

Decision-making criteria for the acquisition of retail properties



“Do physical and non-physical features of retail properties affect the building’s financial performance?”

Jaw-Yang Li, January 27th, 2015

The biggest or the strongest retail will not be the ones to survive, but the trader who anticipate the best on the changing behaviour of the consumer. *Freely translated from Origin of Species by Charles Darwin. (Molenaar, 2012)*

Colophon

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Word of thanks

My objective for this thesis was to help experts gain new knowledge and new insights on real estate. I wanted to add something new to the existing knowledge on real estate. In the end, I'm the one that gained the most knowledge during this graduation process. Many people supported me in this process of learning and I would not have been able to complete this thesis without their support.

First of all, I want thank my parents for their patience and support throughout my entire study in Delft. They were always eager to learn more about real estate and to hear about the progress of my graduation thesis.

Secondly, I would like to thank Johan Buijs and Alica van der Duin for the opportunity to conduct research at NSI and the guidance during the process. I have learned a lot from both and had many laughs with the colleagues at NSI.

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And finally, while conducting this research, I have also gotten to know many new people. I have gained valuable knowledge from these people. I would like to thank the interviewees for broadening my view and Locatus for providing the necessary data.

Preface

This graduation thesis is part of the master Real Estate and Housing and is conducted at the Technical University of Delft. It describes the results of a research in the areas real estate management and building economics.

The subject of this thesis is the influence of physical and non-physical building features on the financial performance of retail real estate. The main question throughout this thesis is whether building features affect the net rental income and could be decisive for the acquisition of retail real estate by institutional real estate investors. The goal is to determine a set of building features that affect the net rental income.

To determine the importance of building features the real estate portfolio of NSI, a Dutch listed real estate fund, is analysed using quantitative research methods. Building features used as variables for this research are found through interviews with experts in the field and thorough literature study. In the end, a statistical model is created. This model is used to list building features, which is used to predict the performance of retail properties.

Jaw-Yang Li, The 27th of January 2015

Abstract

Introduction

The economic recession has uncovered a high percentage of vacancy and low returns for real estate investors. Retail real estate is threatened by the economic recession and also by new technological innovation. According to experts in the field, online sales threaten the physical store. Consumers prefer ordering products online rather than visiting physical stores. Shopping centers with every day shopping products are suffering the most from these changes. Retailers must adapt to these changes. They must find new ways to attract consumers by creating stores in which people want to stay. The physical appearance of a retail property is becoming more and more important.

During the hit of the economic crisis the percentage vacancy rose due to the bankruptcy of many retailers. The years after 2008/2009, many tenants were forced to end their contract due to bad economic circumstances. Vacancy is a big problem for investors and the value of properties. Vacancy also means low returns for the investor. High vacancy and low returns are causes for investors to re-evaluate the properties within their portfolios.

Investors use a set of decision-criteria to assess possible investments. The company policy and acquisition strategy of real estate are based on these criteria. But the pre-crisis decision-criteria do not guarantee success anymore. New criteria have to be determined that align demand and supply with a focus on tenant and consumer. As the appearance of buildings become more important, it is assumed that building features are getting more important as decision-criteria.

The purpose of this research is to determine decision-criteria for the acquisition of retail real estate with an emphasis on building features as decision criteria. It is assumed that building features such as material of the façade attract consumers and increase sales. The result revealed which building features are relevant for retail real estate investors and which might be added to the acquisition strategy of investors to improve the return. The following hypotheses has been formulated:

Building features are of such importance to the net rental income of a retail property that it needs to be considered as a decision-making criterion in the acquisition of an institutional real estate investor.

Methodology

The method used for this research is a quantitative approach. SPSS and mixed modeling has been used to find relevant variables. From 48 retail properties within the portfolio of NSI, approximately 50 variables related to the retail properties were identified and data was collected for all these variables from the first quarter of 2008 to at least the third quarter of 2014. Five groups of variables were determined: economic and regional market, locational features, building features, tenant features and consumer features. Linear mixed modeling was used to test the variables for relevance as decision criteria. Variables were considered relevant when they were significantly related ($p < 0.05$) to the financial performance of the building.

Results

The evidence-based advice is to include building features into the acquisition strategy of real estate investors. The expectation that building features are important for the acquisition of retail properties has been confirmed. This research revealed results, which were expected, and also new remarkable results, which were unexpected. Table 1 shows variables, which are found to be significant in this research for the financial performance of retail real estate.

Economic cycle	Economic and regional market features	Location features	Building features	Tenant features	Dependent variable
TIME*TIME	Retail sales	Type of shopping center	Entrance charisma inside	Number of contracts	Net rental income per square meter
	Gross domestic product		Indoor or outdoor shopping		
			Pavement material		

Table 1 Relevant features for this research

Recommendation

Although the results are significant, the outcomes are also remarkable. Therefore, it is recommended to verify the results by future follow up research with the portfolio of NSI. In the future, new variables like sustainability can be added. Repeating this research for another portfolio on an A+ location can also improve the validity of the current findings.

Abstract (Dutch)

De economische crisis heeft voor veel opschudding gezorgd in de vastgoedwereld. Problemen zoals leegstand zijn aan het licht gekomen. De winkelvastgoed sector is hard getroffen door de crisis en wordt bovendien ook nog eens bedreigd door nieuwe ontwikkelingen zoals online-winkelen.

Experts in het winkelvastgoed pleiten voor een nieuwe aanpak. De succes van een winkel is niet meer alleen afhankelijk van de locatie. Verschillende experts verwijzen naar de beleving van een winkelgebied. Een gebied moet aantrekkelijk zijn voor de consument. De beleving en de aantrekkelijkheid van een gebied kunnen worden beïnvloed door gebouweigenschappen. Gebouweigenschappen worden dus steeds belangrijker.

Dit onderzoek pleit voor het gebruik van gebouweigenschappen bij de acquisitie van nieuwe winkelvastgoed door investeerders. Het belang van gebouweigenschappen kan worden getoetst aan de hand van de netto huurinkomsten van winkelpanden. Op deze manier kan de invloed van gebouweigenschappen op het financiële rendement van winkelvastgoed worden onderzocht.

De verschillende variabelen zijn geselecteerd op basis van interviews en literatuurstudie. De variabelen worden gelinkt aan de 48 winkelpanden van NSI. Voor deze panden wordt er op basis van variabelen informatie verzameld over een periode van 6 jaar op kwartaal basis. Door middel van een kwantitatieve analyse zijn de meest relevante gebouweigenschappen bepaald. De resultaten bevestigen het vermoeden dat gebouweigenschappen steeds relevanter worden. Maar om dit volledig te bevestigen zal er in de toekomst meer onderzoek gedaan moeten worden naar gebouweigenschappen. Dit onderzoek zou herhaald kunnen worden voor andere vastgoedportefeuilles met bijvoorbeeld A-locatie winkelcentra. Ook duurzaamheid is een erg interessante variabele die nog meegenomen kan worden.

Ondanks dat het een erg moeilijk onderzoek was vanwege de beschikbaarheid van de benodigde data voor het onderzoek, zijn de resultaten verrassend. Met dit onderzoek zal de importantie van gebouweigenschappen onder aandacht worden gebracht bij vastgoedexperts.

Table of content

I	Colophon	4
II	Preface	6
III	Word of thanks	7
IV	Abstract (English)	8
V	Summary (Dutch)	10
VI	Table of content	12
1.	Introduction	14
	1.1	Influence of e-commerce 16
	1.2	Research questions 18
	1.3	Research Outline 20
	1.4	Graduation Company 20
2.	Theoretical Framework: Basics of real estate	22
	2.1	Introduction 22
	2.2	Real estate investment 22
	2.3	Investment and acquisition 25
	2.4	Economic cycles 26
	2.5	The Basics of retail 35
	2.6	Decision-making criteria: Building features 35
	2.7	Method of identifying retail building features in literature 37
	2.8	Interviews with experts in the field 42
3.	Methodology: Quantitative research	46
	3.1	Introduction to regression analysis 46
	3.2	Data collection 47
	3.3	Dependent variable: Net rental income 49
	3.4	Independent variables: Collecting and selecting 50
	3.5	Analysis 63
4.	Results: Exploration	67
	4.1	Exploration statistical analysis 67
	4.2	Conclusion 77

5.	Results: Final model	79
	3.1 Final model	79
	3.2 Conclusion	82
6.	Discussion	83
	6.1 Result: Building features	84
	6.2 Implementation	85
	6.3 Comparison with offices	86
	6.4 Recommendations	88
7.	Conclusion	89
8.	Reflection	90
9.	Definition	91
9.	References	93
10.	Online documents and websites visited	109
11.	Appendices	98
	12.1 Interviews with experts in the field	98
	12.2 Syntax final model	109
	12.3 Results final model	109

1. Introduction

The situation of the Dutch real estate market is very uncertain due to the economic crisis (van Dijken, Dorenbos, & Lupi, 2014). The end of the economic crisis is not clearly in sight yet and a lot of changes that influence the real estate market are still taking place. Example of changes within the Dutch real estate market, identified by van Dijken and others, are the increasing number of affluent elderly, the low percentage of new construction and urban area development, high percentage of unemployment and the increase of costs and expenses of vacant real estate.

The global recession has uncovered problems like the troubling percentage of vacancy in the Dutch real estate market (Kamer van Koophandel Midden-Nederland, 2012). FGH Bank noted a 5% vacancy at the beginning of the global recession in 2008 for retail real estate and in 2013 the vacancy has increased to 6,9% (FGH Bank N.V., 2014). The increase of 1,9% vacancy shows that vacancy is not increasing as rapidly as it seems, but FGH Bank still warns that the percentage of vacancy for retail is increasing and creating high costs for society while decreasing value of (retail) real estate. FGH bank expects the vacancy in retail to continue steadily increasing for the upcoming years. FGH Bank also alerts for the increasing number of high-risk locations where rents of retail real estate are dropping. The increasing pressure of the rental income and the risk of vacancy affect the value of retail real estate.

Research by the Kamer van Koophandel shows that the national high vacancy rate is caused by a mismatch between demand and supply of real estate in the office-, industrial- and retail market, which has been revealed by the economic crisis (Kamer van Koophandel Midden-Nederland, 2012). In the retail sector, the problems of vacancy and mismatch are particularly present at locations such as small shopping centres (neighbourhood shopping centres), old peripheral locations and streets surrounding the main shopping streets. According to FGH Bank a balance must be found in the benefits for the investor and the demand of the tenant. Investors need to decide whether or not to invest in the potential of a building meanwhile receiving a lower rental income.

Research by the KvK also pointed out another cause of the current high vacancy rate (Kamer van Koophandel Midden-Nederland, 2012). The current economic crisis revealed that the real estate sector was too late to react to unrealistic plans in the Netherlands. The focus was mainly on the supply side. This resulted in a low demand for the expansion of the current supply or stock. Yearly only 1 per cent of the current stock consists of newly constructed real estate according to the KvK.

Increasing vacancy and decreasing returns force investors to re-evaluate the properties within their portfolios within the current global recession (Zurich Services

Corporation, 2011). Investors must critically assess and improve their investment strategy to keep the financial benefits high and avoid defaults. The investment strategy of investors consists of decision-criteria. These decision-criteria are used to evaluate potential risks and performance of real estate. Re-evaluating these decision-criteria to estimate the potential of real estate is part of bettering investment strategies. These criteria provide the owner or buyer an overview of the performance of real estate. The acquisition of a property depends on these criteria. Commercial properties with low performance and high vacancy causes for high expenses. Due to these high expenses, banks nowadays rarely approve loans as it can lead to high debts for the lender.

The purpose of this research is to determine decision-criteria for the acquisition of retail real estate with an emphasis on building features as decision criteria. The importance of building features as decision-criteria for the acquisition of retail real estate will be assessed to determine the relevance. The result will reveal which building features are relevant for retail real estate investors and may need to be added to the acquisition strategy of investors to improve returns.

Gijsselaar (2010) and Kuyper have done researches with similar goals for offices. Gijsselaar first started the research in 2009. At that time, insights in the impact of building features on the office market rents were scarce. The purpose of Gijsselaar was simply to improve the decision-criteria of investors for office buildings. Kuyper took it a step further. He extended the existing dataset with new properties and prolonged the time window to cover a period of 10 years. Due to the timeframe of 10 years, Kuyper was able to take the global recession into account.

This research is roughly modelled after these researches and provides new insights into the existing knowledge on retail real estate. In times of crisis and change, it becomes more apparent how retail is affected by upcoming new technology and changes in consumer behaviour. Investors must be able to adapt to these changes.

“Building features that are of great influence to its users, their willingness to pay, and thereby closely related to the profit of a real estate investor, should play a more decisive role in acquisition strategies.” (Kuyper, 2013)

The onset of the economic crisis marked an era in which companies collapse or are fighting to survive. Pearce and Michael mentioned a few effects of the economic crisis for real estate companies (Pearce & Michael, 2006). These effects include companies and banks cutting back their spending as the percentage vacancy rises due to the low demand for space (real estate).

Reilly found that many companies focussed on cutting expenses and the optimization of their real estate portfolio (Reilly & Brown, 2012). Companies change the strategy of their portfolio to adapt to the changes in demand. Cushman and Wakefield states

that it is important for investors to focus on the demand of the occupier in these times of crisis (Hutchings, Tano, & Can, 2014). The investors must adapt their strategy to fit the demand of the tenant in order to find new opportunities to increase returns.

Real estate properties in the retail sector have a hard time during the current recession. Consumer confidence is dropping and fewer purchases are made. The retail sector depends on the spending of consumers and the future of retail is thus highly uncertain. In the Netherlands, retail had a lower take-up volume in 2013 than in the years before. According to NVM Business the take-up dropped by 25% and the availability levels were up 6% compared to 2012 (NVM Business, 2014). The economic uncertainty and the challenging trade caused a lower percentage of investments in 2013.

Interestingly, Van der Gijp considers the Dutch retail market as a good market for investments in his article “Retail at a turning point” (van der Gijp, 2013). The size of retail space in the Netherlands is about 31 million square meters and the retail market is according to Van der Gijp the most profitable with an annual return of 8.8%. Retail space even increased in ten years’ time with 16.5%. But the vacancy has also doubled to 6.9%. According to the annual report of FGH Bank, the demand for retail real estate increased the last couple of years (FGH Bank N.V., 2014). The absorption of retail real estate has drastically increased with the highest peak in 2012. There is still demand for retail space in the larger cities.

In the Netherlands there is a clear distinction between retail streets on so called A or B locations. A-locations are main shopping streets with the highest number of visitors in the area (van Aarle et al., 2014). B-locations are smaller retail streets. These streets tend to focus on goal shopping and have a harder time to survive the crisis. Other characteristics of failing retail streets are remote locations, non-retail locations and non-residential locations. According to Van der Gijp (van der Gijp, 2013), successful retail locations are often situated in the historical centre of bigger urban regions. He refers to the so-called “dominant” shopping centres as successful retail locations. The “dominant” shopping centres are highly attractive to main retail brands like H&M and new consumers. Vacancy on these locations is between 0% to 2.5%, which is very low compared to non-retail locations (11%) and well below the average vacancy rates for retail (6.9%).

1.1 Influence of e-commerce

E-commerce makes it more unlikely for consumers to go to the store. AEW Europe reported that online retail sales is still growing in parts of Europe (AEW Europe,

2013). AEW Europe is a global investment manager that offers a wide spectrum of real estate investment strategies (AEW Europe). According to AEW Europe, European online retail sales are expected to grow by 70% up until 2017 (Figure 1). An annual growth of 11% is expected. Online retail sales give the consumer a bigger range of products and choice. It is considered easier and time saving.

Retail- or storeowners may contribute to the diminishing use of retail properties. Retailers are analysing their real estate more thoroughly nowadays due to the increase in online sales (Damesick, Blake, Holberton, & Haddock, 2014). Retail- or storeowners often have online stores and are even increasing the range of products online. Demand for retail property is expected to decline. The only retail that is responding well to the changes are according to the AEW Europe report the retail on prime streets (A+ locations) (AEW Europe, 2013). Retail properties or streets on A+ locations offer a “destination experience”. E-commerce cannot offer the same destination experience to consumers. Retail at secondary or tertiary locations are more likely to be victim of the upcoming e-commerce. These locations do not offer the consumer an experience or do not provide a big enough variety of shops or facilities. The locations are also often remotely located. Due to the distance, consumers rather visit the shops online (Damesick et al., 2014).

There is also a change in demographic developments going on that impacts consumer spending. Research by ABN AMRO shows that the average person of 65 years or older spends 33% less compare to people between 45 and 65 (Escobar, Fokkelman, & Buijs, 2014). However, research conducted by thuiswinkel.org shows that the number of online shoppers with an age of 50+ is increasing. In 2002 the percentage online shoppers with an age of 50+ was 12%. In 2011 the number increased a lot to 41%. It is expected that this number will keep increasing. Furthermore, the use of e-commerce among people with an age of 65+ is also increasing. Elderly nowadays are more active and prefer to spend their time differently from shopping. Online shopping provides the comfort of shopping at home without the retailer bothering them. The shopper is full in control when shopping online.

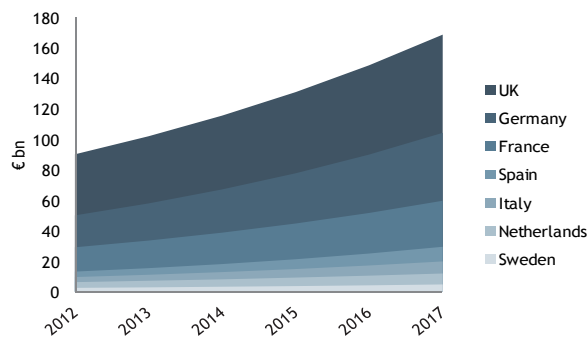


Figure 1 Online retail forecast (Forrester Research Inc, 2013)

While the use of retail properties is diminishing due to the quickly growing e-commerce, the importance of physical stores cannot be ignored. E-commerce is according to retailers a source for the consumer to orientate on possible purchases (Brown, Mendoza-Pena, & Moriarty, 2014). Purchases are mostly made in physical stores. Two-third of the consumers make their purchases in store. Consumers seem to go through five steps in making a purchase: discovery, trial, purchase, pickup and (sometimes) return. Consumers consider in-store pickups very important due to a sense of reliability and trust. This trust and reliability cannot be found online. Therefore it was concluded that both online and physical stores are needed for a retailer to succeed in these times:

“The Bottom line: It’s not physical or digital – It’s Physical with digital.”

(Brown et al., 2014)

While a lot of research focuses on the location and branding of retail, this research helps to explain why tenants are willing to pay a certain price to rent a building. It is assumed that tenants are willing to pay for a good location. So the basic starting assumption of this research is that the value of a building is connected to the willingness to pay by a tenant and that the rent represents the quality of a location or property (Vierkant & Brenninkmeijer, 2014). The rent of the building is considered to be consistent with the current market conditions. Tenants consider a building as adding value to the performance of their store, although, the importance of building features is still partially neglected in the retail market (J. Voss & Heijkamp, 2014). The building features of retail properties are very important in attracting consumers, tenants and, because of the relevance to potential profits, investors.

This research will make an attempt to show that the phrase “location, location, location” is not up-to-date anymore in the retail market. Building features need to be assessed more critically for their importance as decision-criteria to ensure return and performance for an investor.

1.2 Research questions

The current study particularly focuses on the importance of building characteristics, relative to location characteristics in establishing a retail property portfolio strategy. Therefore the aim of this study is to investigate which physical and non-physical retail property features are to be distinguished to improve the set of decision-making criteria for the acquisition of retail property. Recommendations for an evidence-based acquisition strategy have been made. The following research questions were formulated:

1. Which decision-making criteria do institutional investors currently apply in the acquisition of retail property?

This sub question is used to identify the current decision-making criteria used by investors. The features and thus the answer to this question were found through interviews with retail experts on portfolio management and studying literature. The focus is on features, which could be important for the acquisition strategy of investors.

2. What physical and non-physical retail property features can be qualified that potentially have influence on the net rental income of a retail property?

This sub-question is used to identify features, which influence the net rental income of retail properties. The features are found in literature and through interviews. A selection is made based on common sense, research and literature. Opinions gathered from interviews are also taken into account during selection.

3. To what extent do the qualified physical retail property features determine the retail property's net rental income?

After identifying potential relevant variables, data on the variables was collected on a quarterly bases starting from 2008 until the end of 2013. Furthermore, linear mixed modelling was used to statistically identify which variables influence the net rental income.

4. How should knowledge about physical retail property features be implemented into an asset acquisition strategy as decision-making criterion for institutional investors?

The results from the statistical analysis were used to recommend on an evidence-based acquisition strategy for an institutional investor.

Research by Gijsselaar and Kuyper showed the significance of building features for offices (Gijsselaar, 2010). This research investigates the importance of building features for retail real estate. The hypothesis is therefore as following:

Hypothesis

Building features are of such importance to the net rental income of a retail property that it needs to be considered as a decision-making criterion in the acquisition of an institutional real estate investor.

1.3 Research outline

The different phases of this research will be elaborated in this chapter. The phases will be explained using the research questions as framework.

The research outline in figure 2 shows the different stages of this research. This thesis started off by studying the basics of investments. This was followed by comprehensive assessment of literature addressing the basics of the retail market, acquisition strategy and decision-making criteria like building features. Through literature on these different subjects, decision-making criteria that influence building performance were identified. These criteria were the starting point for this research. Interviews with experts in the field were conducted to review the found features.

The second phase is collecting data from an existing real estate portfolio using the formerly identified variables. The variables will be used within a statistical model to provide insights into the financial performance of the retail portfolio.

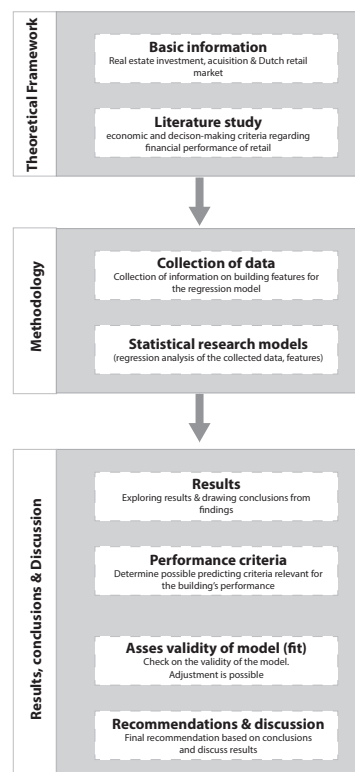


Figure 2 Research Outline (Own Illustration)

1.4 Graduation Company

1.6.1 NSI N.V.

NSI N.V. is a listed real estate fund located in Hoofddorp (the Netherlands). Currently (1 September 2014) NSI N.V. is managing a real estate portfolio valued at 1,8 billion euros. The portfolio currently contains approximately 42 shopping centres located in the Netherlands. The target investments of NSI N.V. are properties that offer the opportunity to increase in value through the active asset management strategy of NSI N.V.. The retail portfolio of NSI N.V. and the earlier experience with other graduate students were reasons to choose NSI N.V. as a graduation company and the perfect real estate company to gather information. The main reason is the large amount of information and the access to (sensitive) information.

From September the first I was a graduate intern at NSI N.V., which means that I had access to information on the real estate portfolio of NSI N.V. during a consecutive time of five to six months. During this period my main task related to my graduation thesis was to gather information on the past five years on building features from the retail portfolio of NSI N.V.

2. Theoretical Framework

2.1 Introduction

This chapter addresses the basics for real estate investments. By explaining the basics, the reader will be able to understand the research and real estate as a whole. Real estate investments will be explained from different views and perspectives. Different aspects like acquisition, the Dutch real estate market, different tendencies within real estate and, the most important part for this research, decision-making criteria will be elaborated in this chapter.

