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# WHO'S CAPTURING THE GREEN VALUE IN KUALA LUMPUR'S OFFICE RENTAL SPACES?

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**Abstract:**

This study aims to understanding the dynamics within the green office rental market in Kuala Lumpur by identifying the industries that capture the most value from green office spaces and analyzing tenant preferences in this evolving landscape. The primary objective is to uncover the current nature of businesses occupying green office spaces and their preferences regarding location, building features, certification levels, and green attributes. By employing a quantitative methodology, the research commenced with an extensive literature review to situate the study within the broader context of existing academic work. Primary data was meticulously collected from GreenBuildingIndex Sdn. Bhd. (GBI) and the Valuation and Property Services Department (JPPH), incorporating sample data from 50 green office buildings documented by GBI and 2,707 rental office spaces recorded by JPPH. The analysis utilized the Statistical Package for the Social Sciences (SPSS) to integrate and examine the data collected from these distinct sources. Furthermore, the nature of businesses occupying these green spaces was ascertained through comprehensive verification using company websites and professional platforms. The findings reveal a notable preference among tenants from sectors prioritizing sustainability, innovation, and strategic positioning, such as Energy and Technology, Financial Services, ICT, and Management Services. These sectors demonstrate an acute awareness and commitment to environmental sustainability, opting for green office spaces that align with their corporate ethos of innovation and responsibility. Moreover, the study delineates tenant preferences in selecting green office spaces, highlighting a clear inclination towards buildings that not only offer prestigious locations and

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advanced green features but also possess recognized green certifications, indicating a mature and discerning tenant base within the market. In conclusion, the research provides insightful revelations about the commercial dynamics of Kuala Lumpur's green office rental market, showcasing a significant shift towards sustainability across diverse sectors. The preferences regarding location, certification, and building attributes reflect a complex interplay of economic, environmental, and social factors, driving the demand for green office spaces in Kuala Lumpur. This study contributes to the understanding of how businesses are aligning with sustainability trends, offering a valuable perspective on the green value captured in the office rental market of Kuala Lumpur.

**Keywords:**

Green Value, Office Rental Market, Green Tenant Preferences

## Introduction

The contemporary office rental market in Kuala Lumpur is witnessing a notable shift towards sustainability and green building practices, reflecting a global trend. This transition is driven not only by environmental concerns but also by the evolving preferences of corporate tenants, who increasingly prioritize sustainability, health, and well-being alongside traditional factors such as location and cost (Mohd Adnan et al., 2022). Consequently, the concept of "green value" in office rentals, representing the premium associated with properties adhering to sustainable building standards, has gained significance (S Kim et al., 2017; Wadu Mesthrige & Chan, 2019). While studies suggest that green buildings are perceived as more marketable and attractive for investments, the rental rate disparity between green and conventional office buildings in Malaysia remains minimal, with factors such as supply-demand dynamics within specific locations playing a significant role (Jasimin & Ali, 2014). However, despite the recognition of green value, challenges persist in accurately quantifying and understanding its distribution within the Kuala Lumpur office rental market. Identifying who captures the green value is crucial for unravelling the economic incentives behind green building investments and for formulating policies that foster sustainable development.

In the context of the evolving landscape of sustainable development and green building practices, the office rental market in Kuala Lumpur, Malaysia, is witnessing a growing emphasis on green office spaces. Despite the burgeoning interest and investment in green buildings globally, empirical research on the economic implications of these investments, particularly in emerging markets like Kuala Lumpur, remains sparse. Studies in various regions have documented a green premium in terms of higher rental rates and occupancy levels for green-certified buildings (Bond, 2014; Fuerst & McAllister, 2011; Li et al., 2021). However, the analysis of stakeholders in the office rental market has not been adequately explored within the context in the country. The question of who captures the green value is essential for understanding the economic incentives behind green building investments and for designing policies that promote sustainable development. Given the unique economic, environmental, and regulatory landscape of Kuala Lumpur, there is a critical need to examine who captured the current green value of office rental market in Kuala Lumpur?

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The primary objective of this study is to identify who's capture current green value in office rental market in Kuala Lumpur. The research questions outline are as follows:

a) What is the current nature of tenant's business in green office spaces in Kuala Lumpur?
b) What are the tenant's preferences in selecting the green office spaces in Kuala Lumpur?

## Literature Review

The evolving landscape of the office rental market in Kuala Lumpur, Malaysia, reflects a notable shift towards sustainability and green building practices. The studies have highlighted the emergence of "green value" in office rentals, where properties adhering to sustainable building standards command a premium. This premium is not only influenced by environmental concerns but also by the evolving preferences of tenants. However, despite the growing recognition of green buildings as attractive investments, barriers such as financial constraints and limited awareness hinder their widespread adoption. While existing literature underscores the economic implications and multifaceted nature of tenants' preferences in Kuala Lumpur's office rental market, there remains a critical gap in understanding who precisely captures the green value in this context. Therefore, there is a pressing need for further research to comprehensively explore the dynamics underlying the distribution of green value among stakeholders, shedding light on the factors driving sustainability, economic dynamics, and the built environment in Kuala Lumpur's office rental market.

### *The Key Factors Contribute to Green Value of Office Rentals Market in Malaysia*

In the context of Malaysia's evolution towards sustainable infrastructure, especially within Kuala Lumpur, the advancement of green buildings is propelled by the green feature prerequisites set by the Kuala Lumpur City Hall, mandating a minimum certification level of 'GBI Gold' or its equivalent (Jasimin & Ali, 2014), The preferences of corporate tenants for office spaces in Kuala Lumpur's commercial hubs are shaped by considerations such as building amenities, occupational health and well-being, alongside corporate social responsibility, underscoring the significance of sustainability characteristics in office selection (Mohd Adnan et al., 2022). The adoption of green leasing practices within office market in Kuala Lumpur is encouraged by green building standards and the recognition of impediments related to financial costs and funding (Mohd Adnan et al., 2017). The financial advantages of green office buildings are highlighted by the tenants' willingness to pay a higher premium for offices with green certification, where such properties enjoy rental premiums around 10.9% more than non-green buildings. Drawing from several research findings, the pivotal elements contributing to the green value in Kuala Lumpur's office rental sector are identified as sustainability efforts, green certification(Wadu Mesthrige & Chan, 2019), alongside the economic and environmental merits of integrating green practices. The influence of green value on the office rental market manifests through the economic gains of green office buildings values (Kasim et al., 2015), the impact of green practices on tenant leasing actions (Sumin Kim et al., 2017), and the obstacles in executing green office strategies. Nonetheless, while the economic and environmental upsides of green office buildings are emphasized, the barriers such as budgetary limitations, lack of awareness, and expertise remain significant challenges to the broader adoption of green offices in Malaysia(Yee Sin et al., 2021).

