Relationship of Property Stigma Dimension and Property Overhang: A Structural Equation Modelling Approach

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Abstract: Property stigma is a significant factor in the overhang of residential units in Malaysia. It refers to some characteristics, features, social values or an event relating to land and buildings that can create a negative perception of a building, land, project or neighbourhood. The current study aimed to assess the relationship of the property stigma dimension in measuring the contribution to property overhang. The study data was collected from 69 participants from the real estate industry in Selangor, Malaysia. The data was then computed on partial least squares structural equation modelling (PLS-SEM) to analyse the seven dimensions of property stigma. The study identified dominant physical, non-physical and psychological factors that shaped property stigma. The findings of this study revealed that only non-physical stigma and psychological stigma were significant in the occurrence of property overhang. The results of this research could guide relevant government agencies and future studies to understand property stigma models for application by property developers. This will enable developers to be more informed and proficient in managing proposed development projects, thereby contributing to the industry's growth and stability and a more balanced property market in Selangor, Malaysia.

Keywords: Property stigma, Property overhang, PLS-SEM, Malaysian property market, Houses in Selangor

INTRODUCTION

The Malaysian property market is experiencing continuous growth, with Selangor leading the Central Region in property transactions. However, according to the National Property Information Centre (NAPIC), Selangor is one of the major states with the highest number of overhang units up to the fourth quarter of 2023 (NAPIC, 2023a). This situation is particularly concerning considering that Selangor is Malaysia's industrial hub and the most populous state (Leh, Mansor and Musthafa, 2016). The high number of overhang properties raises the critical question of why buyers are reluctant to purchase houses in Selangor (NAPIC, 2023b).

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A completed house that remains unsold to potential buyers or investors is included in the property overhang statistics by NAPIC nine months after its launch date (NAPIC, 2023b). There are factors that may affect the property overhang, but the current study focused on property stigma. According to Said, Majid and Geng (2017), a property reported to have a stigma will affect housing prices. Housing prices from comparable properties are reduced by 10% to 20%. This indicates that any property with a stigma has a lower take-up rate because the value differs from a property without a stigma. Thus, properties with a stigma are not the choice of investors or potential buyers. This aligns with the definition of property overhang. According to Ogban and Akujuru (2016), Said, Majid and Geng (2017) and Hajnal (2017), the stigmatised dimension is significant to the house prices. The research gap lies in understanding how property stigma, particularly in Selangor, directly influences the property overhang phenomenon. Existing studies have not adequately addressed how these stigma dimensions interact with geographical and social factors to contribute to overhang properties. Therefore, this study explored the dimensions of property stigma that could contribute to property overhang, focusing on the perception of industry professionals and potential buyers.

LITERATURE REVIEW

Despite the market's potential, many overhang properties highlight the complexity of factors affecting property sales beyond the traditional adage "location, location, location". Bell (2016) suggested that "perception, perception, perception" might more accurately determine property value. This shift in perspective necessitates a closer examination of other significant factors impacting property desirability. Property stigma can be broadly categorised into three types: non-physical stigma, physical stigma and psychological stigma.

Property Stigma

Property stigma refers to the negative perceptions and associations that diminish a property's market value and desirability, often leading to prolonged sale periods and reduced marketability. This stigma can arise from various factors, including environmental concerns such as pollution and contamination (Bond, 2001), physical deterioration like inadequate maintenance and unattractive design (Cradduck and Warren, 2019) and psychological elements such as properties associated with distressing events like crimes or hauntings (Perlin and Ben-Ezra, 2005). Properties affected by stigma often fail to attract buyers, contributing to issues like property overhang, where completed properties remain unsold for extended periods (Said, Majid and Geng, 2017). Therefore, understanding the dimensions of property stigma is crucial for real

estate professionals to develop effective strategies to mitigate its impact and improve the overall market performance. According to Huri et al. (2024), there are three categories of stigma towards property: physical, non-physical and psychological. To investigate this issue, prior studies have engaged real estate players from the real estate industry, including registered valuers and agents, to become respondents and develop a model of the property stigma dimension (Said, Majid and Geng, 2017). The practitioners' perspectives from the studies provide valuable insights into the various dimensions of property stigma and its relationship to property overhang.

Physical Stigma

Physical stigma towards property refers to the negative perceptions and decreased market value resulting from a property's visible physical defects or unattractive features. This stigma can be attributed to various factors, such as poor maintenance, outdated or inefficient design and the overall dilapidation of the property (Cradduck and Warren, 2019). Potential buyers often perceive such properties as less desirable due to the anticipated costs and efforts required for renovation and maintenance. For instance, the presence of structural issues like cracks, leaks or outdated facilities can significantly diminish a property's appeal and market value (Said, Majid and Geng, 2017). Furthermore, properties with limited aesthetic appeal or those needing more modern amenities often face prolonged sale periods and reduced market prices (Ishak, Yakub and Achu, 2019). Thus, understanding the impact of physical stigma is essential for property developers and real estate professionals to improve property conditions and enhance marketability.

