Tenant satisfaction and the investment performance of Dutch real estate

MASTER'S THESIS

Bouwmeester S.D.J. (Sven)

S4516443

University of Groningen

Abstract

The real estate industry is transforming into a more customer-oriented world. Real estate investors who engage in tenant satisfaction programs may benefit from higher tenant retention and a willingness to pay higher rents. However, the direct link between tenant satisfaction and the investment performance of a real estate investor is barely reviewed in the literature. This study provides new insights based on linking excess returns of institutional investment data and satisfaction ratings. The regression analysis of tenant satisfaction on excess returns suggests that no effect can be noticed. The following discussion provides arguments for this result that were not fully covered in the literature. Namely, modernization, high demand for premium buildings, and the acceptance of low returns for proper locations which may bring investor returns down, leading to insignificant regression results. Finally, a deeper inspection of the data indicates that dissatisfied clients tend to leave their property relatively more often, which has the potential to impact vacancy rates and investor returns.

Keywords: Tenant satisfaction, investor performance, direct excess return, real estate.

Colophon

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Version	: Final
Author	: S.D.J. (Sven) Bouwmeester
Student number	: S4516443
E-mail	: s.d.j.bouwmeester@student.rug.nl
University	: University of Groningen
Faculty	: Spatial Sciences
Study	: Real Estate Studies
Supervisor	: M.N. (Michiel) Daams
E-mail supervisor	: m.n.daams@rug.nl
Company	: Keepfactor
Company supervisor	: P. (Phil) Jonckheer
E-mail company supervisor	: phil.jonckheer@keepfactor.com
Date	: 10-08-2022

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Introduction

"Happy tenants stay longer" claim Payne et al. (1995, p. vii), who argue that the greater the level of satisfaction, the greater the likelihood that tenants will stay. Recently, retailers and businesses have focused pro-actively on customer satisfaction, which affects shareholder value and productivity (Eklöf et al., 1999; Anderson et al., 2002; Kristensen & Westlund, 2004). Also, within the real estate industry, tenant relationship receives more attention since it is identified as a business opportunity that can increase revenue, retention, and reputation (3R's) (RealService and EPRA, 2012). Moreover, competition has risen due to shorter commitment of leases over the years, which enforces tenant engagement since satisfied clients are much more open to renewal (Jonckheer, 2021). Finally, tenant satisfaction is included in "Social", which is part of the ESG-objectives[1] incorporated by many institutional investors (Chin et al., 2021).

Galster and Hesser (1981) describe satisfaction as fulfilled needs, aspirations, and abilities to achieve (commercial) goals. Therefore, many aspects can play a role when improving tenant satisfaction. For example, greater accessibility, improved building characteristics such as elevators or sun screening, and increased parking places may be effective. Moreover, aspects related to property management, like relationship management, communal services, rent collection, and property maintenance, are also important. Even the relationship with the property manager has the greatest impact on tenants' overall satisfaction during the lease term (Sanderson and Edwards, 2016). Sanderson (2016) describes that rather empathy, professionalism, responsiveness, and trustworthiness of the property managers are key determinants of tenant satisfaction.

In short, various aspects related to building features, the neighbourhood and the service from the property manager primarily determine whether a tenant is going to renew or not. Alternatively, dissatisfaction with a property is associated with a greater probability of considering moving (Gibler et al., 2014). The latter argument is important since real estate investors wish to maximize their profit and lease renewal helps to achieve this goal.

Lease renewal, or loyalty, was already integrated into the Service-Profit Chain theory in 1997 (Heskett et al.). The theory asserts that satisfied customers are usually more loyal to a service provider. "Assurance" (trustworthiness and professionalism), reliability of service, and value for money for rent and service charges were found to be essential determinants of loyalty (Sanderson and Edwards, 2016). In addition, the work of Kingsley Associates (2004) confirms that commercial tenants in the US are more likely to renew their tenancy contract when satisfied. So, satisfaction is considered a

[1] Environmental, social and governance objectives launched by the United Nations (UN, 2004).

precursor to loyalty in consumer behavior and, in the context of tenant behavior, lease renewal (Sanderson, 2019).

Furthermore, the "willingness to recommend", usually measured by a Net Promotor Score, is also important when discussing customer relationship (Reichheld, 2003). Research has shown that renewing residents are more likely to be willing to recommend their landlord (Sanderson, 2019). Therefore, willingness to recommend has a close relationship with renewal and loyalty. Also, it appears that comparable factors influence the willingness to recommend, such as the ease of doing business, relationship management, value for money and property management (Sanderson, 2019).

Finally, reducing tenancy turnover ("churn") is important for investors' profitability. As Gibler et al. (2014, p. 104) note, “When a tenant vacates a rental unit, the landlord incurs costs through search for a new occupant, refurbishment of the unit (painting, cleaning, decorating), and lost rent while the unit is vacant”. The latter argument is important since a fully occupied building (i.e. no vacancy) creates strong cash flows affecting investment performance for an extensive period (Gibler et al., 2014). Moreover, it appears that apart from lower vacancy rates and transaction costs, an excellent tenant relationship potentially enables the investor to charge premium rents (Sanderson and Devaney, 2017). For that reason, an exceptional investor performance might result from high tenant satisfaction, as depicted in appendix A1.

Within research, few studies were able to capture an exceptional investor performance based on tenant satisfaction. One of the first quantitative studies that focused on the relationship between apartment rent and professionalization was conducted in Florida by Sirmans & Sirmans (1992). Based on an analysis of rents, their study reveals that paying attention to customer service by a professional designation positively affects rent by $19 per month for residential real estate. Second, Westlund et al. (2005) show a small but positive correlation between total return and several factors related to occupier satisfaction. Third, Sanderson and Devaney (2017) reveal a positive relationship of 1.9% between benchmark outperformance and occupier satisfaction, meaning that the improvement of one single unit[2] in occupier satisfaction relates to an increase of nearly 1.9% in excess return. Although empirical evidence is limited, Jonkheer (2022) hypothesis that increasing tenant satisfaction leads to improved investor performance of real estate investors as depicted in appendix A2.

To verify this hypothesis, more work is urgently needed. A research gap arises due to the fact that earlier studies had a different methodology, were held for different segments or countries, or could be considered outdated (Sirmans & Sirmans, 1992; Westlund et al., 2005; Sanderson and Devaney, 2017). Hence, these findings are limitedly transferable to the Dutch commercial market, and for that reason, this study will provide new insights to the existing literature. Therefore, the following research

[2] Tenant satisfaction was measured on an ordinary scale, ranging from one to ten.

question is addressed: *What is the relationship between tenant satisfaction and investment performance of Dutch real estate?*

Several stakeholders within the real estate market might benefit from this research. First, an effect of tenant satisfaction on total returns could encourage institutional investors to involve in ESG-programs, in which tenant assessments are incorporated. Second, a positive relationship might benefit the tenants themselves, since the property manager's actions result in higher satisfaction, leading to increased well-being of employees, higher productivity, and, thus, more profit (Heskett et al., 1997).

Initially, this research investigates the tenant satisfaction scores of 110 buildings and their excess return. The methodology is similar to Sanderson and Devaney (2017), but the regression model applied in this research suggests that there is no empirical evidence to say that tenant satisfaction influences investor performance. Nevertheless, a discussion of the concepts explores the insignificant regression results. Moreover, a paired sample t-test provides new insights and advocates that happy tenants stay longer.

