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Prioritizing the structural and neighborhood preferences of Penang's condominiums

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ABSTRACT

This study examines the preferences of prospective condominium buyers in Penang, Malaysia, with a focus on property structural elements and neighbourhood amenities, as informed by experienced real estate agents. A review of the literature identified twenty key structural features and eighteen important neighbourhood characteristics, including accessibility and community resources. The research involved a purposive sample of 60 real estate professionals, each with at least five years of experience in the local market. These participants assessed the importance of the identified attributes using a self-administered questionnaire. The data analysis generated a relative importance index that ranked the top ten structural and neighbourhood preferences, offering insights into the factors condominium buyers value most. These findings provide valuable guidance for developers, marketers, and policymakers to align their strategies with buyer preferences, ultimately enhancing satisfaction and improving market appeal within Penang's competitive condominium sector.

1. Introduction

The 2030 Agenda for Sustainable Development Goals (SDGs) and the New Urban Agenda (NUA) address the complexities of urbanization and the multifaceted nature of human settlements. These frameworks aim to harmonize the needs of individuals and communities with the critical demands of a sustainable economy, society, and environment. According to a 2022 report from the Department of Statistics Malaysia (2023), Penang stands out as one of the most urbanized regions in the country, with an impressive 92.5% of its land designated as urban. Notably, the North-East District of Penang, sprawling over 126 km², is characterized by its high population density, housing approximately 4,710 residents per square kilometer (Department of Statistics Malaysia, 2023). This bustling urban landscape creates

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significant pressure on available space and infrastructure, escalating demand for high-density living solutions such as condominiums and apartments (Annuar, 2023; Kaur, 2023). In the third quarter of 2024, the real estate market in Penang exhibited remarkable strength, with a notable 28.6% of high-rise residential units successfully sold. This impressive figure highlights a growing preference among buyers for vertical living spaces, as it outperformed the more sluggish sales of landed properties, which recorded a modest 19.2% sales rate (National Property Information Centre, 2024). This trend illustrates a clear shift in consumer preferences, reflecting the practicality and appeal of high-rise living in an increasingly urbanized environment.

House selection is primarily driven by location significance, which is crucial in determining a property's appeal. Homes that offer convenient access to essential neighbourhood amenities, such as well-connected main roads, reputable schools, bustling Central Business Districts (CBDs), and nearby hospitals, tend to be in high demand among potential buyers. In the current landscape of rapid urbanization, the surge in condominium construction has ignited fierce competition, primarily fueled by a growing population seeking affordable housing options. This trend of prioritizing the development of condominiums and apartments over landed properties is a strategic response to the pressing need to maximize the use of limited urban space. Recent data from National Property Information Malaysia reveals that the final quarter of 2023 witnessed a notable increase in transactions of condominiums and apartments in the Timur Laut region of Penang.

Despite this uptick, the issue of housing overhang persists as a significant challenge, with a staggering total of RM17.68 billion involved in 2023. Alarmingly, 47.5% of these overhang cases are attributed to condominiums and apartments throughout Malaysia (National Property Information Centre, 2023). An overhang property is an entirely constructed housing unit with a Certificate of Completion and Compliance (CCC). However, it remained unsold in the marketplace for more than nine months after its launch (Sebri, 2023). Previous research has indicated that various factors, including structural design, location desirability, and neighbourhood characteristics, may influence the prevalence of overhang properties (Murtadza & Salleh, 2018; Shien & Kasim, 2022). In the face of budgetary constraints, many prospective homeowners find themselves in a position where they must forgo specific preferences, making difficult choices to prioritize essential needs and optimize their housing situation.

Financial capability emerges as a key determinant across different geographical settings, often outweighing factors like design and quality. Kam et al. (2021) and Kumar & Khandelwal (2018), reaffirms that budget limitations and affordability significantly affect buyer choices in the residential property market. It shows how perceived behavioural control, often tied to financial ability, affects intention to invest in property. Hamilton et al. (2019) offer a broader psychological framework, explaining how financial constraints limit consumer choices and create a sense of scarcity, which impacts decision-making behaviour beyond housing. This makes financial capability a core lens in understanding consumer behaviour for high-cost items. This proved the theory that consumers are rational and make decisions based on maximizing utility given their budget constraints (Becker, 1976).

