr>
<td>C3 Location</td>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td>C4 Quality</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>C5 Functionality</td>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td>C6 Flexibility of Space</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>C7 Changing possibilities portfolio</td>
<td>6</td>
<td>70</td>
</tr>
</tbody>
</table>

**Table 5.3 Scores and Preference ratings Example 2: Controlling use of the model**
Table 5.3 shows the scores and according preference ratings of the starting situation and the situation after implementing the housing policy. Again, a brief description of the scores will be given to substantiate these.

As shown in the table, the match of supply and demand of space was completely off in the starting situation. A small surplus with most of the small MBO schools, summed up to a large surplus for the entire organisation. The organisation owned over 130,000 m² of space, while the demand was not even 100,000 m². This was the main reason for the drastic housing policy. The housing policy described a large new building with over 35,000 m². But at the same time over 75,000 m² of buildings would be divested. With all interventions described in the housing policy plan, the target of 100% match was closely approximated.

In the starting situation, the quality of the buildings was not that high. For the financial situation, this meant that the NPV of keeping the situation as it was negative. It would take mainly maintenance costs to keep the situation the same. However, for implementing the housing policy, a large investment was necessary. The NPV for implementing the housing policy plan is therefore more negative.

The location score improves significantly by implementing the housing policy plan. Passing from small local schools in remote districts to central locations with high accessibility by public transport is a big improvement.

Also the quality score increases substantially. The buildings in very poor conditions were divested and partly replaced by new buildings. The score on quality therefore increases from insufficient to good.

![Figure 5.11 Decision making model Example 2: Controlling use of the model](image)

Although the functionality of the old buildings was sufficient in terms of providing enough facilities for education, this was an important issue in the housing policy plan. Especially the more modern facilities, like proper internet connections were lacking. In the new building, a lot of attention was paid to the proper facilities for a ROC organisation. Therefore, the score on functionality also increases in the new situation.
The flexibility of space increases mainly because of the new building. In the new building, the flexibility was an important design criteria. The building has many opportunities to change the layout of the building. In the old buildings, this was not possible so this score was insufficient.

The changing possibilities of the portfolio decrease significantly with implementing the housing policy plan. The number of buildings will be much lower, and the buildings that are still owned by ROC Mondriaan are very specific. It will be difficult to divest one of the remaining buildings, if necessary. Therefore the score on the changing possibilities of the portfolio for the new situation will be insufficient.

All preference ratings from Table 5.3 were filled in the schedule (Figure 5.11). First, the preference rating for the match between supply and demand stands out. Since the score is zero, this alternative should be rejected. As mentioned in the beginning of this chapter, a rating of zero means this alternative is not desirable, even if the ratings on the other criteria are sufficient. Besides this boundary condition which means the rejection of the alternative, the total score for the starting situation is insufficient. This means that is was indeed necessary to intervene and change this situation. The total score for the housing policy plan is 62.63, which is a significant increase compared to the starting situation.

It can be said that implementing the housing policy plan will be highly beneficial to the organisation. Since this application of the method is controlling, this outcome is very good to the authors of the housing policy plan. With this outcome, they can show the board of directors that implementing their housing plan would be a wise decision.

5.5.3. Backwards use of the method

The final application of the method that will be demonstrated is the backwards use of the method. With this application, the current situation is filled in the method. According to the preference ratings in the method room for improvement can be established. This application of the method is valuable to get insight in the strengths and weaknesses of the current situation.

As an example, the current situation of ROC West-Brabant is considered. The data is only determined based on the annual report and an estimation of the situation since no data was supplied for by ROC West-Brabant. The results are presented in Table 5.4.

The current demand for space of ROC West-Brabant was based on the student numbers and the average of square meters per student. In the annual report of ROC West-Brabant, the total number of square meters was mentioned.

Together, the match between supply and demand could be established on 117%. This means that ROC West-Brabant has a significant surplus in space. The financial situation has been established on -20, since the maintenance costs of such a large portfolio can be very high.
The scores for location, quality of the buildings and functionality were estimated based on readings in the annual report. The location score is not that high. This mainly has to do with the difficult target area of ROC West-Brabant. They are located in a low-density area with a lot of small villages with poor public transport facilities. The quality and functionality of the buildings seem to be in reasonable condition, so a score of 7 was granted.

The flexibility of space of the buildings is quite low. Flexibility is not one of the main goals of ROC West-Brabant, so not a lot of attention has been paid to this aspect of the buildings. Again, because of the large distances between the different buildings, it is not an option to shift the courses to different buildings. Therefore, the flexibility of space is scored insufficient.

From the ROC organisations that participated in the case studies, ROC West-Brabant was the only organisation that paid attention to the changing possibilities of the portfolio. For example, over 10% of the buildings they use are rented. This makes it easier to divest some buildings if necessary. The score for this criteria is therefore quite high.

The preference ratings corresponding to the scores have been filled into the method. Figure 5.12 shows the result of the current situation. The total score in only just sufficient, so this should be reason to look for improvements in the situation. For each criteria it has been indicated if there is some room for improvement. Insufficient scores can be found with the match between supply and demand, the financial situation, location and flexibility of space. Based on this information a profile of an intervention can be established. It is clear that ROC West-Brabant has more space than necessary. By looking for possibilities to sell some of their buildings, not only the match between supply and demand will improve, but also the financial situation will increase.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Score</th>
<th>Preference rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 Match supply and demand</td>
<td>117%</td>
<td>15</td>
</tr>
<tr>
<td>C2 Financial situation</td>
<td>-20</td>
<td>50</td>
</tr>
<tr>
<td>C3 Location</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>C4 Quality</td>
<td>7</td>
<td>85</td>
</tr>
<tr>
<td>C5 Functionality</td>
<td>7</td>
<td>70</td>
</tr>
<tr>
<td>C6 Flexibility of Space</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>C7 Changing possibilities portfolio</td>
<td>8</td>
<td>85</td>
</tr>
</tbody>
</table>
The two other criteria that can be improved are the location and the flexibility of space. Even though ROC West-Brabant never paid attention to flexible spaces, this might be an issue they should consider in their decision making. By improving the flexibility of space, they will be able to cope with changes in a more adequate way. Improving the location score will be difficult for ROC West-Brabant because of their target area. It is however important to keep the location (and especially the accessibility) in mind during the decision making process. The organisation will benefit from an increase in location score.