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As a summary, the key factors influencing the green value of office rentals in Kuala Lumpur such as tenant preferences (Mohd Adnan et al., 2022), financial cost and fundings (Sumin Kim & Lim, 2019; Mohd Adnan et al., 2017), buildings attributes and location (Wan Rodi et al., 2019), corporate social responsibility (Mohd Adnan et al., 2022), market value enhancement (Jasimin & Ali, 2014) and green attributes (Rodi et al., 2022).

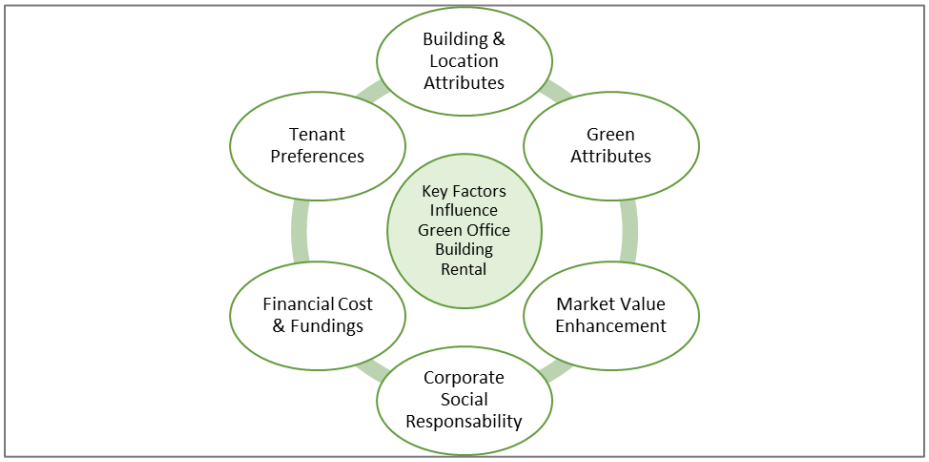


**Figure 1: Key Factors Influence Green Office Building Rental**

Source: Authors (2024)

***Green Building Practice in Office Rentals in Malaysia***

In the decision-making process of corporate tenants for office spaces within green buildings in Kuala Lumpur, a multitude of factors are considered, encompassing geographical positioning, financial implications, architectural characteristics, wellness and health considerations, reputation and branding, alongside commitments to social corporate responsibility (Mohd Adnan et al., 2022). The adoption of green lease agreements, emphasizing the reduction in energy and water usage as well as the utilization of recycled materials, is notably common among administrators of premier office structures in Kuala Lumpur (Mohd Adnan et al., 2017). Research conducted in Kuala Lumpur indicates that aspects such as green building classifications, locational advantages, engineering and service quality of buildings, and aesthetic and design elements play a significant role in influencing rental values within the Golden Triangle Area of Kuala Lumpur (Wan Rodi et al., 2019). Environmental certification programs, including HKBEAM, BEAM-Plus, and LEED, are recognized for adding value to office buildings, evidenced by tenants' willingness to incur a premium for offices that are green-certified (Wadu Mesthrige & Chan, 2019). The proliferation of green buildings in Kuala Lumpur is viewed as a testament to sustained economic progression, thereby enhancing their marketability and attractiveness for investment endeavors (Jasimin & Amat, 2019). Offices in buildings that have attained green certification are seen to have elevated real estate worth, predicated on anticipations of diminished operational expenditures and enhanced organizational efficacy, facilitated by superior indoor environmental quality (IEQ) conducive to employee performance (Jasimin & Amat, 2019). The Malaysian government has placed emphasis on green building initiatives, such as the Green Building Index (GBI), which prioritizes renewable energy sources and energy conservation (Nazri et al., 2015). The impetus for fostering sustainable consumption and production patterns in the Klang Valley, inclusive of Kuala Lumpur, has been significantly driven by political commitment and stringent regulatory frameworks, particularly those that promote resource recycling (Amasawa et al.,

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2024). The implementation of green offices in Malaysia faces hurdles, including financial constraints, limited awareness, a deficiency in specialized knowledge, ownership dilemmas, and the nature of the buildings themselves (Yee Sin et al., 2021). Doubts and reservations concerning the economic repercussions represent impediments to the progress of green-building initiatives, with cost and funding emerging as notable challenges (Mohd Adnan et al., 2017).

In conclusion, the integration of green practices within the office rental market in Kuala Lumpur, Malaysia, is shaped by an array of influences such as location, financial considerations, buildings attributes, and corporate social responsibilities. The accreditation of sustainable building practices enhances the appeal of office rentals, with green office spaces yielding economic advantages like superior real estate value and reduced operational costs. Nonetheless, the broader adoption of green initiatives in office rentals in Kuala Lumpur is hampered by challenges such as budgetary limitations, insufficient awareness, and expertise, as well as financial constraints.

***The Influence of Green Value on Office Rental Rates in Malaysia***

The adoption of green building practices exerts a multifaceted impact on the rental rates for office spaces. An investigation into the management practices of office buildings in Kuala Lumpur highlighted a prevalent adherence to the Green Building Index's green attributes or criteria, emphasizing green lease terms such as the reduction of energy and water usage and the incorporation of recycled materials (Mohd Adnan et al., 2017). The selection of office spaces within green buildings by corporate tenants is informed by a variety of factors including location, finance and cost, buildings attributes, health and well-being, corporate image and branding, as well as corporate social responsibility. These sustainability factors are believed to enhance the value proposition for tenant businesses, thereby motivating their choice to lease green office spaces (Mohd Adnan et al., 2017). Moreover, the push towards sustainable construction in Malaysia, especially for office buildings, is propelled by the tangible benefits these properties present, thus enhancing their marketability and investment appeal (Jasimin & Amat, 2019).

The economic and financial ramifications of green building implementations for office spaces in Kuala Lumpur, Malaysia, are noteworthy. Employing a mix of technological innovations, organizational strategies, and occupant behavior modifications can significantly lower the energy consumption of green office buildings in Malaysia, aiding in the alignment of actual energy consumption with pre-estimated energy usage figures (Ohueri et al., 2018). Furthermore, the financial viability of green commercial office buildings in Malaysia is closely associated with Indoor Environmental Quality (IEQ) features, such as indoor air quality, air change effectiveness, thermal comfort, and noise level, all of which serve to minimize risk, enhance marketability, expedite leasing and sales processes, and elevate net operating income alongside investment returns (Jasimin & Amat, 2019). Contrastingly, evidence suggests that the advent of green buildings does not markedly influence the rental depreciation of traditional buildings in Kuala Lumpur. A majority of the survey participants refuted the notion that the rents of conventional buildings are adversely impacted by the presence of green constructions (Che Ani et al., 2022). It was discerned that sustainable classifications do not significantly affect rental depreciation, whereas factors such as the location and site, building engineering and services, and building appearance and design play a pivotal role in influencing rental values in Kuala Lumpur's Golden Triangle Area (Wan Rodi et al., 2019).

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In conclusion, the implementation of green building practices in office spaces in Kuala Lumpur, Malaysia has implications for rental rates, sustainability, and the environment, as well as economic and financial aspects. However, the implication might not be greatly affected the conventional buildings in strategic location as Golden Triangle area. The key green building attributes that commonly implemented include energy and water-saving consumption, recycled material usage, and green lease terms. These attributes contribute to the development of sustainable and environmentally friendly office spaces, while also impacting rental rates and economic recognition.

