Integrating Updated Google Street View and Aerial Imagery to Enhance Buyer Trust and Sustainable Marketing in Malaysian Real Estate

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Abstract

Digital marketing tools have been widely adopted across various industries worldwide, as well as in Malaysia. These tools have enabled Malaysian property developers to obtain real-time insights into purchasers and create a valuable channel for communicating with customers more effectively. Platforms such as iProperty and PropertyGuru, as well as Google Search and Maps, and micro websites that embed virtual tours are the first interactions buyers build with developers. Yet there is often a mismatch between the online information available through the satellite or street view and what real estate agents or developers show. Available Street View and satellite images seen by the public often show outdated representations of projects, which do not necessarily correspond with reality but have had a significant impact on many developments. This inconsistency often undercuts buyer confidence and dilutes the faith in the credibility of developments' digital marketing efforts. The study aims to examine how customized updates of Google Street View and Aerial View photos raise accuracy, transparency, and reliability in Malaysian real estate marketing. Hence, this paper furthermore contains a case study involving the M Legasi Show Village launched recently by Mah Sing Group. According to findings, custom-developed GSV clarifies the project condition as the latest imagery captured and may enhance marketing sustainability by reducing unnecessary printed materials and travel to the site. To summarize the findings, it shows that the updated GSV and AV content offer an elevated level of transparency in marketing and enhance buyer perception within the Malaysian real estate sector.

Keywords: Malaysia, google street view, aerial view, real estate marketing, buyer trust, sustainability

1. Introduction

In Malaysia, property buyers' first impressions usually appear online. Buyers visit Google Maps, Street View, and developer websites to evaluate new projects before visiting the sales galleries in person. When these platforms display outdated images of undeveloped land or missing access roads, it creates confusion, undermines trust, and delays purchase decisions or disappoints residents after handover. Recently, some Malaysian developers have reported repeated buyer complaints about inaccurate maps and incomplete access routes after project handovers. Outdated SVI images result in critical challenges undermining the accuracy and reliability of the project communication between physical development progress and online representation on any platform.

To address this issue, some of the developers learn the lesson on how to have an updated Custom-developed Google Street View (GSV) and Aerial View (AV) imagery to reflect and be align with the project conditions, which won't be lag behind current construction status. Custom-developed GSV imagery allows developers to publish up-to-date visuals directly onto Google Maps through the appointed agency. This study explores how these types of updates improve transparency between buyers and developers, boost marketing credibility, and align with sustainable marketing practices by minimizing travel and printed collateral.

The research provides experimental data from the Fresnel Group's extensive GSV imagery archives, and a case study of M Legasi Show Village offers a peek into the appearance and visual characteristics of the surroundings of the current development, something that is not available in other datasets, which shows that augmenting the models with GSV imagery increases their marketing performance and visitation to their sales gallery.

2. Literature Review

2.1 Google Street View & Aerial View

Google Street View (GSV) is the most well-known and common service providing Street View Imagery all over the world. Google Street View acquires its imagery from two primary sources: Google's own collection efforts and contributions from the public. Google uses specialized equipment and vehicles to capture imagery on a massive scale (Anguelov et al., 2010). Since its launch in 2007, Google Street View reached coverage of more than 100 countries, expanding also into indoor spaces. Street View has been used for research in fields like urban analytics and geographic information science, and is associated with many other research projects on different topics. On the other hand, there is another method of contribution, which is by appointed third-party exclusive partners or public contributions

(User-Generated Content). By combining these methods, Google can provide a virtual representation of surroundings on a universal scale. Somehow, the update frequency varies by many factors, such as the following list:

- Urban Areas or Major Cities: Expect more frequent updates, often yearly or every couple of years, as these areas are high-priority.
- Rural or Less Populated Areas: These areas can see much longer gaps between updates, sometimes three years or even longer.
- Traffic & Big Changes: Google focuses on areas with significant new developments or high user interest.
- Driver or Vendor Schedules: Updates rely on Google's Street View cars (or third-party providers) driving the streets, so timing isn't fixed.
- Country Policies: Local regulations can affect how often imagery is captured.