Based on the available information and the outcome of the method, an advice to ROC-West Brabant would be to investigate the possibility to divest some of their buildings. Preferably the buildings that are not highly accessible. Both the match between supply and demand and the financial situation would improve by such an intervention. It would also be wise to consider the flexibility of space in the decision making process to improve the overall score for the organisation.

This application of the proposed method for real estate decision making can be very valuable to the decision making process. The schedule gives a clear and simple overview of the situation. Based on this information, it is possible to look for alternatives to improve the situation and determine a focus. Issues come to surface so that they can be addressed.

5.6. Conclusion

In this chapter, the method to support the ROC real estate decision making process was presented. As soon as there is a reason to change the real estate portfolio, like a change in demand or fully depreciated buildings, the method can be applied to support the decision making process. Dependent on the situation, there are three possible applications of this method.

The most direct application of this method is the weighing of different alternatives based on decision criteria. To make the scores on the criteria comparable and to indicate the gradient of the scores, preference ratings were used. The preference rating of the different scores could be deduced from LaGrange curves. The weighted preference ratings result in an overall score that represents the suitability of the alternative to the organisation.
Even though the direct application of the model seems to lead to an unambiguous outcome, in which the best alternative for the ROC organisation is chosen, this application can also have a negative effect on the decision making process. If the method is being used as a solution and the outcome is copied blind, the schedule gets too much power. Decision makers can feel ignored if the decision is only made based on the schedule.

This is not the meaning of the method. The process of filling in the schedule should lead to discussions and raise questions. It is important to have all information in a clear overview to make an informed decision. Therefore, it is important that this model is only used as a support tool in the decision making process and not as a direct decision making tool.

Besides this direct application, the method can also be used as a control test to see if a proposed intervention will be beneficial to the organisation. This way of using the method could also improve the communication with the board of directors. Usually, the board of directors are not specifically familiar with real estate decision making. Using the method, the interventions and their consequences can be presented in a very clear way.

Finally, it is also possible to use the method backwards to see where the real estate portfolio leaves room for improvement. Based on the preference ratings on the different criteria, a profile for interventions can be created. Using this application of the method will create awareness about the strengths and weaknesses of the method. This application of the proposed method for real estate decision making can be very valuable to the decision making process. The schedule gives a clear and simple overview of the situation. Based on this information, it is possible to look for alternatives to improve the situation and determine a focus. Issues come to surface so that they can be addressed.
6. **CONCLUSION AND RECOMMENDATIONS**

Over the past few years, several news items popped up on financial and real estate issues within ROC organisations (NOS, 2012; NOVUM, 2012; Vastgoedmarkt, 2012). Because of supposedly poor real estate policies, ROC organisations got themselves in severe financial problems. Although the news items only highlighted the most extreme cases, it does raise questions about the real estate policy of ROC organisations. Especially with the prospects of declining student numbers and the associated declining income for the ROC organisations, it might be valuable to examine the organisations more closely. This research focused on the ROC real estate policies and more specifically on the decision making process prior to this.

The goal of this research is to identify the difficulties and issues of the ROC real estate decision making process and to introduce a method to support and improve this process. The research question for this research was:

*How can a method support ROC organisations in their real estate decision making in order to improve their real estate portfolio and contribute to their organisational objectives?*

To answer this question, sub questions were drawn to elaborate on the different aspects of the current ROC real estate decision making process, the room for improvement in this process and to find a method that could support the decision making. All sub questions will be discussed briefly in order to come to a final answer to the research question.

6.1. **What are the main specifics of public and in particular educational real estate?**

The real estate of ROC organisations can be described as public real estate because of the public funding they receive. This funding usually amounts about 75% of the total income of ROC organisations. Although the organisations are dependent on public funding, the organisations are free to make their own decisions, including real estate decisions. Even though the ROC organisations can make their own decisions, they are monitored by the Inspection of Education.

The general view of ROC organisations on real estate is quite traditional for a public organisation. Real estate is to facilitate the organisation in providing education (Evers *et al.*, 2002). Real estate decision making is therefore focussed on creating a real estate portfolio that suits the educational goals best.

Another important specific of educational real estate is the nature of the buildings. The characteristics of most buildings owned by ROC organisations can be described as specific and non-marketable. Most buildings are specifically build as a school building and are therefore often not suitable for other functions (Inspectie van het Onderwijs, 2013). This makes the position of ROC organisations on the real estate market not very strong.
6.2. Which existing models can be useful to the improvement of the real estate decision making process of ROC organisations?

To be able to look for possible improvements in the ROC real estate decision making process, several theories and models for real estate decision making were discussed. Overall, it can be concluded that all models and theories that were presented can be valuable to real estate decision making. However, all models also have their limitations and are often not completely comprehensive. There is no model that completely represents or covers all difficulties of the real estate decision making of ROC organisations. This mainly has to do with the characteristics of ROC real estate.

