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THE POTENTIAL OF ARTIFICIAL ISLAND DEVELOPMENT IN MALAYSIA'S PROPERTY MARKET

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Abstract

Urbanization and increasing quality of life among society had caused increasing demand for artificial island development in most cities in the world. However, claims that the artificial island development project able to offer thousands of jobs for the local population has been refuted as it allows such a vast influx of foreigners also its consequences for the racial status quo. Therefore, this research's objectives were to study the artificial island development potential as a marketing tool to boost property market sales as well as to determine its impacts from public community perspective. Thus, this research adopted quantitative approach along the research process. The results were based on the survey distributed within the Melaka Getaway in Malacca which involving 20 respondents from real estate industry's person as well as 160 respondents from public communities. The results show that majority respondents agreed that artificial island development do influence the market sales of property in its surrounding area. Moreover, in terms of its impact towards the community and buyers', the responses were categorized under four elements namely social, economic, environmental and strategic and geopolitical. The most significant impact was an improvement in quality of life, while the most significant disadvantage was a possible harm to the marine ecosystem. These results will be benefitted to both government and private sectors, public community as well as the researcher to explore a new angle of development.

Keywords: Artificial development, Impact, Property development

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INTRODUCTION

Generally, artificial or manmade is often recognized as a replica or synthetics that is frequently a carbon copy of something natural created by humans. In recent years, there is an emerging trend in the real estate market for artificial island development worldwide (Kavya & Gassi, 2020). Increasing demand for artificial island development can be seen in most cities in developing an urbanization lifestyle. This kind of urban settlement has resulted in economic benefits in coastal locations, including increased transport linkages, economic gains from tourism growth, and increased industry and commerce, while also having adverse effects.

There are several reasons why artificial islands are being developed in the modern-day, vary from residential, industrial, commercial, and strategic interests. According to Serina (2017), residential intents encompass the establishment of dwelling colonies and other means of subsistence on the islands. The industrial objective of the islands is to extract raw coal, oil, and minerals out from the ocean floor, as well as to develop manufacturing and production enterprises. Commercial purposes involve maintaining control over commercial sea routes and straits, tourist and recreational functions and the construction of commercial facilities such as retail malls, seaports, and airports amid the sea. Finally, the strategic purpose entails establishing possible defence installations and controlling activity on the man-made island in order to keep an eye on the neighbours: and exert control over a certain territory.

Artificial island construction is not a recent concept in Malaysia's real estate sector. Nonetheless, as Kheng (2020) stated, for the past few years, there is a pronounced tendency concerning the establishment of large-scale artificial islands. While acknowledging the implementation of land reclamation for decades in the Malay Peninsula, this current rapid phenomenon of the landmass in the sea project indicates rather a new logic of land-based development. Several major cities in Malaysia are actively reclaiming land along coastlines and envisioning urban island cities with aesthetic architecture.

So far, there are three large-scale artificial island-making projects happening in Malaysia. Most recently, the extravagant Penang Transport Master Plan is now on proposing phase to develop Penang South Island that consists of three artificial islands. In the meantime, Johor's Forest City, with close proximity to Singapore, is a new overseas property investment enclave primarily for PRC investors as well as The Melaka Getaway, an integrated deep seaport known as the largest and most ambitious of China's Belt and Road initiatives in Malaysia. Regardless of these projects being initiated for different political-economic reasons and contexts, they are all dependent on the speculative nature of urban development with strong governmental support at the subnational level (Kheng, 2020).

However, in Malaysia, despite the increasing number of artificial island developments in recent years, these projects have always been opposed by the public over an environmental concern. This is because an artificial island development brings more disadvantages to the ecosystem as well as economic issues compared to its advantages in a particular area. The land reclamation will cause damage to the sea creatures and a settlement of deep water during the construction. Moreover, artificial island development is a costly expense, and time-consuming developmental project as well as high engineering skilled workers, specific equipment, and good weather also need to be considered (Faisal et al., 2020).

Therefore, this study is to identify the potential of artificial island development that has been escalating over the years in Malaysia as well as considering its impacts, advantages and disadvantages in terms of the local communities' perspectives.

LITERATURE REVIEW

Artificial Island Development

The term "artificial island" refers to a variety of aquatic constructions that can create a specific habitat for humans, such as piling or floating hydraulic constructions. In a restricted sense, the term "artificial island" refers to land artificially created in the sea. Zheng et al. (2020) stated that the artificial island is a manmade island in the water. The artificial island is described in a limited sense, and there are two methods for constructing an artificial island. One option is to construct the artificial island entirely on its own, while another is to enlarge an existing one or merge many tiny islands to create a certain quantity of land. Around the world, the majority of large-scale artificial islands are situated in East and Southeast Asia, the Persian Gulf, Europe, and the United States.