This research starts by explaining the statistical tests and their background in the methodology of chapter two. Then, the third chapter describes how the data is gathered and what kind of selection criteria are used. Next, the results of the analysis are given in chapter four. Finally, the research concludes with a discussion and conclusion.

Methodology

To better understand the relationship between tenant satisfaction and investor performance, several statistical tests are executed. The first test has a similar research approach as the study of Sanderson and Devaney (2017). A multiple regression model determines whether tenant satisfaction positively influences real estate returns while controlling for property-specific characteristics, where *total* excess returns represent investor performance (Brooks & Tsolacos, 2010). Likewise, a second regression model compares *direct* excess return, as dependent variable, to tenant satisfaction ratings. Lastly, a paired sample t-test dives deeper into the ratings given by several types of tenants. Before explaining the statistical tests, we start by considering the dependent variables for this study.

The investor performance of a real estate company is primarily measured by its *total* return and is computed by the sum of the income return and capital growth (Berk et al., 2016). Income return, measured as rent-to-price ratio, includes several elements. It is argued that some of these elements have a close relationship with tenant satisfaction (Westlund et al., 2005). For example, happy tenants may increase rent and positively influence rental growth, while vacancy rate and transaction costs may decrease when satisfaction ratings grow more positive (Jonckheer, personal communication, 22 April 2022). Moreover, property management costs and the services offered by the asset manager compress direct returns but potentially lead to increased tenant satisfaction (Sanderson, 2019). Therefore, *direct* return represents investor performance within this study, and regression analysis shows whether an explicit link with tenant satisfaction exists.

Apart from that, Sanderson and Devaney (2017) advocate within their study that, besides income return, capital growth is closely related to tenant satisfaction. The study asserts that tenant satisfaction leads to higher productivity and higher cash flows for tenants. Considering these higher cash flows, a higher tenant satisfaction may also affect the indirect return since the price of a property is determined by the exit yield and the asset's future cash flows (Berk et al. 2016). For that reason, it is assumed that capital growth is indirectly related to tenant satisfaction. Sanderson and Devaney do have equivalent theories regarding income return, assuming that tenant satisfaction leads to low vacancy rates and increased rents, which benefits the investor. Consequently, *Total* return, including income return and capital growth, is also held as equivalent for investor performance to increase consistency.

Within real estate theories, apart from the property- and location-specific characteristics, the investment returns are highly influenced by macro-economic cycles, or rather systematic risks (Barras, 2002; De Wit & Van Dijk, 2003; Ling & Naronja, 2002). Unemployment- and interest rate, GDP growth, inflation development, and shocks such as Covid-19 are the underlying drivers (Feng, 2021; De Wit & Van Dijk, 2003). Therefore, it is challenging to attribute improved performance to a particular factor. Victor and Razali (2019), Ling and Naronja (2002) & Sanderson and Devaney (2017) advocate that taking the excess return of an asset is a common way to deal with macro-economic

cycles. The excess return compares the total return of an asset with an appropriate benchmark return. Although the efficient markets hypothesis suggests that excess returns should not exist, out- or underperformances are achieved due to unique features of properties (Case and Shiller, 1990). Therefore, during an interview, Sanderson (Personal communication, 21 March 2022) advocates that the computed out- or underperformance gives insight into whether a fund manager adds value to the property while controlling for the economic deviation over time. The basic formula for calculating the excess return is as follows:

$$\text{Excess Return}_{it} = \text{Property return}_{it} - \text{benchmark return}_{it} \quad (1)$$

Also, within this research, the *total*- and *direct* excess return will be incorporated to control for macroeconomic developments. Moreover, this out- or underperformance will be measured over two years. Namely, the year when tenant assessments took place and the year afterwards. This is important since Scarrett (1995) advocates that any outperformance is unlikely to be realized immediately. Underlying theory suggests that leases, especially for multi-tenant objects expire irregularly, whereafter financial benefits of tenant satisfaction can be realized. Ideally, a more extensive period of three to five years would be investigated as Sanderson and Devany (2017) proposed. However, the limited amount of data restricts this methodology for this study.

Now, while having explained the concepts of *total* excess return and *direct* excess return over a two-year period, the following regression equation will be used for the analysis:

$$XR_{it} = \alpha + \beta_1 TS_{it} + \beta_2 \text{Log(AG)}_i + \beta_3 \text{Log(FS)}_i + \beta_4 \text{Log(VC)}_{it} + \beta_5 \text{EL(k=5)}_i + \beta_6 \text{LO(k=4)}_i + \varepsilon_{it} \quad (2)$$

where XR_{it} is the annualized excess return over two years for property *i* at time *t*. TS depicts the degree of tenant satisfaction given by tenants for property *i* at time *t*. Then, several variables are added to the model in order to incorporate property-specific characteristics. Namely, Log(AG) is the logarithm of age measured in years, which according to Ghosh and Petrova (2017) negatively influences excess return. The logarithm of floor space is captured in Log(FS) with square meters being the unit of measurement. Sanderson and Devaney (2017) included floor space and noticed a negative coefficient of -0.16, implying that the total excess return becomes smaller for larger buildings. Log(VC) is the logarithm of vacancy for property *i* at year *t* and given in percentages. Ghosh & Petrova (2017) and De Wit & Van Dijk (2003) advocate that the vacancy rate negatively influences the *total* and *direct* return of real estate investors. Subsequently, EL is the energy label, a numerical variable ranging from A to E (Label F and G were not included in the sample). According to Pivo and Fischer (2009), properties in the US containing energy stars positively influence income returns as well as property values for offices. Their study further concludes that total returns slightly decrease because higher capital appreciation offsets the income return. An important note here is that returns are generated at lower risk, while the NOI for developers even increases. Then, as suggested by Alonso (1964) and (Ling, 2018), the location-specific quality matters and is captured by LO as a

numerical variable containing the options A1, A2, B or C-locations. Other property-specific variables are not at hand but could increase the consistency of regressions within future research[3].

Subsequently, a secondary analysis within this study explores the ratings given by several types of tenants. According to Jonckheer (Personal communication, April 2022) dissatisfied tenants tend to leave their building more often when the contract expires. A paired sample t-test could help to discover the difference between two groups of tenants (Burt et al., 2009). Within this analysis, the properties assessed by Keepfactor are the cases. Then, for each case, it is evaluated how leaving- and remaining tenants rate their property during previous tenant assessment. As suggested by Jonckheer (Personal communication, 4 April 2022), a significant difference between both groups would indicate that happy tenants stay longer.

[3] For further research: Coca-Stefaniak (2013) noticed that footfall would be of added value in explaining the investor performances of retail properties. Ghosh and Petrova (2017) used the annualized capital expenditures per square foot and the leverage of a property to explain excess returns. In contrast, Sanderson and Devaney (2017) just included four variables: tenant satisfaction, property owner, segment and floor space.

Data description

This study uses a sample of Dutch properties for which occupier satisfaction was available from 2016 to 2020. Several institutional investors were approached to participate in this research, and two large investors agreed on this after signing non-disclosure agreements. [redacted].

The gathered sample consists of 110 cases, both office and retail properties. Those properties have heterogenous features, differing from shopping centres *(n=15),* single retail units *(n=24)* and multi-tenant offices *(n=71)* spread across the Netherlands. Although the investors are representative for the broader population of institutional investors in the Netherlands, the sample is quite small due to the relatively short period of 2016 to 2020 for which tenant satisfaction data was available.