***The Impact of Green Building Certifications on Office Rental Rates in Other Countries and Malaysia***

Investigations in various other countries including China and the United States, have delineated that office spaces with LEED certification garner rental premiums between 19.5% and 25.5% (Bond, 2014; Li et al., 2021) Similarly, in Hong Kong, offices that have achieved green certification witness a rental value surge by approximately 10.9% over their non-certified counterparts, illustrating a tenant preference for green certified office buildings (Wadu Mesthrige & Chan, 2019). Further studies conducted in Toronto and the United States corroborate the trend of tenants' willingness to pay a premium for office spaces accredited with LEED certification (Ensign et al., 2021; Fesselmeyer, 2018). Nevertheless, these studies also shed light on the financial and operational barriers associated with acquiring green building certifications, such as the elevated costs of certification and potential rental income loss due to delays in green construction (Pelin Gurgun et al., 2017; Wadu Mesthrige & Chan, 2019). Conversely, research within South Africa has presented a nuanced view, indicating that while green and conventional buildings of comparable quality generally show no difference in rents and operational costs in some regions, green buildings can command a rental premium and offer lower operational costs in certain location, suggesting the significance of location in the green offices values (Azasu et al., 2023).

In the context of Kuala Lumpur, Malaysia, the influence of green building certifications such as LEED or GBI on office rental rates has been a subject of academic exploration. These certifications are identified to positively influence the commercial value of buildings, with the Green Certified Commercial Buildings (GCCB) in Malaysia benefiting in terms of reputation and market value, thus serving business interests (Xin & Cheong, 2020). Furthermore, it has been acknowledged that LEED-certified buildings, despite their higher initial construction costs, tend to incur lower maintenance and repair expenses, suggesting potential long-term financial advantages (J.-M. Kim et al., 2020). These certifications are aimed at diminishing energy usage and greenhouse gas emissions, thereby contributing to environmental conservation (Dodo et al., 2015). Specifically, the application of green materials under Malaysia's Green Building Index (GBI) has been demonstrated to significantly reduce energy consumption and carbon dioxide emissions (Dodo et al., 2015). However, challenges such as financial constraints, lack of awareness, technical expertise, ownership factors, and building types pose obstacles to the implementation of green building certifications in Malaysia (Yee Sin et al., 2021). The momentum towards green building certifications in Malaysia, exemplified by the GBI, is propelled by an increasing end-user demand for green office spaces, contrasting with the private sector-driven LEED system in the U.S., which involves a distinct evaluation methodology consisting of prerequisites and credit items (Khan et al., 2015; Shon et al., 2014).

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In summation, evidence from diverse global markets indicates that green certifications can significantly impact rental rates, with a marked willingness among tenants to pay premiums for certified spaces. Despite the potential financial and operational hurdles, green building certifications like LEED and GBI offer notable economic advantages by enhancing property market value and reducing long-term operational costs. These certifications also advance environmental goals through decreased energy consumption and carbon emissions. Nonetheless, in Kuala Lumpur, Malaysia, the deployment of green certifications faces challenges such as limited budgets, awareness, and expertise. The approach to adopting green building certifications in Kuala Lumpur may vary from that in other major cities, influenced by different evaluative criteria and motivators.

***Tax Incentives Available for Companies Renting Green Office Space in Malaysia***

In Malaysia, companies that rent green office spaces are eligible for various tax incentives, including financial, fiscal, and structural benefits, contingent upon obtaining a Green Building Index (GBI) certificate, which underscores the commitment to sustainability and energy (Hashim et al., 2016; Shazmin et al., 2016) These office spaces must meet criteria related to sustainable development, energy efficiency, and green technology adoption to qualify for such incentives. The array of incentives offered, such as financial grants, loans, funds, vouchers, rebates, tax exemptions, and expedited building permits, not only provide economic and environmental advantages but also encourage building developers to incorporate green features into their projects. Consequently, these incentives facilitate sustainable development and the broader adoption of energy-efficient practices within the Malaysian office rental market (Hashim et al., 2016; Shazmin et al., 2016).

**Methodology**

This study employed a quantitative approach. Earlier phase involved a thorough literature review to contextualize the research within existing scholarship. Next, the primary data was collected from GreenBuildingIndex Sdn. Bhd. (GBI) and Valuation and Property Services Department (JPPH), Ministry of Finance Malaysia. There are 50 sample of green office building block data produced by GBI and 2,707 rental office space given by JPPH involved in data collection. The data from two different sources was combined and analysed by using the Statistical Package of Social Sciences (SPSS). The occupants of green office buildings in rental data were further identified. The company nature of business was verified from various company website and professional platform.

The combination of green building data and rental data was subjected to analysis using the Statistical Package for the Social Sciences (SPSS), a widely utilized software for statistical analysis. This approach allowed the study to gain insights into the relationship between green building attributes and rental rates in the office rental market in Kuala Lumpur. The descriptive analysis and crosstabulation analysis were used. Overall, the use of SPSS for descriptive and crosstabulation analysis allowed researchers to systematically explore the relationship between green building attributes and rental rates in the Kuala Lumpur office rental market. This approach facilitated a deeper understanding of the factors driving the green value in the context of office rentals, providing valuable insights for stakeholders such as investors, developers, and policymakers.

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## Results & Findings

### *The Current Nature Of Tenant's Business Of Green Office Space In Kuala Lumpur*

The following figure shows the tenant business profiles that dominated green buildings of Kuala Lumpur's office rental market. The tenant business profile with the highest count is "Oil & Gas, Energy Services and Software" which likely representing a diverse mix of businesses related to oil and gas industry. The second highest count is for "Banking/ Finance" business category which notable tenant profiles with relatively high counts related with financial services. The next followed by "Information Technology or multi-media" companies, indicating a significant presence of technology and multimedia firms in Kuala Lumpur's green office spaces.

In summary, while there is a diverse range of tenant businesses, the data suggests that oil and gas, energy/utilities, financial services, technology/multimedia, management services firms dominate the occupancy of green office buildings in Kuala Lumpur's rental market.