In recent times, artificial islands have often been built by land reclamation due to the lack of available land for specific development or the country's rising demand for additional habitat or recreational opportunities. They have been constructed more recently to alleviate urban over population, accommodate airports, and encourage tourism. The construction and development of artificial islands for commercial, industrial, residential, and strategic objectives are likely to become increasingly prevalent shortly. Additionally, technological advancements will undoubtedly contribute to raising the frequency of artificial islands. Additionally, suggestions have been made to construct additional islands in order to alleviate coastal erosion or to produce electricity using renewable energy sources. Such initiatives might provide new possibilities and events to a region that previously lacked development potential or was experiencing an area scarcity, as is anticipated to occur in the future.

However, there is a prospect of an artificial island development race, which would surely have a detrimental effect on marine life and biodiversity (Kavya & Gassi, 2020). The design of such a project has several challenges, most notably in terms of its environmental impact. It is vital to consider all of its facets. The airport artificial island, for example, is typically located near the city and is primarily influenced by the air route and surrounding restrictions; the artificial port island, on the other hand, is mainly determined by the economic hinterland of the adjacent land and the cargo transfer function; and the auxiliary artificial island of the cross-sea channel is influenced primarily to the layout of the entire channel (Zheng et al., 2020).

Dimension of developing artificial island

Table 1 below presents several dimensions in developing artificial island namely strategic and geopolitics dimension, economic dimension, and marine and nautical dimension.

Table 1: Dimension of Artificial Island Development

	Details
Strategic and geopolitics	• artificial islands are developed for strategic and geopolitical concerns. They are frequently developed to keep an eye on neighbouring nations and serve as a place for military and defence infrastructure construction. These artificially established islands may be utilised to attack adversarial countries with warships and missiles (Mirasola, 2015).
Economic	• One of the primary attributes of an artificial island is its economical factor which is largely concerned with commercial and industrial activities. Artificial islands are often built for the purpose of researching and exploiting natural resources such as water, coal, petroleum, minerals, and even fisheries products. • Another economic benefit associated with manmade islands in the tourist industry, countries develop artificial islands for tourism attractions. The other economic objective is the development of harbours and runways.
Marine and nautical	- Bueger (2014) claimed that the marine and nautical dimension is also known as "maritime security", is gaining use and significance in international affairs. There is no precise definition or agreement on a marine security term at the moment. - In 2014, regional organisations such as the European Union and the African Union announced the establishment of marine security initiatives. However, the United States

	Details
	is a pioneer in marine security, having established a National Maritime Security Policy in 2004. - Between 2008 and 2011, piracy off the coast of Somalia, interstate tensions in the South China Sea and the East China Sea, and governments' expanding military might in their sea bodies have all put emphasis on maritime security in the last few years.

Land Reclamation

Land reclamation is the process of creating artificial land from within a coastal area (Sufian & Mustafa, 2010). Coastal land reclamation, or simply reclamation, is the process of reclaiming uninhabited sea or riverbeds (Ning et al., 2010). Land reclamation is an excellent option that is properly managed in terms of physical, social, and economic growth, all of which contribute to meeting human requirements (Maryati, 2012). Land reclamation enables the expansion of land for human benefit in a number of ways. The majority of land reclamation in Malacca is utilised to create residential areas and commercial or mixed development (Malacca Economy Planning Unit, 2015). This step is taken to fulfil development demand and alleviate population strain. Simultaneously, it can be one of the methods used to attract foreign investment, therefore improving and expanding Malacca's economy. This scenario demonstrates the critical role of coastal land reclamation in ensuring economic sustainability.

Additionally, land reclamation is viewed as a method of creating new unoccupied land. In comparison to mainland growth, this approach is straightforward. Additionally, reclamation was employed to eliminate polluting water regions and to improve the sea's hydraulic characteristics by rearranging the shoreline. Acting as both a fixed asset and a visionary resource for state leaders (as well as local corporate and political rulers) reclaiming land development policy, these island-building projects are intended to bolster national treasury through immediate land sales and long event land-and-property indirect taxes. Most crucially, these game-changing initiatives should be viewed as a new governance instrument capable of sustaining state economic development and the illusory promise of future cities while allowing land-use planning to become more spatial and systemically flexible (Kheng, 2020).

Despite the fact that coastal reclamation dates all the way back to the eighth century, it was not until the 1990s – in response to a thriving economy – that coastal reclaiming became an urban regeneration choice in Malaysia. Since 1988, at most, 31 land reclamation projects have been allowed, as well as the reclamation of whole coasts in federal states like Kedah and Negeri Sembilan and even the development of 18 artificial islands (Chee, 2017).