Since all models have elements that can be valuable to the real estate decision making of ROC organisations, these elements were be combined into one method which was mainly based on the model for preference based portfolio design (Arkesteijn & Binnekamp, 2012). The criteria that were chosen for this method were largely based on the methods that were presented and complemented by some criteria that seem important as a result of the literature study. The first criteria, supply versus demand was derived from the DAS framework (De Jonge et al., 2009). The criteria Quality, Functionality and Sustainability were derived from the performance indicators (Den Heijer, 2011). In the table of performance indicators, there was also attention for the profitability and competitive advantages. The profitability was implemented in the criteria financial situation. Using only performance indicators will probably be not sufficient. Therefore, the financial situation was included separately from the performance indicators in this method. Finally, the alternative usability was part of the criteria. This criteria was based on the necessary balance that needs to be found between functionality and marketability, as discussed in paragraph 3.3.2 Public Real Estate. All criteria determined by the literature study can be found in Table 6.1.

6.3. What are the organisational characteristics of the real estate decision making process of ROC organisations?

To answer this sub question, literature study was not sufficient. Three ROC organisations were selected to be subject to case studies. The ROC organisations chosen for the case studies are different in several aspects. Several aspects of the ROC real estate decision making process were elaborated on in these case studies. The aspects of that were discussed are; the allocation of financial resources, the decision making process and the important actors and factors in the decisions.

By far the largest source of income for ROC organisations is the lump sum funding of the government. Over 75% of the total income of ROC organisations is coming from the government funding (100 bv, 2005). Because of the public funding, the financial playing field of ROC organisations is limited by the Inspection of Education.
For ROC real estate decision making, the solvability of the organisation is most important. If investments cause a drop of solvability under thresholds, the financial risks of the investment will be too high and the ROC organisation can end up with large financial problems. Therefore, the solvability should stay above thresholds.

The allocation of financial resources and the financial policy of the three examined ROC organisations are quite similar. The board of directors establish the overall budget, including the housing budget. The budget for housing is mainly based on the expenses from the past and the necessary investments to implement the housing policies. The ROC organisations are free to spend their money as long as they stay within the thresholds of the Inspection of Education.

The real estate decision making process of the ROC organisations is mainly determined by the management department responsible for real estate. However, the board of directors is always the deciding vote. Each ROC has a policy plan for the organisation. In this policy plan all goals of the organisation are mentioned. The plan that is drawn up is dominated by education policy. Usually, the real estate management team is given the task to translate this policy into a specific housing policy plan. The drawing of this housing policy plan is usually based on experience and ‘gut’ feeling and not very objectified. The housing policy plan then has to be approved by the board of directors so they can check whether the plan fits within their overall policy.

Although the different ROC organisations are not necessarily dissatisfied with the results of their housing policy plans, they do see room for improvement. A more objective approach to the important decision criteria may help to get a clearer overview of the possibilities for the portfolio. Also some more structure to the process itself help to make the process more transparent. A difficulty that also became visible is that it is sometimes difficult to convince the board of directors of a certain idea or option. Using a method, the managers responsible for housing can demonstrate the consequences of certain actions to the board of directors. This might improve the communication towards the board of directors. Better communication can again help to improve the decision making process.

There are a few actors that should be kept in mind during the decision making process. First of all, the businesses in the area are quite important to the practical part of the education. A proper alignment of classes and internships could improve the efficiency of use of space. The relationship with the businesses in the area should therefore be maintained well. Also the municipality should be kept close. Although the municipalities do not have the means to have a direct effect on the ROC organisations, they do have the means to create possibilities, or influence the possibilities in a negative way. The most important instrument of the municipalities is the possibility to change the land use plan (bestemmingsplan). The land use plan can be very important to the ROC organisations when drawing up their housing policies. The final actor that should be kept in mind are the ROC organisations in the surroundings which can be competition.
The most important decision criteria that were mentioned by the ROC organisations subject to the case study were: functionality, location and flexibility. This shows that the ROC organisations still consider the usability of the building for the organisation as most important. All criteria that were determined based on the case studies are presented in Table 6.1. Together with the results of the literature study, the criteria for the final schedule could be established.

### 6.4. How can the decision making process be improved?

Based on the case study, it could be concluded that there is room for improvement in the current decision making process. The proposed improvement of the decision making process of ROC organisations is two-sided. The substance of the input for decisions as well as the form of the process could be improved.

As shown in Table 6.1, the current decision criteria of ROC organisations have been supplemented with criteria from the literature study. Considering the financial issues of some ROC organisations in the past, and the threat of declining student numbers and the associated decrease of income, it is important that the ROC organisations are going to pay more attention to the financial situation and the changing possibilities of the portfolio. By including these criteria in the decision making, future developments and unexpected changes could be coped with more efficiently. Besides using the proposed criteria, it is important that each ROC organisation considers the decision criteria for their own situation. The determination of both the decision criteria an weights of these criteria are already valuable to the decision making process. The discussions that will be held to determine the decision criteria and their weights are important to the decision making process. The decision criteria give insight in the place of real estate in the organisation and the factors that are consider important to the organisation. The weights of the criteria gives insight in the priorities.

To improve the actual process of decision making, a method for ROC real estate decision making was introduced. This method (Figure 6.1) is mainly based on the model for preference based portfolio design (Arkesteijn & Binnekamp, 2012), but adjusted for the ROC organisations.