2.2 Related Works

Nowadays, Augmented Reality (AR) & Virtual Reality (VR) technologies are broadly used in creative marketing and recent studies have highlighted the growing usage of AR technologies in marketing innovation (Mitrovic et al., 2021). In marketing techniques, either AR or VR helps companies in related fields to stand out by providing unique ways to offer their property or products (Biljecki & Ito, 2021). Exclusive marketing practices tend to make potential buyers feel more interested in the promotions, which directly improves the marketing strategy of the company (Naik et al., 2014). The implementation of AR or VR in the marketing process is a form of innovation that will continue to grow in the future. Sales & marketing communication among the property development industry is based on several theories and models which explain a series of steps that prospective buyers go through, such as social media and online promotions as the first contact point, and how it affects buyers' decision-making in purchasing products, and second step make a physical appointment to visit the sales gallery for further more comprehensive details. For instance, (Rehman et al., 2014; Wijaya, 2012) discussed several response hierarchy models. Regardless of differences between these response hierarchy models, it shares a common idea on the buyer's behavior with marketing promotions, which could be streamlined into three main behavioral phases, such as cognitive-affective-conative (C-A-C). Cognitive refers to a mental activity that reflects personal thought about the aspect of their world, while affective is defined as the degree of feeling and emotion, and lastly, conative is related to intention to perform behavior (Wijaya, 2012). Since our study is more behavioral, we can separate it from some other recent studies from Naik et al. (Naik et al., 2014; Liu et al., 2017; Law et al., 2017), who have begun to leverage the

availability of large-scale street image data to extract urban knowledge. For example, both (Liu et al., 2017; Law et al., 2017) used machine vision techniques to retrieve geographical knowledge such as street frontage quality. In contrast, Naik et al. (Naik et al., 2014) used Street View images to estimate the perceived safety of streets. However, to our best knowledge in the real estate context, there are either limited studies or none that investigate whether outdated SVI can change the trust and the influence of the house buyers, as accuracy, transparency, and credibility will be questioned. We suggest that more studies need to propose and compare outdated SVI with the customized GSV & AV of the same project to understand the increase in buyer interest and their response to the promotional materials.

2.3 Real Estate and Buyer Perception

AR & VR technology makes the process of buying and selling property more innovative. The implementation of augmented reality and virtual reality in the real estate sector is a revolution that makes it easier for buyers and sales agents to carry out the process of buying and selling property (Parman et al., 2023). Property's online marketing has gained a strong momentum, and respectfully buyer's trust is significantly influenced by that. When potential buyers encounter outdated conditions through Street View or satellite imagery, they may view developers' advertisements as unreliable (Biljecki & Ito, 2021). A few detailed examples of studies follow. For example, Malaysian studies confirm that online visuals play a key role in shaping emotional connection and purchase intention (Low et al., 2020; Law et al., 2017) is another example of a study where GSV imagery is used in combination with other data (e.g., housing attributes) to predict house prices. The traditionally used housing attributes, such as location accessibility, explain most of the variance of house prices, but augmenting or superimposing the actual models or 3D models with imagery increases their performance. Accurate GSV or AV imagery helps buyers to imagine accessibility, nearby amenities, and environmental quality, or even the view of the house balcony, all of which affect their sense of confidence. Outdated imagery of the urban or rural areas from Google Street View reduces marketing efforts by representing conditions that do not align with the current developments and promotions of developers. Prospective buyers encountering empty lots or absent road connections frequently doubt the validity of timelines for projects and commitments regarding infrastructure. Companies like OSK Property have faced buyer confusion for Iringan Bayu Phase 12 project when certain road names or recently constructed neighborhoods were not visible on Google Maps, resulting in numerous inquiries and negative feedback from new home purchasers. These discrepancies underscore the necessity for a more proactive strategy in managing GSV imagery.

2.4 Custom-developed GSV Imagery as a Trust-Building Tool

According to data from Fresnel Group (2025), since 2015, overall 33,602 images associated with 1,357 projects led to a total of 281,258,265 views (Fig. 1). We find this interest highlights how visual precision influences buyer engagement and information seeking. By incorporating customized GSV and AV of the recent situation from the project at the job site, developers can keep their online presence aligned with the real-world construction activity. The enhanced images can improve accuracy and the trust level of the stakeholders.