2.2 Real estate investment

2.2.1 Advantages of investing in real estate

Van Gool describes investment as using funds to reach a certain goal or to increase value. Investing is trading the current available money for a yet unknown amount in the future. Depending on their goals and risks an amount is invested in by investors. Using equity to invest in real estate has a few advantages according to Meijners (Meijners, 2012) and van Gool & others (van Gool, Jager, Theebe, & Weisz, 2013):

- Diversification of the portfolio
- Hedging against inflation
- Reasonable stable and predictable cash flows
- High returns

A portfolio only consisting of assets like stocks and bonds can be very vulnerable. By adding real estate to portfolios risk within portfolios can be reduced according to van Gool et al (van Gool et al., 2013) en Meijners (Meijners, 2012). The ability to create diversity within real estate portfolios is a great advantage of investing in real estate. The risk reduction is caused by the low correlation between real estate and stock. The relation can even be negative in some cases. A possible explanation for the low correlation is the fact that rents and investments of the real estate market are not directly connected to the market of bonds and stock.

Van Gool et al mentions that real estate is reasonably hedged against inflation (van Gool et al., 2013). A high average performance can help to compensate for inflation while maintaining a high profit margin. The following causes this hedge according to van Gool et al:

- Indexation of the rents of rental-contracts
- The rise of construction-costs

- The continuing increase of value of property (ground)

The true cause for the hedge seems to be the low correlation between property (real estate) performance and inflation. The main reason for this is that real estate is tangible and is considered to have a stable return and cash flow (Geltner, Miller, Clayton, & Eichholtz, 2007).

The long lifecycle and lease-contract of a building can almost assure the owner of a stable return and predictable cash flow for the years to come. However, Van Gool et al. also refers to the importance of the location and quality of the building (van Gool et al., 2013). Location and quality of buildings are important for potential investments. The increase of value also depends on the size of the asset portfolio and the diversification.

A high return is important for every investor and could attract a potential investors. Vijverberg et al. has shown that the return or profits of real estate are higher compared to stocks and bonds (Vijverberg, van Aart, van der Mark, van den Heuvel, & Ong, 2012). Wijnen shows that in particular a high return is obtained in the retail market (Wijnen, 2010). An important issue though is the volatility of real estate, which causes uncertainty in an investment regardless of the return or profit. Profits and return can be increased by intensive management (van Gool et al., 2013). Maintenance, renovation and re-development are key in increasing return by management.

2.2.2 [The disadvantages of investing in real estate](#)

Investing in real estate has a several disadvantages. Van Gool et al. mentioned a few disadvantages in the book “Onroerend goed als belegging”. Meijners and Geltner et al. added a few disadvantages to the list. The following disadvantages are considered the most important:

- Knowledge- and management intensive investment type
- Imperfect market
- Illiquidity
- Indivisibility; need for capital
- Transaction costs

A building is a physical or tangible object and functions as an accommodation or production tool. According to van Gool et al. investing in real estate takes a lot management and knowledge due to these features of real estate (van Gool et al., 2013). Acquisition processes consist of buying, maintenance and selling. Buying and

selling real estate can take years. Intensive management and maintenance is needed to maintain and even increase the value of real estate.

It is well known that the real estate market is an imperfect market (Musil, 2011). In an imperfect market information is not quickly accessible to all actors in that market. Furthermore, buyers and sellers are not immediately available and matched. This imperfection is closely related to the illiquidity and divisibility of real estate and is confirmed by Devaney and Scofield (Devaney & Scofield, 2013).

Buying and selling real estate is a long lasting process. The time between buying and selling is long due to illiquidity. Illiquidity is an important investment risk (Cheng, Zhenguo, & Yingchun, 2013). Portfolios containing real estate are less flexible due to illiquidity (van Gool et al., 2013). Transactions also take a lot of time and the costs are high. The fact that transaction costs need to be paid for in some countries does not help.

Indivisibility makes it impossible for real estate owners to sell parts of their real estate. Unlike real estate, it is possible to sell a share of the same stock while a part of stock is kept. Indivisibility causes a higher risk for investments in real estate as compared to bond and stocks (Kuyper, 2013). Unlike real estate, the stocks and bonds market can be considered as a perfect market. According to Galbraith and Darity, the market will immediately correct differences on the stocks and bonds market (Galbraith & Darity, 2005). Friction is caused by the ever-changing differences between supply and demand. Equilibrium is not possible within real estate. Geltner explains this by referring to the four-quadrant model by DiPasquale and Wheaton (Geltner et al., 2007). The four-quadrant model is further elaborated in chapter 2.4.

Other disadvantages of investing in real estate are the lack of transparency in the real estate market and the difficulty to measure the performance of a real estate portfolio. The lack of transparency partly explains why the real estate market is considered as an imperfect market. According to van Gool et al. a lot of information is unavailable and the lack of transparency attracts people with criminal intentions (van Gool et al., 2013). Market transparency is according to Voss of utmost importance to a reliable and sustainable market (W. Voss, 2011). Valuations create more transparency, but Voss concludes that full access to information is not readily available yet.

Valuations can help to make the world of real estate more transparent according to Voss (W. Voss, 2011). Van Gool et al disagrees because of the inability to measure valuations accurately due to the subjective nature that is involved in the valuations of properties (van Gool et al., 2013).

2.3 Investment and acquisition

Van Gool et al. mentions that the investor decides which strategy is held when it comes to his own real estate portfolio (van Gool et al., 2013). He decides what is most important for his (share of the) portfolio. A possibility for an investor is to invest in an existing fund with an existing investment strategy. In this case, the investor will have limited influence or even no influence on the management of the portfolio. A portfolio manager will be responsible for making the investment decisions and strategic decisions, for example deciding about the risk and return ratio. There are two approaches for portfolio decision-making (van Gool et al., 2013):

- Asset-only-approach (measuring performance and risk in terms of investor-output)
- Asset liability management (taking into account the overall activity of the investor when looking at performance and risk)

The process of investing consists of a few steps according to Van Gool: acquisition, financing, operation, re-development (if needed) and selling (figure 3).

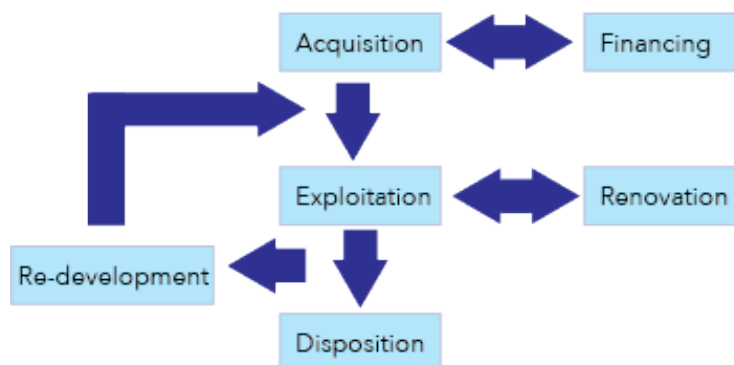


Figure 3 Investment process (van Gool et al., 2013)

When investing in real estate, there are a few criteria that are important for the investment process: the pre-set performance goal, the length of time during which the investor wants to invest, the liquidity of the investment, the acceptance of risks of an investment, usage of debt capital for an investment and the coherence of the investment-results with the expected results of the investor.

The acquisition within the investment process is of great importance during the current economic crisis. Acquisition means buying real estate or acquiring stock and bonds (van Gool et al., 2013). Each investor has his own strategy and goals for acquiring real estate. These goals can range from diversification to sustainability. An investor will first start off by looking for investment opportunities within the market

by pre-selecting properties. The potential property will be critically assessed on the current market conditions, the building characteristics, possible tenants, feasibility and performance. Possible needs for construction and maintenance are also considered. All these features potentially affect the value of the building that might be acquired. If the outcome of the research is positive, the negotiations will start.

2.4 Economic cycles

The economy has ups-and-downs, which are referred to as cycles. Cycles are a series of events that keeps repeating in the same order (Geltner et al., 2007). There will be times in which the economy will grow and times in which the economy will shrink due to bad circumstances as in the current economic crisis. Galbraith and Darity distinguished the following phases of an economic cycles (Galbraith & Darity, 2005): depression, recession, recovery, expansion and peak. The current crisis, which started in 2008, is a good example of the phases as described by Galbraith and Darity. The economic crisis has gone through the phases recession and depression. Currently in 2014 the economy is slightly recovering from the global recession according to the Centraal Planbureau (CPB) (Centraal Planbureau, 2014). Fanning defined four phases which takes place within a cycle (Fanning, 2007): Expansion; slowdown, peak and downturn, contraction, slowed contraction and upturn (trough). The difference phases are shown in figure 4.

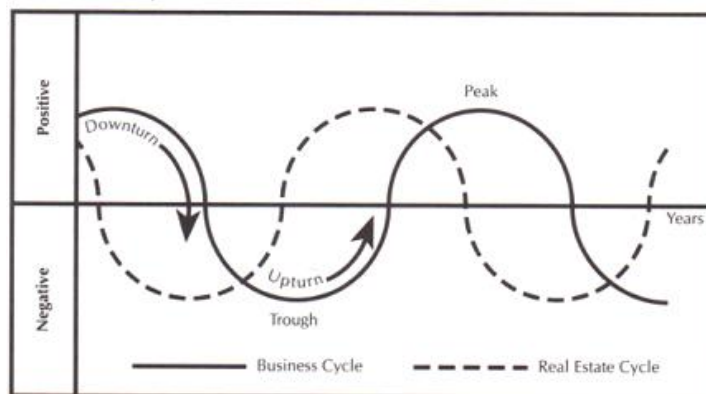


Figure 4 Phases as defined by Fanning (Fanning, 2007)

Consumers are affected by the phases of the economic cycle. The current global recession has a big impact on the behaviour of consumers (van Strien & Wierenga, 2009). Real estate has gotten more uncertain during this economic crisis due to the changing demand of customers. Consumer confidence has dropped and their purchasing power has decreased. Consumers or tenants are important for retail and

thus retail properties. Cushman and Wakefield concludes that the investor more than ever needs to focus on what the occupier wants (Hutchings et al., 2014). In retail, the occupier is dependent on the preferences of the consumer (Carpenter & Moore, 2005). Retailers and retail property owners must adapt to the shopping preferences of the consumer.

The real estate market is known for different cycles, which affect demand, supply, construction and rent. The balance between demand and supply is a continuous changing process, which does not reach equilibrium. DiPasquale & Wheaton explain the relationship between rent, supply, demand and construction using the four-quadrant model (DiPasquale & Wheaton, 1992). The four-quadrant model is shown in figure 5. Figure 6 shows a lecture slide of Marcel Theebe explaining the four-quadrant model and the actors involved. The model shows how the occupier market, investor market and construction market are connected. Theebe, DiPasquale & Wheaton considers the fourth quadrant of the model as the adjustment of stock (new stock in m2). An example of adjustment in the four-quadrant model: low demand by tenants leads to lower values of properties for investors. The number of new construction projects will thus diminish and the percentage stock will drop.

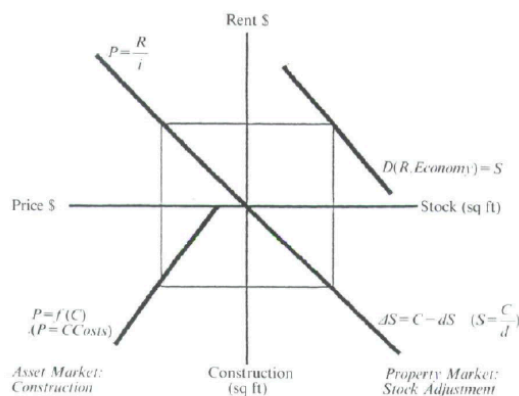


Figure 5 Four-Quadrant model (DiPasquale & Wheaton, 1992)

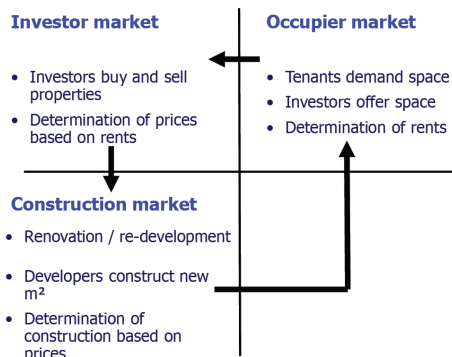


Figure 6 Four-Quadrant model as explained by Theebe (Theebe, 2013)

2.5 The basics of retail

Retail is defined as the provision of physical goods for the personal use of the consumer (Q&A Research & Consultancy, Quix, Terra, Hamann, & Wortel, 2011). It is important for a retailer to offer supply according to the consumer's demand. Physical stores and high quality service from employees in stores are distinguished from consumer demand. In the current recession consumer's demand and the supply from retailers are becoming more and more important. The Hoofdbedrijfschap Detailhandel (HBD) describes in their report the changing shopping environment through 6 C's. The 6 C's are: consumer (1), communication (2), choice (3), customer experience (4), channel (5), and checkout (6). The 6 C's explain, according to HBD, why shopping areas are able to attract consumers.

According to WPM, A-locations are minimally affected by the global recession (Groep, 2009). There is still demand for A-locations. B- and C-locations are negatively affected by the global recession. The demand and the shopping behaviour of the consumer changed. Researches by ING (Zwart, 2014) and WPM show that the demand and the rent of B-locations have dropped. Vacancy has increased. Here, an assumption can be that the increase of vacancy could be a reason for rents on B-locations to drop. These changes in demand, vacancy and rents will be researched to determine the importance of building features. The rent will be the independent variable as it is indirectly affected by the quality of location and building.

2.5.1 Retail types and classification

Retail classification is based on location, type of retail and the size of the shopping centre. Three classifications are found in literature. These classifications are explained and compared to determine important variables and the types of shopping centre. The

results are used to determine the limitations and to specify the target shopping centres of this research.

Though in the remaining of this report the ABC-location classification is not used, the classification is still elaborated. Knowledge on the ABC-location classification is important because articles and literature often refer to this classification.

NVM Business presents the location classifications A, B or C in the report “Winkelmarkten Grote Steden” 2014. Locations are classified by evaluating the quality of the location and the number of visitors (visitors flow). The shopping district with the highest number of visitors in an area is considered to be an A1 location. The number of visitors at A1 locations is considered to be the maximum for that specific area. B or C locations are distinguished as locations near or other than A1 locations and attract a percentage of the maximum number of visitors. The following table shows the location-classification and the percentage for each category.

Location classification	Percentage of the maximum number of visitors (flow)
A1	75-100%
A2	50-75%
B1	25-50%
B2	10-25%
C	5-10%

The location classification presents the quality of the location as the number of visitors in an area attracts. It is assumed that the number of visitors is connected to the number of sales in an area. DTZ showed that a prediction of the rent can be made based on the number of visitors (Zadelhoff, 2011). The amount of rent is connected to the willingness to pay by tenants. For this research, rent is determined as the demand from tenants for a location that attracts visitors. The visitors and the quality of the shopping area affect the rent.

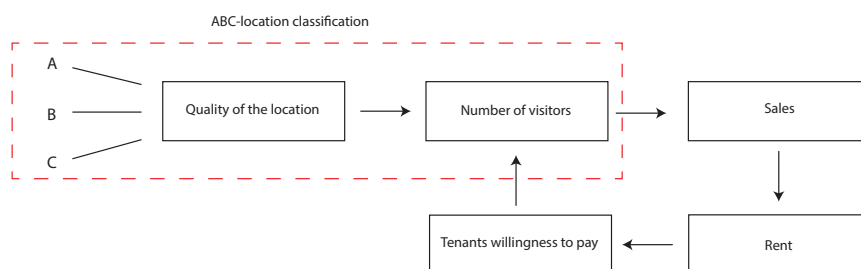


Figure 7 ABC-location classification (Own illustration)

Another way to classify location is based on the type of store, size and location (van Aarle et al., 2014). Locatus distinguishes three types of shopping centres based on type, size and location: main shopping areas, supporting shopping areas and other

shopping areas. Main shopping areas are the most important shopping centres in an area. Supporting shopping areas are secondary shopping centres, which are smaller in size, compared to the main shopping areas. The distinction between the three types is based on two types of retail: retail for leisure and retail for everyday shopping. The types are further subdivided into smaller types based on location and size in units. The number of stores in an area defines the type of shopping centres. Location is scaled on a national level.

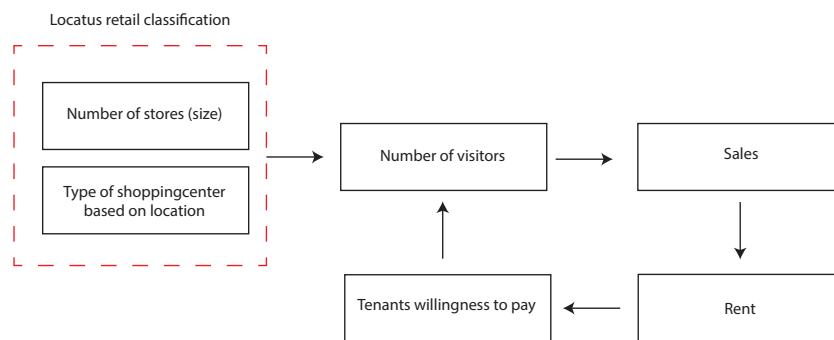


Figure 8 Locatus classification (Own illustration)

The “Locatus” classification has similarities to the ABC-location classification. Both methods distinguish two locations: a main location and smaller secondary shopping area. This can loosely be translated to an A and B location. Attractiveness is an indication for both methods. The Locatus classification assumes that the number of stores in the area attracts visitors. The ABC-location classification assumes that the quality of the location attracts visitors. Quality is undefined, but the number of stores could be part of the quality of a shopping area. A difference between both methods is that the type of store is only included in the Locatus classification.

The last classification in this research is based on consumer motives as presented by Droogh Trommelen en partners in their report “Dynamiek in beleid” (Droogh Trommelen en Partners, 2011). DTNP is a consultant that specializes in multifunctional shopping areas. DTNP assumes that the consumer chooses to go to a specific location (shopping center) based on their personal demands. Demand and choice are translated as motive. Unique for this classification is that the importance of the type of stores (branche) in the area. Similar to the Locatus classification, is the distinction of shopping centers by the number of stores.

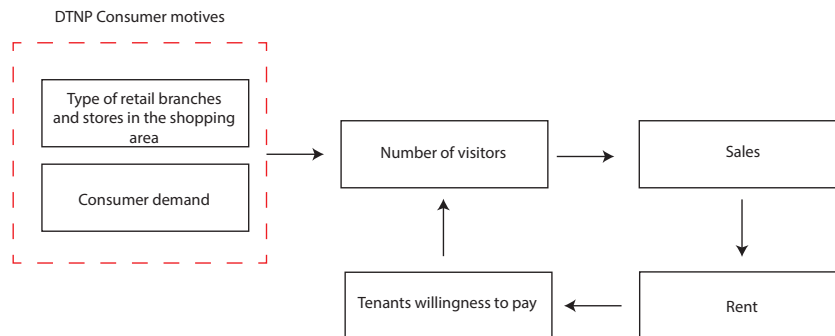


Figure 9 DTNP consumer motives (Own illustration)

The ABC-classification as defined by NVM Business presents rent as a variable. Rent is dependent on the sales and the tenant's willingness to pay. In this research it is assumed that rent is dependent on the quality of the location, shopping area and building features to attract visitors and higher sales.

Finally, the Province of Zuid-Holland distinguishes two main types of shopping areas: areas for daily shopping and shopping area for non-daily shopping area (leisure) (Zuid-Holland, 2008). The Province of Zuid-Holland mentions this distinction in a report on future policies for Zuid-Holland. Shopping areas for daily shopping are often located at so-called B-locations. But this research will not distinguish between A or B locations as this indication is very subjective. Every retailer, investor or municipality has its own definition of A and B locations. Throughout this report, the distinction between shopping centres for daily products and non-daily products is used. The main focus is on the shopping centres with daily products. To be more precise, smaller shopping areas with the most necessary shops for a neighbourhood. The portfolio of NSI is primarily composed of shopping centres for daily products. Shopping malls with non-daily shopping and leisure are thus excluded.

2.5.2 The Dutch retail market

"ABN Amro negatief over Nederlands winkelvastgoed" (Vastgoedmarkt, 2013)

Research by NVM has revealed that the Dutch retail market has deteriorated in 2013 compared to earlier years (NVM Business, 2014). The supply of retail properties increased by 6% while the overall absorption decreased. Demand for retail properties decreased in every branch of retail. The cause of the decrease in demand was the ongoing economic crisis and low consumer confidence. The overall revenue of retail has decreased by 7% due to low consumption by consumers. The sales within the non-

food branch dropped the most by approximately 30%. It is assumed that vacancy in retail is directly connected to consumption, demand and preferences of the consumer. But there are still a few highlights in 2013 regarding retail. The decrease of absorption did not apply for every location. The absorption in Amsterdam for example increased (figure 10). According to NVM, the retail market was the strongest in Amsterdam followed by Venlo, Den Bosch, Eindhoven and Utrecht. The supply of retail properties in Amsterdam, Venlo, Den Bosch, Eindhoven and Utrecht was less than 5 per cent.

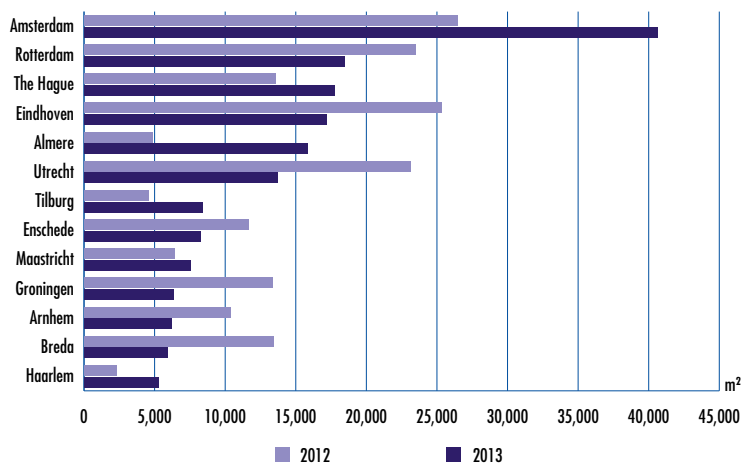


Figure 10 Absorption of retail space (NVM Business, 2014)

In spite of the decrease in demand for retail, Syntrus Achmea Real Estate Finance reported that investments regarding retail had the best performance in 2013 compared to other branches of real estate (Syntrus Achmea Real Estate & Finance, 2014). Furthermore, Syntrus Achmea Real Estate and Finance predict a low vacancy at A1-locations and main shopping centres. They also showed that the economic crisis could lead to opportunities on A1-locations for investors due to the financial problems of current retail owners. The fact that investors currently are focusing on the best retail locations (A+) is confirmed by both Syntrus Achmea (Syntrus Achmea Real Estate & Finance, 2014) and JLL (JLL, 2011).

Syntrus Achmea has also identified threats to retail in a SWOT-analysis of the current situation (Syntrus Achmea Real Estate & Finance, 2014). E-commerce, the increasing percentage elderly (65+) and the economic crisis are possible threats for the retail market. The increase of elderly of 65 years or older can be explained as a demographic development. The number of residents in big cities, especially on A1-locations, is increasing due to the increasing number of young people. Young people are eager to move to bigger cities. Bigger cities offer education and more job opportunities. As result of the migration, the percentage elderly in smaller cities will

increase which means that there will be less capacity in the smaller cities for certain retail functions in the future. Retail in smaller cities will become more and more aligned to the demand of the elderly.

Vacancy and a high percentage of bankruptcy in the retail sector have contributed to an unstable rental income. In 2013, rents of Dutch retail properties have dropped by 4,7 per cent compared to 2012 (figure 11) (NVM Business, 2014). There are differences in rent levels (or yields) between locations. Prime locations have a significant higher rents than average neighbourhoods (van der Gijp, 2013). The main streets in Amsterdam, for instance the Kalverstraat, has a rent level ranging from €2500 to €3100 per square meter, which is within the highest regions of rents. The rents of an average shopping centre in a neighbourhood in the Netherlands are between €100 and €300. The high rent level on prime locations is the result of the zoning policy in the Netherlands. The zoning policy in the Netherlands is very strict and focuses on preserving the historical or the built environment.