<table>
<thead>
<tr>
<th>Criteria Literature study</th>
<th>Criteria Case study</th>
<th>Criteria Final model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply vs Demand</td>
<td>Match Supply and Demand</td>
<td></td>
</tr>
<tr>
<td>Financial Situation</td>
<td>Affordability</td>
<td>Financial Situation</td>
</tr>
<tr>
<td>Quality</td>
<td>Quality</td>
<td>Quality</td>
</tr>
<tr>
<td>Functionality</td>
<td>Functionality</td>
<td>Functionality</td>
</tr>
<tr>
<td>Sustainability</td>
<td>Flexibility</td>
<td>Flexibility of space</td>
</tr>
<tr>
<td>Alternative Usability</td>
<td>Changing possibilities Portfolio</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Location</td>
<td></td>
</tr>
</tbody>
</table>
This method is initially intended to weigh different possible real estate interventions against the most important decision criteria. The interventions that will be beneficial to the ROC organisation as a whole will come up and the decision makers can select the alternative that suits the goals of the organisation best.

In the method, preference ratings will be used to make the scores of the different criteria comparable. Looking at the criteria, the scores will be in different units of measurement. It will therefore be very difficult to compare the scores. Another reason to use preference ratings is the fact that the scores on the criteria are often not linear desired. Preference ratings do include the desired scores on criteria.

There are three different applications of this method. All applications have the potential to improve the decision making process of ROC organisations. According to the real estate situation and reason to reconsider the real estate portfolio, an application can be chosen.

As mentioned, the intended application of the method is selecting the best alternative from a number of different alternatives. This is a very basic application with a logical process. First, a change of real estate portfolio is required. The reason for this required change could be from scheduled depreciation to a sudden drop in student numbers. Then, the different alternatives have to be drawn up. The management team responsible for real estate will get this task. It should be noted that to design the alternatives, the method can be used as well.

When the alternatives are known, they have to be scored based on the LaGrange curves. Finally, the schedule has to be filled in and the weight can be applied to get an outcome. This outcome should present the best alternative for the ROC organisation.
This application of the method improves the structure of the decision making process significantly. It is a transparent way of decision making and it requires discussions on the decision criteria and their weights. These discussions are valuable to get all priorities in order and to think outside the box. However, this application can also have a negative effect on the decision making process. If the method is being used as a solution and the outcome is copied blind, the schedule gets too much power. Decision makers can feel ignored if the decision is only made based on the schedule. This is not the meaning of the method. The process of filling in the schedule should lead to discussions and raise questions. It is important to have all information in a clear overview to make an informed decision. Therefore, it is important that this model is only used as a support tool in the decision making process and not as a direct decision making tool.

Another application is a more controlling application and can also be used to communicate with the board of directors. The goal of this application is to show that the housing policy drawn up by the management team responsible for real estate is beneficial to the organisation. It can be quite difficult to properly substantiate a specific choice for intervention in real estate. With this method, the intervention can be tested against the current situation and the improvements can be shown.

This application is more limited, but can still improve the decision making process. The method prompts discussions about the important criteria and their weights and presents the strengths and the weaknesses of a specific intervention. Thereby, using the method as a tool to substantiate decisions and communicate these decisions to the board of directors can also be an improvement to the process. The method gives a quick and comprehensive look into the housing situation. It makes the communication easier and more transparent, which is beneficial to the real estate decision making process.

The final application of this method is to use it backwards. In this application, the method is not used to test alternatives, but to draw alternatives. In order to do this, the current situation will be filled in. If the score of the current situation on the different criteria is known, the situation can be examined in order to see where there is room for improvement. If the current situation scores very low on a specific criteria, the real estate portfolio could be improved significantly if the focus will be on this criteria. Using the method backwards helps to get insight in the current situation. The strengths and weaknesses of the current real estate portfolio will become clear and options to improve the weaknesses can be sought. This application of the proposed method for real estate decision making can be very valuable to the decision making process. The schedule gives a clear and simple overview of the situation. Based on this information, it is possible to look for alternatives to improve the situation and determine a focus. Issues come to surface so that they can be addressed.
6.5. Recommendations

This research proposes a method for ROC real estate decision making that can improve the decision making process. The three suggested applications of the method can all be beneficial to the process. Whether the method is applied in a direct way to weight different alternatives or if it is used backwards to look for a suitable alternative, the process will be more structured, transparent and well-informed. Also the controlling function could help to objectify the process and improve the communication towards the board of directors.

In order to implement the method successful, first the ROC organisations need to get their information supply in order. The first step to a transparent process is knowledge about the current situation. Then, when using the method, the ROC organisations should elaborate carefully on the decision criteria and their weight. It is highly recommended to take the suggested criteria into account. Especially the criteria ‘changing possibilities portfolio’ should be included to take future developments into account.

Even though proper use of the proposed method can help to improve the current decision making process, there are some limitations to this method that should be considered. Many of the criteria are expressed in scores on a scale from 1 to 10. This is a common approach to scoring criteria that are difficult to quantify. However, the score will therefore be always debatable. Also the choice to give the management team responsible for real estate the task to draw up the alternatives could be a limitation. The optimal alternative may be overseen by this approach. However, this choice was made to keep the method easy to use.

Considering the limitations, it should be noted that the method and the outcome of this method should be used as a guideline for the decision making. It is really a support tool for the decision making process and not intended to substitute the process.

The improvements of this method to the ROC real estate decision making process rises questions on the application of the method on other types of public real estate. It is difficult to answer these questions, since no extensive research has been done on other types of public real estate. The application of this method on other types of public real estate is expected to be possible and possibly even quite successful. Many of the ROC real estate characteristics are correspond to real estate characteristics of for example libraries, health care organisations and especially other educational organisations. However, more research will be necessary to give a proper prediction of the application of the method on these types of public real estate.
7. Literature

http://www.bouwstenenvoorsociaal.nl/?q=maatschappelijkvastgoed  
’s-Hertogenbosch: CINOP.  
DTZ Zadelhoff (2013, march 26th 2013). [Huisvesting middelbaar beroepsonderwijs].  
http://www.bouwstenenvoorsociaal.nl/?g=omvang%20maatschappelijk%20vastgoed  
http://www.vakbladmaatschappelijkvastgoed.nl/  

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dan-kantoren-en-winkels

8. Appendices

8.1. Appendix A: Interview ROC Organisations

8.1.1. Interview questions (Dutch)

Deel 1: Hoe gaat de besluitvorming in zijn werk?