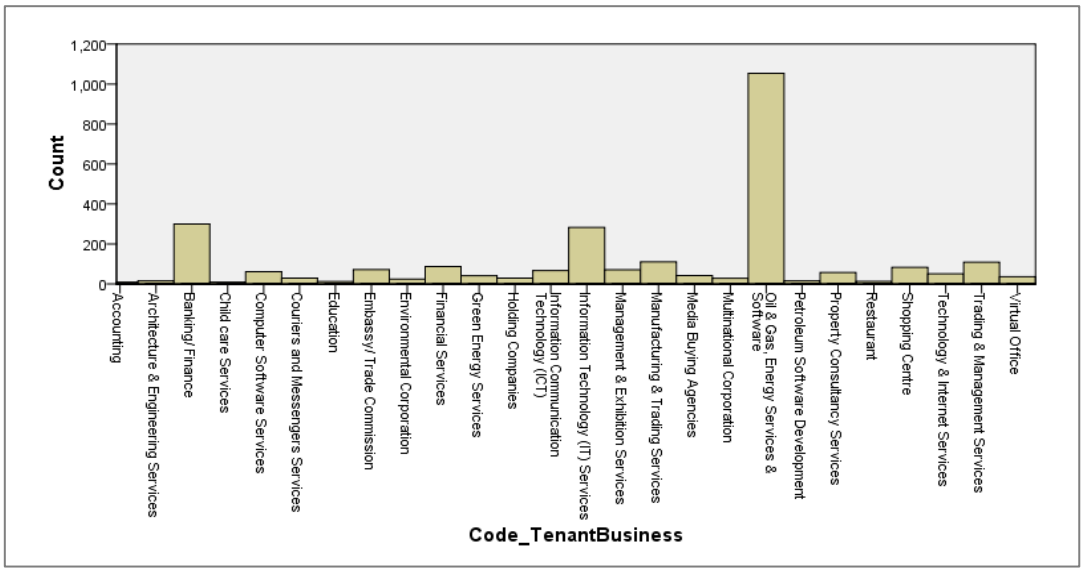


**Figure 2: Tenant Business In Kuala Lumpur's Green Office Buildings In Kuala Lumpur**

Source: (Authors, 2024)

### *The Tenant's Business Of Green Office Space By Locations In Kuala Lumpur*

The tenant business industries in green office buildings across four sub-locations in Kuala Lumpur indicates a diverse range of industries capturing green value. In the KLCC/GT area, the predominant industries include Oil & Gas, Energy Services & Software, Banking/Finance, and Information Technology Services. The Central Business District is characterized by businesses in Automotive, Repair, Maintenance & Services, Finance & Insurance Services, and additional emphasis on Insurance Services. Within the City Centre, the focus shifts slightly to Oil & Gas, Insurance Services, and Information Communication Technology Services. In contrast, the Suburban area hosts primarily Managing Companies, Business Consultancy Services, and Corporate Services. This distribution suggests a varied integration of green value across different business sectors within Kuala Lumpur's differing urban locales.

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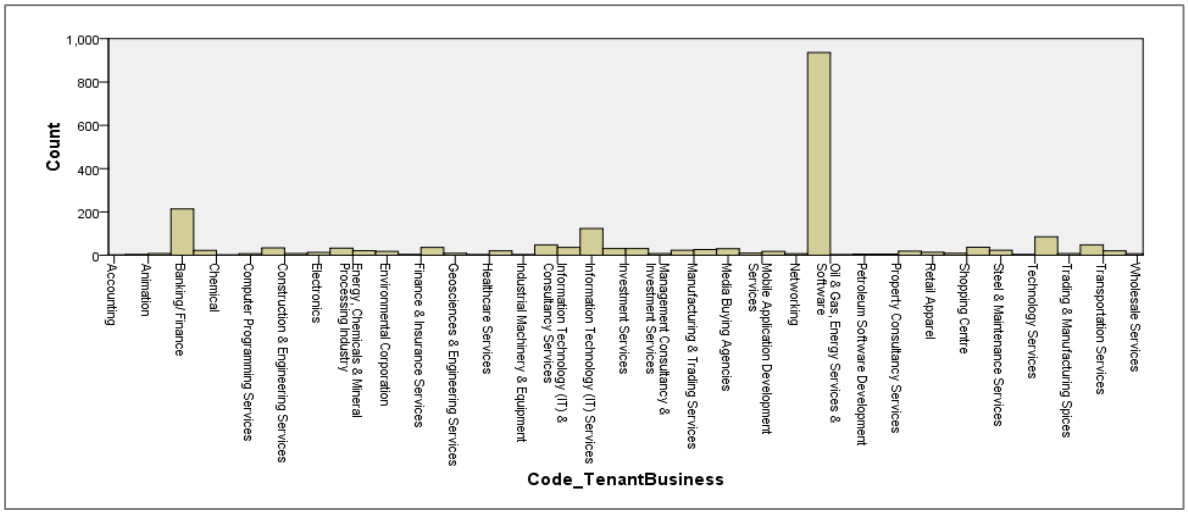


**Figure 3: Tenant Business In Green Office Buildings in KLCC/ GT Area, Kuala Lumpur**

Source: (Authors, 2024)

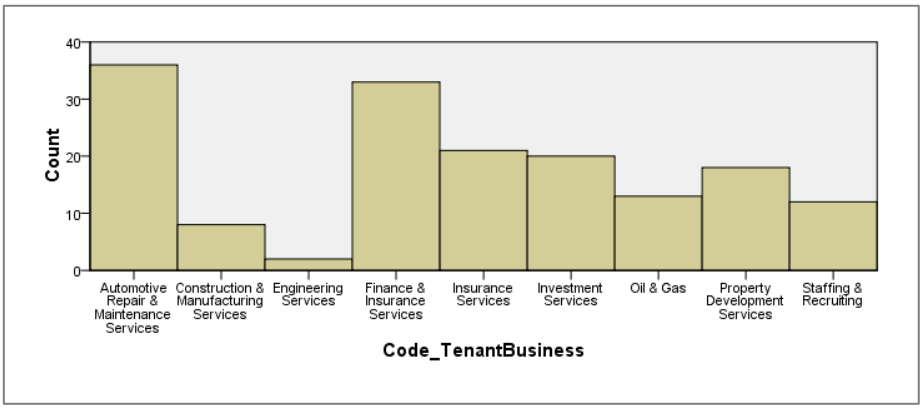


**Figure 4: Tenant Business In Green Office Buildings At Central Business District**

Source: (Authors, 2024)

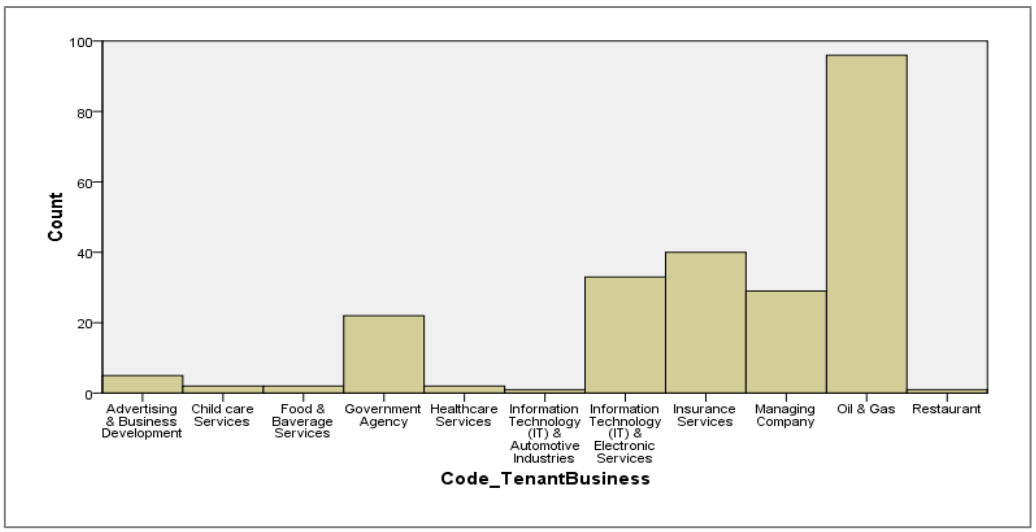


**Figure 5: Tenant Business In Green Office Buildings At Within City Centre**

Source: (Authors, 2024)