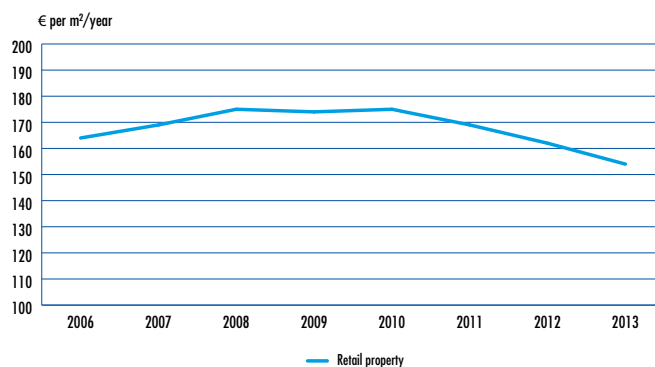


Figure 11 Rent decrease in retail (NVM Business, 2014)

2.5.3 Investors and retailers

The connection between real estate investors and retailers is formalized in a rental contract. Retailers rent buildings from real estate investors. Real estate investors control and maintain the quality of the building for the retailers. The quality of the building affects the sales and thus the revenues of retailers. The building is thus the link between retailers and customers (Sybertsma, 2011). BNP Paribas shows the relationship between market, consumer, retailers and investor in their report on retail risk index by explaining possible effects of bad control and management by the investor (Paribas, 2012). Hidde Tauw translated this information into a figure in which the chain of effect in retail is shown (Tauw, 2014):

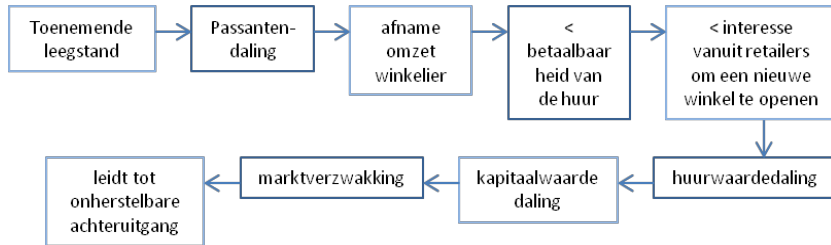


Figure 12 Domino effect retail (Tauw, 2014)

The model by Tauw shows the relationship between investor and consumer: when the investor is negligent, the consumer will spend less in store. The model suggests that the physical buildings and locations with low quality will lead to vacancy and attract fewer consumers. This can result in lower revenue (Tauw, 2014). Low revenue leads to uncertainty for the investor. Uncertainty is caused by the tenant not able to acquire the necessary revenue to meet the demanded rent of the investor. On the long term, in the worst case, this will lead to bankruptcy of the tenant and thus add further to vacancy.

2.5.4 Consumer and retail

The recession led to decreasing consumer confidence and an increasing number of bankruptcies in the retail sector (FGH Bank N.V., 2014). According to the annual real estate report by FGH Bank N.V. the low consumer confidence and the low consumer spending power resulted in a drop of 2,3 per cent in consumer spending. The situation regarding the consumer will not improve much in the near future (J. Voss & Heijkamp, 2014). Low consumer spending causes for a decrease in the variety of shops and an increase of vacancy on a regional level. FGH Bank mentions adaptability as key solution to the current problems on the Dutch retail market. According to Dalling and van de Beek, experts at JLL, consumers expect retailers to fulfil every need. Retailers must offer quality and a shopping experience (Dallinga & Van de Beek, 2011). Retailers must be aware of the consumer demand, be flexible and provide a unique shopping experience.

2.6 Decision-making criteria: Building features

Based on studies of offices, three types of decision-making criteria can be identified (Gijsselaar, 2010): Decision-criteria on economical, locational and building level. For retail, two more classes need to be considered as well: tenants and consumers. Gijsselaar (2010) en Kuyper (2013) reported several building features that affect the financial performance of office buildings. These building features influenced the performance of the portfolios of office buildings.

2.6.1 Office building features as identified by Gijsselaar (Gijsselaar, 2010)

Table 2 shows building features related to the net rental income of offices (Gijsselaar, 2010). Gijsselaar identified these features are identified these features using literature study and interviews with experts from real estate investment companies. Furthermore, Gijsselaar collected quarterly data for the different physical and non-physical features as shown in table 2.

Regional market conditions	Location	Building qualities	
Vacancy rate	Distance to important places	Age	Façade
Gross Domestic Product	Distance to transportation nodes	Percentage unused space	Entrance
Office Employment	Parking	Total floor area	Average floor area
Absorption Rate	Accessibility	Number of floors	Measurements
Office Stock	Charisma of the surroundings	Percentage common space	Office concept
Supply	Environmental amenities	Architectural quality	Lighting
		Ceiling height	Availability of external view
		Lay-out	Building amenities
		Flexibility	LFA/GFA ratio
		Furnishing	Privacy

Table 2 Physical and non-physical features (Gijsselaar, 2010)

The results of statistical modelling confirmed the influence of several features on the net rental income (Gijsselaar, 2010). According to Gijsselaar the influence of age, distance to transport, absorption rate, number of floors, entrance and flexibility were the most significant. Gijsselaar also managed to specify a few pre-determined features, which led him to find new features. He found more specific features such as the number of residents at a location, building type and using typology used. Gijsselaar found a strong influence by building features on offices at all locations except for A+ locations as these were not available in the existing portfolio. The most important

conclusion from the research by Gijsselaar was that quality at building level is important. The quality at building level directly affects the buildings performance directly. Gijsselaar reported no evidence for influence of building features like material and shape on performance. Features related to function like the quality appeared to be most important.

2.6.2 Office building features as identified by Kuyper (Kuyper, 2013)

Similar to Gijsselaar, Kuyper also started with a set of predefined building features collected from literature and interviews. Kuyper resumed where Gijsselaar left off and added new features to his research (Kuyper, 2013). An important difference between both researches was the factor time. Gijsselaar's research took place right after the economic crisis in 2009. The economic crisis was thus not taken into account due to the restricted timeframe. But his recommendations did include that this research had to be repeated every 4 till 5 years to keep track of changes and to confirm his findings. Kuyper repeated the research in 2013 and took the economic crisis into account. He assumed that the crisis had to have significant influence on the decision-making of investors. He also assumed that the results would be different due to the global recession (Table 3).

Regional market features	Location features	Building features	
Vacancy rate	Urbanisation classification	Age	Charisma of entrance outside
Absorption Rate	Position towards Randstad area	LFA/GFA ratio	Heating, cooling, ventilation
	Number of residents	Number of floors	Free standing
	Location surrounding typology	Average LFA per floor	Energy label
	Distance to public transport	Mixed use of functions	Spatial layout
	Distance to NS railway station	Type of façade material	Using typology
	Number of parking places	Shape of buildings footprint	Flexibility
	Parking norm	Shape of buildings facade	
		Charisma of entrance inside	

Table 3 Physical and non-physical features (Kuyper, 2013)

Kuyper also concluded in the end that the feature pre-crisis and after-crisis were of such importance that building features had to be included as decision-making criteria in the acquisition strategy of investors (Kuyper, 2013). Physical features like the

entrance and building type were confirmed to influence the net rental income. Non-physical features like using typology were also confirmed as important. Although the results were quite similar to the results of Gijsselaar, there were still a few differences. Gijsselaar found the features distance to transportation and number of floors significant in his research. Kuyper found these features no longer significant. Furthermore location features also seem to be less significant in the study of Kuyper.

2.7 Method of identifying retail building features in literature

There is a difference between building features regarding offices and retail. Features for offices collected by Gijsselaar and Kuyper are not necessarily applicable to or relevant for retail. Retail is also dependent on the consumer preference and demand (Carpenter & Moore, 2005). The retailer, being the tenant is dependent on consumer spending. Therefore retailers prefer to rent retail space at locations attracting consumers and visitors. The number of visitors is often reported to be related to profit in times of recession (Zadelhoff, 2011). Research by Cushman and Wakefield showed a shift in the demand of users and consumers (Cushman & Wakefield, 2014). Studies by Multi-Development and NRW also showed the importance of consumer preference for retail (Willems, 2012).

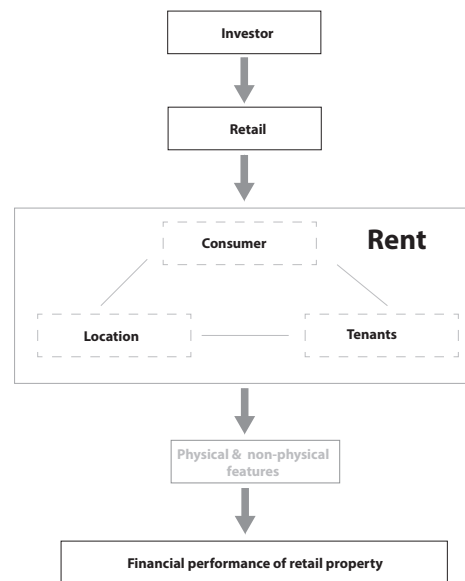


Figure 13 Identification of building features (Own illustration)

2.7.1 Economic and regional market features in retail

A decrease in the number of visitors and consumer spending can also lead to an increase of vacancy. According to Van Zweeden, local retailers are dependent on visitors and consumer spending in an area (van Zweeden, 2009). A high percentage vacancy in a shopping centre is unattractive for consumers and affects the surrounding or remaining retailers. On the contrary, a large number of retailers combined with a good mix of tenants increases the number of visitors (Borgers, Brouwers, Kunnen, Jessurun, & Janssen, 2010). A large number of different shops can offer more choice and match demand of consumers.

Furthermore vacancy can cause surrounding retail properties to decrease in value. Vacancy can partly predict the rent and the level of success. But not all vacancy affects retail negatively. According to Keeris a 3-5 per cent vacancy is necessary for a good functioning retail market (Keeris, 2005).

Absorption has been added as economical features. Absorption represents the time in which properties are unused and vacant (Lim, Berry, & Sieraki, 2013). Absorption is directly connected to the vacancy, but is according to Lim et al. of minor importance. Other economical features that are expected to influence a building's performance are the variables gross domestic product (GDP) and the retail sales. According to Matysiak & Tsolacos, GDP and retail sales are the most successful demand side indicators (Matysiak & Tsolacos, 2003).

2.7.2 Location features

A study by Öven and Pekdemir shows the importance of geographical characteristics for generating rental income (Öven & Pekdemir, 2006). The most important location feature is with no doubt accessibility (Lusht, 2012). Lusht, Öven & Pekdemir consider the distance towards a city centre, business district or secondary centre a good predictor of how buildings will perform in the future. Transportation is vital to gain access to shopping areas and therefore influence the financial performance of retail (Debrezion, Pels, & Rietveld, 2007). Better transportation means more visitors and consumer spending. Debrezion et al. reported higher profits when a store is located a quarter mile from a transportation hub.

Existing literature often define parking as part of and key to the accessibility of a shopping centre (Platform Detailhandel Nederland, 2009). But researches on parking contradict one another. Research by Platform Detailhandel Nederland showed that parking quality and parking fee are key to the performance and attractiveness of shopping centres. On the contrary, Van Meerkerk et al showed that parking fee and parking in general are not influential for the financial performance of shopping centers (van Meerkerk, Mingardo, & Bosch, 2008).

When looking at transportation and accessibility as indicator for rent and the financial performance of retail two theories in literature are relevant: economies of agglomeration and the central place theory. Both theories are important when considering the relationship between location, distance, rent and retail (Geltner et al., 2007). Economies of agglomeration refer to the advantages of having multiple companies on 1 location. Companies, or in this case retail stores, can profit from each other depending on type. The economy of agglomeration theory is closely related to the theory of positive locational externalities. Van Zweeden mentioned in his research

that some stores will profit from other stores in the direct surroundings (van Zweeden, 2009).

The central place theory by Walter Christaller & August Losch also seems relevant for the financial performance of buildings and rent (Geltner et al., 2007). Geltner et al. explains the central place theory as following: the closer the different cities are compared to each other, the smaller the transportation costs. Although both theories are developed for big production firms, both theories might be also applied to retail.

To conclude, distance and accessibility as variables in this study is vital. The discussed theories show the relationship between rent, distance, location and accessibility. Accessibility and parking are important for attracting new visitors. The retailer will be able to attract other consumers besides local consumers.

2.7.3 Building features

Many studies show that building features are important for estimating building performance and rent. Experts like Vierkant and Brenninkmeijer stress the importance of building features as decision-criteria in the current global recession (Vierkant & Brenninkmeijer, 2014). Kuyper and Gijsselaar identified different building features for offices. Many of these building features are also applicable in retail. But retail is, as mentioned earlier, more dependent on the consumer. This research will start off with a set of features as identified by Kuyper and Gijsselaar. Each feature will be assessed on relevance with retail, measurability and off course through literature. An important selection criterion is the ability to measure a feature. During this stage, assumptions will be made. These assumptions will be verified or completed by experts in the field of real estate in a later stage. A few of the most important features will be elaborated through literature.

Many authors reported that the variable age affects the building's performance. Among these authors are Lusht (Lusht, 2012) and Sah (Sah, 2011). On the contrary, researchers like Matysiak & Tsolacos doubt the effects of age on the buildings financial performance (Matysiak & Tsolacos, 2003).

Other variables found to influence the building's performance are the number of floors, flexibility, lay-out, façade, number of residents at a location, building type, entrance and using typology (Gijsselaar, 2010). These features are from studies focussing on offices and are assumed to be of equal importance to retail. Most of the existing literature on retail features focuses on location, experience and the perception by consumers. The experience of shopping and consumer preference seems to be of big importance for retailers. Retailers and investors can make buildings more attractive for consumers based on consumer preference (Vosters, 2008). A selection of features which are indicators for location experience and consumer preference are indoor/outdoor, pavement, traffic flow and shops (type of retailer) (Willems, 2012).

Furthermore, features related to the building's façade were also added (Dijkman, 2012). Dijkman used quantitative methods in his research to investigate the significance of different building features and found significant influences for the shape of the façade, the material of the façade and lighting. Materials of pavements have proven not to be significant. All these features are tested once more in this thesis.

The variable architectural quality has not been included in this research as variable. Although the variable architectural quality is regarded as influential for the experience, it is also considered to be subjective to different opinions and hard to measure (Vosters, 2008).

2.7.4 [Tenants and consumers](#)

The tenant and the consumer are two important stakeholders in this research as also mentioned in the interviews with experts in the field.

According to Vierkant and Topal retail is dependent on the tenants in the area and the tenants in an investor's property. Competition or possible vacancy can influence tenants in the direct surroundings negatively. Cushman and Wakefield has also stated that it is important for investors to focus on the demand of the property's tenant (occupier) in these times of crisis (Hutchings et al., 2014). In fact, investors must adapt their strategy to fit the demand of the tenant in order to find new opportunities. Tenant demand is partly dependent on the type of tenant. Research by Bakker has shown that the type of tenant is important for the success of a shopping area (Accenture, 2012; Bakker, 2011). Bakker explains tenant mix, type of tenant and the number of retail as important for the level of competition in an area. Most real estate developers and real estate investors choose for a uniform approach when it comes to the type of tenants. Well-known international retailers are preferred as these tenants provide for less financial uncertainty and a high market value. But there are also investors and real estate developers who prefer more variety in (private) tenants, as they believe this will attract more visitors. In this way, they hope to distinguish the shopping area from other shopping areas.

Furthermore, A study by Rick Willems showed new insights into features which influence the performance of buildings (Willems, 2012). Willems showed that a few building features are important for both consumers and tenants. The consumer is, as mentioned earlier, a very important factor in this research. Retail is highly dependent on the consumer spending, which is very uncertain during the current global recession. Other retailers choose to be located at places, which attract a lot of visitors. Research by DTZ revealed that a high number of visitors could lead to a high number of sales (Zadelhoff, 2011).

Finally, age and income of consumers were found to be important (Escobar et al., 2014), Willems (Willems, 2012) and Op Heij (Op Heij, 2012). For example an elderly tend to spend a lot less than younger people, but often have more money to spend.

2.7.5 Features for retail as identified through literature

This research uses the features as determined by Kuyper (Kuyper, 2013), both to allow for future comparisons and because it is assumed that many of the features from the existing set of features for offices also affect retail. However, retail differs from offices regarding the influence tenants, thus retailers, and consumers might have. Tenants pay rent to attract and sell products to consumers. From literature, new features were added to the pre-determined set to complete the list. The features reflect building features from retail properties and the retail market. The features were found in for example studies by Willems (Willems, 2012), Ciari et al. (Ciari, Löchl, & Axhausen, 2008), Op Heij (Op Heij, 2012) and Beer (Beer, 2013). The most relevant features for this research are shown in table 4.

Table 4 Retail features (Own illustration)

Regional market features	Location features	Building features		Tenant	Consumer
Vacancy rate (locational)	Urbanisation classification (district; type of location)	Age (renovation or construction year)	Charisma of entrance outside		Age of the consumer
Absorption Rate (take up of retail space per year)	Position of the shopping centre towards Randstad area	LFA/GFA ratio	Free standing		Income per household
	Number of residents in the neighbourhood of the shopping centre	Number of floors	Energy label		Type
	Location surrounding typology	Average LFA per floor	Spatial layout (floor plan + design)		Car owners
	Distance to public transport	Mixed use of functions (Type of retailer)	Using typology (regio functie, buurt? Wonen en winkelen)		Unemployment
	Distance to NS railway station	Type of façade material (Visibility and colour)	Flexibility (adjustability of available space)		Household composition

	Number of parking places	Shape of buildings footprint	Material of pavements (colour)		Educational level
	Parking norm	Shape of buildings facade	Window size (shop windows)		
	Retail competition / shops (mix of function)	Charisma of entrance inside	Single or multi-tenant		
	Size of the shopping area	Cost of maintenance (status of the building / age)	Roof opening / Window		
	Number of visitors (pedestrian flow)	Indoor / outdoor shopping centre	Available space retail (m2)		
		Width of the street			

2.8 Interviews with experts in the field

Interviews were used to verify the findings from literature and to correct or to add new information. The main goal was exploring the current retail market and to learn as much as possible. Information in retail real estate is known for fast information processes and changes. Five interviews were conducted as the interviews for the purpose of this study. These interviews were completed before the start of the data collection at NSI N.V.. The results determined the importance (weight) of the different building features. The expert participating in these interviews were carefully selected upfront to make sure the information gained is relevant for this research. The interview protocol that was developed for this part of the research can be found in appendix 9.1.1.

During the interviews, the experts were asked to use small cards, on which features are stated, and they were asked to assign a ranking to each feature. In this way, experts do not need to assign value to the different features, which made it easier to rank the features. The interviews were taken from the perspective of the investor. The cards were ranked according to the importance of the feature for the company when acquiring new properties. It does not necessarily reflect if the features affect the financial performance negatively or positively unless stated otherwise. The different features were horizontally or vertically placed dependent on the importance and the relevance of other features. Figure 14 explains the positioning of the cards.

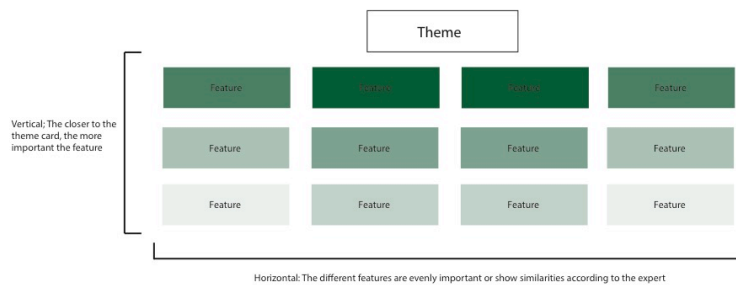


Figure 14 Feature placing system as used in the interviews (Own Illustration)

Different experts in the field were contacted for an interview. All interviewees were experts on retail real estate. The knowledge of these experts came from their background and experience in the real estate. Their current position within a company also contributed to their knowledge. The choice of the different experts was based on the following set of criteria:

- Background and currently active in the retail; the expert must possess knowledge of the present changes of retail real estate. The expert must have worked at least 5 -10 years in the retail real estate sector.
- The function of the expert must be directly connected to portfolio management, asset management, property management or investment management; these functions are directly connected to the acquisition of real estate and the maintenance of the real estate portfolio.
- The expert must be from a real estate company that is well known for its retail property.
- The chosen real estate companies should have different backgrounds to cover every type of Real Estate Company. The company must possess retail on B-locations, as those locations are the focus of this research.

One exception has been made when choosing the companies. A Dutch association for retailers was chosen for its involvement in retail real estate and is identified as a starting point for this research. This research does not only focus on the building features, but also consumer and tenant features. Consumers and tenants are the “heart” of retail. Without the tenant and consumer this research would be incomplete. As an association for retailers, it helped to identify features related to the consumer and tenant and provide more insight in this research. The Dutch association for retailers contributed a lot to the results of this research.

[Interview: Main results in a quick overview](#)

All experts pointed at the company policy and available budget as features, which influence the acquisition strategy. Financial benefits and profit are the most important

motivation for the acquisition of real estate. Acquisition starts when another company sets a building or shopping center for sale. The potential buyer will first explore the location and the rent level followed by a due diligence analysis. The market price for the building can be corrected based on the due diligence analysis.

All experts mentioned during the interview that size is an important feature. A small shopping area has less potential for change and often is not prepared for future use. Larger shopping areas are more desired as vacancy will not affect the income as much as it will influence smaller shopping centers. The type of shopping centers that attracts consumers are often shopping centers with two supermarkets, located in a good neighborhood with the right amount of residents in the direct surroundings. Although many some features are regarded as irrational features, many rational features drive irrational features. The acquisition of properties will never be approved if the rational reasons are not beneficial. Gut feeling is not a decision criterion.

One of the companies has not bought much since 2008. Their acquisition strategy is currently based on selling properties. Keeping the acquisition strategy up to date is important as a seller must know what the buyer wants. The last couple of years, the company made many concessions regarding the contract and rent of tenants. The duration of tenant-contracts is part of the value of real estate. Buyers of properties determine the duration of contracts as security in the price for a property.

For another company location seemed to be the first criteria for the acquisition of properties. Second were the maintenance and the potential of the building. According to the interviewee: “A low quality building on a good location can generate profit when the potential (good maintained building with possibilities for adaptation) is high. For a high quality building on a low quality location an increase in quality through transformation or maintenance will not attract more visitors.”

The 3rd company focuses a lot more on the return of acquisition than other companies. Every feature they mentioned is connected to the return and hurdle rate. The most important criteria seems to be an A1-location shopping center with a certain size and a return between 3,5-4 million euros. Physical building features were not considered in their strategy. This company considers shopping areas as a whole and only find physical features important for single units.

The 4rd company focuses more on the consumer. They mention that retail is emotion and the consumer the hart of retail, thus making physical building features important as they provide an experience for the consumer. As the visitor numbers of an area drops, the vacancy of the area will increase. They further mention the number of visitors as an indication for the sales and thus vacancy. Attracting the visitor is the most important point of action.

Many experts mention at first that the physical building features are not important, but as the interview goes along, the experts mention more physical features. During the interview, experts positioned cards with features based on the importance of the features. Table 5 shows the features, which were the most important and were similar for all experts.

Economical and regional market features	Locational features	Building features	Tenants	Consumer features
Vacancy of retail property (m ² per year in the regional market)	Number of visitors per year (pedestrian flow)	Location of a single unit in the shopping centre	Average duration of contracts	Average income in the area
Absorption rate of retail property (m ² per year in the regional market)	Number of residents (neighbourhood)	Indoor (or outdoor) shopping area		Spending pattern
	Size of the shopping area	Available retail space (m ²)		
		Number of floors		
		Flexibility in the layout of the property		

Table 5 Importance of features (Interviews)

The interviews revealed a lot of new insights that can be used to make the best selection of independent variables for this research. The interviews were used to start off this research and to take a quick view in the world of investment and retail. They provide a good understanding of the processes and the independent variables.

The result of the interviews with regard to the specific features can be found at appendix 9.1.3.

3. Methodology: quantitative research

This chapter describes the methods and techniques that are used to research the effects of building features on the building's performance. This research uses statistical analysis and is to be characterized as a quantitative research project. This chapter will start off with a short introduction on regression techniques and rent calculations. Finally different choices of gathering information and variables will be justified.