Numerous studies have explored the significant factors that shape urban residents' purchasing decisions regarding condominium amenities (Ratzke, 2023; Teo et al., 2023; Wang et al., 2023). The combination of appealing features, such as green infrastructure and rich biodiversity, strongly resonates with today’s buyers. However, despite the preference for these appealing features, fundamental factors like the structural and locational preferences remain crucial in attracting potential buyers due to financial affordability. These structural features and neighbourhood amenities, deeply influenced by the surrounding environment, serve as essential criteria in the housing selection process (Abdul Wahab et al., 2023; Ismail & Mohamed Shaari, 2019; Mentaza Khan et al., 2017). By gaining a deeper understanding of these structural and neighbourhood characteristics, developers and stakeholders in the property market can effectively cater to prospective buyers' basic needs, ultimately creating practical living spaces that balance the essential needs within an average budget.

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Thus, this study's primary aim was to thoroughly investigate the priorities regarding the essential property criteria, which are characterized by structural and neighbourhood preferences as perceived by real estate agents and property sellers. The reason that their perspectives are being taken into account is that real estate agents are professionals dedicated to assisting individuals in their quest for properties, whether acting on behalf of the buyer or the seller (Abdul Manaf & Mansor, 2018). In Malaysia, these agents play a crucial role, representing both the vendor (the landlord or lessor) and the purchaser (the tenant or lessee)(Board of Valuers, Appraisers, Estate Agents, and Property Managers, 2020). This dual representation allows them to navigate the market efficiently and advocate for the interests of their clients. The Malaysian Institute of Estate Agents (MIEA) is the authoritative body that oversees and represents all registered estate agents nationwide, ensuring that they adhere to industry standards and best practices.

Real estate agents possess an acute understanding of potential buyers' tastes and requirements. They have firsthand knowledge of prevailing market conditions and competitive property values, which empowers them to provide insightful advice during your search. According to the Valuers, Appraisers, and Estate Agents Act 1981, only registered estate agents, negotiators, and property owners have the legal authority to manage real estate transactions. Consequently, their expert opinions on condominium preferences are shaped by a collective understanding of current market trends, ensuring potential buyers receive informed guidance as they navigate the complex world of property investment.

By focusing on these perspectives, the research provides a comprehensive overview of the crucial preferences influencing condominium buyers. The insights gained from this study could play a crucial role in shaping the future of condominium development in Malaysia, especially in developing effective marketing strategies and informing government housing policies. To fulfill this objective, the study utilizes a relative importance index to meticulously rank the significance of various structural and neighbourhood preferences. This method allows for a clear presentation of the prioritized preferences among condominium buyers in the vibrant market of Penang, Malaysia, offering valuable guidance for stakeholders in the real estate sector.

Hence, a relative importance index (RII) is a valuable statistical tool designed to assess and rank the relative significance of different characteristics or factors. This method involves gathering preferences from respondents, who rate each characteristic on a scale. On the example of the 5-Likert scale, a rating of one signifies very low importance, while a rating of five denotes the highest significance level. The RII is instrumental in identifying which factors hold the most weight in each context, allowing researchers to prioritize items effectively. By analysing the ratings collected, the index reveals insights into the most significant impact factors, making it an essential technique in research and decision-making. This structured approach ensures that respondents' voices are heard and helps them make informed choices based on their perceptions.

1.1 Structural preferences

The house is the most significant durable good for households. It is a major investment that necessitates much involvement and intricate decision-making. Beyond the mere choice of location, the house's physical structure is a crucial factor shaping the buying process. When discussing structural preferences, we refer to the physical characteristics that define a home, including the building's facade. These characteristics significantly impact potential buyers' decisions. Factors such as the overall size of the unit, the number of bedrooms and bathrooms, the presence of a lift, and the layout of the living space are all vital components that contribute to a family's comfort and lifestyle.