Non-physical Stigma

Non-physical stigma towards property refers to negative perceptions and reduced market value resulting from factors unrelated to the property's physical condition (Said, Majid and Geng, 2017). This stigma encompasses environmental issues, such as proximity to waste disposal sites or high-voltage power lines and social factors, like crime rates or undesirable neighbourhood reputations (Bell, 2016). Additionally, social concerns, such as crime issues (Ibrahim and Maimun, 2022; Teck-Hong, 2011), a high number of students renting in family neighbourhoods (Horgan, 2020) and an influx of foreign workers (Huri et al., 2024), contribute to non-physical stigma. The perception of distance and accessibility, including poor access to public transport (Kasim and Tey, 2022; Tan,[1] *pers. comm.*, 29th May 2024; Rahim et al., 2019), also plays a role. Public stigma, such as developers failing to deliver houses on time (Rahim et al., 2019), poor construction quality (McCabe, 2018) and the misconception that well-known developers always launch properties at higher prices (Rahim et al., 2019), further impacts property value. In Selangor,

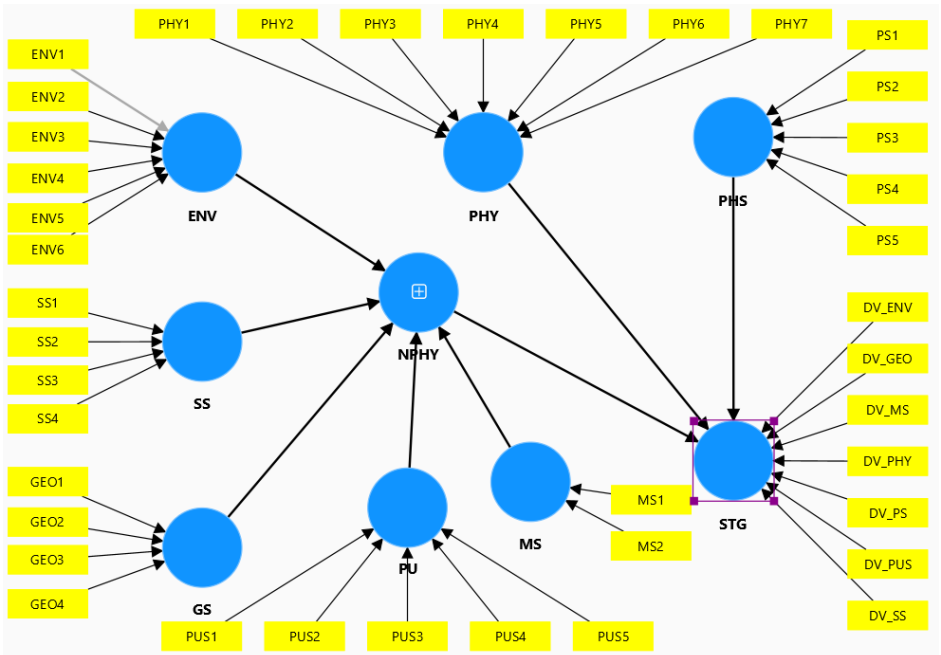
the mandatory inclusion of affordable housing in large-scale projects under the Rumah SelangorKu policy adds another layer to this issue. Lastly, minimal stigma, related to poor maintenance of facilities and the conversion of units into Airbnb accommodations, threatens resident safety and contributes to non-physical stigma (Huri et al., 2024). These non-physical stigma factors can significantly deter potential buyers and investors, leading to prolonged sale periods and lower property values (Callanan and Eves, 2015).

Psychological Stigma

Psychological stigma towards property refers to the negative perceptions and adverse emotional responses that potential buyers or investors may harbour due to the property's association with distressing or undesirable events. This can include properties where tragic incidents, such as murders, suicides or natural disasters, have occurred, as well as those believed to be haunted (Alias et al., 2014). Notably, concerns about past flash floods and landslides can also evoke fear among potential buyers (Adzhar et al., 2021; Said, Majid and Geng, 2017). Even if a property is located in a desirable area, these elements can deter prospective buyers, reducing market value and prolonging sale periods (Bond, 2001; Bell, 2016). Psychological stigma is rooted in the emotional and cognitive responses of individuals, which significantly influence their purchasing decisions and overall perception of the property (Perlin and Ben-Ezra, 2005). These psychological factors create a sense of fear, discomfort or aversion, leading to diminished market value and extended sale periods. The impact of psychological stigma on the property is profound as it affects not only the perceived safety and desirability of the property but also the buyer's willingness to engage with it, ultimately influencing the property's marketability and value (Said, Majid and Geng, 2017). This stigma can linger long after the events that caused it, making it a significant factor in real estate transactions and property valuations.