3.1 Introduction to regression analysis

The different variables as determined in paragraph 2.8 must be judged on their relevance to the net rental income. All variables in table 5 are to be considered independent factors and will be assessed for the strength of their relationship with the net rental income, being the dependent variable in the regression analyses. Regression techniques are shortly elaborated in this chapter.

The essence of regression techniques is in this case the use of an independent variable to predict the value of a dependent variable. The dependent variable is the unknown factor, while the independent variable is known and is used as input. Depending on the number of variables, it could be a simple-regression (one variable) or a multiple regression (more than one variable). The model assumes that the independent variables are able to predict the dependent variable.

The following equation shows the basics of a regression model:

$$\text{Outcome}_i = (\text{Model}) + \text{Error}_i \quad (1)$$

This equation describes a basic regression analysis and shows that a model plus error can predict the outcome. The model can be any kind of model combined with the available data. When using simple regression, the model is regarded to be linear and shows a "straight line" fitted to the data. Two aspects define a linear or a straight line: the slope (b_1) and the intercept (b_0). The intercept is the point at which the line crosses the vertical axes. The equation will be as following:

$$Y_i = (b_0 + b_1X_i) + E_i \quad (2)$$

b_0 and b_1 are the regression coefficient and represent the importance of the predicting variables used in the model as input. E_i is added to the model as a residual or error

term, which represents the difference between input and output (Y_i) of predictors. X_i represents the predictors also known as the input.

A multiple regression involves multiple predictors. A study using regression analysis with more than one predictor variable is common. This research will also focus on multiple predictors and is thus considered a multiple regression. The following equation represents a multi regression analysis model:

$$Y_i = (b_0 + b_1X_{1i} + b_2X_{2i} + \dots + b_nX_{ni}) + E_i \quad (3)$$

The equation shows a similar equation as the equation describing a simple regression model. The difference in this equation is the fact that every predictor variable has to be incorporated into the model. So, a multiple regression predicts the outcome using multiple predictor variables, an error term. The multiple predictor variables all have different importance.

This research uses a multiple regression because there are multiple dependent (predictor) variables. As mentioned before, the topic will be the influence of building features (independent variables) on the net rental income (dependent variable). This approach equals the approach of Gijsselaar (Gijsselaar, 2010) and Kuyper (Kuyper, 2013). An example equation for this research is shown below with some pre-determined features from paragraph 2.7.5.

$$\text{Net Operating Income} = (b_0 + b_1\text{Number of floors} + b_2\text{Residents} + b_3\text{Shape} + \dots + b_nX_{ni}) + E_i \quad (4)$$

Some independent factors in the current research are similar to the independent factors explaining net rental income of offices. The remaining predictor variables will be selected with care to make sure the research is sound. The result of the regression modelling depends on the quality of the data. The relevance of the predictors will be supported by referral to literature where possible and some predictors will be selected for its substantive theoretical importance, as did Gijsselaar and Kuyper. Other variables, predicting specific characteristics of retail will be added as part of this research project. The predictors will be entered into the model using a hierarchical regression approach. Selected variables will be put into the model according to how the variables predict the net rental income, as appearing from the level of significance.

3.2 Data collection

Data collection is an essential part of this research. This paragraph will show how the data will be collected and elaborate on the different variables. Important is the

explanation of how the variables are measured and processed. Kuyper has provided a figure in which he shows how the variables add-up in this research (Figure 15).

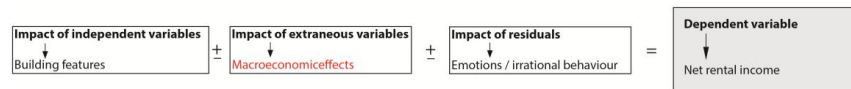


Figure 15 Variables adding up (Kuyper, 2013)

The first step in collecting data, besides looking in literature, is finding a database with over 40 individual retail properties. An extensive database is important for making the research more realistic and to make solid statements regarding investments in retail. The properties in the database will be analysed for each predictor variable reflecting a building feature to find results on building and financial performance. The institutional real estate investor NSI has provided 48 retail properties. NSI was also willing to provide the net rental income. Detailed information on the net rental income is rare and extremely sensitive business information. For this research, it is important for the portfolio owner to open up and make the sensitive business information available.



Figure 16 Location of retail properties NSI portfolio (Own illustration)

All features need to be collected for at least 5 consecutive years. There has to be a minimum of 20 measurements over time for each feature. The features will be collected for each quarter in a year. The timeframe of this research will be 6 years and ranges from the first quarter of 2008 to the fourth quarter of 2013.

Properties that are or have been part of the portfolio of NSI during the first quarter of 2008 until the fourth quarter of 2013 are eligible for the analysis. To assure the quality of the data and the research, retail properties must at least been part of the portfolio of NSI for a consecutive time of two years. This means properties bought and discarded right away do not qualify for this research. In the two years, the property must also be at least 75% retail. The mark percentage is chosen as retail is recognized by NSI as a separate part of their real estate portfolio. Many retail properties can be found separately from other functions in documents by NSI. Examples are the yearly valuation documents of the different properties. The valuations show that properties with both an office and retail functions are valued separately for each function. This refers to NSI considering retail as separate part or product within their portfolio. All information on features gathered for this research refers to retail properties in the portfolio of NSI only.

NSI has 48 retail properties that qualify for this research if the presented constraints for this research are taken into account. The 48 properties constituted a large diversity of shopping centres. The 48 retail properties consist of properties sizes ranging from 1033 m² to 23553 m². The properties are located at A-, B+ and B- locations in approximately 25 different cities in the Netherlands. These cities varied in size from small, medium to large cities, throughout the country except for the northern part of the Netherlands (i.e. Groningen, Friesland, Drenthe). There were no properties located in these parts of the country.

While collecting data, it appeared to that in some cases data is missing. Data need to be collected for the 48 properties from the first quarter of 2008 to the fourth quarter of 2013. This means 24 consecutive quarters. For this research, the data was not 100% complete. It appeared to be impossible to collect data a 100% complete. Excluding the retail properties or shortening the time period could affect the significance of this research. Therefore it was decided to leave out properties with more than 25% missing data. As data collection took place in 2014, a large share of data over 2014 was not yet available and therefore discarded for the purpose of this research.

3.3 Dependent variable: Net rental income

The goal of this research is to determine retail-building features that influence the decision-making criteria of an investor. The building features will improve the decision-making criteria and thus the acquisition strategy. Opportunities will be fully utilized and returns will increase.

An incentive for an investor to invest capital is a high return. Investment return must be higher than interest rates from savings. Real estate offers this opportunity. But investing also brings risks. The higher the investment returns, the higher the uncertainty and risk will be. As mentioned earlier there are a few points of attention when investing in real estate: the required rate of return and the acceptable level of risk (van Gool et al., 2013). The rate of return can be determined to be the target variable in this study.

The direct income is the net income over a certain period (Geltner et al., 2007). The indirect income is the capital growth and is not included in this research for a few reasons (Gijsselaar, 2010). Firstly, the volatility of indirect income is higher than direct income. Second, the indirect return is calculated from valuations. Valuations are based on transactions, which means that lagging and smoothing of what can be involved. And lastly, the influence of economic circumstances on appraisal values would cause for noise in the collected data. The indirect income can be kept artificially high by incentives. Therefore, the net rental income is considered more appropriate than the net income and used as dependent variable in this research.

The net rental income is not the same as the direct income. The direct income is part of the capital value and the capital value is considered an unreliable source in this research. Another advantage of using the net rental income is that it cannot be artificially influenced. The net rental income adjusts for example for the maintenance costs, operating costs and vacancy. These costs are taken in consideration when calculating the net rental income.

<p>Quarterly gross rental income</p> <ul style="list-style-type: none"> - Management fee - Operating expenses <ul style="list-style-type: none"> - Fixed expenses - Maintenance - Insurance - Service charges - Leasing / Marketing - Costs of bad debts <p>Quarterly net rental income</p>
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Table 6 The quarterly NIM (NSI)

The institutional real estate investor NSI is willing to provide information on the net rental income for this research. The net rental income is determined by calculating the total income minus the rental expenses for the specific period. The method used by NSI to calculate the net rental income is roughly explained in table 6. Table 7 gives a brief explanation on the costs involved in calculating the quarterly net rental income.

Quarterly gross rental income:	The total of rental income for one quarter of one shopping centre (Actual rental sum as received by NSI)
Operating expenses:	Expenses or costs for running the property
Fixed expenses:	A fixed amount of costs that returns for each quarter.
Maintenance:	Unscheduled or scheduled maintenance for the preservation of the property. Activities to keep the building up to date through periodical repairs or to deal with direct damage.
Insurance:	A premium paid for the insurance of the property
Service charges:	These costs are for the tenant. Only in case of vacancy will NSI be accountable for service charges
Leasing / Marketing:	Costs for attracting tenants (preparation of the property)
Costs of bad debts:	Costs for unpaid rent by tenants
Management fee:	Costs for work by NSI

Table 7 Explanation of the costs (NSI)

The net rental income for the 48 retail properties was collected for 24 consecutive quarters. The quarterly net rental income per property has been divided by the lettable floor area of each retail property. In this way, the quarterly net rental income for each shopping centre will become more comparable. The final step is to correct for inflation. By correcting for inflation the impact of the economic changes or effects will be less. The inflation rates are taken from CBS (CBS, 2014).

3.4 Collecting, selecting and measuring (independent variables)

Many independent variables are identified for this research through literature and interviews with experts in the field. In this way, these variables are operationalized in this paragraph. This paragraph will provide explanation on how the variables were found, and more importantly how they were pre-selected for this research. This paragraph will provide explanation on how the variables were found, and more importantly how they were pre-selection for this research. All features belong to either of the five categories: locational, economical or regional market, building level, tenant and consumer (Figure 17). The features were selected on predictive power, the ability to measure and the likelihood of finding the required information.

Net rental income level	Residual
	Consumer features
	Tenant features
	Building features
	Locational features
Economical features	

Figure 17 Five categories of features (own illustration)

If we look at the pre-determined equations for this research, it can be noticed that there is still an unknown factor. The E_i is considered to be the residual in the equation and represents the error term. The equation with these four groups will be:

$$\text{Net Rental Income} = B_0 + B_1\text{Regional market features}_i + B_2\text{Location features}_i + B_3\text{Building features} + B_4\text{Tenant} + B_5\text{Consumer} + E_i \quad (5)$$

The next chapter will explain the different groups of features and the measurement of the variables. The measurement is divided in scale for number s and nominal for qualitative outcomes. The value shows the way in which importance is expressed. Where possible features were operationalized in the same way or as close as possible to the way they were operationalized by Gijsselaar and Kuyper (Kuyper, 2013) to allow for future comparisons.

3.4.1 Economical and regional market features

The economical and regional market features represent the trends and developments of the economy. Market features can be used to take the economic cycles into account. The features are collected from public reports from FGH Bank and the home shopping website thuiswinkel.org. FGH bank publishes factsheets and reports on a yearly basis. For this research, the annual reports were used due to inconsistency and the unavailability of the factsheets. These data from FGH Bank and Thuiswinkel.org represents a year. As mentioned earlier, the net rental income is

collected for each quarter. The difference in years and quarter per year will not greatly reduce the quality of research, as measuring market features on a yearly basis instead of on a quarterly basis will not be highly significant and not increase noise in the data (Kuyper, 2013). Market conditions vary over time and are thus modelled as repeated measures.

Variable Label		Values
VAC_M2	Vacant retail space directly available for usage in m2 in a city per year	-
ABSM2	The absorption of retail space in m2 in a city per year	-
SUPPLY_M2	The supply of retail space in m2 in a city per year	-
RETAIL_SALE	The development of sales in the Netherlands for each quarter (Consumer spending)	-
ONLINE_SALE	The sales online per half year in million euros	-
GDP	The gross domestic product in percentage compared to the previous year	-

Table 8 Economical and regional market features

Table 8 shows the market features included in this research. The annual reports by FGH Bank and other literature show more features like for example stock and rent levels. These features are excluded from this research. These features have proven in former researches to be insignificant. This was partly because other variables already accounted for these effects

The research on office building features by Kuyper took into account the economic crisis and economic cycles. This was possible due to the long time horizon of the research (first quarter 2004 to third quarter 2013). Gijsselaar started the research in 2009. He gathered the pre-crisis data from 2004 to 2009. Kuyper repeated the research by Gijsselaar, but changed the focus to the effects of the economic circumstances. Kuyper added new data to the already existing database of Gijsselaar. He extended the database from 2009 to 2013. The database thus consisted of pre-crisis data (2004-2008) and after crisis data (2009-2013). This made it possible for Kuyper to add two more variables to his research: economic cycles and pre / after crisis. Both variables are not included in this research. The time horizon and the range of the data are not sufficiently long to measure pre- and after crisis effects. Only after crisis data (2008-2013) has been collected for this research. This research is considered as a full after crisis research.

The **VAC_M2** represents the vacancy (m2) of retail space or shopping centres for a specific city. The vacancy is defined by FGH Bank as the space that is directly ready

for usage by a new tenant. Vacancy is thus defined as retail space that is currently not in use (relative to the total available stock).

ABSM2 is the absorption (m²) of retail space. FGH Bank defines absorption as the number of m² that has been leased in a specific year. The absorption also consists of sale-and leaseback transactions and m² offices in the process of changing function (transformation or adaptation). An important note is that the data gathered from the annual reports from FGH Bank only apply to shopping centres with a size above 200 m². This limitation should not be a problem as all 48 shopping centres within the portfolio of NSI are larger than 200m² and the exact figures are only slightly higher. The effects of this limitation are thus assumed to be minor for the purpose for the research.

SUPPLY_M2 represents the retail space (m²) on a specific location ready for lease or sale. The supply consists of the current existing properties, future projects and properties under construction (renovation).

RETAIL_SALE is the development of the number of sales in retail on a national level. The development in sales is presented as the difference between the number of sales in 2010 and other years. The year 2010 is the starting point of the comparison and is given the index value 100. The years 2008-2009 and 2011-2013 are presented in comparison to 2010 with an indexation value. An example: the index value of 2011 is 92,9. The index value is lower than 100. This means the number of sales in 2011 has been lower compared to the number of sales in 2010 (index value 100).

ONLINE_SALE represents the purchases by the consumer online in millions of euros. It is considered as the influence of e-commerce on the number of sales. The online-sale information has been collected on a 6-month basis from thuiswinkel.org.

GDP is the national gross domestic product. It represents the monetary value of products and services produced by one country for a specific period of time. The GDP is often used to measure economic activities. A drop in GDP often means low economical activities due to for example a recession. The GDP in this research is defined as the percentage change in volume compared to the previous year.

As mentioned earlier, Kuyper did not analyse all presented features as earlier research by Gijsselaar already proven that features like GDP and supply are insignificant for offices. For retail properties, the significance of many features is still unknown. Therefore, features like GDP and supply were included in the analyses for the purpose of the research.

3.4.2 [Locational features](#)

Location features are essential to determine the performance of a retail property. The locational features are first of all divided into a geographical part and a physical part. From there on, location features can be further divided into four scales or perspectives

from which features can be analysed. The first scale is the perspective on a geographical and national level: Where is the shopping centre located in Netherlands? The second scale level takes a a closer view on the location: in which type of area or city is the shopping centre located? The third scale focuses on its location in the city and the fourth on the physical surroundings on building level: How does the shopping centre relate to its surroundings? The list of location features by Gijsselaar and Kuyper was very broad and diverse. For this research new location features have been added to the existing list as this research refers to retail. The 48 shopping centres in this research primarily consist of neighbourhood shopping centres. These shopping centres depend more on locational factors and their surroundings. Features like the number of residents are more important for daily shopping centres compared to shopping centres on A1 locations for leisure or offices.

Variable Label	Variable	Value
RANDSTAD	Position of the shopping centre towards "Randstad" area	1 = Large 4 cities 2 = Inner Randstad 3 = Peripheral Randstad 4 = backward area
URB_CLASS	(Level of) urbanisation (classification)	1 = Very strong 2 = Strong 3 = Medium 4 = Less 5 = Not
NUM_RES	Number of residents in the neighbourhood	-
LOC_SUR	Typology or functions surrounding the shopping centre	1 = Office 2 = Retail 3 = Residential 4 = Other
ACCESS_TR	Accessibility; the best way to reach a shopping area	1 = Car 2 = Public transport 3 = Walk 4 = Bicycle
DIS_NSKM	Distance to the NS-train-station in km	-
PP_QUALITY	Quality expressed as the number of parking spaces and the accessibility of parking spaces	1 = Good 2 = Reasonable 3 = Mediocre 4 = Poor
PF	Parking fee	1 = Fee required 2 = No fee required
NUM_RET	Number of retail in the area (Trade and the hospitality industry)	-
LOCATUS_TYPE	Type of shopping centre (Type according to the Locatus classification)	1 = Inner city 2 = Main shopping area (Big) 3 = Main shopping area (small) 4 = Core shopping area (big) 5 = Core shopping area (small) 6 = Core supermarket centre 7 = district centre 8 = Neighbourhood area centre (small)

		9 = Inner city shopping area 10= neighbourhood centre 11 = Neighbourhood area centre (large) 12 = supermarket centre 13 = Concentration of large scale retail 14 = Retail near train station or with a certain theme (Schiphol Plaza, outlet Roermond)
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Table 9 (Locational features)

Table 9 shows the location features for this research. The feature **RANDSTAD** represents the geographical factor on a national level. It determined the location of the shopping centre in relation to the Randstad area. The feature **RANDSTAD** provides four values, which indicate the location of the shopping centre. The most distinct value that can be assigned is the value backward area. The value backward area is defined as a location outside of the Randstad. This differs from the other three values as the three values indicate a location within the Randstad.

The location and the surroundings are assumed to have a large impact on shopping centres on B-locations with daily shopping facilities. The number of residents in the area (**NUM_RES**) is important for daily shopping facilities. The size of the market in a neighbourhood can be roughly determined by the size of the population. But the number of residents does not provide any information regarding the density of the area and the built environment. Urbanisation classification (**URB_CLASS**) has been added as variable to determine the density. CBS defines urban classification as the density of human activity based on the density of the present addresses in the area. CBS has provided five values ranging from very strong to low.

The urbanisation classification describes the density of the area, but does not provide a description of the type of surrounding. It does not clarify what the density is. Earlier research and experts in the field have showed the importance of the surroundings for a shopping centre. The location surroundings variable (**LOC_SUR**) was included in this research. This variable will be used to make a distinction between offices, retail, residential and other typologies of the surroundings of the shopping centre.

Accessibility of a shopping centre is highly relevant when it comes to attractiveness. Depending on location and surroundings the consumer can use different kinds of transport to reach the shopping centre. In a residential area, the surrounding residents can reach the shopping centre by bike or by foot, while a car often is needed to reach a shopping centre at an industrial area. The variables accessibility (**ACCESS_TR**), distance to public transport in km (**DIS_NSKM**) and the distance to the highway in km (**DIS_HWKM**) have been added to explore the transportation possibilities of the

properties. Accessibility provides the best option for transport to a property. Options in transport include car, public transport, by foot and by bike.

Accessibility by car is of no value when no parking spaces are available at the designated location. Therefore, parking quality (**PP_QUALITY**) and parking fee (**PF**) has been added as variables. The variable parking quality represents the number of parking spaces compared to the average number of visitors and the accessibility of the parking spaces (Value scale 1-4). Parking fee has been added as experts in the field mention free parking as an incentive for consumers to visit an area.

Good transportation provides consumers with more options for shopping. Shopping areas becomes more accessible. Retail in the area becomes competition for the shopping centre. The number of retail stores in the area (**NUM_RET**) will provide more insight into the competition within an area between retailers. Furthermore, the number of retail stores can show the ratio between retail stores and the number of residents in an area.

Activities and changes involving a shopping centre or its surroundings often require cooperation of the local government. Government policy is considered as an overall aspect that is involved in every process regarding changes to the shopping centre and environment. It is hard to assign a value to the influence of government policy. The influence depends on the type and scale of an activity. For this research, influence of government policy as variable is left out.

Just like government influence, the number of visitors has also been left out. Many experts refer to the number of visitors as an important indicator. A high number of visitors is considered an important feature for a high number of sales. But many experts point at the fact that a high number of visitors do not directly mean high returns. Not every visitor is a buyer. A high number of visitors only increase the odds for an increase in sales for a retailer. This number of visitors has not been accounted for due to the unavailability of data. Available information is primarily focused on A1-locations like the Kalverstraat in Amsterdam. The properties in this research are located at B-locations. Information on the number of visitors exists, but it is unknown who possesses the data according to Locatus.

[3.4.3 Building features](#)

Building features are the main focus of this research. Relevant features were identified through literature study and in interviews with experts. In selecting variables, the availability was also considered. Many data seemed theoretically relevant but were unavailable. Since Kuyper and Gijsselaar found building features explaining the differences in net rental income of offices, these variables are added to this research

and adapted for the retail market. Similar to Kuyoer and Gijselaar, a questionnaire was developed to have these features assessed from the technical managers. The questionnaire can be found in appendix 9.1.2..

Adaptability was added for its importance to future works and indicates the potential of shopping centres. Based on the expertise of an interviewee two types of building features can be distinguished. Building features with the possibility to be adapted and building features, which cannot be altered. For example, the flexibility of shopping centers cannot be altered while lighting can. The distinction between adaptable and not adaptable is important as it indicates the potential of a shopping center.

Table 10 provides an overview of all building features for which data was collected. The remaining of this paragraph provides a short explanation on these variables.

Variable Label		Value
AGE	Average age of an area	
LFA_M2	The lettable floor area in m2	
NR_FL	Number of floors	
ALPHA_FL	Average LFA per floor	
SPAT_LAY	Spatial layout of a shopping centre	1 = Linear 2 = Rectangular 3 = Acute Angles 4 = Round (Shape)
NR_SIGHT	Number of lines of sight in the shopping area from the entrance	
TWO_SIDED	Retail at both sides of the street	1 = Yes 2 = No
FREE	Free standing	1 = Yes 2 = No
FAC_MAT	Type of façade material (Visibility and colour)	1 = Glass 2 = Bricks 3 = Plaster 4 = Natural stone 5 = Concrete 6 = Steel 7 = Mixed use
FAC_UNITY	Unity of shopping fronts and facades at a shopping centre	1 = Good 2 = Reasonable 3 = Mediocre 4 = Poor
FAC_SHAPE	Shape of the shopping centres facade	1 = rectangular 2 = Acute angles 3 = Round shapes
PAV_MAT	Material of pavements of the main route at a shopping centre (colour and structure)	1 = Mixed use 2 = Bricks 3 = Permeable paving 4 = Asphalt 5 = Concrete 6 = other
ENTRE_CHAR_IN	Charisma of entrance inside	1 = Good 2 = Reasonable

		3 = Mediocre 4 = Poor
ENTRE_CHAR_OUT	Charisma of entrance outside	1 = Good 2 = Reasonable 3 = Mediocre 4 = Poor
CHAR_GENERAL	Charisma of the entire shopping centre	1 = Good 2 = Reasonable 3 = Mediocre 4 = Poor
FLEX	Flexibility in the layout of the shopping centre	1 = Good 2 = Reasonable 3 = Mediocre 4 = Poor
STATE_PROPERTY	Condition of the shopping centre (maintenance)	1 = Good 2 = Reasonable 3 = Mediocre 4 = Poor
IN_OUTDOOR	Indoor (or outdoor) shopping area	1 = Indoor 2 = Outdoor
LIGHT	Lighting quality (from for example roof opening / window)	1 = Good 2 = Reasonable 3 = Mediocre 4 = Poor
LNR_SHOPTYPE	Type of retail that is the most represented in the shopping centre (function and largest m2 present in the area)	1=Food products 2= Hard or durable goods (electronics, furniture) 3=Soft goods or consumables (clothing, medicine) 4=Arts (Books, music) 5 = Service provision 6=Vacant

Table 10 (Building features)

The variable **AGE** reflects the technical life of a shopping centre. The technical life of a shopping centre can be extended though large-scale maintenance and renovations. The timing of these renovations and maintenance took place is considered as baseline point of measurement for this research. The variable age is calculated as the time since last renovation or maintenance took place up until present day.