Ultimately, these fundamental aspects play a crucial role in enhancing household satisfaction and ensuring a higher quality of life, making them essential considerations in the home-buying journey. (Mulliner et al., 2020). Structural preference tends to justify the functionality criteria rather than the desire (Moghimi & Jusan, 2015). From the literature, twenty house preferences are classified into structural characteristics of a house. The structural preferences measured in this study are listed in Table 1.

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1.2 Neighbourhood preferences

Neighbourhood preferences shape individuals' mobility, behaviour, and lifestyle choices. Factors such as proximity to the workplace and access to reliable public transportation significantly influence these preferences (Abdul Fattah et al., 2018; Ismail & Mohamed Shaari, 2018). In general, a household's demographic characteristics—such as age, family size, occupation, and financial situation—determine both structural and neighbourhood preferences, which, in turn, shape the range of available housing options.

Condominium preferences reflect potential buyers' considerations and judgements when investing in a unit. These preferences are dynamic and may change over time, often influenced by market trends and personal circumstances, thus making them unpredictable (Banal & Robielos, 2020). However, to identify general and essential preferences, this study analyses relative importance by ranking the results using the Relative Importance Index (RII). Eighteen neighbourhood preferences, identified through a literature review, are presented in Table 1.

2. Methodology

2.1 Questionnaire development and instrument

A self-administered questionnaire was developed, consisting of four sections. Section A captured the respondents' demographic information, while Section B addressed structural preferences. Section C focused on neighbourhood preferences, and Section D included other natural amenities that could potentially attract buyers. However, Section D is excluded from this discussion, as it falls outside the scope of this study.

In total, twenty structural attributes and eighteen neighbourhood attributes were selected to measure buyer preferences. Respondents were asked to rate the importance of each attribute using a 5-point Likert scale, which reflects the typical feedback gathered from potential condominium buyers in the Penang market.

The list of attributes related to structural and locational factors is presented in Table 1.

Table 1. Attributes of structural and neighbourhood preferences

Preferences	Attributes
Structural (20 attributes)	Total floor area, number of bedrooms, number of bathrooms, availability of utility room, building age, total of floor levels, unit's level, total number of houses per level, facility amenities, quality of building materials, green building certifications, size of living area, size of kitchen area, house address number, house orientation, lift availability, unit's amenities, unit's type, guarded compound, number of parking lot.
Neighbourhood (18 attributes)	Proximity to central business district, workplace, main road/highway, schools, higher education facilities, health facilities, public transport amenities, worship centre, recreational park, petrol stations, fire/police stations, super/hyper/mini markets, industrial area, cemetery, green area, water bodies, tourist attractions, and sports amenities.

To ensure content validity, the questionnaire was reviewed by an experienced academic specialising in urban economics. The expert evaluated the relevance, clarity, and coverage of the items in relation to the study's objectives. Based on the feedback received, minor adjustments were made to improve item wording and ensure alignment with the intended constructs. Furthermore, the questionnaire items were grounded in existing literature to support comprehensive coverage of the research variables. In addition to establishing validity, the reliability of the questionnaire was assessed using Cronbach's alpha to determine the internal consistency of the items.

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The respondents for this study comprised real estate agents, negotiators, and property sellers with in-depth knowledge and experience in the Penang real estate market. To ensure a high level of expertise, only participants with at least five years of experience in the local real estate sector were selected. The questionnaires were distributed using multiple methods to maximise reach, including emails for convenience, face-to-face interviews for personal engagement, QR code leaflets for easy access, and phone calls to facilitate direct communication and gather in-depth insights. This diverse approach was intended to capture a comprehensive range of responses from professionals well-versed in the nuances of the Penang condominium market.

2.2 Statistical Analysis

The quantitative data underwent statistical techniques. Descriptive analysis was employed to ascertain the percentage of respondent distribution, while the instrument's reliability was evaluated using Cronbach's Alpha in Statistical Package for Social Science (SPSS) version 29.0 software. Cronbach's Alpha was calculated using the formula (1):

$$\alpha = \frac{N.\hat{c}}{\upsilon + (N-1).\hat{c}} \quad (1)$$

Where N is the number of items, $\hat{c}$ is the average covariance between pairs, and υ is the average variance. The rule of thumb for interpreting alpha for Likert scale questions is shown in Table 2.