- Hoe belangrijk is het huisvestingsvraagstuk binnen het bestuur?
- Hoe wordt de verdeling van de financiële middelen bepaald?
- In hoeverre wordt er toezicht gehouden?
- (Door wie/welke instellingen wordt er toezicht gehouden?)
- (WAarop controleren zij?)
- (Wat gebeurt er als het ROC niet aan de eisen voldoet?)

- Wat zijn de betrokken binnen de besluitvorming?
- (Welke actoren zijn er allemaal?)
- (Hoeveel invloed hebben deze actoren op de besluitvorming?)
- (Op welke wijze kunnen zij invloed uitoefenen?)
- (In hoeverre is het van belang dat de actoren ‘tevreden’ gehouden worden?)
- (Wat is de invloed van de gemeente/overheid?)

- Welke criteria spelen een rol binnen de besluitvorming?
- (Welke criteria worden meegenomen?)
- (Welke factoren bepalen deze criteria?)
- (Hoe zwaar wegen de criteria mee? Rangschikking)
- (Worden de criteria aangeleverd door de betrokken actoren?)
- Welke methode wordt gebruikt bij de besluitvorming?
- Wat doen jullie voor onderzoek voorafgaande aan het besluitvormingsproces?
- (informatie input)

- Welke rol speelt de vastgoedmarkt binnen de besluitvorming?
- Wordt er strategisch gekeken naar de waarde van de panden als er een besluit moet komen?

- Hoe gaan jullie om met externe veranderingen (dalende leerling aantallen, politieke veranderingen enz)?
- Hoe gaan jullie om met vraag en aanbod?
- Op welke termijn wordt er gekeken naar de toekomstige vraag?
- Hebben jullie ruimte om dalende inkomsten op te kunnen vangen?

- Vastgoedbesluitvorming uit het verleden: Heeft u een voorbeeld van vastgoedbesluitvorming in het verleden? Hoe is dit verlopen? Wat was de uitkomst?
- Waar was dit besluit op gebaseerd?
Deel 2: Ruimte voor verbetering

- Wordt het besluitvormingsproces geëvalueerd?
- Welke vorm van evaluatie wordt hier voor gebruikt?
- Wat wordt er met de evaluatie gedaan?
- Ziet u ruimte voor verbetering in het huidige besluitvormingsproces?
- Hebt u een idee hoe deze verbeteringen doorgevoerd kunnen worden?
- Is in het geval van uw ROC ondersteuning of verbetering van het besluitvormingsproces gewenst?
- In welke vorm?

Deel 3: Ik ben een model aan het ontwikkelen om het besluitvormingsproces inzichtelijk te maken. In hoeverre denkt u dat dit als ondersteuning kan dienen in het proces?

- Bent u bekend met besluitvormingsmodellen?
- Is het gebruik van modellen gewenst?
- In hoeverre denkt u dat kunnen modellen een handvat bieden?
- Welke invulling zou u geschikt vinden?
- Hebt u de juiste informatie om een model in te kunnen vullen?
- In hoeverre bent u het eens met de selectie van de alternatieven?
- Is er een besluit genomen in de afgelopen jaren waarvan zowel de nul-situatie als de nieuwe situatie bekend is?

8.1.2. **Interview with ROC Aventus (Dutch)**

**Interview ROC Aventus (14 jan 2014, 13.00 uur met dhr Dieckmann en dhr Bosgoed)**

Het ROC Aventus is een middelgrote ROC organisatie. Een deel van de lump sum die jaarlijks wordt toegekend vanuit de overheid wordt gelabeld en bestemd voor huisvesting. Dit bedrag wordt bepaald aan de hand van de vaste lasten die de vastgoedportefeuille met zich meebrengt. Het huisvestingsbudget bestaat ongeveer uit 8-9% van de totale lump sum.

**Deel 1: Hoe gaat de besluitvorming in zijn werk?**

Voorbeeld uit het recente verleden: Het verlaten van de locatie aan de Singel in Deventer en de verhuur van dit gebouw. Aanleiding voor dit besluit waren de teruglopende leerlingen aantallen. Het was duidelijk dat het aantal vierkante meters niet overeen kwam met het benodigde aantal vierkante meters. Daarbij gaf ook het tekort op de huisvestingsbekostiging (tot 2011 bijna 15% per jaar) aan dat een ingreep in de vastgoedvoorraad noodzakelijk was.
De keuze is gevallen op het gebouw aan de singel om een aantal redenen:

- Dit gebouw was moeilijk aan te passen aan de veranderende wensen van het ROC Aventus. De organisatie moest van drie gebouwen terug naar twee. De twee gebouwen die over bleven moesten wel voldoen aan de behoeftes en genoeg ruimte bieden voor de leerlingen. Het gebouw aan de singel was hiervoor het minst geschikt. Het gebouw aan de Singel betreft een monumentaal pand met een aanbouw. Er was echter weinig ruimte om uit te breiden en door de regels waren ook aan verbouwingen beperkingen gesteld.

- Dit gebouw was gemakkelijk te verhuren. Er was al heel snel een partij die het pand graag wilde huren. Dit kwam grotendeels door de locatie van het pand in de binnenstad van Deventer en de mogelijkheden die dit (ict) bedrijf zag voor de indeling.