RESEARCH MODEL DEVELOPMENT

The current research utilised a research model to investigate the relationship between dimensions of property stigma, namely non-physical stigma, physical stigma and psychological stigma, and property overhang in Selangor, from the perspective of real estate industry players. This model was essential to understanding the influence of each stigma on potential buyers' perceptions because they contribute to the prolonged sale periods of property overhang. Each construct within the model was carefully selected based on a thorough review of relevant literature. Detailed attributes of the research model are presented in Figure 1.



Notes: STG = Stigma; PHY = Physical stigma; NPHY = Non-physical stigma; PHS = Psychological stigma; MS = Minimal stigma; ENV = Environmental stigma; SS = Social stigma; PUS = Public stigma; GEO = Geographical stigma.

Figure 1. Research model

According to Figure 1, the study model used the higher-order construct for the non-physical stigma constructs. The non-physical stigma consisted of sub-constructs such as minimal stigma, environmental stigma, social stigma, public stigma and geographical stigma. Generally, this research model was developed based on three hypotheses:

H1: Non-physical stigma has a positive and significant relationship with property overhang.

H2: Physical stigma has a positive and significant relationship with property overhang.

H3: Psychological stigma has a positive and significant relationship with property overhang.

CASE STUDY

This study focused on property overhangs in Selangor. According to the property market report for Q4 2023, Selangor was among the states with the highest recorded property overhangs after Johor, Kuala Lumpur and Perak (as shown in Table 1).

Table 1. Residential property overhang in Malaysia at Q4 2023

State	Total Unit
Wilayah Persekutuan Kuala Lumpur	3,194
Putrajaya	302
Labuan	42
Selangor	3,011
Johor	3,629
Pulau Pinang	2,722
Perak	4,588
Negeri Sembilan	1,357
Melaka	532
Kedah	177
Pahang	478
Terengganu	232
Kelantan	359
Perlis	6
Sabah	1,933
Sarawak	1,646
Total	24,208

Source: NAPIC (2023)

In general, Selangor has a high demand for housing. Its population was projected to reach 7.3 million in 2024, and migration to the state has increased (Aris et al., 2020). The state is also a concentrated area for development due to the high demand and portrays better economic activities compared to Johor, Perak and Kuala Lumpur. It is Malaysia's most populous and most developed state, with the development of housing, commercial, retail and industrial activities (*Harian Metro*, 2023). This has resulted in the state having the highest standard of living and the lowest poverty rate in Malaysia (*New Straits Times*, 2023). The percentage of Selangor's M40 household income group was the

highest in Malaysia, at 26.4%, and contributed 25.5% (approximately MYR252 million) to Malaysia's gross domestic product in 2022 (*New Straits Times*, 2023). Selangor also recorded an unemployment rate of 2.6% in Q1 2023, compared with 2.9% in the same period in 2022 (*The Star*, 2023). Nonetheless, Selangor recorded the highest number of property overhangs after Johor and Kuala Lumpur.

METHODOLOGY

This section presents the research methodology for developing a model using stigmatised property dimensions toward property overhang in Selangor from a real estate industry player's perspective. It comprises the explanation of the sample, data collection method and strategy and data analysis technique. The samples were assessed using the partial least squares structural equation model (PLS-SEM) technique (formative-formative measurement model) to demonstrate the relationship between property stigma variables and their relationship towards property overhang issues. The formative model has been used by Rodi et al. (2018) and Rodi, Yusof and Arif (2024) in real estate research. It enables estimating complex models with many constructs, indicator variables and structural paths without imposing distributional assumptions on the data (Hair et al., 2017).

This study focused on the perspective of real estate industry players from Selangor towards the residential overhang scenario in Selangor as of Q4 2023. The data were collected using a self-administered questionnaire. The questionnaire was designed and developed based on the factors obtained from previous studies. It consisted of two sections. Section 1 focused on the respondents' demographic questions, including their categories, working experience, academic qualifications and professional membership, to ensure they have vast experience in the real estate industry. Section 2 focused on the categories of property stigma that contribute to why people refuse to buy a house in Selangor. The questionnaire used a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The questionnaire was developed using Google Forms and distributed via WhatsApp groups of property valuers and estate agents in Selangor, including the WhatsApp group of valuers from government agencies, namely the Property Valuation and Services Department. This study relied on online approaches to data collection since it can be easily distributed, monitored and managed. The minimum sample size for PLS-SEM analysis was 30 (Hair et al., 2017). Nonetheless, this study managed to obtain 69 completed questionnaires from respondents, thereby the number of samples in this study was considered adequate for analysis.