Table 2. Interpreting alpha

Cronbach's Alpha	Internal consistency
$A \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Generally, a score of more than 0.7 for α is usually considered to be appropriately acceptable. The higher value of α shows the stability of instruments used in the study.

The relative importance index (RII) was calculated using Microsoft Excel using the formula (2).

$$\frac{\Sigma w}{AN} = \frac{5n_5 + 4n_4 + 3n_2 + 2n_2 + 1n_1}{5n} \quad (2)$$

The variable w represents the weighting assigned by respondents to each factor, and this weighting is measured on a scale from 1 to 5. Specifically, "n1" represents "not important," indicating a lack of significance; "n2" denotes "slightly important," suggesting minimal relevance; "n3" indicates "moderately important," implying a fair level of significance; "n4" signifies "very important," showing a strong level of importance; and "n5" corresponds to "extremely important," reflecting a critical level of importance that warrants immediate attention. In this context, "A" denotes the highest possible weight set at 5. Meanwhile,

"N" refers to the total number of respondents participating in the survey or study, contributing to the overall data collection process. The outcome of the Relative Importance Index (RII) is calculated and can range from 0 to 1. This index allows us to quantify the perceived importance of various factors as rated by respondents. The importance rank is determined based on the RII value, with values closer to 1 indicating a higher perceived importance of the corresponding factor. This analytical approach facilitates a clearer understanding of how each factor is valued by the respondents concerning the overall context being studied.

3. Results

The demographic data collected from the respondents provides an in-depth look at their gender, educational backgrounds, and professional experiences within the property market. Initially, 74 samples were obtained; however, 14 were filtered out due to their insufficient experience in Penang's property market, specifically those with less than five years of involvement in this field. The remaining 60 samples comprised seasoned property agents, sellers, and negotiators, each bringing knowledge and insights to the study. Their extensive experience ranges from navigating complex transactions to understanding market trends and client needs, ensuring a rich pool of perspectives for analysis. Consequently, the study focused on this selective group of respondents, allowing for a more nuanced evaluation reflecting the expertise and depth of experience in the Penang property market.

The reliability analysis scored 0.809 and 0.805 for structural and neighbourhood preferences, detailed in Table 3. The value of more than 0.8 can be considered to be acceptable in terms of internal consistency in the set of questionnaires (Yusel Karakaya & Alparslan, 2022).

Table 3. Result of Cronbach's Alpha

Type of preferences	Cronbach's Alpha	Number of items
Structural preference	0.809	20
Neighbourhood preference	0.805	18

Given the acceptable level of internal consistency, the study proceeded with descriptive analysis to develop a demographic profile of the respondents. Table 4 presents the demographic data of the survey participants.

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Table 4. Respondent demographic data

Respondent background (N=60)	Percent
Gender:	
- Male	43.3 %
- Female	56.7 %
Age:	
- Below 35	23.3 %
- Above 35	76.7 %
Education's level	
- Certificate	6.7 %
- Diploma	33.3 %
- Bachelor's degree	56.7 %
- Master's degree	3.3 %
- PhD	0 %

The survey revealed that 43.3% of the respondents identified as male, while 56.7% identified as female. Regarding age, 23.3% of participants were under 35, while 76.7% were 35 years old or older. This age distribution aligns with the requirement that participants have at least five years of experience in the Penang property market. This suggests that many respondents are likely to be more seasoned professionals. Additionally, over 50% of the respondents hold bachelor's degrees, while 33.3% have diplomas. Furthermore, 6.7% have certificates, and 3.3% possess master's degrees. Overall, these demographic profiles illustrate a diverse group of respondents contributing to the insights gathered in this survey.

3.1 Structural Preference Importance Index

The respondents rated the importance of various structural preferences commonly expressed by potential clients when searching for condominiums. Table 5 presents the Relative Importance Index (RII) results, ranking twenty structural preferences based on their importance.