Huisvestingsbeleid op hoog (portefeuille) niveau wordt bij het ROC Aventus vastgesteld door de raad van bestuur. De raad van bestuur bepaalt in hoeverre er vestigingen bij moeten komen of juist moeten worden verhuurd of verkocht. Uiteraard wordt er wel informatie verzameld voorafgaande aan deze besluitvorming. Het besluit zelf wordt echter niet zeer rationeel, maar meer op basis van gevoel en een persoonlijke afweging van de mogelijkheden genomen. De raad van toezicht heeft direct invloed op het beleid dat bepaald wordt en toetst over het algemeen of de raad van bestuur goede beslissingen neemt. Op het geheel wordt toezicht gehouden door de inspectie van het onderwijs/centrale overheid, maar hierbij is het met name belangrijk dat het ROC binnen de gestelde grenzen opereert. Mogelijk komt er meer bemoeienis bij zeer ingrijpende beslissingen met grote financiële gevolgen.

Andere actoren, zoals de gemeenten raken pas betrokken op lager niveau. Als er een besluit voor nieuwbouw is genomen, zal in overleg met de gemeente de juiste locatie worden bepaald en vanaf dat moment zal ook medewerking van de gemeente noodzakelijk zijn op het gebied van bestuurlijke ingrepen, zoals wijzigingen in de bestemmingsplannen en soms zelf onteigening procedures. Het ROC Aventus heeft deze medewerking ondervonden bij de planning van de bouw van het gebouw in Apeldoorn. Vraag is echter hoeveel invloed de gemeente zal hebben als een ROC gebouw niet gewenst is.

Ook een belangrijke actor, een die meer en meer belangrijk wordt, is de financieringsverstrekker. In het huidige klimaat is het niet gemakkelijk om een financiering rond te krijgen. Hierbij is de exploitatie van het gebouw zeer belangrijk.

Naast deze actoren zijn ook bedrijven in de omgeving belangrijk met oog op stageplekken en toekomstige banenmarkt, maar dit is meer een indirecte actor. Deze zal geen directe invloed hebben op het huisvestingsvraagstuk.

Kijkend naar de criteria, zijn functionaliteit, gebruik, flexibiliteit en identiteit belangrijk. Zolang binnen het huisvestingsbudget wordt gehandeld zijn de financiële gevolgen niet het belangrijkste criterium.
Op het moment is het ROC Aventus niet direct bezig met de optie om nog meer vestigingen af te stoten. Ook het ROC Aventus heeft te maken met teruglopende leerlingaantallen. Zij zijn echter meer geïnteresseerd in het beter inzetten van de ruimte die ze nu tot hun beschikking hebben dan het afstoten van ruimte. Er wordt gekeken naar mogelijkheden om de ruimte die nu een lage bezettingsgraad heeft effectiever in te zetten en eventueel extern te verhuren op de tijden dat de school er zelf geen gebruik van maakt (bijv. in de avonduren).

Deel 2: Ruimte voor verbetering
De afgelopen tijd is het ROC Aventus bezig geweest om inzicht te krijgen in de situatie. Hiervoor is een inventarisatie van getallen nodig geweest om het beeld op orde te krijgen. Als voorbeeld wordt het aantal m² genoemd. Dit was eerder niet altijd duidelijk en daardoor was het ook moeilijk om de besluitvorming te structureren.

Er wordt aangegeven dat, als het gaat om de besluitvorming op lager niveau (bijvoorbeeld bij de planning van een verbouwing), er wordt gekeken naar de criteria en de eisen voordat er bepaald wordt hoe de verbouwing exact zal plaatsvinden. Op hoger niveau is de besluitvorming echter een stuk minder rationeel en wordt door een kleine groep op basis van gevoel en intuïtie vastgesteld (bijvoorbeeld waar een verbouwing plaats moet vinden of welk gebouw verhuurd of verkocht moet worden).

Deel 3: Het model
Het gepresenteerde model kan in het besluitvormingsproces een handvat of vooral structuur bieden. De invulling zal vooral bestaan uit de criteria: functionaliteit, flexibiliteit, locatie op knooppunten (al wordt dit minder belangrijk) en identiteit. Financiering wordt gezien als randvoorwaarde, maar speelt ook wel een rol in de selectie (Investeringskosten zijn hierin belangrijk). Duurzaamheid wordt zeker meegenomen, maar meer bij de invulling van het ontwerp op een lager niveau.

Vooral de mogelijkheid om de ruimtes flexibel te kunnen gebruiken ziet ROC Aventus als een belangrijke factor.

8.1.3. Interview with ROC Mondriaan (Dutch)

Interview ROC Mondriaan (15 jan 2014, 10.00 uur met dhr Van Wegberg)
Het ROC Mondriaan is een grote ROC organisatie in de regio Haaglanden. Mede door wet- en regelgeving heeft in 2000 een grote fusie plaatsgevonden tussen een groot aantal MBO scholen in deze regio. Door deze fusie kwam het ROC Mondriaan in het bezit van een groot aantal gebouwen en diende er beleid te komen hoe om te gaan met de grote portefeuille aan vastgoed.
Deel 1: Hoe gaat de besluitvorming in zijn werk?

Voorbeeld uit het verleden: De nieuwbouw van de campus aan het Leeghwaterplein in Den Haag.

Eerder is genoemd dat de fusie een belangrijke aanleiding was om de vastgoedportefeuille te bekijken en beleid te bepalen rondom deze portefeuille. Bij het ROC Mondriaan is de besluitvorming als volgt gestructureerd:

- De raad van bestuur ontwerpt samen met de directie en het management een visie en missie voor het ROC Mondriaan als geheel. Hierin wordt uiteengezet hoe het ROC Mondriaan haar onderwijs vorm wil geven en wat de kernwaarden zijn voor de organisatie. Het overheidsbeleid is in de vorming van de missie een zeer belangrijke bepalende factor, die tegelijkertijd zwaar onderhevig is aan veranderingen, soms op zeer korte termijn. Het is mede hierdoor niet mogelijk om beleid op zeer lange termijn vast te stellen. Daarom is gekozen voor een uitgebreid beleidsplan, geschreven in 2003, welke elke 5 jaar wordt herzien.