In this study, frequency analysis was performed to summarise and identify any peculiarity of data to ensure the data was suitable for analysis. The next step of data analysis involved the PLS-SEM to investigate the relationship and test the hypotheses developed previously. PLS-SEM is helpful for small sample sizes and can handle many indicators. A total of two applications were employed for data analysis: IBM SPSS Statistics version 28 and SmartPLS version 4. Table 2 describes the constructs and indicators used for the PLS-SEM analysis.

Table 2. Indicator variables

Construct	Code	Indicator
Non-physical stigma	ENV	Environmental
	ENV1	Dumping site (Ogban and Akujuru, 2016)
	ENV2	Groundwater contaminated by chemicals (Hajnal, 2017)
	ENV3	Sewerage processing plant (Ogban and Akujuru, 2016)
	ENV4	High-voltage transmission lines (Hajnal, 2017)
	ENV5	Flight landing area (Hajnal, 2017)
	ENV6	Railway line (Hajnal, 2017)
	SS	Social stigma
	SS1	Crime issues (Ibrahim and Maimun, 2022; Teck-Hong, 2011)
	SS2	Foreign workers are renting in the neighbourhood (Huri et al., 2024)
	SS3	International students renting in the neighbourhood (Horgan, 2020)
	SS4	Many residents convert their units into Airbnb (Huri et al., 2024)
	GS	Geographical stigma
	GEO1	Distance to government office (Kasim and Tey, 2022)
	GEO2	Travelling period of more than one hour to facilities and amenities (Tan, *pers. comm.*, 29th May 2023)
	GEO3	Travelling period of more than one hour to CBD (Tan, *pers. comm.*, 29th May 2024)
	GEO4	Poor access to public transport (Rahim et al., 2019)
	PU	Public stigma
	PU1	Delivering house on time (Rahim et al., 2019)
	PU2	Poor construction quality (McCabe, 2018)
	PU3	Located in a flood-prone area (Bell, 2016)
	PU4	Located next to a waste processing centre (Ibrahim and Maimun, 2022)

(*Continued on next page*)

Table 2. *Continued*

Construct	Code	Indicator
	PU5	Located next to a sewerage processing plant centre (Huri et al., 2024)
	MS	Minimal stigma
	MS1	The facilities are not well-maintained (Huri et al., 2024)
	MS2	Management office bans owners from engaging in short-term rentals (Huri et al., 2024)
Physical stigma	PHY	Physical stigma
	PHY1	Poor quality floor finishing (Teck-Hong, 2011)
	PHY2	Low-quality building materials (Cradduck and Warren, 2019)
	PHY3	The small size of the living area, bedrooms and kitchen (Said, Majid and Geng, 2017; McCluskey and Rausser, 2003; Kasim and Tey, 2022)
	PHY4	Inefficient and poor layout design (McCluskey and Rausser, 2023)
	PHY5	Few and unattractive facilities (McCluskey and Rausser, 2003)
	PHY6	The balance of unsold units is facing directly toward the lift (Tan et al., 2023)
	PHY7	Overhang units are poorly maintained and dilapidated (Tan, *pers. comm.*, 29th May 2023)
Psychological stigma	PHS	Psychological stigma
	PS1	Haunted (Gourley, 2016)
	PS2	Ex-burial ground (Alias et al., 2014)
	PS3	Next to the burial land (Alias et al., 2014)
	PS4	Flood phenomenon (Adzhar et al., 2021; Said, Majid and Geng, 2017)
	PS5	Landslide phenomenon (Adzhar et al., 2021)
	P_OVG	Property overhang

This study attempted to address the gap identified by Said, Majid and Geng (2017), who previously examined property stigma from the viewpoint of property experts and found significant impacts on property value. Their findings suggested that if a property is perceived to be stigmatised, its market value may be adversely affected, making it less attractive to potential buyers and investors. This section presents the findings derived from frequency analysis and PLS-SEM. Initially, frequency analysis was performed to examine the demographic backgrounds of the respondents. Subsequently, the PLS-SEM results were discussed, encompassing the measurement and structural

models. This analysis aimed to construct a structural model illustrating the relationship between property stigma and property overhang from the viewpoint of real estate industry professionals.