Table 5. RII for structural preferences

Structural preference	Mean	RII	Rank
Total floor area	4.5	0.9	1
Number of the parking lot	4.4	0.87	2
Number of bedrooms	4.17	0.83	3
Lift availability	4.03	0.81	4
Unit's level	4	0.8	5
Unit's amenities	3.8	0.76	6
Guarded compound	3.7	0.74	7
Number of bathrooms	3.63	0.73	8
Total number of floor levels	3.63	0.73	9
Facility amenities	3.33	0.67	10
Building age	3.17	0.63	11
Size of living area	3.13	0.63	12

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Structural preference	Mean	RII	Rank
Size of kitchen area	3.1	0.62	13
House orientation	2.93	0.59	14
Unit's type	2.87	0.57	15
Quality of building materials	2.43	0.49	16
Green building certifications	2.43	0.49	17
House address number	2.43	0.49	18
Total number of houses per level	2.2	0.44	19
Availability of a utility room	2.13	0.43	20

The results presented in Table 5 reflect the critical preference levels rated by the respondents. The findings indicate that the top ten structural attributes prioritised by respondents are total floor area (RII = 0.90), number of parking lots (RII = 0.87), number of bedrooms (RII = 0.83), lift availability (RII = 0.81), the unit's level within the condominium building (RII = 0.80), unit amenities (RII = 0.76), guarded compound (RII = 0.74), number of bathrooms (RII = 0.73), total number of floor levels (RII = 0.73), and facility amenities (RII = 0.67).

The total floor area, number of parking lots, number of bedrooms, and number of bathrooms were ranked 1st, 2nd, 3rd, and 8th, respectively. These attributes, closely related to space consumption, are regarded as the most important when selecting a home. Meanwhile, lift availability, the unit's level, unit amenities, total number of floor levels, and facility amenities were ranked 4th, 5th, 6th, 9th, and 10th, respectively. From the perspective of property agents, these rankings suggest that potential buyers place high importance on extended floor space and indoor amenities as essential living requirements. Additionally, the guarded compound, ranked 7th, reflects buyers' prioritisation of security, underscoring its relevance in the selection process.

In contrast, the attributes ranked lower in the list are generally not explored or discussed in depth by buyers. These items may be perceived as secondary considerations or optional features. The ranking suggests that such elements are more flexible and can be modified or overlooked during decision-making. As a result, they hold lower priority compared to higher-ranked attributes, which are viewed as essential or non-negotiable. This flexibility allows buyers to focus on more critical factors without significantly affecting overall satisfaction or outcomes.

3.2 Neighbourhood preference importance index

The respondents rated neighbourhood preferences based on the feedback most frequently received from their clients. Table 6 presents the ranked neighbourhood preferences according to their Relative Importance Index (RII) values.

Table 6. RII for neighbourhood preferences

Neighbourhood preference	Mean	RII	Rank
Proximity to workplace	4.43	0.89	1
Proximity to main road/highway	4.1	0.82	2
Proximity to schools	4.07	0.81	3
Proximity to public transport amenities	3.67	0.73	4
Proximity to Central Business District (CBD)	3.6	0.72	5
Proximity to health facilities	3.43	0.69	6
Proximity to super/hyper/mini markets	3.23	0.65	7

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Neighbourhood preference	Mean	RII	Rank
Proximity to higher education facilities	3.1	0.62	8
Proximity to sports amenities	3.1	0.62	9
Proximity to the industrial area	3.07	0.61	10
Proximity to the recreational park	3.03	0.61	11
Proximity to the worship centre	2.87	0.57	12
Proximity to green area	2.8	0.56	13
Proximity to petrol stations	2.77	0.53	14
Proximity to tourist attractions	2.6	0.52	15
Proximity to water bodies	2.57	0.52	16
Proximity to fire/police stations	2.47	0.49	17
Proximity to cemetery	1.97	0.39	18

The results presented in Table 6 show the ranked neighbourhood preferences identified through the survey. The findings indicate that the top ten prioritised neighbourhood attributes are proximity to the workplace (RII = 0.89), main road/highway access (RII = 0.82), schools (RII = 0.81), public transport amenities (RII = 0.73), Central Business District (CBD) (RII = 0.72), health facilities (RII = 0.69), super/hyper/mini markets (RII = 0.65), higher education facilities (RII = 0.62), sports amenities (RII = 0.62), and industrial areas (RII = 0.61).