- Vastgoed is een van de middelen om de opgestelde organisatiedoelen te kunnen bereiken en wordt ingezet om het onderwijs te faciliteren. Vanuit het beleidsplan wordt daarom een huisvestingsbeleidsplan opgesteld. Dit plan bestaat uit een interpretatie van het beleidsplan. Waarbij het opstellen van het beleidsplan uitgebreid wordt nagedacht over de doelen die de organisatie wil bereiken, wordt bij het afleiden van het huisvestingsplan meer afgegaan op ervaring, intuïtie en gevoel. Daarbij zijn de mogelijkheden die gecreëerd kunnen worden, of soms zelfs aangeboden belangrijke beweegreden voor de besluitvorming.

Terugkijkend naar het huisvestingsbeleidsplan van 2003 zijn er een aantal belangrijke besluiten genomen die de toekomst hebben bepaald voor het vastgoed van het ROC Mondriaan. In deze besluitvorming heeft de gemeente Den Haag een zeer belangrijke rol gespeeld. Een goed voorbeeld hiervan is de ontwikkeling van het Laakhavengebied in Den Haag wat op dat moment een gebied was wat veel aandacht vereiste van de gemeente. In combinatie met het belang van de gemeente om een goed onderwijsaanbod te hebben in de regio, was het de wens vanuit de gemeente dat het ROC Mondriaan zich zou vestigen in een groot nieuw pand in het Laakhavengebied. Ondanks dat de locatie zeer geschikt was vanuit een mobiliteitsperspectief waren er genoeg punten waarop het ROC Mondriaan deze wens niet zelfstandig kon vervullen. Hierbij was medewerking en steun vanuit de gemeente noodzakelijk.

Om de leeghwatercampus te kunnen realiseren is de gemeente daarom op verschillende manieren het ROC tegemoet gekomen. Een deel van de gebouwen die leeg zouden komen te staan na verhuizing werd aangekocht door de gemeente: een aantal om scholen voor voortgezet onderwijs te huisvesten, een aantal om te transformeren of te slopen en nieuwbouw te plegen. Hierdoor had het ROC een financiële garantie van de verkoop. Maar ook bij de voorbereidingen van de nieuwbouw van de Leeghwatercampus heeft de gemeente zowel financiële als bestuurlijke mogelijkheden gecreëerd.
Concluderend uit de besluitvorming na de fusie heeft het ROC Mondriaan een mooie kans gekregen die zij gegrepen heeft. Het is echter niet zo dat de gemeente directe middelen heeft aangeleverd. Ook zijn er nog steeds gebouwen die op de lijst staan voor verkoop. Het is zeker voor schoolgebouwen lang niet altijd gemakkelijk om een goede prijs te krijgen, of het gebouw überhaupt verkocht te krijgen. Naast deze specifieke casus heeft het ROC daarbij nog meer vastgoedbesluitvorming doorgemaakt. Ondanks dat gemeenten vaak een belangrijke rol spelen binnen de vastgoedbesluitvorming, hebben zij geen directe stem in de besluitvorming. Het creëren van mogelijkheden en medewerking bij de realisatie van het huisvestingsbeleid is het enige middel dat een gemeente heeft om invloed uit te oefenen.

Uiteindelijk is het dus het ROC zelf dat de besluiten neemt. Kijkend naar de criteria die voor het ROC Mondriaan het meest meewegen in besluitvorming, zijn gebruik, functionaliteit en flexibiliteit. Daarbij besteed het ROC Mondriaan bij de invulling van de ontwerpen altijd veel aandacht aan de identiteit. Bij elke vestiging moet het duidelijk zijn dat je bij Mondriaan naar binnen loopt. De kosten van een gebouw zijn belangrijk, maar hierbij wordt vooral gekeken naar de onderhoudskosten. Voor investeringen en grote ingrepen in de portefeuille wordt voornamelijk gekeken of deze kosten binnen het huisvestingsbudget vallen. Risicoanalyses spelen hierbij een grote rol. Als een investering binnen het budget valt en geen buiten proportionele risico’s met zich meebrengt wordt een dergelijke investering geaccepteerd.

De actor die vooral controleert op de besteding van de gelden is de Raad van Toezicht. Die zullen bij het huisvestingsbeleidsplan nagaan of de kosten realistisch worden meegenomen en of de investeringskosten acceptabel zijn. Daarbij heeft de Inspectie van Onderwijs de taak om de ROC’s te controleren op hun (huisvesting)uitgaven. Hierbij merkt het ROC Mondriaan dat het toezicht op vastgoeduitgaven begint toe te nemen. Echter, als er geen extreme investeringen gedaan worden en de risico’s worden meegenomen en gewaardeerd, dan zal de Inspectie niet ingrijpen.