Keepfactor is the company that measures the tenant satisfaction score. The company helps asset- and property managers to add ESG value and enlarge satisfaction among tenants of properties. This goal is realized by a platform that uses algorithms which combine real property data and tenant satisfaction assessments simultaneously. As a result, Keepfactor can prioritize investments that enlarge the satisfaction of the occupiers, resulting in higher retention and, therefore, less risk for real estate investments.

Keepfactor executes tenant assessments among contact persons and occupiers of properties within institutional investor portfolios. The tenant satisfaction score of each property is compiled by assessing fourteen aspects such as accessibility, exterior, interior, amenities, parking possibilities, sustainability, safety and climate within a building. The answers for each aspects are given on an ordinal scale ranging from one to ten, where one corresponds to extremely poor and ten being extremely good. Next, the tenant satisfaction scores are calculated by averaging the ratings of all mentioned aspects[4] given by occupiers within that year. In case there are more tenants, the satisfaction score of a property is calculated by taking the mean of all tenants. Other tenant features such as tenure, rental price, floor space used, or the number of occupiers were not at hand for this study, but could enlarge the impact of future research.

For some properties, tenant assessments were held annually from 2016 onwards, while other studies were carried out occasionally. Therefore, the number of unique properties assessed is 59. The assessments were not held at a fixed point during the year, but repeat studies typically took one year apart. The number of assessments within a building depends on the number of tenants and contact persons available. For that reason, a tenant satisfaction score for colossal shopping malls or multi-tenant offices was created out of 50 to 70 assessments, while one single contact person sometimes

[4] All aspects receive equal weighting.

represented the opinion of a single tenant office or retail unit. The dataset, therefore, consists of an unbalanced sample over several years.

Table 1 gives the descriptive statistics for the tenant satisfaction data used for the regression analysis. The data contains positive data points and a negative skew, signifying that those answers are clustered around higher values (see appendix B.1). Moreover, tenant satisfaction scores change slowly over the years while having high correlations between scores of the same assets and their previous years.

Table 1: Descriptive statistics of tenant assessments over the years.

Year assessment	n	Mean	St. dev.	Min.	Max.
2016	7	6.713	0.556	5.77	7.28
2017	17	6.849	0.481	5.99	7.74
2018	18	6.785	0.702	4.53	7.74
2019	48	6.354	1.005	4.02	8.52
2020	20	7.127	0.724	5.27	8.64

The two institutional investors supplied the investor performance data who created a selection in the MSCI data portal. The MSCI returns are appraisal based, for which the institutional investors had to supply their own results. This can be seen as one of the inevitable consequences of relying on external parties. Next, the relative performance is derived by subtracting an appropriate benchmark from the return of an individual property. As suggested within the methodology, the returns are gathered for the years when tenant assessments were held. So, if the tenant assessment was held in 2017, the

Table 2: Benchmark returns (%)

Year	Office segment		Retail segment	
	Direct return	Total return	Direct return	Total return
2016	5.6	10.0	5.3	3.7
2017	5.1	12.2	5.2	5.4
2018	4.3	15.7	4.9	4.9
2019	3.7	16.9	5.0	- 1.1
2020	3.6	4.7	4.7	- 4.3
2021*	3.3	8.0	4.6	1.1

*Benchmarks are gathered to create an excess return over two years.

annualized returns are based on the years 2017 and 2018[5]. An overview of the annualized total and direct returns are given in appendix B.2.

Moreover, the MSCI data portal supply the appropriate benchmark. This benchmark is composited of all annualized property returns within that same segment, within the same country and for that same year. So, to create the outperformance for an individual office building in 2018 located in Rotterdam, the average return of all office buildings within the Netherlands during 2018 is subtracted. An overview of the benchmark returns threatened for this research is given in table 2.

Table 3 depicts the descriptive statistics for this study. The *total* and *direct* excess return are the independent variables of interest. Interesting to note here is the positive mean value for both variables, indicating that the average return of all cases is higher than the benchmark return.[6] This result is verified by the annual reports in which both investors notice an outperformance compared to the benchmark. Anyone might ask whether both investors are better informed, or the investors are better in executing their core business. However, Berk et al. (2013) suggest that any investor cannot outperform the benchmark. For that reason, any outperformance, as suggested in table 3, is due to more risky assets held in the portfolio and equivalent to a core+ or value-added investment style.

[redacted]

[5] The methodology describes that any outperformance is unlikely to be realized immediately (Scarrett, 1995). Therefore, the average return over two years is considered.

[6] We would expect the excess returns to become about 0%, since the data contains 110 assets that should be representative for the real estate market.

Table 3: Descriptive statistics of data.

Statistic	N	Mean	St. dev.	Min.	Max.
Annualized total excess return (%)	110	[redacted]	[redacted]	[redacted]	[redacted]
Annualized direct excess return (%)	110	[redacted]	[redacted]	[redacted]	[redacted]
Tenant satisfaction	110	6.664	0.863	4.02	8.64
Floor space (sq. mtr)	110	13,674.76	16,773.57	104	63,325
Vacancy rate (%)	110	5.249	12.869	0	95
Age of property	110	53.791	43.513	4	222
Location	*110*	*2.027*	*0.943*	*1*	*4*
A1	36	0.327	0.471	0	1
A2	46	0.418	0.496	0	1
B	17	0.155	0.363	0	1
C	11	0.1	0.301	0	1
Energy label	*110*	*1.627*	*0.917*	*1*	*5*
A (A+, A++, A+++)	66	0.6	0.492	0	1
B	25	0.227	0.421	0	1
C	15	0.136	0.345	0	1
D	2	0.018	0.134	0	1
E	2	0.018	0.134	0	1

Results and Discussion

Data analysis

We can start to plot the distributions of the assembled excess returns of the individual properties (*n=110*), in figure 1. In figure 1, panel A shows annualized *total* excess return. The outperformance tends towards a normal distribution, concentrated approximately at 0%, and the outperformance ranges from about [redacted] Those values at the lower and higher end of the distribution are extreme, given that the total returns of the benchmark[7] properties range from [redacted] over the years. A select set of buildings have had an average total return of more than [redacted] which can be explained by the incremental capital growth of real estate assets from 2016 to 2019[8] (Langens et al., 2020). The negative results are explained by a few observations having a [redacted]%, while the benchmark performance was quite well. Moreover, the highest frequency of the data is surrounded by negative values, implying that a substantial number of properties have an underperformance. Overall, the random sample from the population largely follows a normal distribution and therefore has potential for statistical analysis (Brooks & Tsolacos, 2010).

Both figures have been hidden and are not available for public purposes.

Figure 1: distributions of annualized *total* and *direct* excess return over two years.

Figure 1, Panel B, depicts the annualized *direct* excess returns. The data follows a normal distribution, ranging from [redacted]%. Moreover, the peak is clustered at positive values, meaning that most properties in the dataset had an outperformance in their direct return. The under- and outperformance of figure 1 can be explained by the data selection, in which two investors participate and the sample is relatively small. A larger sample would force the peak to concentrate around 0%, since all objects are compared to their benchmark.

Figure 2 plots the excess returns against the tenant satisfaction score of each property. The dots in panel A are primarily random. Therefore, we might expect no apparent empirical solid relationship between tenant satisfaction and *total* excess return from these data. Also, the regression line drawn indicates that there is, to some extent, a weak but negative relationship (slope = -0.11). This result contrasts with literature findings, suggesting that higher tenant satisfaction leads to an outperformance

[7] Annualize returns of all properties within the same segment, country, and year.