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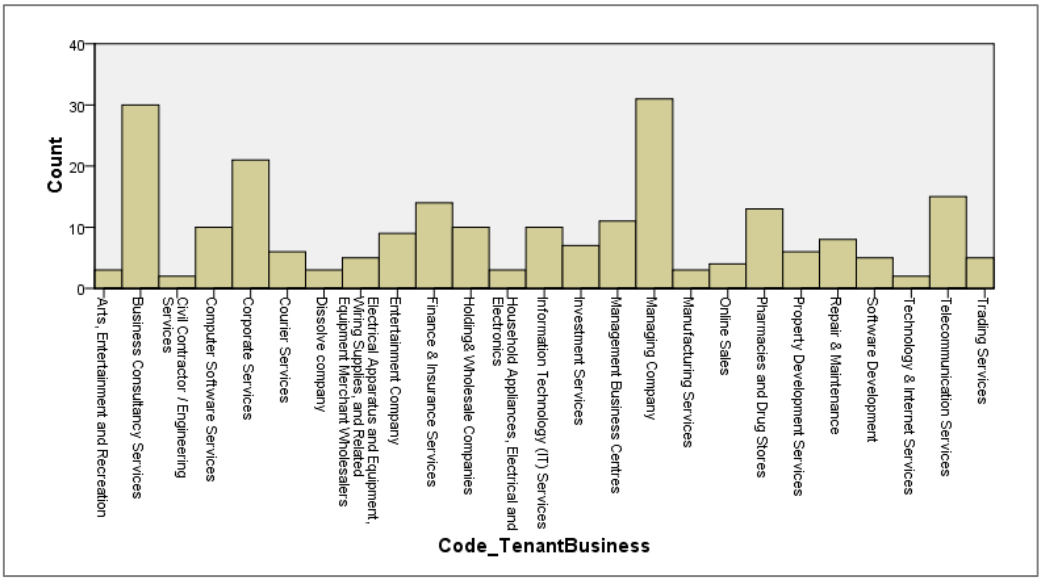


**Figure 6: Tenant Business In Green Office Buildings at Suburban**

Source: (Authors, 2024)

Overall, the results suggest that some industries may be more concentrated in certain areas of Kuala Lumpur's office rental market. This could be due to a number of factors, such as the availability of suitable office space, the proximity to clients or customers, or the rental rates in each location.

***The Tenant's Preferences Of Green Office Space In Kuala Lumpur***

The Figure 7 provides information about the preference of 2,707 tenant of green office spaces by location in Kuala Lumpur. It also shows the specific buildings of the office rental spaces which were occupied by the tenant. The building with the highest count is falls under the KLCC/Golden Triangle area. This could potentially be a major office development in that prime location such as Petronas Twin Tower, Menara Citibank and GTower. There are several other buildings/developments shown in the KLCC/Golden Triangle area with relatively high counts, suggesting a concentration of office spaces in this prestigious area. In the Central Business District area, JKG Tower seems to have the highest count among the buildings shown. The Within City Centre area has a couple of buildings with notable counts, including Menara Shell. Vertical 38, UOA Tower appear to be the highest count in Suburban area.

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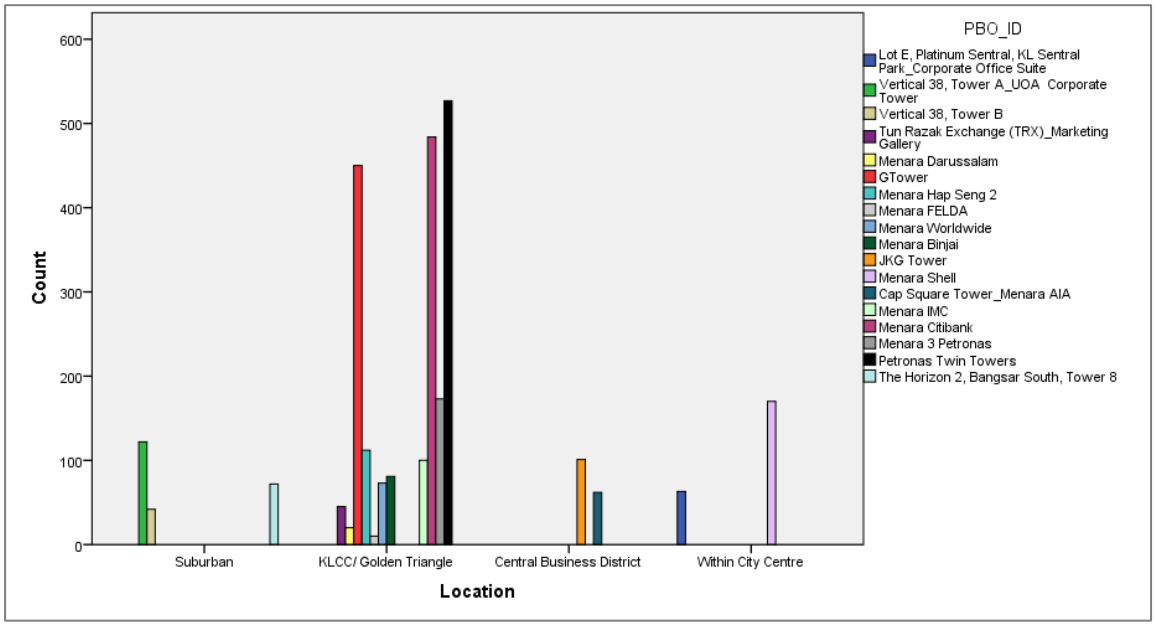


**Figure 7: The Tenant's Proportion Of Green Office Buildings In Kuala Lumpur**
Source: (Authors, 2024)

***The Rental Rates Of Green Office Spaces In Kuala Lumpur***

The figure 8 displaying the frequency distribution of rental rates per month across different locations in Kuala Lumpur. The x-axis represents the frequency or number of rental units, while the y-axis shows the rental rate per sf/month. The graph is divided into four sections based on location: Suburban, KLCC/Golden Triangle, Central Business District, and Within City Centre.