Fig. 1. Data from Fresnel Group since 2015
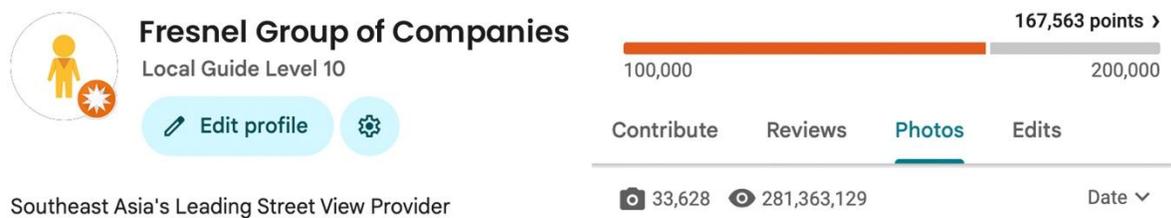
2.5 Conceptual Framework

The conceptual framework explains how customized GSV and 360 AV augmented imagery may influence the way buyers perceive and respond to the new property promotion and the future development itself. When digital visuals closely reflect what is actually happening on the ground or how the future development may look like at the site location, buyers gain more understanding and confident of the project details such as the building design, masterplan of the facility area, and the layout plan of the units, as well as the surroundings and amenities, and the distance to the project. These clearer visual supports accuracy, transparency, and credibility factors more among the genuine buyers. In practical terms, the availability and easy access to the VR or AR of the project will enable potential buyers to independently cross-check information and data provided by developers through their marketing channels or GSV feature from either their sales gallery or job site location through Google search, which will assist in reducing information asymmetry in real estate marketing collateral. When accuracy and transparency contribute together, they play an important role in establishing credibility (Azmi et al., 2021). As these factors are aligned, buyers generally shows more higher level of trust, and they feel more confident when considering long-term purchasing decisions. In this sense, customized GSV and AV imagery serve more than a promotional purpose: they operate first as strong marketing tools and secondly to boost buyer confidence and enable faster decision-making within the Malaysian property market.

Figure 2. Conceptual Framework
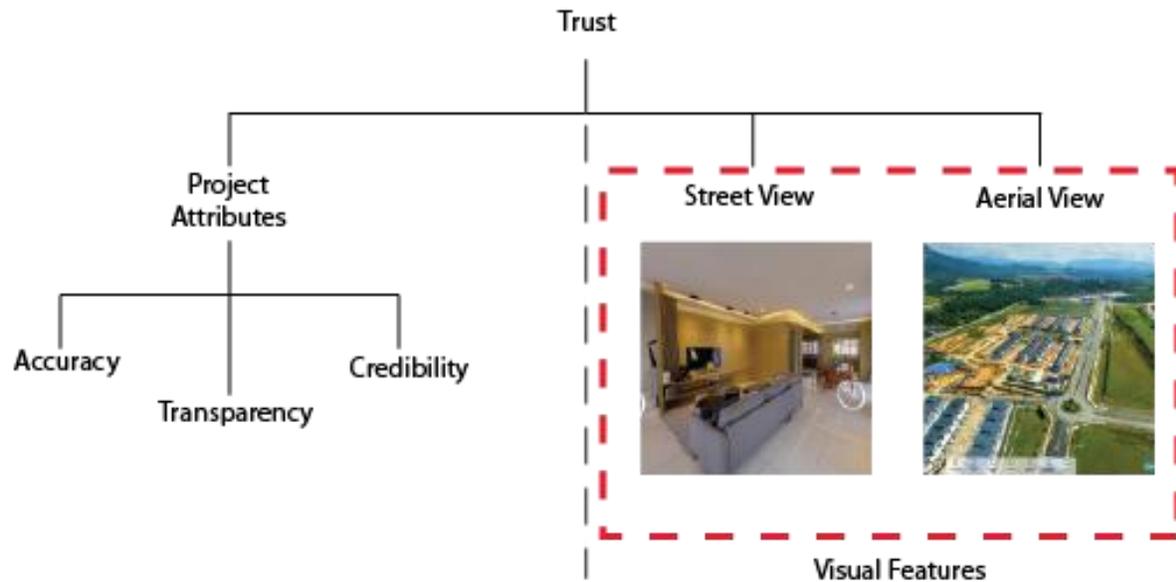
Conceptual Framework showing how GSV and AV imagery as Visual Features shape buyer trust over the project attributes, for more long-term decision making through the accuracy, transparency, and credibility.