Not all shopping centres have been renovated or underwent large-scale maintenance. For these shopping centres, the starting point for measurement is the date the shopping centre was finalized. The variable age has been measured for period 2008 to 2013 and accumulates or varies over time (repeated measure).

The Average lettable floor area (**ALPHA_FL**) is calculated from the Lettable floor area (**LFA_M2**) and the number of floors (**NR_FL**) of an individual property. These features represent the spatial dimension of the properties. Furthermore, the variables provide a comparison between spatial dimensions of shopping centres. The data has been obtained per shopping centre from official measurement documents provided by NSI. The found measurements were verified for recent changes and correctness.

The way shopping centres are structured is reflected by the spatial layout (**SPAT_LAY**). This variable is important for the experience of a shopping centre (Turley & Milliman, 2000). The layout may direct visitors in a certain direction and guide them through the shopping centre. Four types were distinguished based on the shape of the physical buildings and the walking route. A linear layout provides a straight line of shops for visitors. Rectangular and acute angle layouts also consist of straight lines but with angles in different degrees. Finally, round shape layouts differ from the other layouts, as it does not provide straight lines or acute angles (De Weerd, 2011). Round shape layouts are curved. Figure 18 presents the four types of layout for shopping centres. The variables line of sight, two sided shopping and free standing are related to the type of spatial layout.

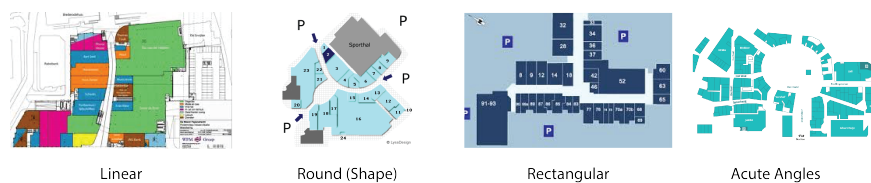


Figure 18 Types of spatial layout; (Illustrations gathered from google images)

The visual lines (**NR_SIGHT**) of a shopping centre belong to the structure of the spatial layout. The design of the spatial layout influences the (number of) visual lines of sight. The visual lines are important as visibility can attract visitors. It affects the route visitors take in a shopping centre. From the four types of spatial layout, the linear layout is the only one with one straight continuing visual line. The variable **NR_SIGHT** is determined from the number of visual lines at the main entrance.

The location of units in a shopping centre is also important for the movement of visitors through the shopping centre. The variable **TWO_SIDED** provides information on the positioning of shops: are stores located at both sides of the shopping street or on one side of the shopping street (Bitgood & Dukes, 2005). Two sided shopping streets are distinguished as two rows of retail facing each other. An example of two sided spatial layout is the linear spatial layout shown in figure 20.

The feature free standing (**FREE**) describes whether the shopping centres functions independently or is part of a larger complex. Often, retail located in the city centre is part of the street view and thus not functioning independently (free standing). On the contrary, large-scale retail boulevards are independent as they are often located on a remote location (Not free standing).

Several features concerning the interior and exterior of shopping centres affecting the charisma of the building are the material of façade, material of pavement and lighting. The materialization of the façade (**FAC_MAT**) can for example affect the charisma

of the building (De Weerd, 2011). Six materials were stated as value: glass, bricks, plaster, natural stone, concrete, steel, mixed use. Mixed use can be assigned to façades consisting of a mixture of materials. All six materials are part of the façade of shopping centres in the portfolio of NSI. The materials were similar to the materials found by Kuyper for offices.

The materials for outdoor pavement (PAV_MAT) were also identified. Pavements can add to the charisma of the shopping centre as a whole (Ghazzi, 2012). Five types of pavement were included: bricks, permeable paving, asphalt and concrete. The last option, other, was added to cover unknown pavements as many more materials were possible. Furthermore, materials for indoor pavements were included in the data collection. This information was collected through an online questionnaire for the technical managers. Research by Gijsselaar and Kuyper did not include the variable material of pavement.

For all shopping centre, differences between the indoor and outdoor environment affects the physical appearance and the use of materials. The material of pavements is an example as it distinguishes materials for indoors and materials for outdoors. For that reason, the variable indoor or outdoor (IN_OUTDOOR) has been added to this research. This variable is related to the comfort of the consumer when shopping. Lighting (LIGHT) also differs between indoor and outdoor shopping centres. An indoor shopping centre with a roof window can provide natural lighting, but not necessarily so. This variable describes whether there is daylight access or not.

The last building feature regarding the façade is the shape of the shopping centre's exterior (FAC_SHAPE). Three shapes were identified: round shapes, rectangular and acute angles. The three shapes were found by analysing the shopping centres in the portfolio of NSI.

The charisma of the entrance inside (ENTRE_CHAR_IN), the charisma of the entrance outside (ENTRE_CHAR_OUT) and the overall charisma (CHAR_GENERAL) add to the aesthetical quality of a shopping centre and were used to qualify the attractiveness of the shopping centre. An entrance outside must invite consumers to enter a shopping centre, while the entrance inside must provide a certain level of comfort for people to stay. Outdoor shopping centres do not always have a main entrance. For this reason, the charisma for the entrance for outdoor shopping centres is assessed from the place that visitors enter or leave the shopping area or shopping centre.

The level of maintenance (STATE_PROPERTY) affects the overall charisma of a shopping centre. The aesthetical quality and the charisma of a shopping centre will be lower when the level maintenance is low.

Brinklaan, Apeldoorn	Sterpassage, Rijswijk	Vasco de Gama, Utrecht	Hagenborgh, Almelo
			
Good	Reasonable	Mediocre	Poor

Table 11 Charisma of entrances assessed by technical managers (NSI)

The variable **LOCATUS_TYPE** represents the type of shopping centres according to the Locatus classification. The Locatus classification was determined using detailed information from NSI. NSI uses a different classification to classify their properties. Another important feature is the type of retail. A big variety of shops and a large range of products are more likely to attract visitors (Borgers et al., 2010). The available type of retail needs to meet the consumers' demand. For the purpose of this study research, shopping centres were classified after the largest percentage retail type at the property (LNR_SHOPPING). Five values were assigned: food products, hard or durable goods, soft goods or consumables, arts, service provision. Vacancy is added as a sixth variable for properties in the portfolio of NSI that are vacant.

A questionnaire was sent to various technical managers. They provided information on these features based on experience. These managers are responsible for the physical quality and possess current knowledge on the properties. The variable technical manager has been left out for this research. Research by Kuyper has shown that the influence of managers outperforming each other is insignificant (Kuyper, 2013).

3.4.4 Tenant features

Tenant features reflect the performance and value of buildings. Tenant features are directly related to the percentage vacancy and the net rental income of retail properties. The research by Gijsselaar and Kuyper did not address tenant features. Tenant features are less significant for offices and many office features already covered the tenant features. Building features were the main focus of both Gijsselaar and Kuyper. Data on tenants was provided by NSI and was verified with other sources from NSI. This was necessary because NSI holds information on the tenant per single unit in a shopping centre, but it could well be that one tenant rented several non-adjacent units within a shopping centre. The data was verified and now only for this small inconsistency and only represent the number of tenants.

Variable		Value
NR_CONTRACT	Number of contracts	-
DUR_CONTRACT	Average duration of contracts	-

Table 12 (Tenant features)

The number of contracts (**NR_CONTRACT**) reflects the total number of contracts per shopping centre. The number of contracts reflect the variety of tenants within one shopping centre. This variable is comparable to the variables single or multitenant in the office-database (Gijsselaar, 2010)

The contract length (**DUR_CONTRACT**) is an indication of possible vacancy and uncertainty (risk), as contracts will eventually end. This is important as this might interfere with economic developments (Gijsselaar, 2010). The contract length (**DUR_CONTRACT**) is defined as the length of time the contract is valid in years.

3.4.5 Consumer features

Consumer features provide basic information on consumers, which is essential for retail properties. Two types of consumer features are to be distinguished: direct consumer features and indirect consumer features. Indirect consumer features represent the influence of the economy and regional market on the behavior of consumers. Consumers are sensitive to changes in the economic cycle as changes can influence a consumer positively or negatively. The economic cycles influence the consumers spending pattern. Consumer confidence and the average spendable income are considered to be indirect consumer features. The indirect consumer features are measured on a national level and on year basis from CBS (CBS, 2014).

The direct consumer features consist of information on the consumer as individual and the daily activities like employment. What is the average age of the person and what is the origin of the consumer? What is the average income of a consumer in a region? Data were obtained from CBS (CBS, 2014).

	Variable	Value
AGE	Percentage of residents with an certain age in an area	1 = <15 2 = 15 - 25 3 = 25 - 45 4 = 45 - 65 4 = >65
AVERAGE_INCOME	Average income in an area per resident	1 = Very high 2 = High 3 = Medium 4 = Low 5 = Non (Scales of income)
STAT_EMPLOY	The percentage employment in an area	Ratio (Unemployed / entire population in the neighbourhood)
HOUSE_COMP	The average number of people in a household in an area	1 = Single person household 2 = Household without children 3 = Household with children
ORIG_	Percentage people from a specific origin in an area	1=native 2=foreign (western EU) 3=foreign (beyond western EU)
CONS_CONF	The change in consumer confidence measured in	

	as a relative number with 0 as neutral point	
SPEND_INCOME	Spendable income in euros (times a thousand)	

Table 13 Consumer features

Shopping centres depend on consumers to buy products and must adapt to the demands of the consumer. In retail, the different life stages people are considered important. Using the variable **AGE** the proportion of different age groups is used to describe residents in a specific area. The classification distinguishes five age groups. For example, the category 15-25 represents residents in a specific area between the ages of 15 and 25. Per category the data reflect the percentage of residents that belongs to this age group. The age-ranges and percentages are taken from CBS (CBS, 2014). **HOUSE_COMP** also relates to the life phase of the consumer. It describes the average size of a household in an area. The size of households often changes as part of the life phase that the consumer is going through. The spending pattern varies with the size of each household. The data reflect the percentages per category.

The origin (**ORIG_**) of residents is not an indication of the life phase, but is a demographic factor often used as an indication of the spending pattern. This variable classifies residents according to their culture, either native or foreign. Foreign is further classified into western EU descent and beyond western descent to give an indication of the cultural roots of the residents. The data reflect the percentage per category. **AVERAGE_INCOME** represents the total income in an area per resident. The income is an indication of the spending power of each resident in an area. The variable **STAT_EMPLOY** is closely related to the average income. **STAT_EMPLOY** summarizes the number of residents who are currently receiving a welfare benefits, as they currently are not employed. These residents do not provide for an income and thus lowers the average income per person.

Finally, the consumer confidence (**CONS_CONF**) and spendable income (**SPEND_INCOME**) are both selected to reflect economic influences. Both features reflect the spending pattern of residents. Consumer confidence is measured as value indicating an increase or decrease of the consumer confidence compared to earlier years. Spendable income is defined as the percentage change in spendable part of the income in percentages (increase/decrease). Both variables are collected at a national level and were obtained from CBS (CBS, 2014).

3.5 Analysis

This paragraph showed the different phases of the research. The process of statistical analysis will be explained in the same order as it has been conducted. The statistical method and the processes used are similar to the approach of Kuyper for offices (Kuyper, 2013). For this research, data has been collected for the years 2008 to 2013.

The process consists of three phases (table 14). During these three phases the effects of different features on the net rental income were analysed. First, the collected data was explored for usage, relevance and validity. The second phase consists of making a pre-selection of variables, potentially influencing the net rental income. Each variable was individually analysed. The variables with significant effects were used to in the last phase constructing the final model.

Phase	Tasks guideline	Statistical method used
Phase 1 Exploration	Exploration of the dataset	
Phase 2 Pre-selection	Univariate analyses of independent variables not varying over time	General linear model
	Univariate analysis for the net rental income, which is repeatedly measured over time. Independent variable could be either measured as invariant over time, or being a independent factor that also varies over time	Mixed linear model
	Selection of variables for final model that are potentially relevant using a significance level of $p \leq 0.25$.	
Phase 3 Final model	Preparing the final model by stepwise excluding variables that were not significant ($p \leq 0.05$).	Mixed linear model
	Defining and reviewing (final) model by first combining all variables that were found to be significant per main category. Variables that were not significant at $p \leq 0.05$ were excluded step by step.	Mixed linear model

Table 14 Description of statistical process of Kuyper adjusted (Kuyper, 2013)

3.5.1 Phase 1: Exploration

The first phase consists of a general exploration using descriptive statistics describing the mean, standard deviation and confidence intervals for the found variables and data. The exploration of the derived data also led to adjustments. Some variables had low numbers in certain answer categories and answer categories were therefore combined if necessary. Recoding was done to ensure that the lowest numbers per answering categories was at least 10 cases.

3.5.2 Phase 2: Pre-Selection

Many variables have been collected through literature study and interviews with experts in the field. The possibility that all features together influence the net rental income is very unlikely, as features might be interrelated.

First, for all independent variables a general linear regression using the net rental income as dependent variable was performed. In this way, the single influence of an individual independent variable could be identified. The dependent variable net rental income has been measured for 28 quarters. The net rental income is thus considered

as repeated measure. Mixed linear modelling was used because the outcome with net rental income was modelled as a repeated measure. Analysis has been performed on the entire retail portfolio of NSI.

Independent or explaining factors could be also varying over time (Age) or being invariant over time (many building features). Some variables were measured over time for 28 quarters and also differed per shopping centre. Age of the shopping centre is an example of such a variable. It is very likely that because measurements varying over time, the measures at one time are correlated to the measures a quarter later, and so on. This is called autocorrelation and there was indeed a significant autocorrelation across measures of 0.95 ($p < 0.05$). Therefore, mixed linear models were specified with a first-order autoregressive covariance matrix (AR1). Independent variables were considered as fixed variables. Type III test of fixed effects were used to describe the significance of the impact of age on the performance of shopping centres.

The criterion for pre-selecting a variable for inclusion in the next stage of modelling was set at a $p \leq 0.25$. The pre-selection of variables consisted of testing variables and sorting variables into three groups. The variables were sorted into three groups with ranges: $p > 0.5$, $p = 0.5-0.25$ and $p \leq 0.25$. The second step was to refine selection for further inclusion in the model building stage. Per main category all variables with $p \leq 0.25$ were combined in a model and all variables with a $p \leq 0.05$ were stepwise excluded from the submodels. The final set of features with $p \leq 0.25$ was entered into the final model. An example: the features flexibility, NR_LFA and charisma entrance inside were tested. During the first selection, flexibility ($p=0.98$) was excluded. The second step showed that NR_LFA was not significant ($p=0.32$). NR_LFA was also included. Charisma of the entrance inside was the only feature, which was added to the final model ($p=0.00$).

3.5.3 Phase 3: Final model

The input variables are determined in the previous phase of the statistical analysis. This last phase is used to determine the best model for the analysis.

Mixed modelling allows for shopping centres to be modelled as all having their own net rental income (modelled as random), or as all having the same net rental incomes (modelled as fixed). A random model would allow for multiple regression lines, a fixed model specifies one regression line for all shopping centres. Random coefficients are considered as normally distributed. Three random effect models can be distinguished: models with random intercepts, models with random slopes and models with both random intercepts and slopes. Using a random intercept means a different starting point for rental income at different locations. Secondly, different

slopes would mean that the increase in net rental income over time differs across shopping centres. Like Kuyper and Gijsselaar did find for offices, a random coefficient for intercept only was found to be the best model. This means that shopping centres have different starting levels of net rental incomes, but that the increase of over time is comparable. This is easily understood, as properties differ in size and other characteristics and it is therefore unrealistic to expect that they all have the same net rental incomes. Finally, a choice needed to be made between the use of Maximum Likelihood (ML) or Restricted Maximum Likelihood (REML). Maximum likelihood has the advantage that it can be used to compare models and allow for comparisons across models and for a comparison with earlier research on offices on a later stage. Therefore Maximum likelihood was used for estimation.

Similar to Kuyper and Gijsselaar, the Akaike value (AIC) was used to determine fit and to compare between models. The information criterion Akaike value needs to be as low as possible. The final mixed model produced an Akaike value of 6158,672. The variables included in the final model can be found in table 15.

Information Criteria ^a	
-2 Log Likelihood	6114,672
Akaike's Information Criterion (AIC)	6158,672
Hurvich and Tsai's Criterion (AICC)	6159,798
Bozdogan's Criterion (CAIC)	6286,856
Schwarz's Bayesian Criterion (BIC)	6264,856

The information criteria are displayed in smaller-is-better forms.
a. Dependent Variable: NIM2.

Table 15 Akaike's value (SPSS)

4. Results: Exploration

4.1 Exploration statistical analysis

This chapter presents the results of the statistical analysis. The variables are explored in relation to the net rental income and the building's financial performance. The most striking findings and trends are discussed and elaborated in this chapter. More details on the variables can be found in chapters 5 and 6.

4.1.1 Net rental income

For this research, information on the net rental income of 48 retail properties is collected. For each property, information is collected for each quarter of a year (a total of 4 quarters a year). By collecting data per quarter, changes in the net rental income become visible and easier to explain. The net rental income is the dependent variable in this research.

The net rental income does not include costs and can only be affected by raises in rent. It is less vulnerable to artificial manipulation such as lagging and smoothing. The volatility of the net rental income is thus low. Fluctuations in the net rental income can be explained by changes in rent and tenant. Rent can be lowered to attract new tenants (incentives) and vacant space can cause a drop in rental income while costs remain. Figure 19 shows the average net rental income for 48 retail properties from 2008 to 2014. The net rental income per square meters has been collected from the

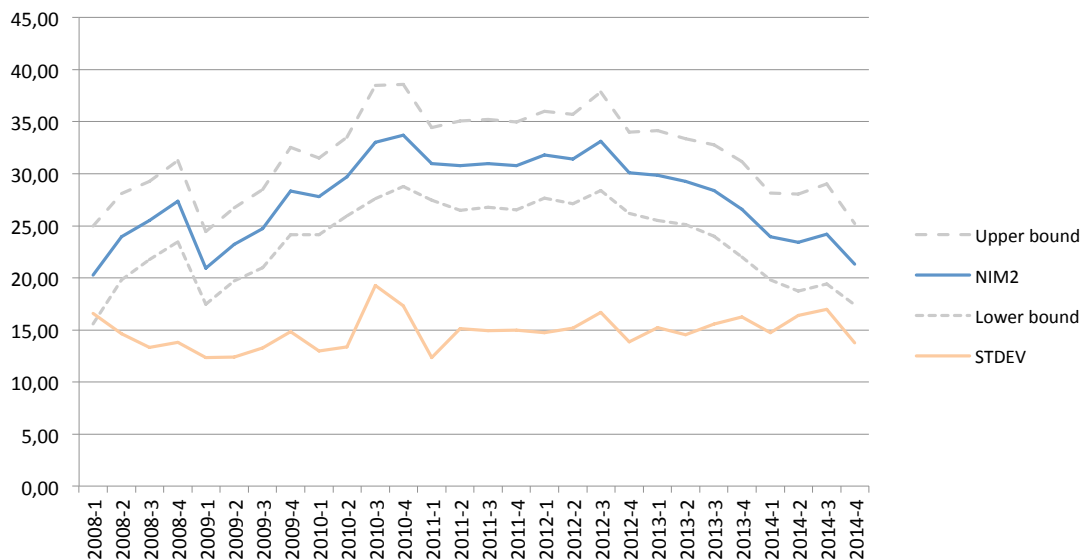


Figure 19 Quarterly average of the net rental income per square meter

first quarter of 2008 up until the fourth quarter of 2014. The net rental income has been corrected for inflation before calculating the net rental income (NIM2).

Fluctuations in the graph are considered influences of the current economic circumstances. Figure 15 shows the NIM2 rising until the fourth quarter of 2008. From the first quarter of 2009 the NIM2 remains the same up until the fourth quarter of 2012. The NIM2 decreases from the second quarter of 2012. These changes in the graph are mirroring the economic crisis starting in 2008/2009. The retail portfolio of NSI seems to have a delayed response to the effects of the crisis. The effects of the economic crisis did not affect retailers directly in 2008. The influences of the economic crisis were not directly visible. It took a few years before the crisis affected the net rental income, which is attributed to the existing tenant contracts that probably delayed the influence of the economic crisis. Figure 15 shows a decrease of the NIM2 since 2012, which indicates the start of the crisis in the retail portfolio of NSI. A lot of retailers at the moment could not afford the rent anymore and ended their contract. In the worst case, bankruptcy caused for vacancies and extra costs or debts for NSI. Other small drops in the graph can be explained by unexpected costs for maintenance due to malfunctions, planned large-scale renovations and incentives at the start of the year. This particularly applies to the decrease in net rental income in first quarter of 2009.

A possible explanation for a part of the decrease of the net rental income per m² in 2011, is the partly demolishment of shopping center 't Loon. The sudden drop of net rental income was caused by the partly collapse of shopping center 't Loon in Heerlen. The parking lot of shopping center 't Loon sagged due to underground mining by the government. Due to the collapse, part of the shopping center had to be demolished and NSI could not collect rent for that part of the shopping center. After the drop in NIM2, the graph stays rather stable and consistent at one value until the effects of the economic crisis became visible.

4.1.2 Absorption, vacancy and supply

Regional market features represent the economy at specific locations in the Netherlands. The goal of this research is to determine features that influence the financial performance. These features were assumed to be relevant for Dutch investor and applicable on a national level. After exploring the portfolio of NSI, this does not seem to hold. Retail properties in the portfolio of NSI were located widely dispersed in all parts of the Netherlands, except for the northern part of the Netherlands. NSI does not possess retail properties located in the provinces of Drenthe, Groningen and Friesland. But as many retail real estate investors do not possess retail in the northern part of the Netherlands and then number of transactions there are low, it can be assumed that the database is still a reasonable reflection of the Dutch market.

The basic regional variables in this research are the regional vacancy and the absorption. Both variables were replaced by TIME*TIME in the final model, as TIME*TIME yielded a more reliable result and a significant effect. TIME*TIME represents the effects of the economic cycle (Kuyper, 2013). The final model showed that the regional vacancy and the absorption were not significant for the financial performance, when time*time was first included.

For the exploration supply per m2 was used as indication of vacancy. The data regarding vacancy was rather incomplete and the variable TIME*TIME was used instead. The variable supply provides a more specific and accurate view on the m2 vacancy based on the available data. The supply consists of current vacancy and future vacancy (projects in the future). The supply provides a forecast of possible vacancy, which is important for investors to lower risk and uncertainty during the acquisition of retail. The supply is presented in figure 20.

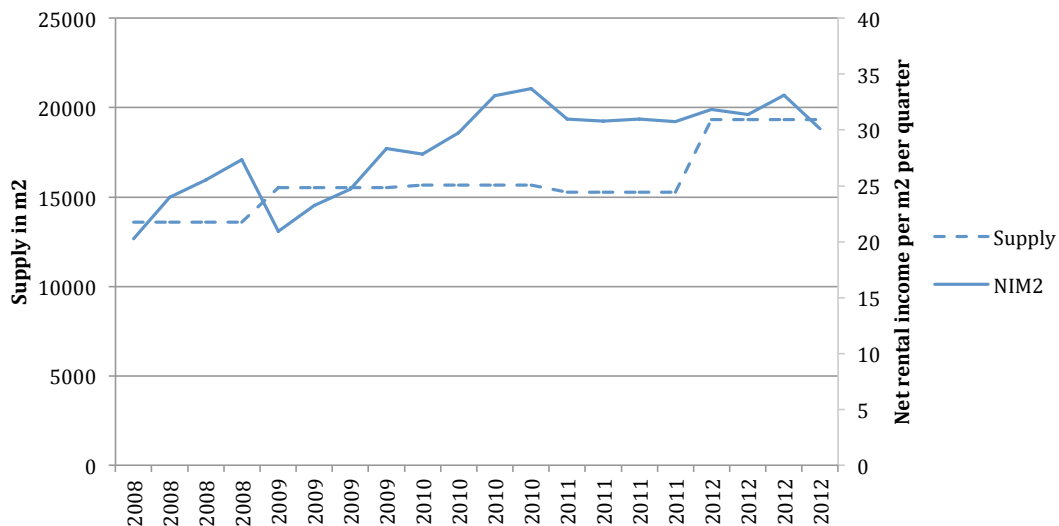


Figure 20 The average supply in m2 for Dutch retail

Figure 16 shows the relationship between the supply per m2 and the net rental income per m2 for shopping centers. The supply per m2 has been studied from 2008-2012 due to the unavailability of data. The supply remains at the same level from 2009 to 2011 followed by a huge increase in 2012. In the period between 2009 and 2011, the net rental income per m2 increased. The percentage vacancy in retail increased by 11% in 2011 according to NVM Business (NVM Business, 2013). NVM considers the economic recession and the increasing percentage elderly as possible cause. In the first quarter of 2012 the supply remains steady and consistent, while the supply fluctuates. This shows a possible relationship between both variables. It can be assumed that when the supply remains at the same level, the rent levels increases. This

result suggests the supply can affect the building's financial performance. But the question remains whether the supply or the vacancy are the result of low performance shopping centers or the financial performance of shopping centers.