Table 3 presents the demographic information of 69 respondents who were experienced real estate industry practitioners in Selangor. These respondents included registered valuers, probationary valuers, registered estate agents and real estate negotiators. This study gathers data on their role in the industry, working experience and professional membership. They then provided their perspectives on the stigmas associated with property overhangs. To investigate the industry player's perspective on the stigma found in the residential overhangs in Selangor, the gathered data were analysed using a descriptive approach since it is straightforward and easily understood by the reader (Jasimin and Ali, 2015).

Table 3. Respondents' demographic profile

No.	Respondent Profile	Criteria	Number of Respondents	%
1	Respondent category	Registered valuer	20	29.0
		Registered estate agent	3	4.3
		Real estate negotiator	16	23.2
		Probationary valuer	30	43.5
2	Working experience	Less than five years	10	14.5
		5 years to 10 years	17	24.6
		11 years to 15 years	13	18.8
		16 years to 20 years	13	18.8
		More than 20 years	16	23.2
3	Academic qualification	Certificate	2	2.9
		Diploma	8	11.6
		Bachelor's degree	29	42.0
		Master's degree/Doctorate (PhD)	28	40.6
		Advance diploma	2	2.9
4	Professional membership	Board of Valuers, Appraisers, Estate Agents and Property Managers Malaysia	45	65.2
		Royal Institution of Surveyors Malaysia	14	20.3
		Malaysian Institute of Professional Property Managers and Facility Managers	10	14.5

(*Continued on next page*)

Table 3. *Continued*

No.	Respondent Profile	Criteria	Number of Respondents	%
5	Age	20 years old to 30 years old	9	13.0
		31 years old to 40 years old	28	40.6
		41 years old to 50 years old	21	30.4
		51 years old and above	11	15.9

Results from the PLS-SEM analysis

The data were carefully examined for any missing information, strange or inconsistent responses, outliers and normality issues. Subsequently, the research moved on to measuring and setting up the structural model. For the formative model, a test for convergent validity was performed. The results revealed that the path coefficient for convergent validity among all variables was above 0.8 (as shown in Table 4), indicating that all the examined constructs met the criteria for sufficient convergent validity. Therefore, it was concluded that all the variables effectively contributed to their intended purpose.

Table 4. Measurement indicator

Steps	Measure	Indicator
1	Variance inflation factor (VIF)	< 5.0: Remain
2	Outer weight	> 0.5: Remain
3	*t*-value	> 1.65: Remain
4	Outer loadings	> 0.5: Remain

Source: Hair et al. (2017)

Formative Measurement Model Evaluation

First, the constructs were examined using the VIF to identify their collinearity levels. VIF values below 5.0 indicate that the formative indicators are free from collinearity issues (Hair et al., 2017). The results of the current study demonstrated that all indicators produced a desirable VIF value of below 5.0, suitable for the subsequent analysis. Then, the measurement model was tested to identify the significant indicator outer weights, outer loadings and t-value using the PLS-SEM algorithm and bootstrapping. The aim was to determine the suitable indicators for keeping or deleting from the measurement model. The indicator shall remain in the model if it produces an outer loading of more than 0.7 and significant or 0.5, even if it is not significant (Hair et al.,

2017). Otherwise, it shall be removed from the model if the outer loading is less than 0.5. Tables 5, 6 and 7 summarise the significant value of formative construct measurement.

In the current study, some indicators produced negative outer weights and were removed from the model. In reference to Tables 5, 6 and 7 several constructs were removed from the measurement model, including non-physical stigma (ENV2, PUS4 and SS2), physical stigma (PHY 1 and PHY 4) and psychological stigma (PHS1 and PHS3), as these constructs produced an outer loading less than 0.5 and negative outer weight.

Table 5. Non-physical stigma indicator

Main Construct	Indicator	Weight	*t*-value	Significance (One-tailed)	VIF	Outer Loadings	Result
ENV	ENV1	0.170	0.720	Not significant	1.958	0.580	Remain
	ENV2	−0.211	0.906	Not significant	1.605	0.163	Remove
	ENV3	0.483	1.763	Significant	2.211	0.811	Remain
	ENV4	0.134	0.608	Not significant	2.023	0.754	Remain
	ENV5	0.057	0.200	Not significant	3.075	0.802	Remain
	ENV6	0.461	1.663	Significant	2.990	0.864	Remain
GS	GEO1	0.205	1.090	Not significant	1.470	0.675	Remain
	GEO2	0.305	1.483	Not significant	2.149	0.807	Remain
	GEO3	0.275	0.919	Not significant	2.041	0.801	Remain
	GEO4	0.474	2.120	Significant	1.468	0.835	Remain
PU	PUS1	0.047	0.206	Not significant	2.595	0.741	Remain
	PUS2	0.652	2.958	Significant	3.139	0.932	Remain
	PUS3	0.229	1.020	Not significant	1.903	0.727	Remain
	PUS4	−0.143	0.549	Not significant	3.104	0.698	Remove
	PUS5	0.378	1.230	Not significant	2.755	0.770	Remain
SS	SS1	0.472	2.583	Significant	1.406	0.677	Remain
	SS2	−0.166	0.777	Not significant	1.731	0.463	Remove
	SS3	0.301	1.152	Not significant	2.250	0.777	Remain
	SS4	0.625	2.824	Significant	1.457	0.837	Remain
MS	MS1	0.490	4.025	Significant	1.128	0.733	Remain
	MS2	0.722	7.007	Significant	1.128	0.887	Remain