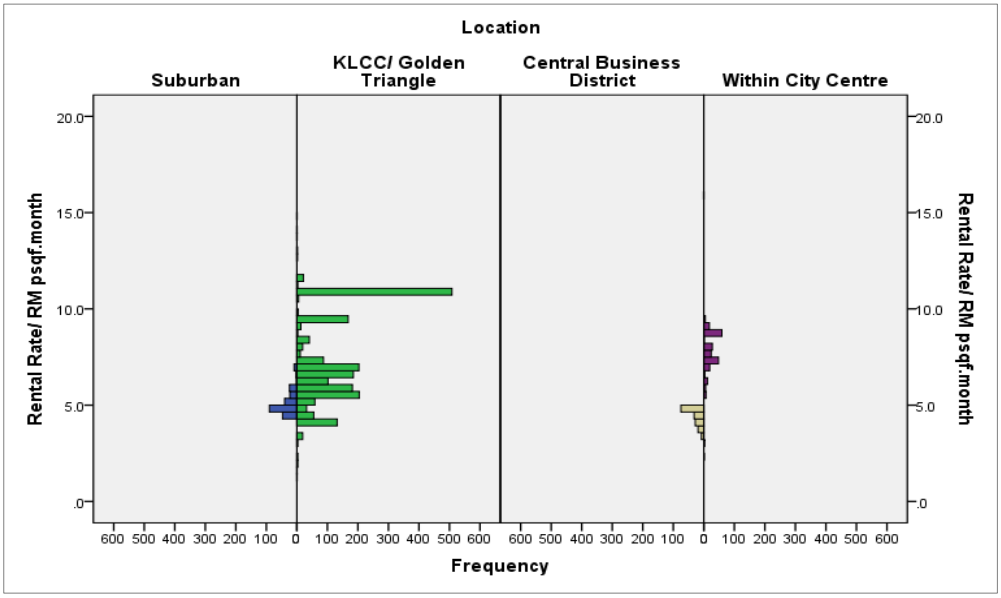


**Figure 8: The Rental Rates Of Green Office Spaces in Kuala Lumpur**
Source: (Authors, 2024)

The KLCC/Golden Triangle section shows a wider distribution of rental rates, with several clusters representing different price points. The Central Business District and Within City Centre sections display a similar pattern, In the Suburban area, the bars indicate a concentration

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of rental units at lower price points. Overall, the histogram illustrates the variation in rental prices across different zones of the city, with suburban areas offering more affordable options, while central locations command higher rental rates, likely due to factors such as proximity to commercial hubs, amenities, and transportation.

***The rental rates of green office spaces by locations in Kuala Lumpur***

The following figures shows the rental rates of green office spaces in Kuala Lumpur vary across different sub-locations. In KLCC/GT area, the rates are generally below RM15 per square foot (psf) per month, with the majority falling within the RM5 to RM10 psf/month range. In Central Business District area, rental rates are below RM8 psf/month, with most rates ranging from RM4 to RM6 psf/month. Meanwhile in Within City Centre area, the rental rates are under RM10 psf/month, predominantly between RM6 and RM9 psf/month. Lastly, the Suburban, the rates in this area stay below RM7 psf/month, with most lying between RM4.50 and RM6 psf/month.

This summary showcases the variation in rental rates for green office spaces across different areas of Kuala Lumpur, indicating a higher cost in the KLCC/GT area and progressively lower rates as one moves to the Central Business District, within the City Centre, and finally to the Suburban areas.

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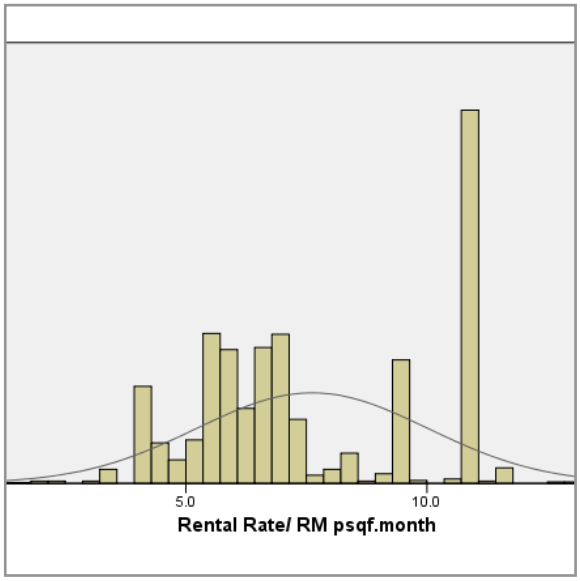
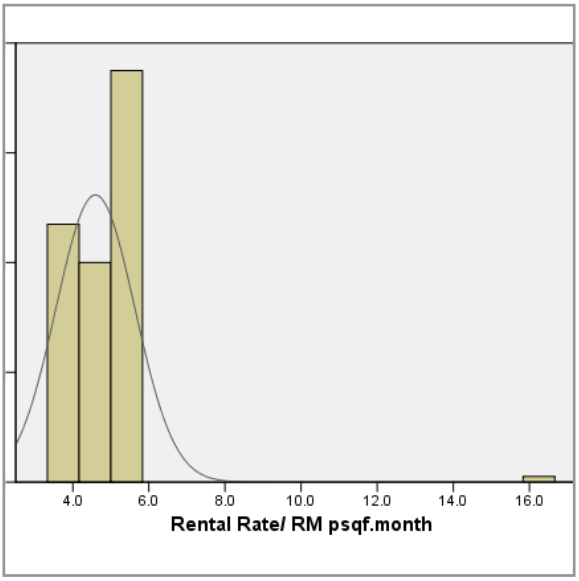
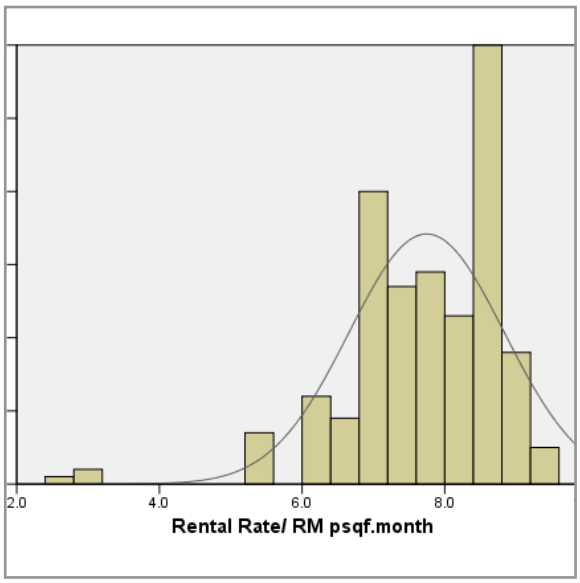
KLCC/ GT




Central Busiess District




Within City Centre




Suburban

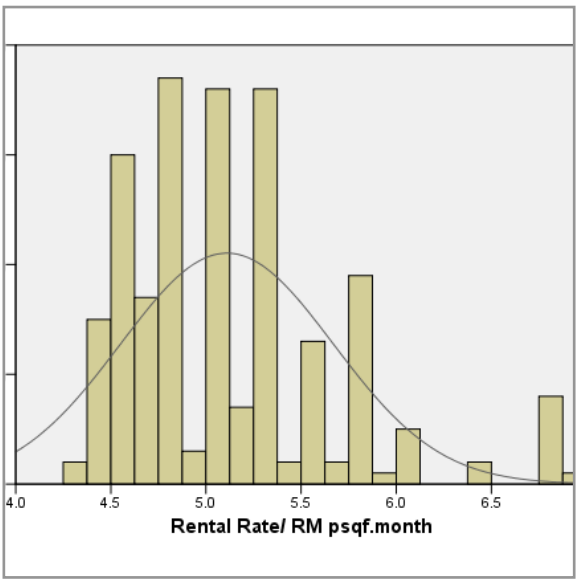



**Figure 10: Rental Rates Of Green Office Space In Kuala Lumpur By Locations**
Source: (Authors, 2024)

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***The Certification Level Of Green Office Buildings By Locations In Kuala Lumpur***

The image in Figure 11 presents a stacked bar chart that compares the count or frequency of buildings across different locations within Kuala Lumpur, categorized by GBI green building certification level, namely Certified, Silver and Gold.