[8] Within this study, property returns of the dataset originate from 2016 and 2021.

in the *total* return of an asset (Westlund et al. 2005; Sanderson and Devaney, 2017). The theoretical underlying rationale of Westlund et al. (2005) & Sanderson and Devaney (2017) is that the tenants reward excellent property management or high quality of location and accessibility, leading to lower vacancy rates or increased rents. Moreover, Sanderson and Devaney (2017) also claim that valuers might not have taken occupier satisfaction fully into account since satisfaction translates into a greater likelihood of lease renewal and improved cash flows.

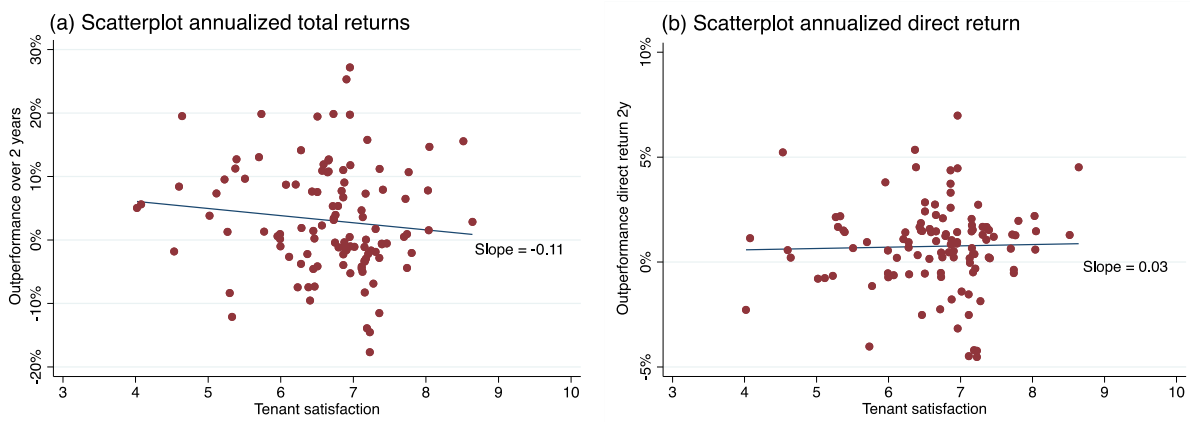


Figure 2: Scatterplots of tenant satisfaction versus *total* and *direct* excess returns over two years.

An important note made by Sanderson (Personal communication, 22 April 2022) is that capital growth as such has a more indirect link with tenant satisfaction. Since mainly economic drivers play a dominant role in determining the capital growth of an asset, a more direct link might be found in the relationship between *direct* return and tenant satisfaction. The relationship is shown in panel B. Essentially, tenant satisfaction may influence vacancy, exploitation costs, and a willingness to pay a higher rent and could influence income return. The dots within panel B are mostly centred between an outperformance of -1% and +3%, while satisfaction ratings differ mostly from 6 to 8. The regression line gives a positive relationship of 0.03, although several factors might influence this result, and therefore the next section shows a regression that controls for several other variables that might be influential for explaining returns.

Subsequently, during a meeting with one of the investors, the outliers of the dataset were discussed. The investor acknowledged that few properties had poor investor performances, but it appears that those objects were modernized (Van der Linde, personal communication, 27 May 2022). These building upgrades were based on action plans that follow from tenant assessments held by Keepfactor. It is evident that the upgrades increase operational costs for those properties but positively affect satisfaction ratings. Since the operational costs relate directly to the income side of a property, it might force a worse investor performance while increasing tenant satisfaction scores (Gosh and Petrova, 2017). For that reason, appendix E shows equivalent scatterplots as discussed in chapter four. It

appears that the slopes become more positive when renovated properties are omitted. For *total* excess return, the correlation weakens from -0.11 to -0.05, while for *direct* excess returns, the correlation rises from 0.03 to 0.13.

Regression results

Two separate multiple linear regressions are performed for *total*- and *direct* excess returns. This section will focus on the findings for annualized *direct* excess returns because the regression results are equivalent to those for *total* excess returns (see appendix C.1). Moreover, it is suggested that a more direct link can potentially be found between the direct return of real estate assets and tenant satisfaction.[9]

Subsequently, table 4 depicts the multiple linear regression model results that contain a sample of 110 observations. The model has an R-squared of 45%, clarifying the variance of the dependent variable explained by the variance of the independent variables. This R-squared is reasonable compared to earlier studies of Sanderson & Devaney (1.2%) (2017) and Westlund et al. (46%) (2005).

The logarithm of age is one variable that does not add value to the model because it cannot be generalized for the population at a 95% confidence level. Although the coefficient is negative, implying that older buildings have worse investor performance, we cannot derive any results for the population due to an insignificant P-value. This finding partially corresponds with the conclusion of Gosh and Petrova (2017), who found insignificant results in the excess return of offices, while there is a small and positive coefficient for retail units. Furthermore, in line with the literature is the significant finding for vacancy that hurts investor performance (De Wit & Van Dijk, 2003; Vandell, 2003). Also, Ghosh and Petrova (2017) found a positive coefficient for occupancy rate and total excess return. Then, floor space is significant and has a negative sign, implying that larger floor space leads to lower outperformance. This matches the earlier findings of Sanderson and Devaney (2017), that found a negative coefficient of -0.44 for the logarithm of floor space. Another explaining factor for direct return is the energy label. Energy label A is the reference category and positively influences investor performance compared to other energy labels. This is in line with Pivo and Fischer (2010) who argue that energy efficiency leads to higher returns. Contrary, Pivo and Fischer (2009) suggest that

[9] Sanderson (2022) advocate that particularly economic drivers play a dominant role in determining the capital growth of an asset

Table 4, regression output

Variables	Coefficients	Std. error	T-statistic
dep.= annualized *direct* excess return			
Tenant satisfaction	0.084	0.185	0.45
Age of building (log)	-0.447*	0.242	-1.84
Vacancy rate (log)	-0.326**	0.085	-3.82
Floor space (log)	-0.444**	0.192	-2.31
Energy label (A=ref)			
B	-0.998**	0.432	-2.31
C	-1.199**	0.494	-2.43
D	-2.858**	1.173	-2.43
E	-3.076**	1.290	-2.38
Location (A1= ref)			
A2	1.926**	0.427	4.52
B	1.933**	0.583	3.31
C	1.322*	0.759	1.74
Constant	4.509*	2.717	1.66
Probability > F	0.000		
R-squared	0.446		
N	110		

*Significant at the 10% level. **Significant at 5% level, respectively.

capital growth offset higher income equalizing the return on investments, although a lower risk can be noticed. Thereupon, the positive location coefficients indicate that A1 locations, equivalent to the city centre and CBD locations, have worse investor performance than A2 and B-locations. At the same time, other locations are slightly better but are significant at 90% confidence level. This finding is supported by Fischer et al. (2022). Although investigations were made for REITS, their study reveals that assets at good locations include less risk, and investors are willing to pay higher prices at lower yields. Therefore, it can be suggested that investors are willing to accept lower returns when less risk is involved.

Focusing on the key independent variable, tenant satisfaction, shows an insignificant result. Therefore, within this analysis, tenant satisfaction has not enough impact to influence the investor performance of an investor at the 95% confidence level. This contrasts with earlier studies that found a significant result, although their research approach differed because they utilized data for different segments, countries, and periods (Sanderson and Devaney, 2017). Several reasons might explain these unexpected results. The main arguments can be found in the detailed discussion in which the literature is reviewed and the concepts of return are explored.