Table 6. Physical stigma indicator

Main Construct	Indicator	Weight	*t*-value	Significance (One-tailed)	VIF	Outer Loadings	Result
Physical stigma	PHY1	−0.222	0.830	Not significant	4.076	0.663	Remove
	PHY2	0.553	1.948	Significant	4.994	0.796	Remain
	PHY3	0.012	0.043	Not significant	3.045	0.670	Remain
	PHY4	−0.025	0.097	Not significant	3.406	0.700	Remove
	PHY5	0.307	1.769	Significant	1.608	0.730	Remain
	PHY6	0.103	0.473	Not significant	3.506	0.831	Remain
	PHY7	0.483	2.521	Significant	1.943	0.840	Remain

Table 7. Psychological stigma indicator

Main Construct	Indicator	Weight	*t*-value	Significance (One-tailed)	VIF	Outer Loadings	Result
Psychological stigma	PS1	−0.022	0.091	Not significant	2.100	0.433	Remove
	PS2	−0.222	0.909	Not significant	2.019	0.387	Remove
	PS3	0.795	3.585	Significant	1.785	0.840	Remain
	PS3	0.532	1.876	Significant	2.342	0.760	Remain
	PS5	0.043	0.140	Not significant	2.777	0.537	Remain

Structural Model Evaluation

Figure 2 depicts the final structural model for this study. Next, the structural model evaluation was conducted. The evaluation to assess the relationship between exogen and endogen latent variables consisted of three procedures: collinearity assessment, structural path coefficient, hypothesis testing and coefficient of determination (adjusted *R* square).

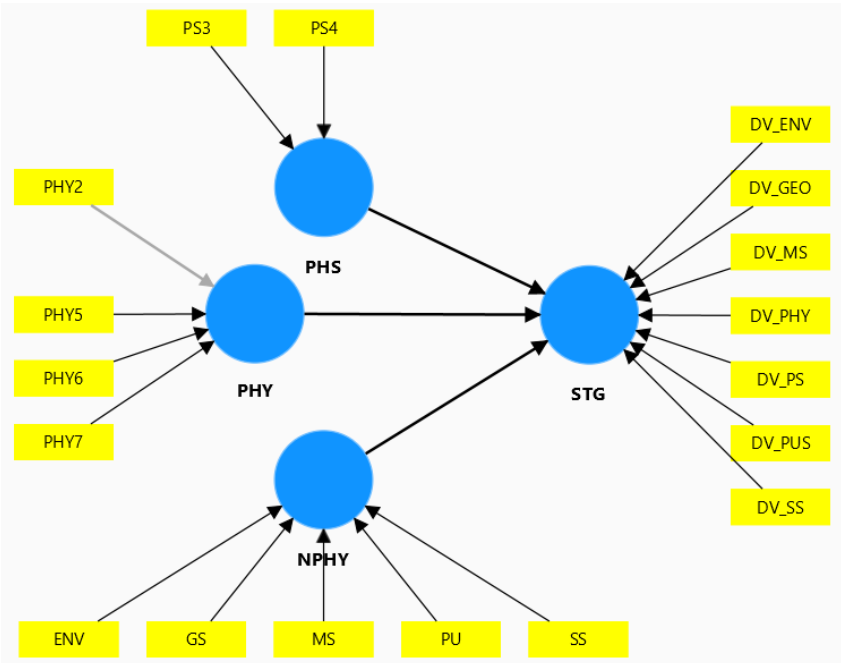


Figure 2. Final measurement and structural model

Table 8. Summary of the VIF value for the exogenous latent variables

Endogen Construct	Exogen Construct	VIF
Property overhang	Physical stigma	2.370
	Non-physical stigma	2.246
	Psychological stigma	1.853

VIF values above 5 or 10 are typically problematic and may involve further investigation or remediation. As shown in Table 8, the collinearity assessment results using VIF recommended that all predictors in the structural model were free from collinearity problems. Next, a bootstrapping technique using 5,000 bootstrap samples to weigh the indicators was conducted to assess the structural path coefficient. This technique determined the significance and relevance between endogenous and exogenous constructs for hypothesis testing. The closer the correlation coefficient values to –1.00 or +1.00, the stronger the relationship, negative or positive.