The second regional market feature to be discussed is the absorption rate. The absorption rate has been collected for the period 2008-2013. An analysis of the absorption rate in comparison with the net rental income per m2 is shown in figure 21. Kuyper and Gijsselaar found highly interesting results for the relationship between absorption and the NIM2 for offices. They found a negative correlation, which was highly unexpected. For retail, a similar result can be seen. From the first quarter of 2010 to the fourth quarter of 2012 the financial performance increased, while the absorption per m2 decreases. The opposite happened from the quarter of 2012 onwards. The absorption increased while the financial performance decreased. Kuyper has recognized the same cyclical behavior in literature of the office market. No literature has been found for this behavior regarding retail, making this result even more interesting. NVM Business mentions that vacancy decreased due to demand for retail space in the large four cities (NVM Business, 2014). New tenants or occupiers were more easily found due to the level of demand.

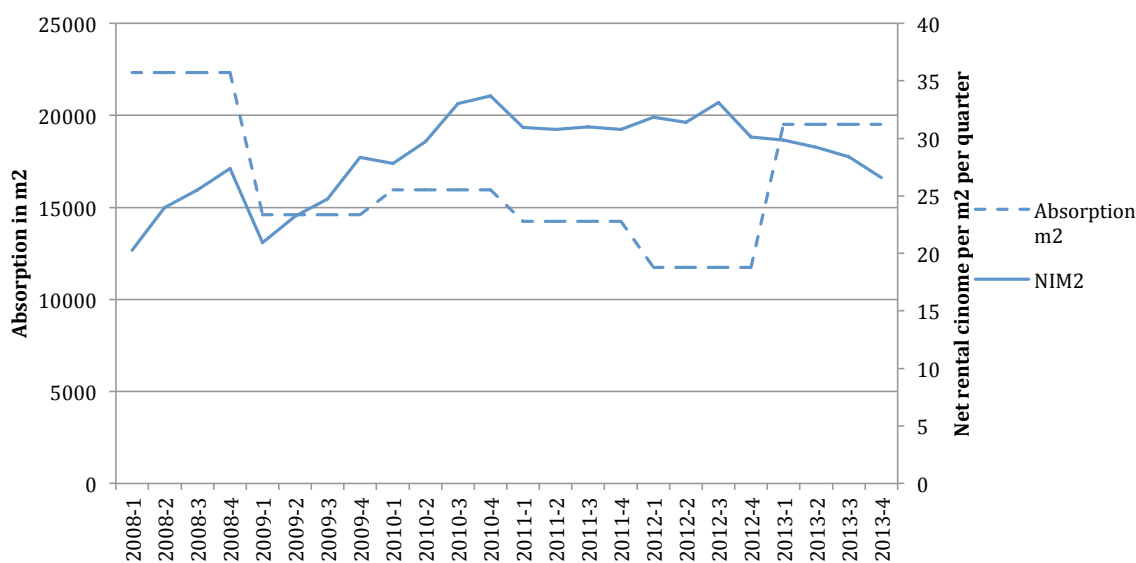


Figure 21 The average quarterly absorption in m2

Research nowadays describes online-sales or e-commerce as a threat for retail real estate (Altera Vastgoed N.V., 2014). For example, research by AEW Europe showed an increase of the use of e-commerce, which will lead to a decline in demand for physical stores. Experts in the field defined online-retailing as a focal point of

attention. But retailers also consider online-retailing an opportunity. Many retailers are currently using online shopping to improve services and returns. Figure 22 shows the development of online sales and NIM2 for the period 2008-2013. The figure shows that online sales increased the last 6 or 7 years. From the year 2012 onwards, the portfolio of NSI is affected by the economic crisis and the net rental income level decreases. The online sales increased from 2008 to 2013. If both variables are compared from second quarter of 2012 onwards, a negative influence of the online sales on the net rental income can be found. The biggest difference between both variables is found in the fourth quarter of 2012 and beyond. This result confirms that online sales or e-commerce are threats to physical retail stores. Online sales keep increasing while the financial performance of shopping centers at B-locations decreases.

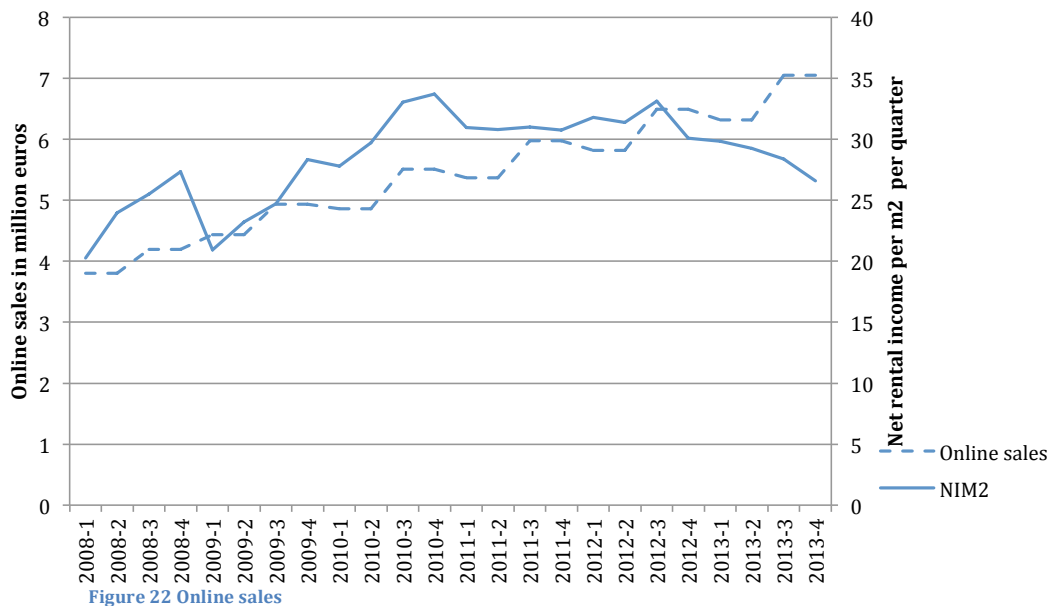


Figure 22 Online sales

Retail sales online increased according to the findings in figure 22. It could be assumed that retail sales also increased. An analysis of the retail sales showed otherwise. From 2008 to 2013 retail sales decreased. From the fourth quarter of 2012 onwards, both the net rental income per m2 and the retail sales decreased due to the delayed effects of the crisis. This means, although online sales increased, it does not mean that sales in general will increase. The conclusion is that sales in physical stores dropped, while the share of online sales increased. Figure 22 showed once again that online shopping is a threat to the performance of physical stores. Furthermore, a relationship between the financial performance of shopping centers and retail sales has been found.

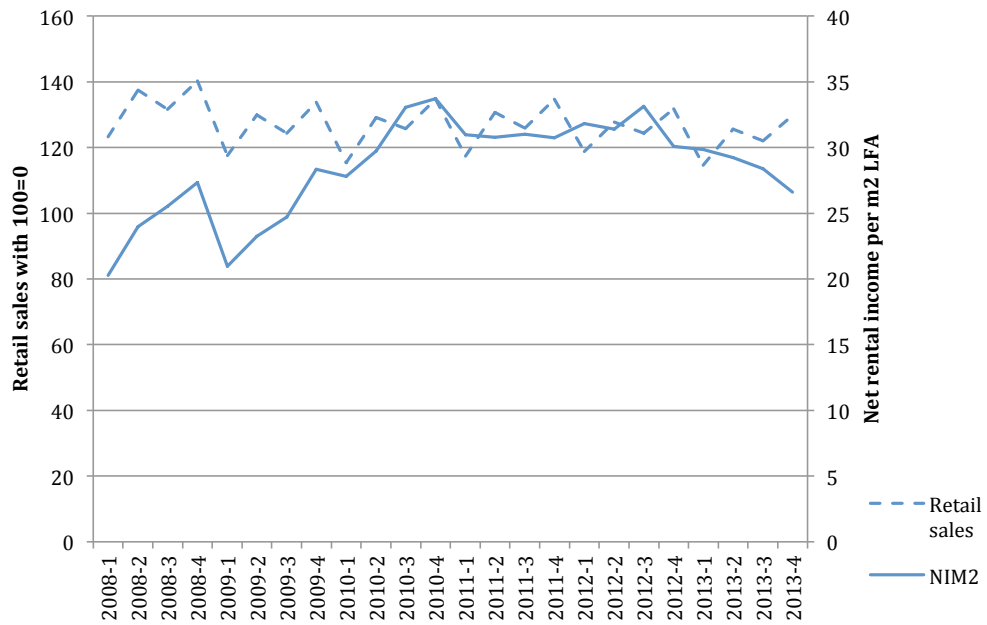


Figure 23 The average retail sale ratio

The relationship between the retail sales and online sales yields interesting results. Figure 24 shows an increase of online sales from the first quarter of 2008 to the third quarter of 2014. In the same time window, retail sales decrease. Retail sales in general decreased while online shopping increased. An increase of online sales does not result in an increase of retail sales, suggesting a decrease in consumer confidence.

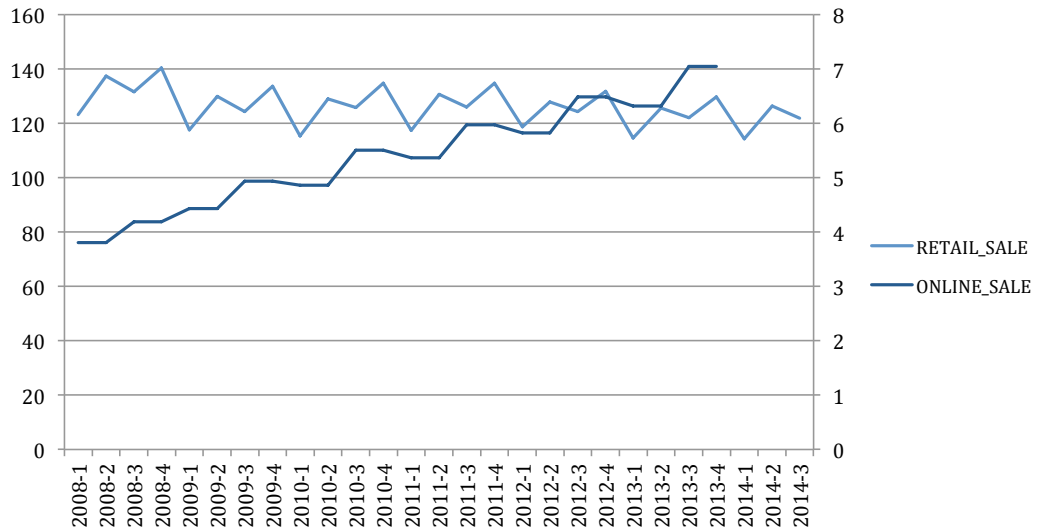


Figure 24 Online sales compared to Retail sales

The variable number of residents is a very important feature to this research. It is assumed that shopping centers with a daily shopping function depends on its surroundings and thus the number of residents in the area. Figure 25 shows the number of residents in relationship to the net rental income. The figure shows two remarkable results. First of all, the number of residents in the area is increasing. CBS refers to an explosive growth of the population in the Randstad and especially in the large four cities. The retail portfolio of NSI contains a lot of properties located in the Randstad, which explains the increasing number of residents. Secondly, the figure shows an increase of the population in 2010, while the financial performance of retail properties has been dropping since 2011. If the results from the number of residents relative to the retail sales are combined, the conclusion is that the overall retail purchases of consumers have dropped over the last few years (figure 26). Take this a step further and comparing it to the online sales, it can be concluded that people spend less in physical stores like neighborhood shopping centers and more frequently order products online.

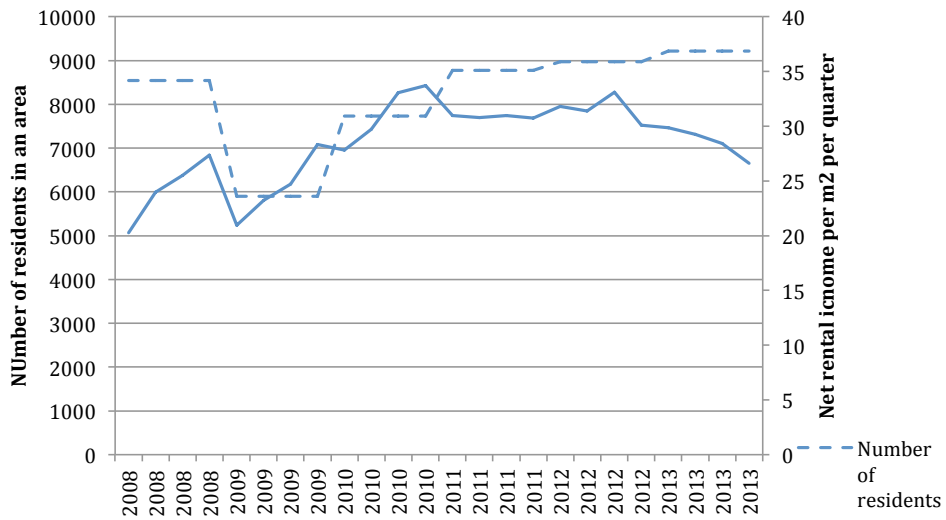


Figure 25 Number of residents

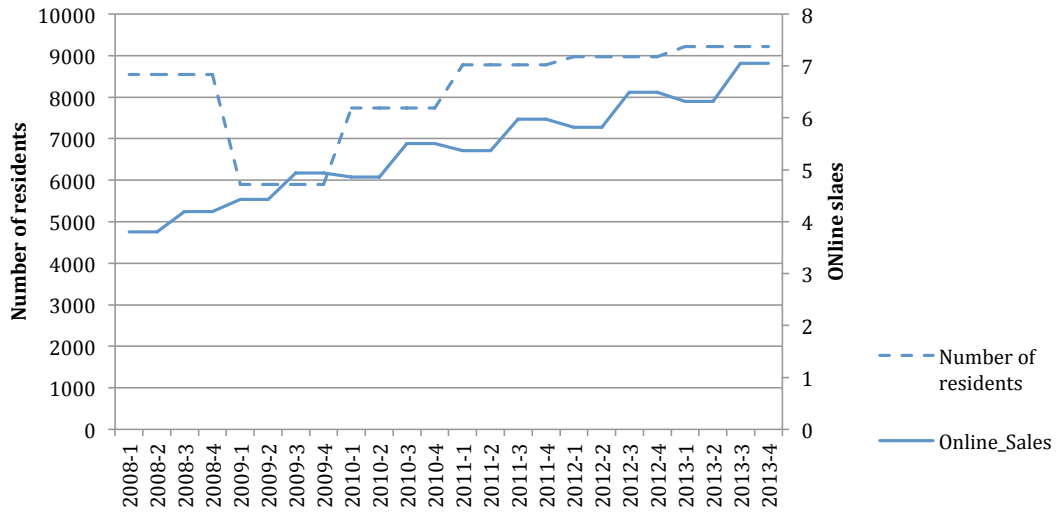


Figure 26 The number of residents compared to the online sales

4.1.4 Age and the charisma of retail properties

The age of the real estate is thought to have a negative influence on the financial performance of retail properties as can be also concluded by comparing the variable age with the net rental income in m2 LFA per quarter year (figure 25).

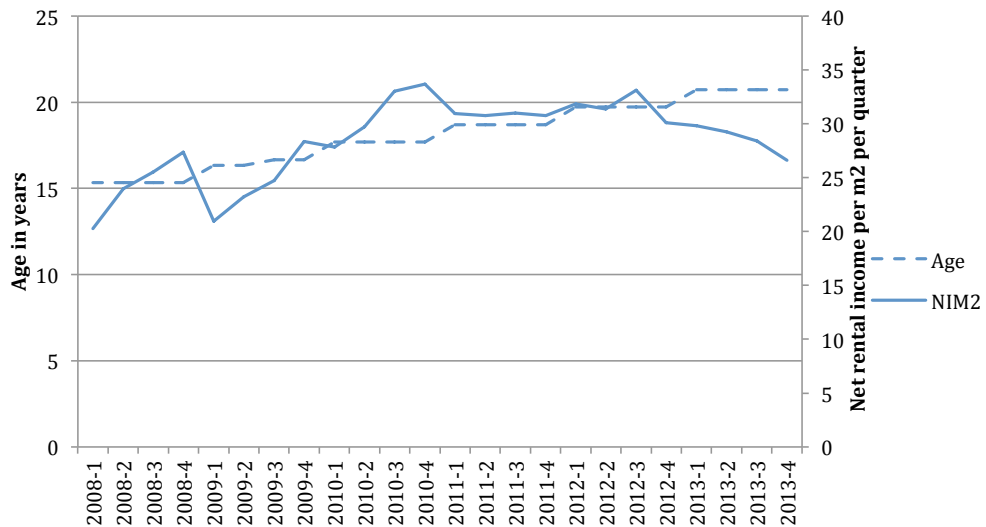


Figure 25 Age of the properties

The average age of 48 retail properties were measured over 28 quarters from 2008-2014. The average age of the retail portfolio of NSI has increased. NSI has not acquired new properties for the last three years, but NSI did sell properties. This did not affect the average age, as it only concerns a small number of sold properties. The relationship between age and financial performance seems to be as expected. As the properties ages, the financial performance decreases. As a consequence, a negative correlation between both variables is found.

It is assumed that the age of properties also affects the charisma of properties. The influence of charisma for an entire retail property is assessed in figure 26. During the exploring interviews with experts in the field, the charisma of the property was mentioned as an important criterion for the first impression of a property. This finding also emerges from figure 26, with the highest financial performance found in the properties with best looking entrances. The charisma of a retail property might thus considered to be an important criterion for the acquisition of retail real estate.

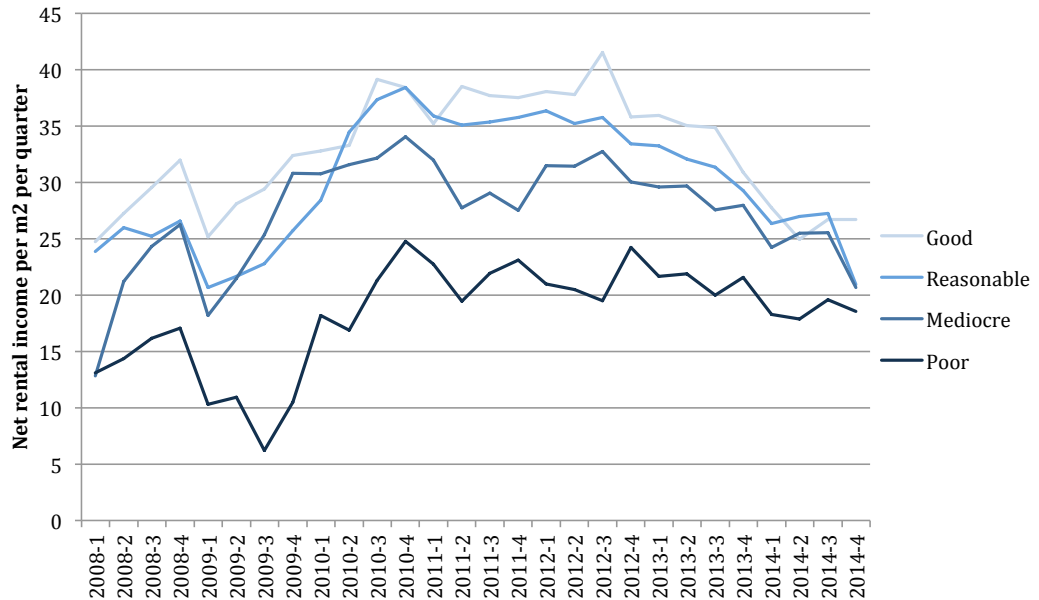


Figure 26 The charisma of the retail property in general

4.1.5 Type of retail

During the interviews with experts, a lot of real estate investors mentioned that the company policy is decisive in determining an investment strategy. NSI has determined a strategy in which the type of retail in a shopping center functions as decision-criterion. Acquiring new retail properties is partly dependent on the present retail types in the shopping center. The assumption of NSI is that certain types of retail are more decisive for the financial performance than other types. An analysis of the retail portfolio shows the importance of retail types as decision criterion. The retail type food product and soft goods or consumables seems to be the most important types of retail in a shopping center in terms of financial performance. These types affect the financial performance of retail properties positively.

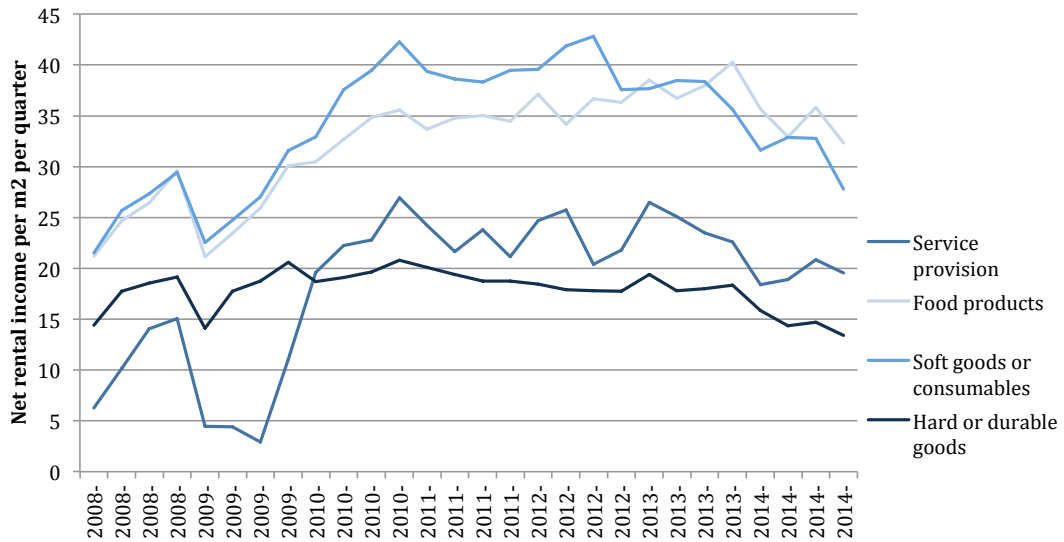


Figure 27 Retail type

4.2 Conclusion

This chapter provided an exploration of the variables found in earlier phases. The concurrent comparison of the economical and regional market features revealed an unexpected result for the absorption rate. The net rental income responded to the absorption, but not as expected. The low absorption coincides with an increase of the net rental income. The absorption increased while the financial performance decreased. Kuyper has reported similar findings for the offices in the portfolio of NSI. Another important finding came from the exploration of the developments in retail sales, retail online and the number of residents. Retail sales and retail online influence the financial performance of retail properties. It was expected that the number of residents would affect the financial performance positively, but the analysis showed otherwise. The number of residents seems to be related to the retail sales and online shopping as all three impacts the NRI. This may indicate that consumer spending, consumer confidence and spending power decreased, with consumers more often shopping online instead of visiting the neighborhood shopping center. Another possibility is that the consumer visits other shopping areas instead.

At the building level, the variable age is important. As expected, the result showed that the impact of age on the financial performance is negative.