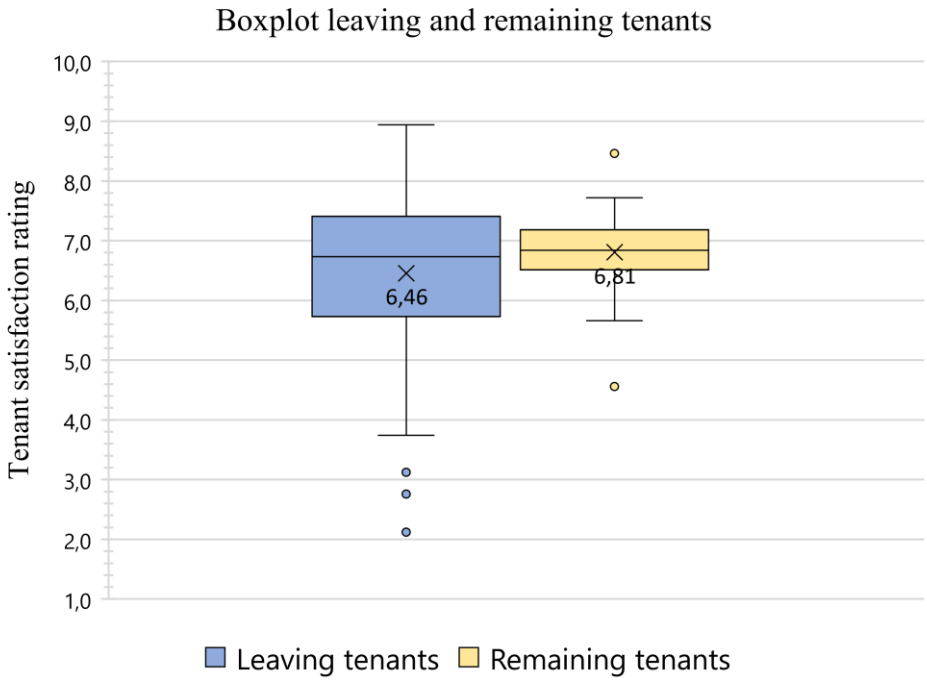
Moreover, it is shown in appendix C.2 that there is almost no explanatory power for an analysis in which tenant satisfaction is treated as a single variable. In appendix C.2, the result is insignificant, implying that tenant satisfaction does not significantly impact direct return. In addition, appendix C.3 shows the regression results, where location, energy label and vacancy are omitted since these variables are partially related to tenant satisfaction. Again, the result for tenant satisfaction remains insignificant.

Relationship between leaving- and remaining tenants

A deeper inspection of the data might possibly discover a relationship between tenant retention and tenant satisfaction. Therefore, another analysis has been executed that focuses on leaving and remaining tenants. Theoretically, Keepfactor assumes that happy tenants stay longer due to the excellent working environment, higher productivity, and potential revenues (Jonckheer, personal communication, 22 April 2022). This relationship can be disentangled by looking at the tenant satisfaction scores of leaving tenants. It might be that leaving tenants rates less favourable during tenant assessments indicating a vacancy risk. Alternatively, it could be argued that higher rating results in longer retention.

For this analysis, similar tenant satisfaction data is delivered by Keepfactor. The properties investigated during 2016 to 2020 represent the cases. The essential difference compared to previous analysis is that other properties are considered, derived from four different institutional investors. Therefore, a different sample is selected within this analysis, because properties have to be investigated which include leaving tenants. After selecting properties with leaving tenants, a difference between leaving- and remaining tenants can be noticed.

Figure 2: Boxplot of leaving and remaining tenants and their tenant satisfaction score.



To examine this further, figure 2 shows a boxplot that gives the average rating for leaving- and remaining tenants. The group of interest is leaving tenants and their ratings during previous tenant assessments. The control group exists of the remaining tenants within that same building for which the equivalent tenant assessments' have been held during that year. A histogram of the satisfaction ratings is added in appendix D and the number of tenants in both groups is 78. The interquartile distance range for *leaving* tenants differs from 5.7 to 7.4 while having a median of 6.7. The *remaining* tenants have an interquartile distance range of 6.5 to 7.2 and a median of 6.8. The reason for those more moderate scores in the control group can be clarified by the larger number of tenants staying each year in a property. For example, a multi-tenant office assessed in 2018 has 2 leaving tenants and 14 staying tenants. Since the group of staying tenants is large, a single tenant that rates their property poorly is diversified away by other staying tenants with more moderate ratings. On the other hand, if one of the leaving tenants rates their property poorly, the average score becomes heavily impacted because the case exists of just two assessments. Therefore, many more outliers can be seen within the group of leaving tenants. Overall, the mean of 6.46 and 6.81 for leaving- and remaining tenants suggests that remaining tenants appreciate the building significantly more than leaving tenants.

Table 5, Results for paired sample t-test

	n	Mean	St. dev.	St. error	t-stat	Sig. (2-tailed)
Leaving tenants	78	6.456	1.849	0.154	-2.476	0.016
Remaining tenants	78	6.807	0.347	0.067		

Table 5 shows the results of the paired sample t-test. The null hypothesis for the test is that the means for both groups are equal when the observations are paired. The paired sample t-test compares both means, taking the number of observations and both variances into account. Given the significance level of 0.016, we can reject the null hypothesis and state that based on a 95% confidence level the means of both groups are different. This result implies that leaving tenants, on average, rate their building 0.34 lower than the remaining tenants.

Discussion

Understanding the findings

At the start of this study, it was hypothesized that a positive relationship between tenant satisfaction and investor performance would be found. However, the regression results for both, *total* excess return and *direct* excess return provide insignificant regression results for tenant satisfaction. These contrasts earlier studies of Wustland et al. (2005) and Sanderson and Devaney (2017), who found a positive relationship between tenant satisfaction and returns. Those findings are in line with their hypothesis that tenant engagement pays off. However, those studies had a different research approach because they utilized data for different segments, countries, and periods. Moreover, Wustland et al. (2005) based the conclusion on one significant year (2002), while the results of the other years appear to be insignificant. So, one single year supports their hypothesis, while the findings of other years are in line with this research. Then, after revealing a positive and significant relationship between building upgrades and benchmark-adjusted returns, Ghosh and Petrova (2017) noticed an unclear relationship between tenant improvements and *total* excess return of retail properties, while the office market showed a significant and negative relationship. Gosh and Petrova (2017) attribute the latter finding to the market conditions of that period and state that when supply is relatively high to demand, owners of space need to incur expenditure costs that improve building quality. Again, the insignificant relationship is in line with this study, while at the same time leaving certain aspects unexplained. Therefore, a grey scientific field arises in which the relationship between returns and satisfaction is not fully identified. A more detailed analysis of the concepts related to *direct* and *total* return might shed new light on the existing literature within this section.

To start, the rationale of Keepfactor suggests that higher tenant satisfaction leads to lower vacancy rates and a willingness to pay higher rents, both related to income return (Jonckheer, personal communication, 4 April 2022). However, this income return, or rent-to-price ratio, includes a price component that might be influential (Brooks & Tsolacos, 2010). In determining the direct return, appraisers value investor portfolios yearly for bookkeeping reasons. When a valuation takes place, implemented action plans based on tenant assessments could have increased the quality and services of the property (Gosh and Petrova, 2017). For example, the appraiser could notice the implementation of luxurious interieur, extra parking spaces or better services and, therefore, increase the value of the complexes. Since both higher rents as well as higher property values cancel out, the income return is not affected (Gosh and Petrova, 2017). In other words, the higher tenant satisfaction ratings are not reflected in higher income returns.