The KLCC/Golden Triangle location shows a significant number of buildings, with the majority being Certified, followed by Gold, and a smaller number of Silver-certified buildings. The Central Business District has the highest overall count of buildings, dominated by a large number of Certified buildings, followed by a considerable number of Gold-certified buildings, and a relatively small number of Silver-certified buildings. In the Within City Centre location, there are fewer buildings compared to the Central Business District, but the distribution is similar, with the majority being Silver-certified, followed by Certified, and a small number of Gold-certified buildings. In the Suburban area, there is a small number of buildings with Silver certification and almost none with Certified or Gold certification levels.

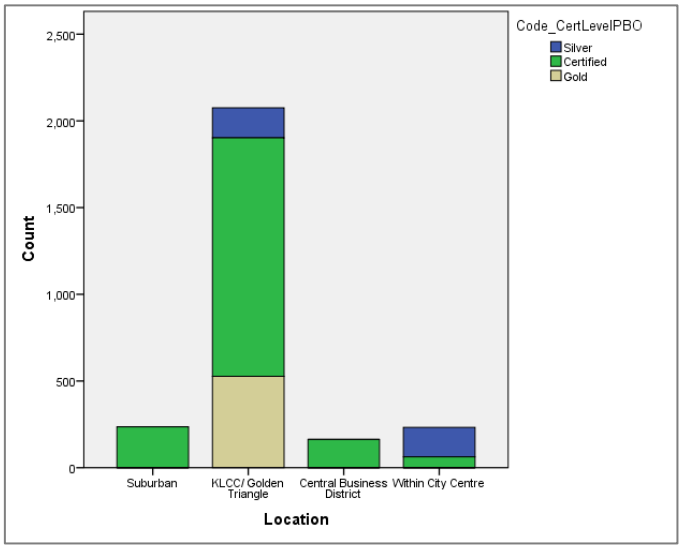


**Figure 11: The Green Office Buildings Certification Level in Kuala Lumpur**

Source: (Authors, 2024)

Overall, the chart indicates that the KLCC/Golden Triangle areas have a higher concentration of green-certified buildings, particularly all three levels of certification from Certified to Gold level, likely due to the status as prime commercial and business hubs. The other area, on the other hand, has a relatively low number of green-certified buildings.

***The Green Office Buildings' Attributes By Locations In Kuala Lumpur***

The KLCC/Golden Triangle section exhibits the highest concentration of green attributes scores in all five green attributes namely energy efficiency, indoor environmental quality, material and resources, water energy and innovation. The bars span a wide range, with the tallest green bars indicating a higher frequency of properties achieving good energy efficiency levels in this prime location. Meanwhile, the other areas do not have many data points or bars, implying that the data or information on green building attributes is only available in those scores. The section shows a smaller number of bars compared to the KLCC/Golden Triangle area, with a few properties achieving moderate levels of green attributes and energy efficiency scores, as represented by the yellow, blue and purple bars.

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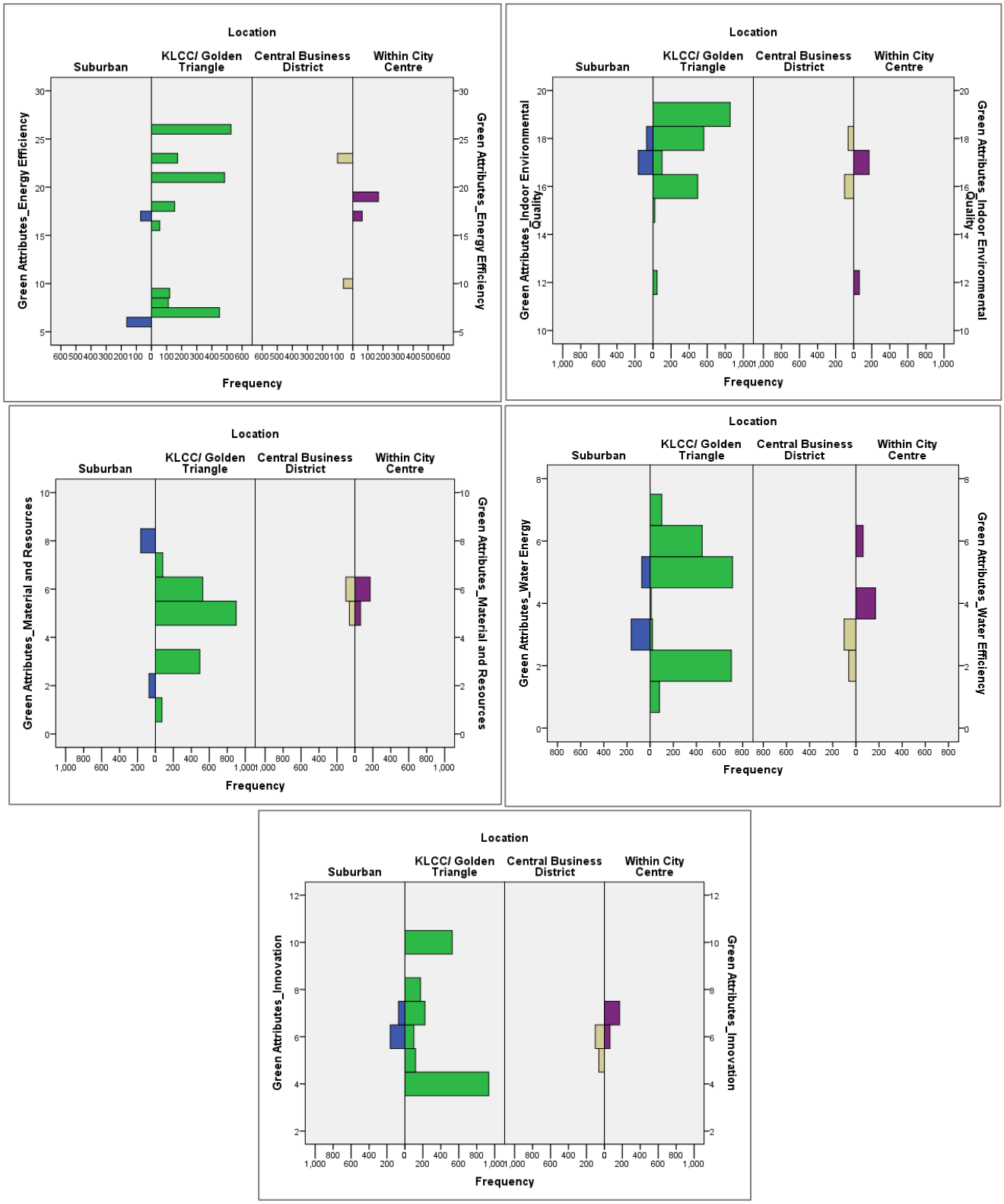