3. Methodology

This research employs an exploratory single-case study design approach, incorporating content analysis of imagery from Google Maps along with performance analytics obtained from the Fresnel Group (2025) dataset.

3.1 Case Selection: M Legasi Show Village

The M Legasi Show Village, a development by Mah Sing Group, is located in Semenyih, Selangor. In early 2025, based on Google Maps imagery showed the location of the site as a thick forest (Figure 3), even though clearing of the land and partial construction were ongoing. On June 9, 2025, Fresnel Group published an updated 360-degree aerial view photo of the area on Google Maps, which marked the boundaries of the land and highlighted all the nearby amenities for future development (Figure 4). Within a few months of sample collection update, the project achieved 14,291 views organically on Google Maps, reflecting increased visibility and more viewer engagement (Figure 5).
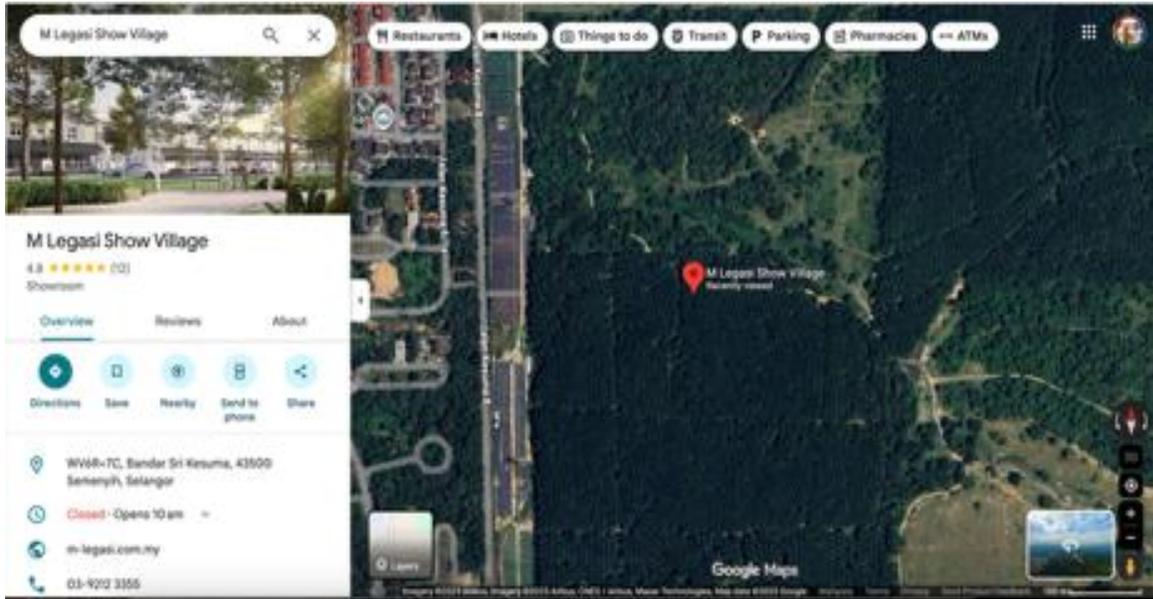
Figure 3. Satellite Imagery
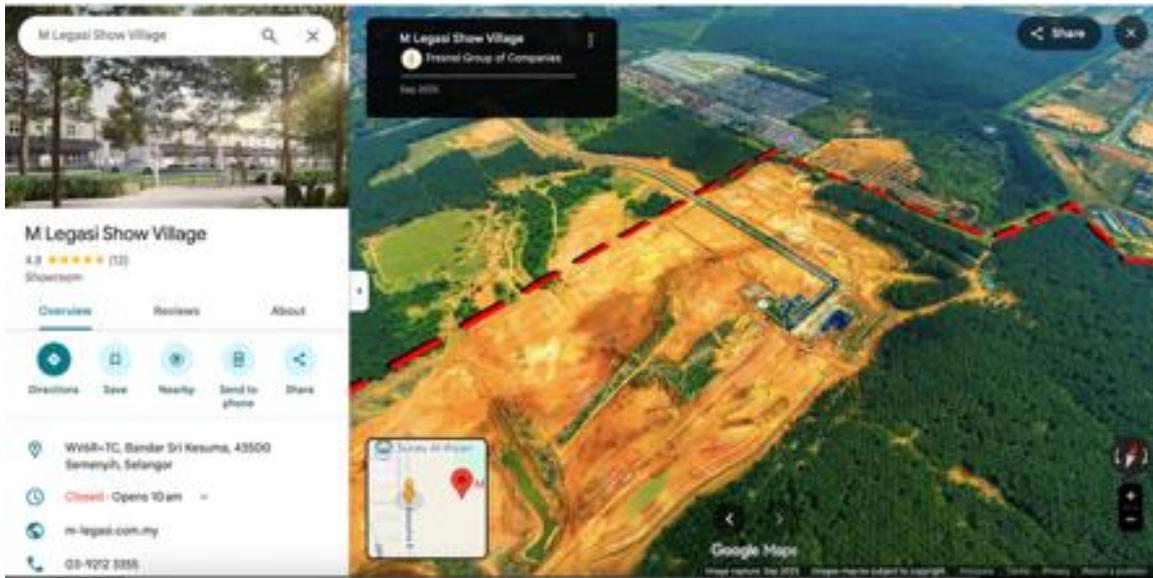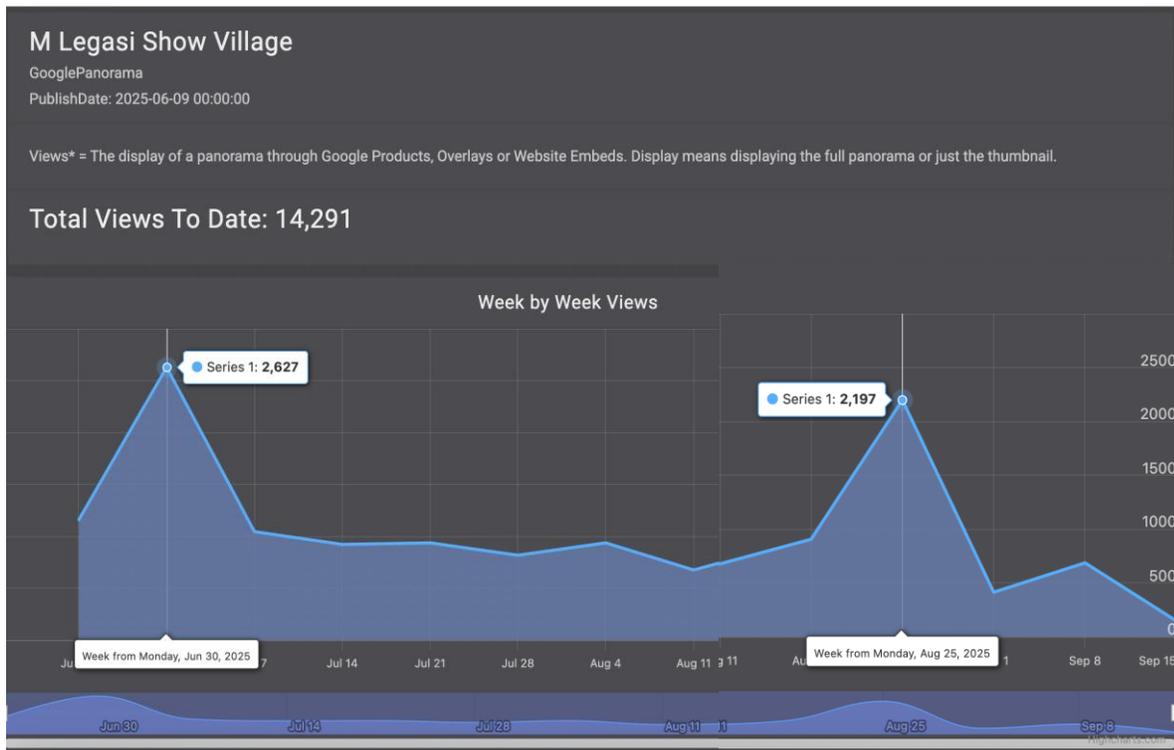