Also, it is noticed that some properties had poor investor performances due to modernization (Van der Linde, personal communication, 27 May 2022). So, higher operation costs squeeze the income component of direct return, although the building upgrades should inevitably lead to higher rents in

the future. But since lease renewals occur after three to five years, the effects on income return are not noticed yet. This observation might therefore disturb the regression results since excess returns are measured over just two years.

Next, *total* return includes a capital growth component determined by the cash flows and the exit yield. Similarly, it might very well be that implemented action plans increase the quality of a building, which lowers the exit yield and therefore implies a higher price (Sanderson and Devaney, 2022; Gosh and Petrova, 2017). This mechanism could potentially be triggered even more since the demand for premium buildings at top locations has risen over the years, and investors are willing to pay higher prices for improved quality and services (Langens et al., 2020). Again, higher investment values lead to compressed total returns. For those proper buildings, satisfied tenants in combination with low returns could stimulate a negative relationship and therefore disturb the regression results.

Finally, this study focuses on the relationship between satisfaction and return, while investors usually trade off risk and return. The regression results show that buildings at premium locations had a lower direct return compared to their benchmark. A fundamental reason might be the acceptance of lower returns at locations for which less risk is involved (Ling, 2018). Similarly, it might be the case that properties with high satisfaction ratings include premium quality and services, that provide less risk for investor portfolios. Hence, high tenant satisfaction could contribute to the acceptance of lower returns on investments.

In few studies, the results were very clear about the relationship between tenant satisfaction and investor performance. However, the analyses above explore several reasons for the insignificant regression results. Modernization that comes with high costs, price increases for premium buildings, and the acceptance of lower returns when less risk is involved, are all hypothetical reasons that bring down an investor's return and disturb the hypothesis that tenant satisfaction leads to higher returns. These reasons were not explored thoroughly in the literature but help to deeper understand the relationship between investor performance and tenant satisfaction.

Implication dissatisfied leaving tenants

The results of the paired sample t-test show that both groups rate their buildings significantly different. This result implies that leaving tenants, on average, rate their building 0.34 lower than the remaining tenants. This finding has an important implication for investors. Namely, empirical evidence suggests that more dissatisfied tenants tend to leave their property relatively more often than satisfied tenants. Therefore, this has an implication for investor performance if leasable meters stay unoccupied, resulting in a higher vacancy rate. De Wit & Van Dijk (2003) and Vandell (2003) conclude that high vacancy negatively impacts investment return. Moreover, tenant relocation comes with transaction costs, such as broker costs and incentives that lower an investor's income return (Englund, 2005). In short, satisfied clients appear to stay longer, which has the potential to boost investor performance.

Future research

As with all studies, this research has limitations that could be improved upon in future research. A first limitation is that few investors were willing to share data, resulting in 110 cases for the regression analysis. This small sample size contributes to one of the main issues of this study. Mainly because the small sample size reduces the power of the study, increases the margin of the error, and could therefore lead to insignificant results. Hence, expanding the number of cases would add value for future research. This could be achieved by approaching more tenant assessment companies and investors to gain more tenant satisfaction and investor performance data. On the other hand, Keepfactor just started in 2016, so their amount of available data will increase with time. In addition, the comparison between leaving tenants and remaining tenants could become more reliable if more tenants are examined.

Moreover, taking a more extensive period could create a better balance in the data. For example, Sanderson and Devaney (2017) took the average return of individual properties and their benchmark over three to five years into account. Since this research considers a two-year average, some outliers in the performances are noticed. When calculating the performances for future research, extending the period to a three to five years average, could better diversify away the outliers of one single year. More importantly, some of the property returns suffered from high renovation costs, while the benefits of higher rents arise in the future. Since the average returns are just calculated over two years, the benefits might not have been incorporated yet.

Then, by taking the average of several aspects, much variation in the tenant satisfaction data is lost. Earlier on, it is described how the tenant satisfaction score of each property is compiled, based on averaging fourteen aspects from several occupiers. The inevitable consequence of this data treatment is that some negative opinions or aspects could be diversified away by other tenants with more moderate ratings. Therefore, limited variation in the data arises. It would be of added value if future researchers keep an eye on individual aspects and their outliers, because some negatively rated aspects could possibly affect financial performance deeper than other, positively rated, aspects. However, this observation cannot be made due to an overall grade for tenant satisfaction.

Finally, the examined years covered data from 2016 to 2020. During the latter two years, Covid-19 heavily impacts investor performances. However, benchmark returns are hurt as well, which partially corrects for this development. It is argued that every property and each tenant is treated differently. For example, some investors allow paying part of the rent, while vacancy levels might have risen due to uncertainty among tenants (Van der Linde, 2022). As a result, some properties might have noticed an under- or outperformance influenced by Covid-19 consequences. Therefore, it is valuable for future research to make comparable analysis that excludes Covid-19 related data.

Conclusion

Over the years, tenant relationship has received increasing attention within the real estate industry. Apart from revenue, retention, and reputation (3R's), businesses conduct tenant assessments because competition has risen due to shorter commitment of leases and ESG-objectives becoming more important. Subsequently, the empirical evidence is limited to whether tenant engagement financially benefits investor performance. Therefore, the research question for this study is: *What is the relationship between tenant satisfaction and the investor performance of Dutch real estate?*

A multiple linear regression model was built to better understand the relationship between tenant satisfaction and the investor performance. The excess return controls macroeconomic aspects, while property-specific characteristics were included as control variables. Finally, the dataset contains 110 cases, representing 59 unique objects assessed from 2016 to 2020.

The results section shows a slight but negative relationship between *total* excess return and tenant satisfaction. Moreover, the regression results state that the relationship is insignificant, implying that no conclusions can be drawn for a broader population. This finding contrasts with historical findings, which found a positive sign and significant result. Theoretically, a more direct link should be found by investigating *direct* excess investor returns. Then, the relationship within the sample appears to be positive. However, the regression analysis leads to insignificant results. Again, tenant satisfaction has not enough impact to influence the investor performance.

During the discussion, several arguments were collected that explore the interesting regression results. First, it appears that one investor made extreme investments in order to create modernized buildings that meet the demand of current tenants. Those investments squeeze returns, while satisfaction scores rise over the years, impacting the regression results. Apart from that, it might be the case that investors accept lower returns for buildings that have low property-specific risks, due to high satisfaction ratings.

Finally, the paired sample t-test investigates whether remaining tenants reward their building with higher satisfaction ratings than leaving tenants. It was found that leaving tenants rated their building much lower than remaining tenants. This has an important implication for investors because the risk of leaving is more significant for dissatisfied tenants. Although the linkage between tenant satisfaction and returns was not found, the second analysis provides new insights into the existing literature. Especially because vacancy and tenant relocation come with costs that ultimately negatively influence investor returns.