Figure 3 presents the PLS algorithm results. The figure demonstrated positive psychological stigma, non-physical stigma and physical stigma relationships with property overhang, as shown by the positive coefficient values of 0.165, 0.067 and 0.679, respectively. A total of two constructs displayed significant relationships, with the highest *t*-value of 6.565 for non-physical stigma, followed by psychological stigma with a *t*-value of 1.647 (*p*-value > 10). The physical stigma construct demonstrated an insignificant relationship with property overhang (P_OVG), with a *t*-value of 0.547. The structural model produced an adjusted r^2 = 0.709, explaining 70.9% of the variance in the stigmatised dimension of residential overhangs in Selangor. Table 9 summarises the path coefficients and *t*-values of the structural model.

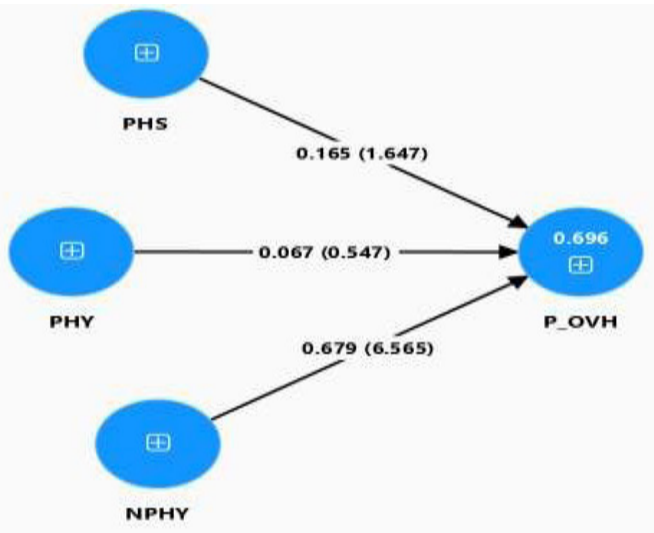


Figure 3. Structural model coefficient value and bootstrapping results *t*-values

Table 9. Path coefficient and *t*-values for all constructs

Hypothesis	Relationship	Coefficient Value	*t*-value	Results
H1	NPHY → STG	0.679	6.57*	Accept
H2	PHY → STG	0.067	0.547NS	Reject
H3	PHS → STG	0.165	1.65*	Accept

Notes: STG = Stigma; PHY = Physical stigma; NPHY = Non-physical stigma; PHS = Psychological stigma; *p < 0.10; NS = Not significant.

RESULTS AND DISCUSSION

The current study found that two out of three hypotheses were accepted based on *t*-values derived from PLS-SEM bootstrapping estimation (as shown in Table 9). The non-physical stigma factor was hypothesised to significantly influence property overhang. non-physical stigma demonstrated greater significance among the variables, evidenced by the highest *t*-values. Therefore, through bootstrapping, Hypothesis 1 was accepted, indicating a strong linkage between the non-physical stigma construct and the property-stigmatised dimension. This suggests that overhang units remain difficult to sell if non-physical stigma persists. Respondents believed non-physical stigma contributes to potential buyers' reluctance to purchase houses in Selangor. This aligns with Said, Majid and Geng (2017), highlighting the significant impact of non-physical stigma on property desirability. Hajnal (2017) also demonstrates that environmental stigmas, such as groundwater contaminated by chemicals, high-voltage power lines and flight landing areas, significantly reduce property value and desirability, contributing to prolonged sale periods. Similarly, Ogban and Akujuru (2016) identify the adverse effects of environmental stigma, such as property near dumping sites and sewerage processing plants, as a key factor in the reduced marketability of residential properties. Even Rahim et al. (2019) noted that non-physical stigma, particularly those related to neighbourhood safety and socio-economic status, often discourage potential buyers from investing in affected properties. Therefore, any non-physical stigma element attached to a property, whether it influences its value or contributes to its overhang status, significantly impacts marketability and buyer interest. The strong linkage between non-physical stigma and property overhang underscores the need for stakeholders in the real estate market to address and mitigate these intangible factors. By doing so, it may be possible to enhance property marketability, reduce overhang rates and create more favourable conditions for property transactions.