Figure 4. Customised Aerial Drone Imagery

Figure 5. The analysis shows viewer engagement through updated 360° imagery

3.2 Data Sources and Analysis

This research relies on primary data taken from Fresnel's (2025) internal analytics, including total published photos, view counts, and the total number of projects published in Google Maps. To support this data's, secondary sources of data were reviewed from other developers' case studies and findings from earlier research (Biljecki & Ito, 2021; Azmi et al., 2021; Low et al., 2020). The analysis reveals a pattern of interactions between viewers and potential buyers through customized GSV and 360-degree AV imagery across three main dimensions:

- Accuracy: the correspondence between real-world conditions and online images.
- Transparency: the clarity in representing infrastructure and accessibility.
- Credibility: buyer engagement assessed through Google Maps view statistics and feedback from developers.

4. Findings and Discussion

This study examined how the response to updated and customized GSV & 360-degree AV imagery related to purchase intention within the property sector. Analysis of Fresnel Group's (2025) internal data reveals mixed yet meaningful patterns. One consistent finding across the case study confirms that

outdated imagery from SVI & Satellite view creates tangible communication barriers between developers, property agents, and potential buyers. When buyers encounter inconsistency between the digital presentation and the physical site condition, trust declines. Fresnel's data (2025) further shows that updated GSV & 360-degree AV imagery generates a higher level of engagement. On the other hand, developers also reported lower post-handover complaints related to unknown or unclear roads and access routes after they intended to update the new roads prior to project handover to the buyers.

Updated imagery also contributes indirectly to sustainability outcomes. Accurate digital walkthroughs reduce the need for repeated in-person visits and help to minimize the travel frequency and marketing waste, such as scale models, ID design mock-ups, and decorative items that are solely used for promotional purposes.

5. Conclusion

The findings of this exploratory case study explore the influence of updated and customized GSV & 360-degree AV on purchase intention within the property industry by increasing the trust factor and have several implications for digitalization in real estate marketing and sustainability. Beyond marketing effectiveness, the findings also suggest wider implications for sustainable marketing practices. With a substantial portion of the global population now covered by Street View imagery, such platforms represent an increasingly important digital infrastructure for remote exploration (Goel et al., 2018). Prior research has shown that virtual visual audits can partially substitute for physical site visits, particularly during early-stage evaluation and information-seeking processes (Badland et al., 2010; Berland & Lange, 2017). In this context, customized GSV and aerial imagery may support more resource-efficient marketing by reducing the need for repeated in-person visits and lowering reliance on printed promotional materials. Customized GSV and 360-degree AV updates, particularly when integrated and published with the augmented items into Google Maps, allow developers to control the accuracy, transparency, liability, and timeliness of their project representation. The evidence from the Fresnel Group and the *M Legasi* case suggests that such updates substantially improve digital marketing credibility and sustainability communication. Such implications align with Malaysia's broader sustainability and digitalisation objectives, including efforts to promote more efficient use of resources and digital alternatives to physical processes (Ministry of Economy Malaysia, 2023). Future studies could extend this analysis using buyer surveys to quantify how accurate imagery influences decision confidence.

Conflict of Interest

The corresponding author is affiliated with the company that provided access to project data used in this study. The authors declare that the analysis and interpretation of data were conducted independently and without commercial influence.

The data used in this study are derived from internal company records and marketing materials. Due to commercial sensitivity, the dataset is not publicly available but may be provided upon reasonable request subject to company approval.

Ethics Approval and Informed Consent

This study did not involve human participants, personal identifiable information, or sensitive data requiring institutional ethical approval.