A first impression is everything and reveals a lot. Experts believe that charisma is a criterion when visiting a retail property for the first time, which turned out to be true

given the suggested associations. The financial performance of a property with a good charisma is higher than that with a poor charisma.

Final, there is suggestive evidence of an influence of retail types on the financial performance. Shopping centers with high percentage food or consumables stores outperform other types of retail like hard goods or service provisions (refer to abbreviations).

The next chapter will provide more information on the final model. It will provide statistical information on the significance of the variables contributing to the final model explaining net rental income of retail properties.

5. Results: Final model

The final model is presented in this chapter. The variables found in earlier phases of this research were used as input for this model. The variables were tested for relevance to the net rental income and financial performance of the portfolio of real estate investor NSI.

5.1 Final model

The variables found in literature and interviews were tested for their influences on the financial performance of retail properties. A set of variables was found to be significantly influencing the financial performance. These variables seem to be the reason of why some shopping centers yielded higher financial performances and returns than other shopping centers. Table 16 provides an overview of the identified variables and the level of significance (Sig.). Variables are considered significant when p is lower than or equals 0.05. However, the best model explaining net rental income was found to include the number of contracts as well. That was decided upon using the goodness of fit by the Akaike information criterion. This will be explained further on.

Type III Tests of Fixed Effects^a

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	336,213	5,482	,020
Entrance charisma inside	1	49,505	8,704	,005
Pavement material	3	49,321	5,400	,003
Indoor or outdoor shopping	1	48,795	14,690	,000
Type of shopping centre	8	49,082	3,094	,007
Time	1	199,107	66,518	,000
Time*Time	1	202,221	36,571	,000
Retail sales	1	555,458	10,776	,001
Gross domestic product	1	691.729	28,349	,000
Number of contracts	1	126,959	2,095	,150

a. Dependent Variable: NIM2.

Table 16 Variables included in the final model with the net rental income per m2 as dependent variable

Matysiak and Tsolacos considered the gross domestic product (GDP) and retail sales important indicators in explaining consumer preference (demand) and the financial performance of retail (Matysiak & Tsolacos, 2003). This research showed indeed that GDP ($p \leq 0.001$) and retail sales ($p \leq 0.001$), both were used as indices representing the consumer and both were significantly related to the net rental incomes of shopping centres.

Indoor or outdoor shopping ($p \leq 0.001$) and the charisma of the entrance ($p \leq 0.01$) was found to be significantly related to net rental incomes. An indoor shopping center is associated with a significantly better financial performance than an outdoor shopping center (table 18). A good or reasonable charisma of the entrance inside has a positive impact on the financial performance, as they did for the net rental incomes of the offices in the portfolio of NSI (Kuyper, 2013).

These outcomes are consistent with found research (Dijkman, 2012), suggesting that charisma of entrances and indoor/outdoor shopping were related to the atmospherics in a shopping center (Turley & Milliman, 2000). An atmospheric shopping center can attract more visitors and thus yields higher returns (Zadelhoff, 2011). Unlike what Dijkman suggested, the material of pavement is significant ($p= 0.003$) and thus influential to the financial performance of retail. Permeable pavements seem to be best suited for a shopping center when it comes to the increase of the net rental income. Concrete, natural stone and mixed-use are outperformed by permeable pavement. However, the difference between the estimation of mixed-use (Estimate = 12.26) and permeable pavements (Estimate = 15.16) are small.

The type of shopping center ($p=0.007$) was found to be significant related to the net rental income, with the highest yield in the inner shopping streets and city quarter shopping (See table 18). This is similar to earlier findings in literature and interviews. The type of shopping center and the type of retail were considered important by NSI. NSI focuses on shopping centers with daily products and daily stores (supermarket). Research by Syntrus Achmea (Syntrus Achmea Real Estate & Finance, 2014) and Aviva Investors (Urwin, 2014) showed that the acquisition strategy of retail investors mainly focuses on shopping centers in supporting locations with at least two supermarkets. This was also mentioned by interviews with experts in the field. Investors thus focus on a certain type of shopping center.

Only one variable representing tenant features was included in the final model the number of contracts ($p=0.150$). In the univariate analyses, number of contracts was significantly related to net rental income ($p=0.005$). In the presence of other variables, it does not show a significant relationship to net rental income. However, the model excluding number of contracts showed a more poor fit than the final model. The AIC with number of contracts was lower (6158,672; table 17) than without the number of contracts (7678,923; table 17). This means the goodness of fit improved with the variable number of contracts. A better goodness of fit means a more reliable model and therefore the

Information Criteria ^a	
-2 Log Likelihood	7636,923
Akaike's Information Criterion (AIC)	7678,923
Hurvich and Tsai's Criterion (AICC)	7679,771
Bozdogan's Criterion (CAIC)	7805,215
Schwarz's Bayesian Criterion (BIC)	7784,215

The information criteria are displayed in smaller-is-better forms.

a. Dependent Variable: NIM2.

Table 17 Akaike information criteria without the number of contracts (own table)

number of contracts remains included in the final model. The relevance of the number of contracts may reflect that a larger number of tenants meets a larger consumer demand (Bakker, 2011).

Table 18 shows a short summary of the estimates of fixed effects. Appendix 9.3 presents a full overview of the estimates of fixed effects and the findings related to correlation effects.

Estimates of Fixed Effects

Parameter	Values	Estimate	Sig.
Intercept		-35,224023	,018
Entrance charisma indoor (1)	Good/Reasonable	10,115683	,005
Entrance charisma indoor (2)	Mediocre/poor	0 ^b	.
Pavement material (2)	Concrete	1,096950	,860
Pavement material (3)	Mixed-use	12,264442	0,18
Pavement material (4)	Permeable paving	15,159993	,002
Pavement material (5)	Natural stone	0 ^b	.
Indoor or outdoor shopping	Indoor	23,251495	,000
Indoor or outdoor shopping	Outdoor	0 ^b	.
Type of shopping centre (2)	City quarter shopping centre (>50shops)	30,722225	,044
Type of shopping centre (3)	Core shopping area L (200-400 shops)	20,802668	,059
Type of shopping centre (4)	Core shopping area S (100-200 shops)	22,388794	,058
Type of shopping centre (5)	Inner city shopping street	32,217144	,008
Type of shopping centre (6)	Inner city: 400 shops	26,972676	,031
Type of shopping centre (7)	Large scale centre	13,803560	,248
Type of shopping centre (8)	Neighbourhood shopping centre (5-25 shops)	19,224755	,103
Type of shopping centre (9)	Neighbourhood shopping centre (25-50 shops)	22,839397	,058
Type of shopping centre (10)	Other	0 ^b	.
Time		1,691370	,000
Time*Time		-,048461	,000
Retail sales		,100432	,001
Gross domestic product		,774205	,000
Number of contracts		,164099	,150

Table 17 Estimates and the subcategories per variable (summary)

Chapter 3 provided an equation for the calculation of the net rental income. This equation can predict the net rental income for retail for daily shopping centers. When using the found variables as input, the following equation can be found:

<p>Net Rental Income = $37,108^b - 10,12(\text{ENTRE_CHAR_IN}=\text{good/reasonable}) - 0^b(\text{ENTRE_CHAR_IN}=\text{mediocre/poor}) + 1,097(\text{PAV_MAT}=\text{Concrete}) + 12,26(\text{PAV_MAT}=\text{Mixed use}) + 15,16(\text{PAV_MAT}=\text{permeable paving}) + 0^b(\text{PAV_MAT}=\text{natural stone}) + 23,25(\text{IN_OUTDOOR}=\text{INDOOR}) + 0^b(\text{IN_OUTDOOR}=\text{OUTDOOR}) + 30,72(\text{LOCATUS_TYPE}=\text{City quarter shopping centre (>50shops)}) + 20,80(\text{LOCATUS_TYPE}=\text{Core shopping area L (200-400 shops)}) + 22,39(\text{LOCATUS_TYPE}=\text{Core shopping area S (100-200 shops)}) + 32,22(\text{LOCATUS_TYPE}=\text{Inner city shopping street}) + 26,97(\text{LOCATUS_TYPE}=\text{Inner city: 400 shops}) + 13,80(\text{LOCATUS_TYPE}=\text{Large scale centre}) + 19,22(\text{LOCATUS_TYPE}=\text{Neighbourhood shopping centre (5-25 shops)}) + 22,84(\text{LOCATUS_TYPE}=\text{Neighbourhood shopping centre (25-50 shops)}) + 0^b(\text{LOCATUS_TYPE}=\text{Other}) + 0,10(\text{RETAIL_SALE}) + 0,77(\text{GDP}) + 0,16(\text{NR_CONTRACT}).$</p>

1. 0^b ; the grand means of the model as found in SPSS

5.2 Conclusion

At the start of the research many experts in the field referred to location as the main criterion for the acquisition of retail real estate. Although expert in the interviews emphasize the importance of location features, this research shows that building features are also highly relevant to the financial performance of shopping centres for daily shopping.

The result showed, as expected, that retail sales, GDP and the number of contracts have a positive effect on the net rental income. A higher number of retail sales is similar to a high consumer spending. More consumer spending will increase the return of retailers. The number of contracts (number of retailers) reflects the extent to which a shopping center can answer consumer demand.

Furtermore, an inner city shopping street has a strong impact on the net rental income compared to large scale centres. The number of shops seems to differ only a little. A city quarter shopping centre with over 50 shops (Estimate = 30,72) seems almost comparable to an inner city shopping street (Estimate = 32,22).

Finally, the final model showed the importance of the charisma of entrance inside for the financial performance of retail. A good or reasonable charisma of the entrance inside has a positive impact on the financial performance. Another positive impact regarding location experience is the material of pavements. Permeable pavements seem to be best suited for a shopping center. Concrete, natural stone and mixed use are outperformed by permeable pavement. But difference between the estimation of mixed-use (Estimate = 12,26) and permeable pavements (Estimate = 15,16) are small. An indoor shopping center is linked to a better financial performance compared to outdoor shopping.

6. Discussion

The purpose of this research is to provide information on the significance of building features for shopping centres. This research started with the observation that the economic recession and e-commerce are a threat to the returns of investors and the financial performance of their properties. Investors use a set of decision criteria for the acquisition of retail real estate. This set of decision criteria must be adapted to the many changes. Many experts consider location as more important than the features of the building itself, which is caught in the one-liner “location, location, location”. However, it may well be that physical building features attract visitors and consumers, but to this day this has not well been investigated. Previous research using the offices portfolio of NSI by Gijsselaar (Gijsselaar, 2010) and Kuyper (Kuyper, 2013) showed that the physical building features were indeed more important than thought. Therefore, the following hypotheses is determined:

“Building features are of such importance to the net rental income of a retail property that it needs to be considered as a decision-making criterion in the acquisition of an institutional real estate investor.”

The financial performance of shopping centres is best reflected by the net rental income, since it cannot be artificially manipulated. Data were collected for a period of 28 subsequent quarters, starting the first quarter of 2008 until the fourth quarter of 2014. Regression analysis and mixed modelling was used to analyse the data and to find the relative importance of building, location, tenant, consumer and economic features in explaining variations in net rental income of the NSI retail properties. Results were corrected for economic fluctuations over time. The findings provided evidence in support of the hypothesis that building features were indeed important. The results of the random effects modelling showed that the charisma of the entrance inside, the pavement materials and whether the shopping centre was an indoor centre or not were important building features to the net rental income. The better performance was found for an entrance with a good or reasonable charisma and for shopping centres with permeable or mixed-use pavements relative to concrete or natural stone. The indoor retail properties also outperformed the outdoor retail properties. Only one-location feature was found to be included in the final model, being type of shopping centre. The best performing locations were the inner shopping centres and city quarter shopping centres with more than 50 shops but less than 100 shops. The number of contracts, being a tenant feature, added also to better describing the variations in net rental income of the retail properties. In the final model, the number of contracts was no longer significantly related to the net rental income, but it was found to improve model fit because of its correlations with the other variables in the model. After correcting for economic fluctuations, the model

was further corrected for economic influences by including the level of the retail sales and the gross domestic product.

6.1 Results: Building features

The variables of the various themes were tested for relevance for the financial performance of shopping centres. Regression analysis and mixed modelling is used to show the significant effects.

A large set of criteria was found to be relevant for the financial performance. Consumer experience seems to be an important factor for retail based on the significant features. Variables like the charisma of the entrance, in/outdoor shopping and the type of shopping centre confirm this. This also confirms earlier statements by Vierkant and Brenninkmeijer on locations as experience, (Vierkant & Brenninkmeijer, 2014). Type of shopping centre considered as location feature in this case.

Accessibility and parking were considered important location variables related to the type of shopping center in the research by Syntrus Achmea (Syntrus Achmea Real Estate & Finance, 2014). But results showed that parking and accessibility were not relevant to the financial performance of retail. That is, other location features were more important and may indirectly address the accessibility of parking space, the availability of parking space and parking fee. Literature on parking fee showed contradicting results. Parking fee was considered very important in literature by Platform Detailhandel Nederland (Platform Detailhandel Nederland, 2009), but seems less important according to research by Van Meerkerk et al. (van Meerkerk et al., 2008). The result is thus similar to the result presented by Van Meerkerk et al. A possible explanation for the insignificance of the variable parking fee seems that the strategy for parking does not differ for shopping centers. Removing the variable parking fee from the model increased the significance of the type of shopping center (from $p=0.017$ to $p=0.007$). This implies that the variable parking fee is indeed addressed by type of shopping center. Moreover, the acquisition strategy of NSI primarily focuses at type of shopping center. The parking facilities may be considered as secondary to the type of shopping center.

Shopping centers are distinguished between different types of shopping centers and shows the relevance between the size of the shopping center and the financial performance. It is clear that shopping centers with a large number of stores and units will produce higher returns. Consumer demand may be best reflected by number of contracts. It is thought that a large number of stores with a large variety attract more consumers. The type of retail in the shopping center combined with the size of the shopping center addresses the demand of consumers.

At first, consumer features seem to be less relevant to net rental income. But indirectly some regional features account for consumer features. The number of sales nationally and the online sales reflect the consumer spending pattern and spending power. The final model showed that the number of sales and the online sales positively affect the financial performance. It shows that sales are important for a high return for the investor and for attracting tenants.

Finally, the age was expected to impact the building's performance. The result from the final model revealed no significant effect of the variable age on the building's financial performance in the presence of other features. Multiple theories exist regarding the relationship between the age of properties and retail. It is assumed a larger capital is invested into retail. The maintenance costs for retail are considered to be much higher than for offices. Maintenance takes place more frequently for retail. A reason that no age effects were found could be that maintenance is accounted for by using net rental income as the outcome measure. A shopping center cannot be outdated, as it will lower its attractiveness and indeed some building features addressing the attractiveness of the retail properties were indeed found significantly related to the net rental income.

6.2 Implementation

The purpose of this research was to find building features that can improve the acquisition strategy of institutional real estate investors. The result must be translated to form an advice for investors.

The variables with a significant effect for the building's performance form a checklist for the acquisition of retail real estate. A retail property needs to be checked for each variable. According to this research, the optimal shopping centre has a good or reasonable charisma of the entrance at the inside. The main material of pavement must consist of permeable pavement. To top it off, the shopping centre needs to be an indoor inner-city shopping centre or an indoor city quarter shopping centre with over 50 shops. A retail property consisting of all features as presented in the final model, is considered to be the optimal shopping centre.

Table 19 presents two shopping centres from the portfolio of NSI. The portfolio of NSI does not possess a full optimal shopping centre. There for, as a second best, a shopping centre is chosen that meets the most variables. Shopping centre Sterpassage has most of the characteristics of an optimal shopping centre, while shopping centre Hardonk is the opposite.


	Sterpassage, Rijswijk	Hardonk, Deventer
		
The charisma of the entrance inside	Reasonable	Mediocre
Material of pavement	Permeable pavement	Concrete
Indoor or outdoor	Indoor	Outdoor
Type of shopping center	Core shopping area L 200-400 shops	Neighbourhood shopping centre 5-25 shops

Table 18 The optimal property

6.3 Comparison with offices

This research on building features for retail properties is highly unique because it used the net rental income. Many qualitative and quantitative studies on location experience and the attractiveness of the shopping centre can be found. But to date, the current approach to retail has not been found in literature. The main difference of this research and other researches is the use of sensitive business information like the net rental income and the fact that this research is conducted for the Dutch Market. A research with a similar goal is the research by Tauw (Tauw, 2014). Tauw also focused on the effects of different variables on the property's performance, but unlike the present study did not use net rental income and also did not include building features. Tauw only used locational features and did not use time series. Instead he used cross-sectional data (without a long time window) and therefore cannot conclude on the causality of the relations.

If we only consider the aspects building feature and mixed modelling (random), the report by Gijsselaar (Gijsselaar, 2010) and Kuyper (Kuyper, 2013) are considered to have the same goal. A big difference is that their research focused on offices. The results of the research by Kuyper revealed that the following variables were decisive for offices:

Economic cycle	Locational features	Building features	Dependent variable
TIME*TIME	Distance public transport	Entrance charisma inside	Net rental income per square meter
TIME	Number of residents	Building type	
		Using typology	
		Flexibility	
		Number of floors	

		Age	
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Table 19 Relevant features as recognized by Kuyper (Kuyper, 2013)

This research showed a set of variables that are significant for the financial performance of retail. The following variables are considered to affect the financial performance:

Economic cycle	Economic and regional market features	Location features	Building features	Tenant features	Dependent variable
TIME*TIME	Retail sales	Type of shopping center	Entrance charisma inside	Number of contracts	Net rental income per square meter
	Gross domestic product		Indoor or outdoor shopping		
			Pavement material		

Table 20 Relevant features for retail

Both the current research and the research of Kuyper and Gijsselaar used net rental income, but for the financial performance the differences in type of properties need to be addressed. Offices are considered to be working spaces in which employees remain for a certain time. It is the obligation of the employee to be present at the office. Retail stores are considered to be short stops for consumers. Consumers buy products and leave. They have no obligation to remain in the store.

Still, some variables were found to be significant in explaining the financial performance of both offices and retail. For both offices and retail the financial performance was found to be affected by the charisma of the entrance inside. This can be explained as the demand for experience and attractiveness of both retail properties and offices. This study corroborates the previous findings that building features also seems to be less relevant, even after adjusting for economic influences.

It can be concluded that, based on this short analyses, retail and offices share similarities. But these similarities must be interpreted differently as retail and offices have different functions and use. The awareness of the differences between the acquisition of retail and offices are low among experts. Based on the findings, people should be more aware of the different use of retail and offices.

6.4 Recommendations

This research has revealed new information on retail portfolios but still has limitations. Further research on several topics is needed to confirm the outcomes of this research.

The first recommendation is to repeat this research after three or five years. By repeating this research, the timeframe can be expanded. A longer timeframe can better the reliability of this research. Furthermore, economic fluctuations (cycles) will become more visible. This research was conducted for a time frame of 6 years. If this research is repeated after 3 years, a time frame of 9 to 10 years can be achieved.

Secondly, when repeating this research, using the portfolio of NSI is certainly an option. The consistency will make information more reliable. But by analysing a new real estate portfolio new data can be collected and maybe new results can be found. For example, this research does not take in the northern part of the Dutch market, as NSI does not possess retail properties in Drenthe, Groningen or Friesland. A new research with a new portfolio covering the entire Dutch market is therefore recommended. Extending the research with the distance to other shopping centres, for instance shopping centres for leisure is also advised.

And finally, the sustainability of retail properties is still hard to define. The portfolio of NSI did not provide information on the sustainability. NSI leases its properties to tenants being empty without interior. The impact of sustainability has thus not been taken in for this research. At this moment, it is not yet possible to determine the effects of sustainability on retail real estate. Such might be possible in a couple of years.

7. Conclusion

The goal of this research was to determine the influence of building features on the net rental income and financial performance. The purpose is to provide tangible advice on acquisition strategies based on solid and sound analysis. The pre-determined hypotheses is:

“Building features are of such importance to the net rental income of a retail property that it needs to be considered as a decision-making criterion in the acquisition of an institutional real estate investor.”

The end result presented in this research reveals that building features are important as decision criteria. Expectations about the use of building features as decision criteria were confirmed. Several variables showed to affect the building's financial performance. These variables can be used to improve the current acquisition strategy of a real estate investor.

The confirmation of the importance of building features does not mean that location is not relevant for this research. Earlier variables found by Kuyper for offices also consisted of locational features. For retail, the significant variables also include the type of shopping centre for the group locational features.

The found variables consist primarily of external features like charisma and material of pavement. Possible explanations for the significance of these variables are the use of physical stores and retail. Attracting consumers is still considered the main goal of retailers. If we compare this to the variables of offices, it can be determined that offices are more focused on the use. Office users will come and remain for short period of time in the building.

The difference between office and retail are important to be aware of. A lot of experts in the field still consider the acquisition criteria for both offices and retail as the same. The comparison between variables shows a significant difference in use and goal.

This research was limited to the portfolio of NSI. This research can be repeated for other real estate portfolios as findings in this report can be confirmed. But when this research is conducted once more, one must keep in mind that research on the financial performance of retail and building features are scarce. Much data is thus yet unavailable.

8. Reflection

A year ago, I started looking for possible subjects for my thesis. By engaging into conversation with many experts in the field and teachers I acquired great ideas. Eventually I chose a subject related to portfolio management and finance. The reason for choosing this subject is my interest in real estate finance, market analysis and investment.

I started off with a lot of great ideas and definitely wanted to use quantitative research methods. My first intention was to map missing data to increase the performance of real estate portfolios. Soon I realised that I needed to look at the end-user and single buildings instead of entire portfolios. I started to read literature on end-users and found existing studies on building features. Finding these studies marked the start of my own research on building features.

As I mentioned earlier, I definitely wanted to use quantitative research methods. I wanted to yield tangible results using a quantitative approach. Learning and understanding quantitative research was a big challenge because I just started to use SPSS. Furthermore, I also needed to collect sensitive business data and a wide range of technical data from an existing real estate portfolio. NSI was found willing to provide the necessary data for this research. Collecting data at NSI turned out to be the biggest task of this study. I have spent many hours collecting data from the databases and the archives. Once the data was collected, the data needed to be restructured and revised for usage.

Another obstacle was the availability of data. I assumed in earlier phases that all data would be available at NSI. But this turned out to be not the case. A visit to Locatus and FGH Bank turned out to be the answer.

This graduation project has helped me gain knowledge on real estate investments, retail real estate and the Dutch market. The internship at NSI and the interviews enabled me to look behind the scenes at real estate investors. I would recommend future graduate students to challenge themselves and to conduct research outside of the university. A professional environment can be highly educational and can help a student develop the necessary abilities for future jobs. Personally I experienced the internship as the perfect opportunity to slowly bridge the gap between the university and the corporate world of real estate.

During the graduation process I have gained a lot of knowledge and I have grown on a personal level. The graduation process provided a great experience and a good preparation for future challenges. I hope that many future students will experience a similar graduation process as I had.

9. Definitions

CBS

Centraal bureau voor statistiek

AIC

Akaike's information criterion

Dependent variable / independent variable

The independent variable is the variable that is manipulated by the researcher (cause) and the dependent variables is the response measured (effect)

Direct return

A percentage value for the total return that is created by an operation's income from property, a fund or an account. In case of real estate the direct returns are reflected by the properties rental income.

Diversification

A management technique that mixes a wide variety of securities within one portfolio

Due diligence

The investigation or audit of potential investments before entering a potential agreement or transaction. A confirmation of the facts regarding a possible sale.

Hedge

A hedge is a position established in one market in attempt to offset exposure to price fluctuations in some opposite position in another market with the goal of minimizing one's exposure to unwanted risk

Independent / dependent variable

In an experiment, the independent variable is the variable that is varied or manipulated by the researcher. And the dependent variable is the response that is measured. An independent variable is the presumed cause, whereas the dependent variable is the presumed effect.

Indirect return

The increase in an asset's market price, also called capital appreciation or gain

Lagging

A valuation error caused by appraisers using old comparables that fail to mirror market conditions at the time of the appraisal.

Listed Fund

Listed funds hold and manage portfolio of assets on behalf of their investors and can include a variety of assets. Buy and sell decisions are made by an investment professional.