Secondly, physical stigma was hypothesised to significantly influence property overhang. The current study, however, found no significant relationship between physical stigma and property overhang; therefore, Hypothesis 2 was rejected. Most respondents believed that physical stigma was less significant, arguing that stigmas may vary substantially among housing schemes. This suggests that what constitutes physical stigma in one context may not be perceived similarly in another. Furthermore, respondents contended that physical stigma could be rectified without incurring substantial costs. For instance, issues such as poor-quality building materials and unsatisfactory finishes can be addressed through complaints to the developer during the defect liability period. This period typically allows buyers to report defects and have them remedied by the developer, thereby mitigating the impact of such issues on the property's desirability and value. Additionally, respondents noted that not all buyers scrutinise the quality of building materials unless

explicitly informed by the developer. This indicates that the awareness and sensitivity of buyers to physical defects can vary, potentially reducing the impact of physical stigma on property overhangs. Concerns regarding inefficient layouts were also dismissed by respondents, who argued that design layouts are promoted and known to the public before purchase. As such, they are perceived as factual information rather than stigmatised attributes. Buyers are typically aware of the layout configurations and make purchasing decisions, accordingly, diminishing the likelihood of these layouts becoming stigmatised post-purchase.

However, most respondents agreed that the remaining unsold units by developers could create various stigmas, such as social stigma. For example, neglected properties can lead to perceptions of poor management, which could foster negative views about the overall development. This aligns with broader findings that poor upkeep and maintenance can contribute to stigmatised perceptions, affecting marketability. These findings are inconsistent with the study by Huri et al. (2024), which stated that physical stigma significantly affects housing sales performance. This discrepancy suggests that the impact of physical stigma might be context-dependent or subject to differing interpretations among market participants. Nonetheless, it is too early to conclude that physical stigma is not a significant factor affecting property overhang, as these findings are based on the perspectives of industry players. To develop a more comprehensive understanding, a further in-depth investigation is required. This would involve a specific case study from overhang residential listings in Selangor to validate the model of stigmatised dimensions towards property overhang from potential buyers' perspectives. Such an approach would provide a broader and more nuanced view of how physical stigma influences property overhang in different contexts.

Lastly, Hypothesis 3 was on the psychological stigma factor. These variables are significant factors that influence property overhang. It can be inferred that the psychological stigma construct is strongly linked to the property-stigmatised dimension and will influence the property overhang. The positive relationship reflects that overhang units will remain challenging to sell as long as this stigma continues. Respondents believed that psychological stigma contributes to developers' failure to attain full sale performance in their housing project; therefore, Hypothesis 3 was accepted. The result is consistent with the findings by Gourley (2016), Said, Majid and Geng (2017) and Adzhar et al. (2021). The studies highlight that psychological stigma significantly influences the demand for property and thus can cause property overhang. The fear and discomfort linked to properties with a history of traumatic events can have a profound impact on the decision-making process of potential buyers. It is also in line with the statement brought by Alias et al. (2014) and Gourley (2016) that fear is often irrational and may persist even after the physical or social factors related to the stigma have been

addressed. For example, a property that has experienced a severe disaster might still be avoided by buyers years later, even if the neighbourhood has improved or the event has faded from the public memory.

CONCLUSIONS AND RECOMMENDATIONS

Researchers have largely overlooked the role of stigmas in contributing to residential property overhang, though stigmas are anticipated to negatively affect the decision-making processes of potential buyers. Incorporating the stigmatised dimensions of property overhang into consideration can provide valuable insights for government and relevant agencies in addressing these issues, ranging from site selection and layout design to strata management. The current study found that non-physical stigma and psychological stigma were significant factors in property overhang. However, it is essential to note that this study was based on the perspectives of property industry professionals, who provided insights based on their extensive experience in the real estate sector. The results may differ when this survey is extended to potential buyers, as they are the actual end-users who encounter these issues firsthand. Additionally, findings may vary depending on the specific case study area, given the inherent uniqueness of each property, which does not share identical characteristics with others. Expanding this research to include more overhang projects and incorporating additional variables will offer a more comprehensive understanding of the impact of stigmas on the property overhang issue. While this study has significantly contributed to understanding property stigma, further research is necessary to understand how stigma evolves. Future studies should focus on longitudinal analyses that track changes in stigma and property overhang across different geographic locations. Additionally, more detailed case studies exploring successful mitigation strategies could offer insights into how other regions have successfully addressed property stigma and overhangs. Furthermore, exploring other types of stigmas, such as financial or legal stigma associated with properties, would provide a more comprehensive understanding.

Local authorities can utilise this model as a critical factor for applicants to consider when creating a new development plan in a particular region. This technique allows for the establishment of an action plan based on symptoms of stigma and the identification of responsible bodies to enhance their policies and processes. Examining the fundamental reasons for property overhang based on the stigma aspect can assist the government in addressing the overhang issue beyond providing rebates, such as refunds on stamp duty, which affects government revenue.

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