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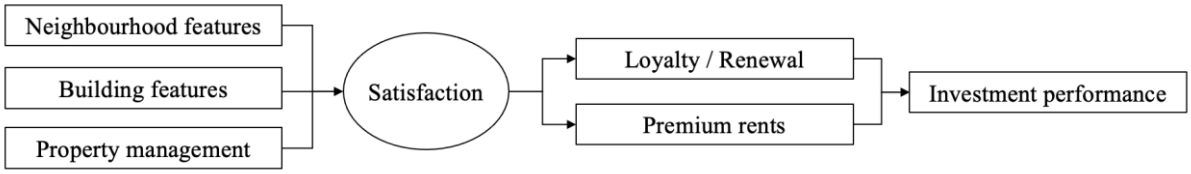
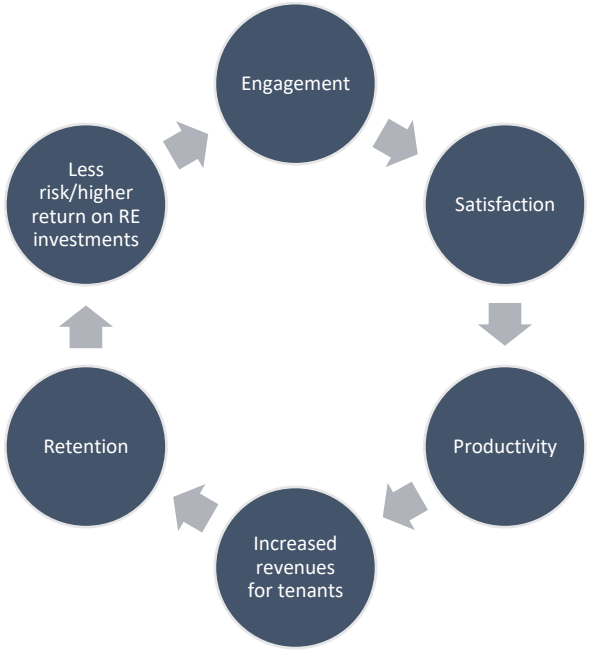
Appendices

Appendix A1: Conceptual model of tenant satisfaction and investor performance.



Appendix A2: Theoretical model of tenant relationship (Jonckheer, 2022).



Appendix B.1: Description of tenant satisfaction data, all years.

Figure have been hidden and are not available for public purposes.

Appendix B.2: Returns of all data

Appendix B.2 depicts the annualized total and direct returns of all cases measured during 2016 to 2021. Interesting to see is that both type of returns largely follows a normal distribution. Moreover, the direct return of most cases are positive, ranging from [redacted] Those values indicate that the capital growth was quite extreme during the measurement period. Given the range for direct returns, the capital growth for an individual asset is about 32%.

Appendix C.1: Regression output of total excess returns over two years

Table 6, regression output.

Variables dep.= annualized *total* excess return	Coefficients	Std. error	T-statistic
Tenant satisfaction	-0.399	0.921	-0.43
Age of building (log)	-2.284**	1.084	-2.18
Vacancy rate (log)	-0.142	0.111	-1.27
Floor space (log)	-1.857*	1.011	-1.84
Energy label (A=ref)			
B	1.446	2.149	0.67
C	2.357	2.542	0.93
D	-1.479	5.794	-0.26
E	3.298	6.581	0.50
Location (A1= ref)			
A2	-2.195	2.031	-1.08
B	0.090	2.783	0.03
C	2.423	3.553	0.68
Constant	29.468**	13.907	2.12
Probability > F	0.006		
R-squared	0.225		
N	110		

*Significant at the 10% level. **Significant at 5% level, respectively.

Table 6 gives an overview of the regression results, where the annualized *total* excess return is given as the dependent variable. Only the logarithm of age appears to be significant within the 95% confidence level of the model. Therefore, we can interpret the regression coefficients and state that older buildings have worse investor performance. Moreover, the key independent variable, tenant satisfaction, is insignificant. Therefore, no interpretation can be made.

Appendix C.2: Regression output of single variable.

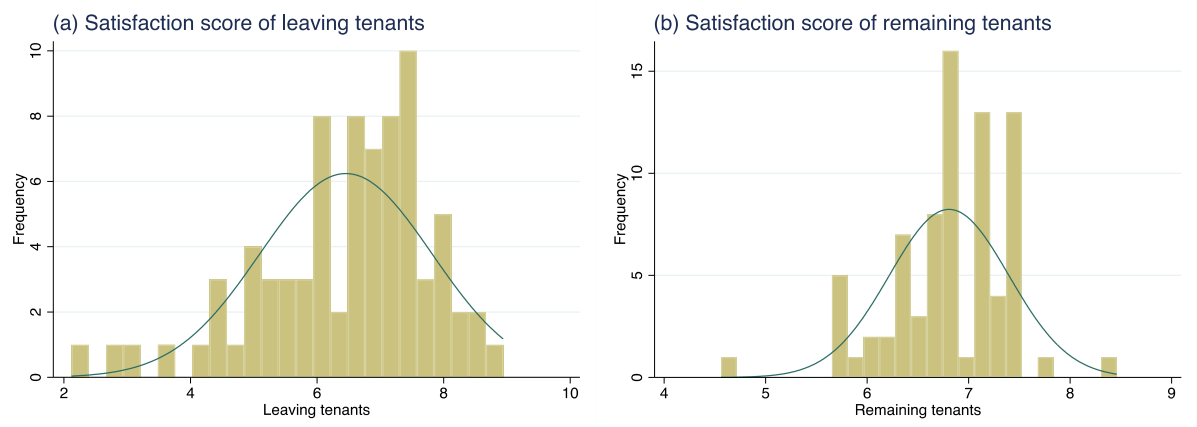
Table 7, regression output of properties.			
Variable	Coefficients	Std. error	T-statistic
dep.= annualized *direct* excess return			
Tenant satisfaction	0.063	0.225	0.28
N	110		
R-squared	0.001		

Table 7 depicts the regression output for a single variable, tenant satisfaction. The regression adds value because it does not correct for location- and building characteristics, which might somehow be influential for tenant satisfaction. The model has an R-squared of 0.001, implying that tenant satisfaction barely explains the extent of out- or underperformance of the investors. Similarly, the coefficient for tenant satisfaction is insignificant. Therefore, we cannot derive the result that tenant satisfaction explains the investor performance of an investor.

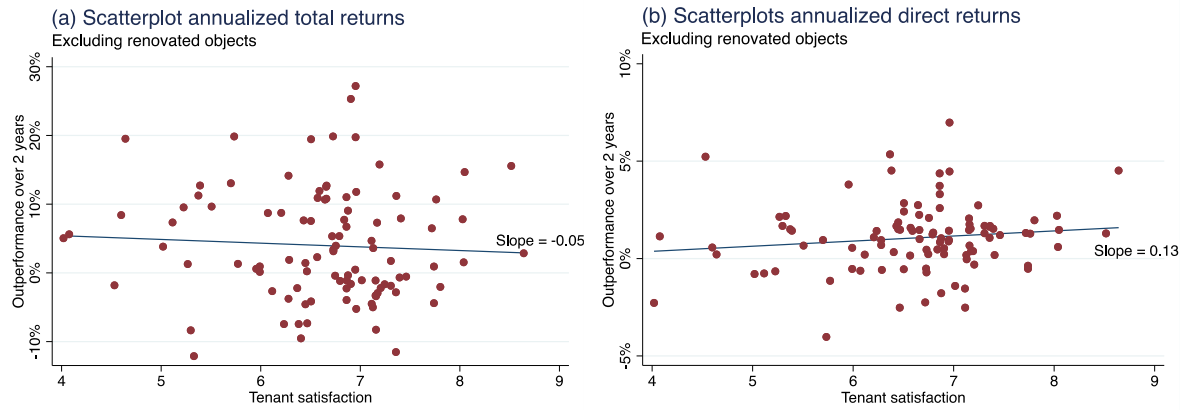
Appendix C.3: Regression output, excluding vacancy, energy label and location.