References

Anguelov, D., Dulong, C., Filip, D., Frueh, C., Lafon, S., Lyon, R., Ogale, A., Vincent, L., & Weaver, J. (2010). Google Street View: Capturing the world at street level. Computer, 43, 32–38. https://doi.org/10.1109/MC.2010.170

Azmi, A., Ibrahim, R., Abdul Ghafar, M., & Rashidi, A. (2021). Smarter real estate marketing using virtual reality to influence potential homebuyers' emotions and purchase intention. Smart and Sustainable Built Environment. Advance online publication.

Badland, H. M., Opit, S., Witten, K., Kearns, R. A., & Mavoa, S. (2010). Can virtual streetscape audits reliably replace physical streetscape audits? Journal of Urban Health, 87, 1007–1016. https://doi.org/10.1007/s11524-010-9505-x

Biljecki, F., & Ito, K. (2021). Street view imagery in urban analytics and GIS: A review. Landscape and Urban Planning, 215, 104217. https://doi.org/10.1016/j.landurbplan.2021.104217

Group of Companies. (2025). Google Maps contributions dashboard: Company data (33,204 photos, 1,345 property updates, 278,888,535 total views).

Goel, R., Garcia, L. M. T., Goodman, A., Johnson, R., Aldred, R., Murugesan, M., … Woodcock, J. (2018). Estimating city-level travel patterns using street imagery: A case study of using Google Street View in Britain. PLOS ONE, 13, Article e0196521. https://doi.org/10.1371/journal.pone.0196521

Google Maps. (2024). M Legasi Show Village – Public Street View (outdated version). Retrieved October 2025 from https://maps.app.goo.gl/QptGRKBpDFoUHR3u8

Google Maps. (2025). M Legasi Show Village – Commissioned Aerial and Street View (updated version). Retrieved October 2025 from https://maps.app.goo.gl/15VfyqXWG3SVQm7NA

Low, S., Ullah, F., Shirowzhan, S., Sepasgozar, S. M. E., & Lee, C. L. (2020). Smart digital marketing capabilities for sustainable property development: A case of Malaysia. Sustainability, 12(13), 5402. https://doi.org/10.3390/su12135402

Liu, L., Silva, E. A., Wu, C., & Wang, H. (2017). A machine learning-based method for the large-scale evaluation of the qualities of the urban environment. Computers, Environment and Urban Systems, 65, 113–125. https://doi.org/10.1016/j.compenvurbsys.2017.06.003

Ministry of Economy Malaysia. (2023). National Energy Transition Roadmap (NETR). Retrieved from https://ekonomi.gov.my

Mitrovic, K., Novakovic, N., Spajic, J., & Cosic, I. (2021). Augmented reality in marketing – State of the art. Proceedings of the 32nd International DAAAM Symposium 2021, 566–575. https://doi.org/10.2507/32nd.daaam.proceedings.081

Naik, N., Philipoom, J., Raskar, R., & Hidalgo, C. (2014). Streetscore: Predicting the perceived safety of one million streetscapes. In Proceedings of the 2014 IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW'14) (pp. 793–799). IEEE. https://doi.org/10.1109/CVPRW.2014.121

Parman, S., Fahrudin, R., Lesmana, M. A., & Putra, P. S. (2023). Penggunaan teknologi augmented reality untuk meningkatkan pengalaman pelanggan dalam pemasaran produk real estate. Jurnal Digit, 13(2), 189. https://doi.org/10.51920/jd.v13i2.354

Rehman, F., Nawaz, T., Ahmed, I., & Hyder, S. (2014). Some insights in the historical perspective of hierarchy of effects model: A short review. Information Management and Business Review, 6(6), 301–308.

Sukma Wijaya, B. (2012). The development of hierarchy of effects model in advertising. International Research Journal of Business Studies, 5(1), 73–85.

Law, S., Shen, Y., & Seresinhe, C. (2017). An application of convolutional neural networks in street image classification: The case study of London. In GeoAI'17: Proceedings of the 1st Workshop on Artificial Intelligence and Deep Learning for Geographic Knowledge Discovery (pp. 5–9). ACM. https://doi.org/10.1145/3149808.3149810

Berland, A., & Lange, D. A. (2017). Google Street View shows promise for virtual street tree surveys. Urban Forestry & Urban Greening, 21, 11–15. https://doi.org/10.1016/j. ufug.2016.11.006.