**Figure 12: The Green Office Buildings Attributes By Locations in Kuala Lumpur**

Source: (Authors, 2024)

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Overall, the histogram suggests that the KLCC/Golden Triangle area has made significant strides in incorporating green building attributes and achieving higher levels of all green attributes in its properties, likely due to its status as a prime commercial and business hub. The Suburban and Central Business District areas appear to have limited data available on green building attributes.

The analysis of green building attributes across various locations reveals some interesting trends:

- **Energy Efficiency:** KLCC/Golden Triangle appears to have the most buildings with higher energy efficiency ratings (17-26), while Suburban areas have the fewest.
- **Site Planning & Management:** Within City Centre and KLCC/Golden Triangle have the most green attributes incorporated into site planning practices compared to Suburban areas.
- **Material & Resources:** Most buildings have a low number of green attributes for material and resources, but KLCC/Golden Triangle has a higher concentration of buildings with a higher number of attributes in this category.
- **Water Efficiency:** Suburban areas have the least amount of water-efficient buildings, while KLCC/Golden Triangle and Within City Centre have a more balanced mix. Central Business District has a similar distribution to Within City Centre, but with fewer highly water-efficient buildings.
- **Innovation:** Suburban areas have the least innovative buildings, while KLCC/Golden Triangle and Within City Centre have a more even distribution across different innovation levels. Central Business District is similar to Within City Centre but with even fewer highly innovative buildings.

KLCC/Golden Triangle appears to be a leader in most green building attribute categories, with a higher concentration of buildings having better energy efficiency, site planning practices, material and resource usage, and water efficiency. Suburban areas tend to lag behind in most green building categories. Central Business District and Within City Centre have a similar distribution across green attribute levels, but Within City Centre shows a slight edge in water efficiency and innovation.

**Discussions & Conclusions**

The current nature of the businesses occupying green office spaces in Kuala Lumpur reveals a strong inclination towards industries that prioritize sustainability, innovation, and strategic positioning within the urban landscape. The tenant’s range across several key sectors. The predominance of the Oil & Gas, Energy Services, and Software sectors in areas like the KLCC/Golden Triangle and the City Centre signifies a keen interest from industries that are both traditional and forward-looking in embracing green buildings. These sectors are inherently focused on innovation and are likely seeking to align their operations with sustainable practices, reflecting a broader industry trend towards environmental responsibility. The Banking and Finance sectors, significantly present in the KLCC/Golden Triangle and the Central Business District, indicate a shift in how these traditionally conservative industries approach their physical footprint. By choosing green office spaces, these sectors demonstrate a commitment to sustainability as part of their corporate ethos, likely driven by both internal sustainability goals and external pressures from consumers and investors. The widespread presence of Information Communication Technology (ICT) companies across almost all areas, especially in the City Centre and suburban areas, suggests that the tech industry's nature—dynamic, innovative, and future-focused—makes it a natural fit for green office spaces. This

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choice aligns with the sector's broader commitment to reducing carbon footprints and promoting environmental sustainability. In suburban areas, there's a noticeable presence of businesses involved in Management Consulting, Business Consultancy, and Corporate Services. This reflects a trend where service-oriented firms, which may not require prime urban locations, are choosing green buildings to benefit from lower operational costs, enhanced employee wellbeing, and alignment with sustainability values.

These occupancy patterns reflect a broader shift in business priorities, where environmental sustainability has become a critical factor in choosing office spaces. The varied nature of the tenants—from energy to finance, tech, and management services—underscores a universal move towards greener, more sustainable business practices across sectors. Occupying green office spaces in Kuala Lumpur allows these businesses to not only reduce their environmental impact but also to enhance their corporate image, attract talent, and potentially access financial incentives related to green investments. Thus, the nature of businesses in Kuala Lumpur's green office spaces highlights a convergence of economic, environmental, and social priorities within the city's evolving commercial landscape.

The findings related to rental rates, green building certifications, and green building attributes across different areas of Kuala Lumpur provide valuable insights into tenant preferences in selecting green office spaces within the city. These preferences can be broadly categorized into three key areas: location and cost, commitment to sustainability, and the quality of green building features. The variation in rental rates across Kuala Lumpur, with higher prices in the KLCC/Golden Triangle area and progressively lower rates moving outward to the suburban areas, indicates a strong preference for prestigious locations among tenants willing to pay a premium for green office spaces in prime areas. However, the availability of more affordable green office spaces in suburban areas suggests that there is also a market for tenants who prioritize environmental sustainability but have budgetary constraints. This demonstrates a diverse tenant base with varied preferences regarding the balance between location prestige and rental affordability. The distribution of green building certifications, particularly the concentration of Certified, Silver, and Gold certifications in the KLCC/Golden Triangle and Central Business District areas, reflects a tenant preference for buildings that have been officially recognized for their sustainability efforts. This suggests that tenants are not only looking for office spaces that claim to be green but are also seeking assurance through formal certifications that these buildings meet specific environmental standards. It implies a discerning tenant base that values a tangible commitment to sustainability. The analysis of green building attributes further refines our understanding of tenant preferences in Kuala Lumpur. The high concentration of buildings with superior green attributes in the KLCC/Golden Triangle area, especially those excelling in energy efficiency, water efficiency, and innovation, points to a tenant preference for office spaces that offer the most advanced and comprehensive green features. This preference suggests that tenants are increasingly knowledgeable about the specific aspects of green buildings that can provide the most benefit, whether through reducing operational costs, providing a healthier work environment, or contributing to a company’s corporate social responsibility goals.

Tenant preferences in selecting green office spaces in Kuala Lumpur are influenced by a combination of factors, including the location and associated rental costs, the level of commitment to sustainability as demonstrated through green building certifications, and the quality and range of green building attributes offered by the office space. While some tenants prioritize the prestige and central location of the KLCC/Golden Triangle, others may opt for

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the more affordable green office spaces in the suburban areas, provided they meet basic sustainability criteria. Across all locations, however, there is a clear preference for office spaces that not only claim to be green but also demonstrate this through recognized certifications and a broad spectrum of green features, indicating a mature market where tenants are informed, discerning, and motivated by a mix of cost, convenience, and commitment to environmental sustainability.

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