Table 8, regression output of properties.			
Variable	Coefficients	Std. error	T-statistic
dep.= annualized *direct* excess return			
Tenant satisfaction	0.101	0.208	0.49
Age of building (log)	-0.987**	0.205	-4.80
Floor space (log)	-0.288*	0.153	-1.89
N	110		
R-squared	0.182		

Appendix D: Histogram of groups in paired-sample t-test.

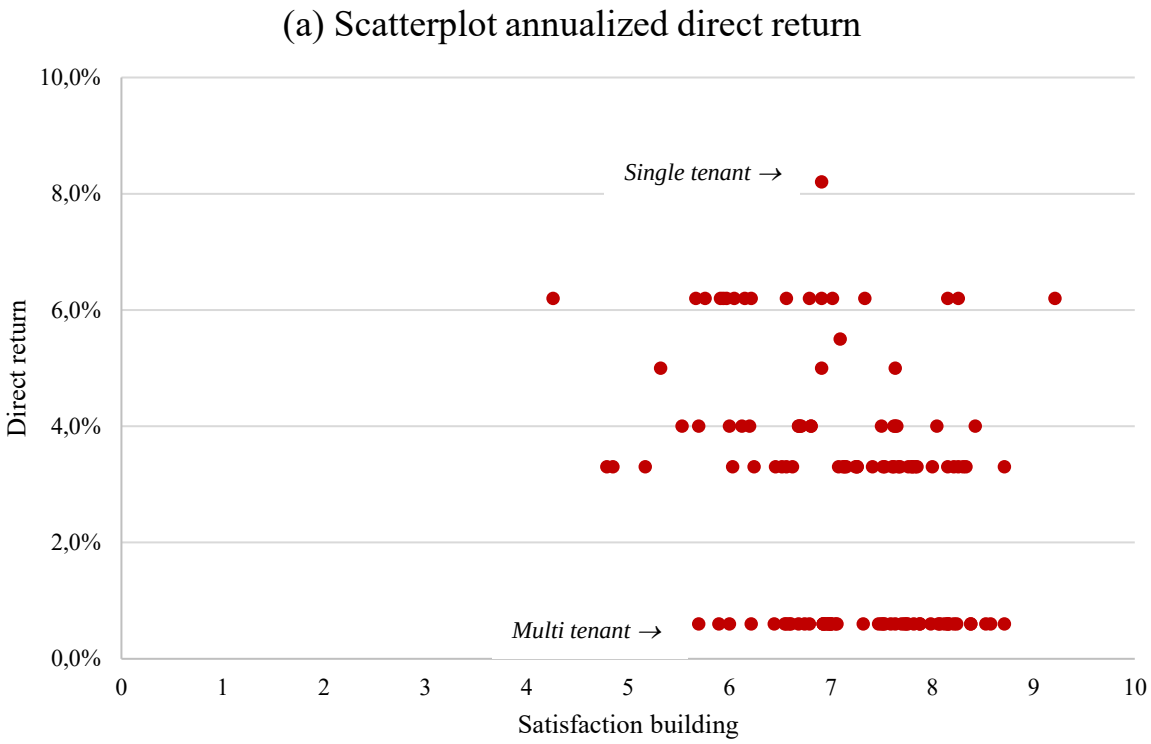


Appendix E: Figure 3 Scatterplots excluding renovated objects



Scatterplots 3a and 3b depict each property's outperformance and the tenant satisfaction score. The essential difference compared to figure 2 is that ten cases are omitted. This process is because all cases suffer from high investments that press investment returns but should increase the building quality and services. As a result, the correlation coefficient becomes a little more positive, implying that the properties influence the outcome. However, tenant satisfaction is still insignificant when those ten cases are dumped within the regression.

Appendix F: Scatterplot of individual tenant respondents



The study also investigated whether the sample could be expanded by taking every individual respondent as a case instead of taking the average building rating. This forces the number of cases to increase over 400, since shopping malls or multi-tenant offices frequently contain over 50 tenants. A particular study approach could increase the power of the regression results due to the large sample size. However, this would violate one of the regression requirements of independent cases. Namely, as suggested by the scatterplot, a multi-tenant office have unique tenant satisfaction scores but does have the equivalent returns for that building at year t. Moreover, the multi-tenant office would have an abnormal weight in the regression output since it accounts for more than 50 cases. In contrast, a single tenant accounts for one single case, leading to biased results. Therefore, this method is not conducted.

Appendix G.1: Correlation matrix of variables

	Excess direct return	Tenant satisfaction	Age	Vacancy (%)	Floor space	Energy label	Location
Excess direct return	1						
Tenant satisfaction	0.037	1					
Age	-0.392	-0.027	1				
Vacancy (%)	-0.281	-0.008	-0.122	1			
Floor space	-0.048	0.161	-0.274	0.358	1		
Energy label	-0.224	-0.170	0.102	0.103	-0.272	1	
Location	0.297	-0.171	-0.274	-0.224	-0.474	0.118	1

Appendix G.2: OLS assumptions.

Assumption: Heteroscedasticity

```
Breusch–Pagan/Cook–Weisberg test for heteroskedasticity
Assumption: Normal error terms
Variable: Fitted values of DirOutper2y

H0: Constant variance

    chi2(1) =   0.15
Prob > chi2 = 0.7002
```

The P-value that corresponds to the Chi-Square test statistic is 0.7002. Since this value is more than 0.05, we cannot reject the null hypothesis and conclude that we have homoscedastic data.

Assumption: Multicollinearity.

	VIF
Tenant satisfaction	1.11
Age	1.56
Vacancy	1.33
Floor space	2.69
Energy label A	1.44
Energy label B	1.35
Energy label C	1.06

Energy label D	1.37
Location A1	1.78
Location A2	1.79
Location B	2.01
Location C	1.48

A value between 1 and 5 indicates a moderate correlation between a given explanatory variable and other explanatory variables in the model. Since there is no variable reaching a VIF over 5, we can conclude that there is no multicollinearity problem.

Assumption: Residuals normally distributed

```
. swilk resid_dirretrn

                    Shapiro-Wilk W test for normal data

    Variable |        Obs       W           V          z       Prob>z
-------------+-------------------------------------------------------
resid_dirr~n |        110    0.98331      1.492      0.893     0.18595
```

The null hypothesis is that the data is normally distributed. Since the P-value of the Shapiro-Wilk Test is greater than 0.05, we cannot reject the null hypothesis and state that the residuals of the dependent variable are normally distributed.

Appendix G.3: DoFile Stata

**Data is prepared and cleaned within the excel file; Data is gathered, numerical variables are encoded, excess returns are calculated by subtracting property returns from appropriate benchmark.*

**Import data: 3. Analyse*

rename AE DirOutpert0

rename AF DirOutper2y

. drop AK

. drop AJ

. drop AG

. drop AH

. encode Investor, generate(Investor_name)

. encode Segment, generate(Segment_name)

. encode Location, generate(Location_numeric)

```
. encode Energielable, generate(Energylabel_numeric)

gen ln_buildingsize = ln(BDsqMtr)

gen ln_vacancy = ln(Vac)

gen ln_age = ln(Leeftijd)

drop if missing(DirOutper2y)

reg DirOutper2y Tenantsatisfaction ln_age ln_vacancy ln_buildingsize i.Energylabel_numeric
i.Location_numeric


*Checking OLS Assumptions

hettest

VIF

predict resid_dirretrn, resid

swilk resid_dirretrn
```