The prioritisation of health facilities, super/hyper/mini markets, higher education institutions, sports amenities, and industrial areas, ranked 6th through 10th, may be influenced by their occasional necessity for general consumers. Although these factors are included among the top ten priorities, most exhibit RII values below 0.7, suggesting only a moderate level of importance. By contrast, only three attributes—proximity to the workplace, main roads, and schools—record RII values exceeding 0.8, indicating their higher perceived significance among respondents.

4. Discussion

Many hedonic pricing models developed by previous researchers have demonstrated a positive and significant relationship between housing prices and floor area, which importantly reflects the market value of condominium units (Paniagua-Molina et al., 2021; Wen et al., 2021). Buyers are generally willing to pay more for larger living spaces, particularly when appropriate parking facilities and bedrooms are provided, underscoring the demand for space among urban purchasers, as observed by real estate agents. In the densely populated Timur Laut District of Penang, this preference is especially pronounced. Here, space-related attributes—such as floor area, number of bedrooms, bathrooms, and parking lots—are ranked among the top priorities. Consequently, the Relative Importance Index (RII) results reinforce the significance of these space-related features as leading preferences.

From the perspective of real estate agents, the unit's level within the condominium building is also considered important. This may be attributed to buyers' desire to enjoy better views or avoid air pollution from traffic, factories, or open burning. Yu et al. (2007) found that higher-level units often offer unobstructed views, which can add a premium to the price buyers are willing to pay. In addition, modern condominium developers tend to emphasise in-unit amenities—such as kitchen cabinets and safety appliances—as selling points, reinforcing their relevance in the decision-making process (Iman et al., 2012). Furthermore, shared facilities, including gyms, swimming pools, and tennis courts, contribute to market competition and are considered essential by potential buyers. The total number of floor levels, ranked 9th, may reflect concerns about residential density, which can affect comfort and privacy, thus justifying its inclusion among the top ten preferences.

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Meanwhile, neighbourhood preferences are closely tied to buyers' lifestyles. The findings indicate that potential buyers prioritise proximity to essential daily destinations, such as workplaces, main roads or highways, schools, public transportation, and the Central Business District (CBD). High levels of mobility necessitate convenient access to city centres, enabling quicker and easier movement. Buyers tend to focus on fulfilling daily routines rather than seeking optional environmental amenities, such as recreational parks, green spaces, or water features. Supporting this view, Iman et al. (2012) also reported that potential buyers generally prefer locations near workplaces and main roads rather than directly within city centres. Notably, the CBD ranked only 5th in preference, which may contrast with traditional urban theories such as the concentric ring model that emphasise the centrality of the CBD. This shift suggests the emergence of a polycentric urban pattern, although further investigation is required to confirm this trend.

5. Conclusion

This study seeks to identify the general prioritisation preferences of potential condominium buyers from the perspective of real estate agents, whose insights offer a comprehensive overview of current market trends. By understanding these essential preferences, property developers can more effectively prioritise the features most desired by buyers, positioning them as crucial elements in the construction of new condominiums to meet widespread consumer demand.

However, the study has certain limitations, particularly regarding which condominium amenities should be emphasised. Modern condominiums offer a wide range of internal amenities designed to attract potential buyers. While some of these features are unique and appealing, others may be unnecessary, depending on individual needs. As additional amenities can influence management fees and overall property prices, careful selection is essential to align offerings with market demand and minimise the risk of oversupply.

To address this gap, further research is recommended to explore the distinct amenity preferences of various target market segments. Such investigations would provide valuable insights into consumers' amenity demands, enabling developers to design more tailored and appealing condominiums that genuinely resonate with potential residents.

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Conflict of interest statement

The authors agree that this research was conducted without any self-benefits, commercial or financial conflicts and declare the absence of conflicting interests with the funders.

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Authors' contributions

Siti Maryam carried out the research, collected data, and wrote and revised the article. Mohd Hasrol Haffiz conceptualised the central research idea and provided the theoretical framework. Both Mohd Hasrol Haffiz and Ernieza Suhana designed the research and supervised its progress. Mohd Hasrol Haffiz anchored the theoretical concept of the research and validated the analysis, and Ernieza Suhana revised and approved the article submission.

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