Op het moment heeft het ROC Mondriaan nog niet erg te kampen met teruglopende leerlingenaantallen in het MBO. Echter in de Volwassenen Educatie lopen deze aantallen wel drastisch terug en hier zal op moeten worden ingespeeld. Het ROC Mondriaan probeert in te spelen op veranderingen in leerlingen aantallen. De prognoses die worden gesteld voor leerlingenaantallen zijn daarom van groot belang binnen de besluitvorming. De vraag naar ruimte wordt vastgesteld aan de hand van deze prognoses. Zo hanteert het ROC Mondriaan een streefaantal van 5,5 m² per leerling. Uiteraard verschilt deze ruimte per opleiding. Zo probeert het ROC leegstand en ongebruikte gebouwen te voorkomen.
Deel 2: Ruimte voor verbetering

Het ROC Mondriaan is contant bezig om het huisvestingsbeleid te evalueren en te vernieuwen. Zo wordt het huisvestingsbeleidsplan elke 5 jaar herzien. Toch loopt ook dit ROC aan tegen moeilijke situaties, zoals de extreme terugloop in het volwassenen onderwijs (inburgering). In deze gevallen is het van belang om de huisvesting goed onder de loep te nemen en besluiten te nemen om de schade te beperken.

Deel 3: Het model


De invulling zal vooral bestaan uit de criteria: functionaliteit en locatie. Ook flexibiliteit binnen de grote vestigingen en het faciliteiten niveau (infrastructuur binnen het gebouw) is van belang. Financiering wordt met name gezien als randvoorwaarde, maar dient ook meegenomen te worden als factor.

8.1.4. Interview with ROC West-Brabant (Dutch)

Interview ROC West-Brabant (15 jan 2014, 15.00 uur met dhr Machielse)

Het ROC West-Brabant is een middelgrote ROC organisatie en is ontstaan na een fusie van verschillende onderwijsinstellingen in de regio. Door deze fusie kwam het ROC West-Brabant in het bezit van een groot aantal gebouwen en diende er beleid te komen hoe om te gaan met de grote portefeuille aan vastgoed.

Deel 1: Hoe gaat de besluitvorming in zijn werk?

De fusie was een belangrijke aanleiding was om de vastgoedportefeuille te bekijken en beleid te bepalen rondom deze portefeuille. Bij het ROC West-Brabant is de besluitvorming als volgt gestructureerd:

- De raad van bestuur ontwerpt samen een visie en missie voor het ROC West-Brabant als geheel. Hierin wordt uiteengezet hoe het ROC West-Brabant haar onderwijs vorm wil geven en wat de kernwaarden zijn voor de organisatie.
- Vastgoed is een van de middelen om de opgestelde organisatiedoelen te kunnen bereiken en wordt ingezet om het onderwijs te faciliteren. Vanuit het beleidsplan is daarom in 2005/2006 een huisvestingsplan opgesteld. Dit plan bestaat uit een interpretatie van het beleidsplan. Hierin wordt voornamelijk aandacht besteed aan hoe de huisvesting kan bijdragen aan het geven onderwijs zoals in het beleidsplan is bepaald.
Het ROC West-Brabant bekijkt het huisvestingsvraagstuk over het algemeen per opleidingssoort. Zo proberen ze in alle drie de grote steden die binnen de regio vallen de juiste opleidingen aan te bieden met bijbehorende faciliteiten. Er wordt vervolgens binnen de stad gekeken waar deze opleiding het beste gevestigd kan worden en in welke ruimte. Gezien de verscheidenheid binnen de opleidingen en de afstand tussen de steden is het voor het ROC West-Brabant niet altijd mogelijk om het huisvestingsvraagstuk vanuit een portefeuille perspectief te bekijken. In plaats daarvan wordt zoals gezegd per sector en per stad de juiste huisvesting gezocht. Ook heeft het ROC West-Brabant als doel om elk college haar eigen identiteit te geven en duidelijk onderscheid te laten zien tussen de verschillende sectoren.

De verschillende sectoren hebben dan ook grotendeels hun eigen panden en worden weinig gecombineerd in één grote vestiging.

Het ROC West-Brabant heeft op het moment nog weinig last van teruglopende leerlingenaantallen in het MBO. Mochten de leerlingenaantallen toch terug gaan lopen, heeft dit ROC een zogenaamde flexibele schil ingebouwd. Dit betekende dat het ROC West-Brabant niet enkel is gehuisvest in gebouwen die in eigendom zijn van het ROC zelf, maar voor een deel zijn zij gehuisvest in huurpanden. Dit heeft het grote voordeel dat mocht het zover komen dat er een overschot is in de voorraad, er vrij gemakkelijk afstand gedaan kan worden van vierkante meters door het opzeggen van de huurcontracten.

Deel 2: Ruimte voor verbetering

Onlangs dat het ROC West-Brabant is de afgelopen jaren meer en meer strategisch is gaan kijken naar huisvesting en vastgoed is op dit gebied nog meer te winnen. Werd het vastgoed eigenlijk altijd gebruikt om te faciliteren, is de tijd nu gekomen om het vastgoed anders te benaderen. Het strategisch inzetten van vastgoed om daarmee meer organisatiedoelen te bereiken dan enkel goed onderwijs heeft de toekomst.

Deel 3: Het model

Het gepresenteerde model is voor het ROC West-Brabant een visualisatie van hoe de besluitvorming verloopt. Het ROC West-Brabant besteed veel aandacht aan de objectiviteit van de besluitvorming. De raad van bestuur stelt een duidelijk strategisch plan om met de criteria die belangrijk zijn in de uitvoering.

De invulling zal voornamelijk bestaan uit de criteria: functionaliteit, locatie en de financieel economische kwaliteit. In tegenstelling tot andere ROC’s ziet het ROC West-Brabant flexibiliteit binnen een gebouw niet als toegevoegde waarde. Aangezien de flexibiliteit altijd beperkt is, zal het niet mogelijk zijn een gebouw aan te passen aan een andere sector, gezien de grote diversiteit in behoefte van de verschillende opleidingen. Wel zien zij de noodzaak van financiële flexibiliteit, bij het ROC West-Brabant in de vorm van de flexibele schil van huurpanden.