NRI

Net rental income; Total income from a property minus the costs and necessary operating expenses

P-value (P)

A measurement for the significance of a regression variable found in the regression output. It represents the probability that the regression coefficient for the variable in question is actually 0.

Smoothing

In the context of appraisal-based property series this is an under-measurement of 'true' variance. Or bias of time series second moments towards zero

Standard deviation

The square root of the variance. A measurement of dispersion of a set of data from its mean

Total return

This is the sum of the income return and the capital growth. Total return is generally considered a better measure of an investment's return than income return alone

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12. Appendices

12.1 Interviews with experts in the field

The following steps or protocol was completed for the interviews:

1. Goals of this research
2. Establishing the main goals of the interviews
3. Relevance to this research
4. How to reach these goals
5. Selecting the companies and experts
6. Interview approach (preparation)
7. Interviews (talking to experts, approach, interpretation)
8. Results
9. Closure (Ending and verifying interviews)

The participants of the interviews:

Company	Fund Type	Sector
A	Dutch listed real estate fund	Retail, housing and offices
B	Listed real estate fund	Retail
C	Pension fund	Retail, housing and offices
D	Dutch association for retailers	Retail
E	Listed real estate fund	Retail and offices

12.1.1 Interview framework

1. Formaliteiten (5 min.)

- Toestemming voor opname en verwerking in verslag (publicatie voor afstudeerwerk; Naam en bedrijf informant vermeld in verslag, maar niet specifieke informatie of uitspraken van de informant)
 - (Anonimiteit en vertrouwelijke informatie aangeven indien van toepassing)

2. Introductie interview

- Iets over mijzelf (Wie ben ik? Wat studeer ik? Etc.)
- Uitleg onderzoek (Wat is het onderwerp? Wat onderzoek ik? Wat is het eindproduct?)
- Doel (en aard) van het interview
 - Selectie te interviewen experts (op basis waarvan?)
 - Uitleg homogeniteit interview (structuur etc.)
 - Tijdsduur +/- Uur (en een kwartier)

3. Introductie te interviewen persoon (5 min.)

- Wie bent u? (Naam, bedrijf/instelling, achtergrondinformatie)
- Functieomschrijving, loopbaan, werkzaamheden

A. Aankooptraject (acquisitie van winkelveastgoed algemeen) (10 min.)

- Kunt u een beschrijving geven van het aankoopproces van een winkelpand / winkelcentra?
- Wat zijn motieven voor een nieuwe aankoop van een winkelpand / winkelcentra?
- Hoe wordt er geselecteerd?
- Welke rol spelen de huidige economische omstandigheden hierbij? (voor winkelveastgoed)
- Welke informatie is er beschikbaar bij het selecteren van panden?
- Hoe kieskeurig kun je zijn bij het selecteren van potentiële panden?

B. Beslissingscriteria (20 min.)

- Welke beslissingscriteria worden er momenteel door u gehanteerd bij de selectie van aan te kopen panden? (Fysieke- en non-fysieke eigenschappen van winkelveastgoed)
- In hoeverre speelt bedrijfsstrategie hierbij een rol? Kunt u hier een voorbeeld van geven?
- Naar welke fysieke kenmerken van een pand wordt er gekeken (voor winkelveastgoed)?
- Hoe grote rol speelt gevoel bij een beslissing? En waar is dat gevoel op gebaseerd?
- Zou u een indeling kunnen maken van rationele en irrationele beslissingscriteria?
- Als eerste indruk een criterium is, welke aspecten zijn hiervoor dan bepalend denkt u?

C. Importantie van gebouwkarakteristieken (15 min.)

- Kaarten met gebouweigenschappen op volgorde van importantie plaatsen door informant

D. Behoeftte aan informatievoorziening omtrent beslissingscriteria (10 min.)

- Ik doe onderzoek naar de fysieke gebouweigenschappen als beslissingscriteria voor de aankoop van winkelpanden of winkelcentra voor een belegger; welke fysieke eigenschappen hebben een positieve/negatieve invloed op de prestatie van een pand (winkelveastgoed) volgens uw ervaring?
- Welke fysieke eigenschappen zouden nog meer een onderscheidend vermogen kunnen hebben gezien de (financiële) prestatie van een pand? (nog niet opgenoemde gebouweigenschappen)
- Is er behoefte om meer over het onderscheidend vermogen van de fysieke eigenschappen van een pand en specifiek winkelveastgoed te weten?

4. Afsluiting

- Afsluiten (alles is gevraagd)
- Eventuele vragen vanuit de informant
- Uitleg wat er met de informatie gebeurt
- Controleer contactgegevens voor mogelijk toekomstig contact indien nodig.
- Danken voor de tijd en de moeite

12.1.2 Online questionnaire (Dutch)

Afstudeeronderzoek - Online Questionnaire

Voor u is een vragenlijst met betrekking tot een onderzoek naar de invloed van fysieke en non-fysieke gebouw-eigenschappen. Dit onderzoek wordt verricht in het kader van een afstudeeronderzoek aan de TU Delft.

Deze online vragenlijst bevat vragen met betrekking tot verschillende eigenschappen van winkelcentra in het bezit van NSI. Bij deze online questionnaire draait het vooral om waarde toe te kennen aan fysieke en non-fysieke eigenschappen. Het gaat hier om uw eigen beoordeling van de gebouw-eigenschappen op basis van uw professionele expertise en ervaring. Met uw expertise en ervaring hoop ik te kunnen bepalen hoe belangrijk gebouw-eigenschappen zijn en welke gebouw-eigenschappen het meeste invloed hebben op het rendement van winkelvastgoed.

Bij voorbaat dank voor uw medewerking en tijd.

* Required

1. Initialen en achternaam van de participant *

.....

2. Titel / functie *

.....

3. Aantal jaren actief in het vastgoed *

.....

4. Onderdeel van... *

Mark only one oval.

NSI

MVGM

Bouwmeester

Other:

NL 112 - Naam winkelcentra

Adres winkelcentra

5. Gevelmateriaal *

Hoofdmateriaal van de gevel van het winkelcentrum (niet de ramen)
Mark only one oval.

- Glas
- Baksteen
- Pleisterwerk
- Natuursteen
- Beton
- Metaal
- Verschillende materialen
- anders...

6. Vorm van de gevel van het winkelcentrum *

Hoe ziet de gevel eruit?
Mark only one oval.

- Rechthoekig
- Scherpe hoeken
- Ronde vormen

7. Eenheid van de gevels van het winkelcentrum *

Mark only one oval.

- Hoge mate van eenheid
- Redelijk mate van eenheid
- Matige eenheid
- Geringe eenheid

8. Materiaal van de vloeren of hoofdpaden in het winkelgebied *

Mark only one oval.

- Mix van materialen
- Asfalt
- Beton
- Natuursteen
- Stoeptegels (steen)

9. Uitstraling van het gehele winkelcentrum in het algemeen *

Mark only one oval.

- Goed
- Redelijk
- Matig
- Slecht

10. Uitstraling ingang *

In geval van niet overdekte winkelcentra dient gekeken te worden naar het punt(en) waar je het gebied binnenkomt (rijden)

Mark only one oval.

- Goed
- Redelijk
- Matig
- Slecht

11. Uitstraling uitgang *

In geval van niet overdekte winkelcentra dient gekeken te worden naar het punt(en) waar je het gebied verlaat

Mark only one oval.

- Goed
- Redelijk
- Matig
- Slecht

12. Lichtkwaliteit van het winkelcentrum *

Mark only one oval.

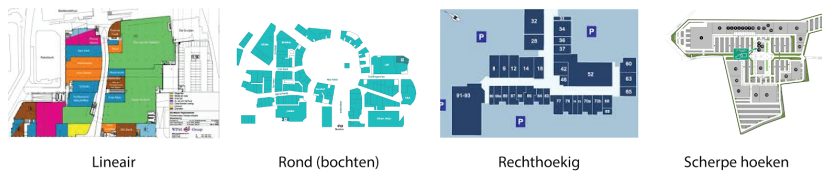
- Goed
- redelijk
- matig
- Slecht

13. Plattegrond van het winkelcentrum (Layout) *

Zie onderstaande plaatjes voor voorbeelden van de opties

Mark only one oval.

- Linear
- Rond (bochten)
- Rechthoekig
- Scherpe hoeken



14. Aantal zichtlijnen vanuit de algemene (hoofd-) ingang van het gebied of winkelcentrum *

Mark only one oval.

- 1
- 2
- 3
- 4
- 5
- Other:

15. Flexibiliteit in de plattegrond van het winkelcentrum (Layout) *

Mark only one oval.

- Goed
- Redelijk
- Matig
- Slecht

16. Onderhoud van het gehele winkelcentrum *

Indien van toepassing: Het gaat hier om het deel in het bezit van NSI
Mark only one oval.

- Goed
- Redelijk
- Matig
- Slecht

17. De omgeving van het winkelcentrum *

Mark only one oval.

- Kantorenpark
- Industrierrein
- Stadscentrum
- Woonwijk

18. **Het gebied is het best toegankelijk met: ***

Mark only one oval.

- Auto
- Openbaar vervoer
- Fiets
- Lopend

19. **Bijzonderheden van de winkelcentra indien aanwezig**

.....

.....

.....

.....

.....

12.1.3 Summary of the different interviews with experts (Dutch)

Interview persoon - bedrijf	A	B	C	D	E
Beslissingscriteria					
Economical and regional market features					
Vacancy rate of retail property (m ² per year in the regional market)	Gevaar, omdat er te veel vierkante meters leeg staan en online winkelen in opkomst is. Er is veel te veel bijgebouwd de afgelopen jaren.		Het winkelaanbod is niet parallel aan de economische omstandigheden. Op het moment dat het goed gaat, wordt er niet automatisch panden aangekocht. Als het minder gaat met de economie, komt er meer aanbod op de markt.		
Absorption rate of retail property (m ² per year in the regional market)					
Locational features					
Position towards "Randstad" area (where is the area located?)	De locatie van winkelgebieden in Nederland is fijnmazig. Elke buurt heeft zijn eigen winkelcentra voor dagelijkse boodschappen.			Panden in de Randstad lopen het minst risico	
(Level of) urbanisation (classification)				Hetzelfde als het aantal passanten	
Number of residents (neighbourhood)	Krimp zorgt ervoor dat verzorgingsgebieden steeds kleiner worden en daardoor verdwijnen veel kleine winkeltjes in kleine winkelgebieden.				Een verzorgingsgebied moet minstens 15000 inwoners hebben; het aantal inwoners is bepalend voor de koopkracht in een gebied.
Typology surrounding the property	De locatie in de wijk is erg belangrijk. Dat bepaalt de zichtbaarheid en de bereikbaarheid vanuit andere voorzieningen zoals het openbaar vervoer.			Ligt het naast een weg?	
Accessibility (best option to reach area)					
Distance to public transport in km (subway, tram, train)	Mensen gaan liever met de auto, fiets of lopen.	Zijn even belangrijk als je in het centrum zit.			Er bestaat een kans dat bezoekers afvloeien naar andere winkelcentra (positief en negatief)
Number of parking spaces					Een tekort kan een consument naar een andere winkelcentrum leiden
Parking fee	Betaald of gratis? Vooral voor wijkwinkelcentra is dit belangrijk. Als een consument boodschappen doet, wil hij niet betalen voor het parkeren. Alleen bij een dagje uit wordt vaak parkeerkosten meegerekend door de consument.			Wordt het parkeertarief beïnvloedt door de aanwezige bedrijven of door de gemeente? Invloed van de gemeente kan nadelig zijn. Belangrijk in Nederland zijn ook de stallingen voor fietsen.	
Competition with surrounding retail (percentage of the same branch)	Belangrijk is niet alleen de huidige concurrentie, maar ook toekomstige projecten in de directe / indirecte omgeving.	Dit hangt af van de locatie omdat een A1 locatie automatisch minder concurreert met een A2 locatie. Investeren alleen in winkelcentra met een voorbepaald aantal units. Zij investeren voornamelijk in winkelcentra op primaire locaties. Locatie en omvang zijn verbonden aan elkaar volgens			
Size of the shopping area	Consumenten gaan steeds vaker naar een gebied met een grotere winkelconcentratie. Kleine winkelconcentraties zijn vaak niet toekomstbestendig. Belangrijk is ook of het winkelcentrum uit allemaal kleine units bestaat of uit enkele grote units.			Wie er naast het pand zit of de omgeving wordt gezien als de verklarende factor waarom mensen langs een pand lopen.	De grootte van een winkelcentra bepaalt deels de keuze
Number of visitors per year (pedestrian flow)		Vindt locatie belangrijk omdat een winkelcentra met veel units op een slechte locatie, veel bezoekers kan aantrekken.		De passantenstroom neemt de laatste jaren af. Dit heeft ertoe geleid dat er minder gekocht wordt, minder omzet en minder winkels. Massa is kassa, maar bezoekers zijn niet automatisch consumenten.	

Influence of government policy	Interne processen (regels), gemeentelijk / overheidsbeleid zijn vaak belangrijk. Beleid van overheden wordt op lokaal niveau bepaald zonder afstemming met ander lokale overheden (geen regionale afstemming).			Het beleid van de gemeente beïnvloed de openingstijden en de tijd waarop bevoorrading mag plaatsvinden (gebouw bereikbaar voor vrachtwagens)	Invloed van de gemeente is over het algemeen belangrijk
Building features					
Age (year)	De gebeurtenissen rondom het pand is belangrijk. Bijvoorbeeld renovatie.			Is gelijk aan onderhoud	Leeftijd bepaalt de hoogte van de servicekosten
LFA					
LFA/GFA ratio					
Number of floors	Meerder verdiepingen in winkels zijn niet gewenst.			Minder belangrijk omdat huurders vaak de verschillende verdiepingen niet kan benutten	Meerdere verdiepingen werkt niet
Average LFA per floor					
Mixed use of (Multiple) functions in the building	Multi en single tenant zijn eigenschappen die meer passen bij kantoorgebouwen.	Multi en single tenant zijn eigenschappen die meer passen bij kantoorgebouwen		Mensen komen graag op plekken waar meerdere functies zich bevinden en blijven langer als er bijvoorbeeld een mix is van food en cultuur.	
Type of façade material (Visibility and colour)	Materiaal is belangrijk omdat je de bezoekers zo lang mogelijk in het winkelcentrum wilt houden. De kans is dan groot dat zij meer besteden.(comfort)	Onderdeel van de "look and feel" en aantrekkelijkheid		Eerste indruk	
Shape of buildings footprint					
Shape of buildings facade				Eerste indruk	
Charisma of entrance inside					
Charisma of entrance outside		Onderdeel van de "look and feel" en aantrekkelijkheid		Eerste indruk	
Free standing					
Location of a single unit in the shopping centre				Winkels moeten zich in het winkelcentra bevinden voor een goed rendement.	
Energy label (Sustainability)	Bij vernieuwingen of onderhoud wordt er gekeken naar duurzaamheid en wat het opbrengt. Indien de servicekosten omlaag kunnen, kan het huurcomponent hoger. Maar winkels staan voornamelijk open en zijn dus niet duurzaam.				
Using typology					
Spatial layout	De opzet van het winkelcentrum is belangrijk (de routing).	Onderdeel van de "look and feel" en aantrekkelijkheid			Mensen moeten een 8je kunnen lopen; bij te lange plattegronden kunnen mensen omkeren
Flexibility in the layout of the property	Tegenwoordig veranderen veel panden van bestemming. Flexibiliteit is belangrijk bij het samenvoegen van units zodat je met de juiste aantal m2 de juiste retailers kunt aantrekken.				Is een value add eigenschap
Condition of the shopping centre (maintenance)	Onderhoud is erg belangrijk; Hoe is de bouwkundige staat van het pand? Hoe is de grond onderhouden? Op basis van een due diligence analyse kan de koop / verkoopprijs worden aangepast.	Onderdeel van de "look and feel" en aantrekkelijkheid	Een achterstallig pand is te overkomen indien de prijs aangepast wordt en het pand potentie heeft.		
Cost of maintenance (€ per year)		Kosten zijn belangrijk omdat er vooral gekeken wordt naar het financiële plaatje en het rendement. Bij alle investeringen moet op het eerste plaats het rendement opwegen tegen de kosten. Vooral de transactie kosten zijn belangrijk.			
Indoor (or outdoor) shopping area					
Width of the street in meters		Onderdeel van de "look and feel" en aantrekkelijkheid		Heel erg zacht	Outdoor wordt gezien als succesfactor
Material of pavements (colour and structure)					

Window size / visibility (window shop in m ²)		Onderdeel van de "look and feel" en aantrekkelijkheid		Hoeft niet perse aan de breedte of grootte te liggen.	
Roof opening / Window					Meer ramen betekent meer onderhoud
Lighting quality					
Available retail space (m ²)	Hanteert een minimum 6000 m ² bij aankoop van panden, omdat deze panden toekomstbestendig zijn en bij de omvang van hun portfolio past.		Te weinig m ² kan een probleem zijn.		
Type of retail (function)		Onderdeel van de "look and feel" en aantrekkelijkheid,			Een goede mix zorgt voor een dynamisch winkellocatie
Type of shopping centre / area	Boodschappencentra aantrekken veel mensen. Belangrijk is een goede wijk, een goed verzorgingsgebied en twee supermarkten.			De consument bereid zich steeds beter voor op het type winkelcentra.	
Rent level					
Percentage vacancy in a building					
Tenants					
Number of contracts					Aantal contracten = aantal huurders
Number of tenants	Er zijn twee soorten huurders: Kleine zelfstandige ondernemers en grote winkelbedrijven. Een groot aantal zelfstandige ondernemers is minder gewenst door de risico op leegstand.				
Type of tenant	Er worden veel concessies gemaakt (incentives) om de juiste huurder aan te trekken.		Retailers kunnen ook in panden gaan zitten omdat er geen keus is. Dit onderzoek is meer relevant bij veel aanbod.		Lokaal/landelijk, dagelijks/niet-dagelijks
Average duration of contracts	Verhuurders zoeken zekerheid in de lengte van contracten. De lengte van contracten bepaalt mede de hoogte van de koopprijs en de incentives voor huurders. De meeste huurders kiezen voor een twee jarig contract.				Heeft invloed op de prijs van het object
Sales (Gross income)					
Rent level					Als een retailer nu al te veel huur betalen, weet je dat de huur in de toekomst zal dalen.
Consumer features					
Age (life phase, CBS)			Besteding is steeds minder afhankelijk van de leeftijd.		
Spending pattern	Mensen geven minder uit.			Is moeilijk definieerbaar doordat de mensen de hele dag door verandert van type.	Online/offline
Average income in the area			Belangrijk, maar zegt niets over de uitgaven van een huishouden		Opleidingsniveau is hetzelfde of indirect een effect
Number of car owners in the area				Achterhaald, tegenwoordig woont de jongere generatie steeds vaker in de stad.	Niet direct relevant
Employment (%)				Is gerelateerd aan het komen.	Average income is hetzelfde
Household composition					
Educational level				Is gerelateerd aan het komen.	Inkomen is hetzelfde of indirect een effect
Origin					Heeft invloed op de benodigde branchepatroon

12.2 Syntax final model (SPSS)

```
MIXED NIM2 by ENTRE_CHAR_INR PAV_MAT# IN_OUTDOOR#
LOCATUS_TYPER WITH TIME RETAIL_SALE GDP NR_CONTRACT
/CRITERIA=CIN (95) MXITER (100) MXSTEP (10) SCORING (1) SINGULAR
(0.000000000001) HCONVERGE (0,
ABSOLUTE) LCONVERGE (0, ABSOLUTE) PCONVERGE (0.000001,
ABSOLUTE)
/FIXED= ENTRE_CHAR_INR PAV_MAT# IN_OUTDOOR# LOCATUS_TYPER
TIME TIME*TIME RETAIL_SALE GDP NR_CONTRACT | SSTYPE (3)
/METHOD=ML
/PRINT=SOLUTION TESTCOV
/RANDOM=INTERCEPT | SUBJECT (ID) COVTYPE (ID)
/REPEATED=TIME | SUBJECT (ID) COVTYPE (AR1)
/EMMEANS=TABLES (ENTRE_CHAR_INR) COMPARE ADJ (LSD).
```

12.3 Results final model

Type III Tests of Fixed Effects^a

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	336,213	5,482	,020
Entrance charisma inside	1	49,505	8,704	,005
Pavement material	3	49,321	5,400	,003
Indoor or outdoor shopping	1	48,795	14,690	,000
Type of shopping centre	8	49,082	3,094	,007
Time	1	199,107	66,518	,000
Time*Time	1	202,221	36,571	,000
Retail sales	1	555,458	10,776	,001
Gross domestic product	1	691.729	28,349	,000
Number of contracts	1	126,959	2,095	,150

a. Dependent Variable: NIM2.

Estimates of Fixed Effects^a

Parameter	Values	Estimate	Std. Error	df	t	Sig.	95% Confidence interval	
							Lower bound	Upper bound
Intercept		-35,224023	14,413997	53,268	-2,444	,018	-64,131441	-6,316605
Entrance charisma indoor (1)	Good/Reasonable	10,115683	3,428756	49,505	2,950	,005	3,227120	17,004246
Entrance charisma indoor (2)	Mediocre/poor	^{0b}	0					
Pavement material (2)	Concrete	1,096950	6,184985	47,834	,177	,860	-11,339912	13,533813
Pavement material (3)	Mixed-use	12,264442	5,005213	49,056	2,450	0,18	2,206383	22,322502
Pavement material (4)	Permeable paving	15,159993	4,587049	50,448	3,305	,002	5,948659	24,371328
Pavement material (5)	Natural stone	^{0b}	0					
Indoor or outdoor shopping	Indoor	23,251495	6,066578	48,795	3,833	,000	11,058951	35,444038
Indoor or outdoor shopping	Outdoor	^{0b}	0					
Type of shopping centre (2)	City quarter shopping centre (>50shops)	30,722225	14,827966	47,605	2,072	,044	,902207	60,542243
Type of shopping centre (3)	Core shopping area L (200-400 shops)	20,802668	10,770435	49,768	1,931	,059	-832888	42,438225
Type of shopping centre (4)	Core shopping area S (100-200 shops)	22,388794	11,505703	47,583	1,946	,058	-750204	45,527793
Type of shopping centre (5)	Inner city shopping street	32,217144	11,544196	47,395	2,791	,008	8,998328	55,435960
Type of shopping centre (6)	Inner city: 400 shops	26,972676	12,141755	47,558	2,221	,031	2,554184	51,391169
Type of shopping centre (7)	Large scale centre	13,803560	11,788995	47,269	1,171	,248	-9,909270	37,516390
Type of shopping centre (8)	Neighbourhood shopping centre (5-25 shops)	19,224755	11,575765	47,761	1,661	,103	-4,052887	42,502396
Type of shopping centre (9)	Neighbourhood shopping centre (25-50 shops)	22,839397	11,747758	49,147	1,944	,058	-7,66817	46,445611
Type of shopping centre (10)	Other	^{0b}	0					
Time		1,691370	,207381	199,107	8,156	,000	1,282425	2,100314
Time*Time		-,048461	,008014	202,221	-6,047	,000	-,064262	-,032660
Retail sales		,100432	,030594	555,458	3,283	,001	,040338	,160526
Gross domestic product		,774205	,145408	691,729	5,324	,000	,488710	1,059699
Number of contracts		,164099	,113367	126,959	1,448	,150	-,060235	,388433

a. Dependent Variable: NIM2.

b. This parameter is set to zero because it is redundant.

This graduation thesis is part of the master Real Estate and Housing and is conducted at the Technical University of Delft. It describes the results of a research in the areas real estate management and building economics.

The subject of this thesis is the influence of physical and non-physical building features on the financial performance of retail real estate. The main question throughout this thesis is whether building features affect the net rental income and could be decisive for the acquisition of retail real estate by institutional real estate investors. The goal is to determine a set of building features that affect the net rental income.

To determine the importance of building features the real estate portfolio of NSI, a Dutch listed, is analysed using quantitative research methods. Building features used as real estate fund variables for this research are found through interviews with experts in the field and thorough literature study. In the end, a statistical model is created. This model is used to list building features, which is used to predict the performance of retail properties.