Legislation for Land Reclamation

Land reclamation is listed in the Town and Country Planning Act 1976's concept of 'development' (Act 172). "The carrying out of any construction, engineering, mining, industrial, or other related operation in, on, or beneath the land, the material alteration of the use of any land or building or portion thereof, or the subdivision or amalgamation of lands; and the term "develop" shall be deemed accordingly". Thus, all land reclamation activities must adhere to the provisions of Act 172 and associated legislation such as the 1965 National Land Code (NLC) and the 1976 Local Government Act (Act 171) (Mohammad et al., 2016).

Malaysia has a comprehensive set of laws and regulations governing land development. The National Land Code (NLC) of 1965, the Town and Country Planning Act 1976 (Act 172), and the Local Government Act 1976 (Act 171) are the primary pieces of law in Malaysia that facilitate related development. In terms of planning, the National Land Code (NLC) 1965 contributes to the standardisation of Malaysia's tenure systems and land concerns, particularly in Peninsular Malaysia. While Act 171 establishes the form, organisational structure, functions, and obligations of local government in general, with a particular emphasis on responsibility for the town and country planning. Act 172 is critical in guiding the establishment of a unified legislation and development system, particularly in the development plan and development control system, and it is aimed to address Malaysia's planning weaknesses.

According to Mohammad et al. (2016), there are several divisions of government and planning administration, depending on the country's government structure. In the majority of countries, the planning administration hierarchy is decided by the level of government. Malaysia's planning administration is divided into three levels: federal, state, and local. Each level has distinct tasks and duties, particularly in terms of physical planning. The Federal Government is responsible for policy creation, planning, execution, coordination, and assessment in order to steer Malaysia's physical development in a positive direction (Town and Country Planning Act 1976 (Act 172), 2014). The State Government is responsible for land matters, whereas the Local Government is in charge of planning, coordinating, and managing the use and development of land and structures under its jurisdiction. A sound planning administration practice aids in the regulation of growth. Implementation by the subordinate planning authority is critical for increasing planning administration efficiency.

Implication of artificial island development

Table 2 below presents several implications in developing artificial island namely economic, social and environmental.

Table 2: Implication in Developing Artificial Island

	Details
Economic	• Coastal cities have reaped the benefits of dense urbanisation, such as improved transportation links, higher tourism revenue, and an expansion in business and industry, but they've also suffered the consequences.
Environment	• The ecosystem has been poisoned, signalling the end of the seabed's existence. The severe pollution caused by noise continues to worsen. • Natural habitats including mangrove forests, seagrass beds, saltmarshes, and mudflats, are rapidly replaced by artificial "biodiversity", including seawalls, rock armour, breakwaters, and marinas, resulting in the loss of precious natural ecosystems and destruction of natural connectivity between terrestrial and marine systems. • By 2030, it is anticipated that up to 12.5 million km2 of ecological species would have been lost, and there is an urgent demand to find strategies to minimise this loss (Chee, 2017). • Excessive growth and building in marine and coastal systems have resulted in a phenomenon dubbed "ocean sprawl." Ocean sprawl degrades or destroys marine ecosystems as a result of the installation of manmade structures, with more severe effects happening in sedimentary ecosystems. • Potential to alter the populations of proximity habitats by changing light availability, velocity, wave energy, sediment and mineral transfer, leaking contaminants, altering predator-prey relations, and causing noise during their building projects (Heery et al., 2017).
Social	• Land reclamation may also result in the loss of a community's livelihood based on its tradition. The land reclamation area might jeopardise the people's connection to the sea, whereby many water festivals were emphasizing the significance of that bond. • Due to the fact that land reclamation prevents seawater from entering, the ritual of carrying saltwater to shower each other has been modified by the usage of tanks of water supply. • Language hurdles are frequently the biggest impediment for villages, with many unable to communicate in English and even fewer able to communicate in Mandarin (for example).

	Details
Strategic and Geopolitical	• To address strategic and geopolitical problems, man-made islands have also been constructed. Military and defence infrastructure is typically built in these areas as a means of keeping tabs on neighbouring countries. It is possible that these manmade islands may be used to launch missile attacks against countries that pose a threat (Mirasola, 2015).

RESEARCH METHODOLOGY

This study has adopted a quantitative approach along the, where is a technique that utilizes quantified data as well as numerical data. The study was carried out within the Melaka Gateway, Melaka. The rationale behind these choices is from the point that the developmental project is a cityscape in which all requisite landscapes are found, relevant artificial island development in the nation is located, and it is accessible. As a result, it is possible to collect all required and pertinent data from the local community regarding the objectives of this study.

In this study, the objectives were answered through the data collected from the local community to determine the artificial island development's impact, and real estate practitioners to determine the potential of artificial island development as a marketing tool to boost property market sales. A total of 200 questionnaires were distributed to the local community, and 30 questionnaires were distributed to the real estate practitioners. Considering that an artificial island development project affecting most people who live nearby and affecting their wellness and well-being due to the development of artificial island projects takes place, the public community who live surrounding there was therefore appropriate.

RESULTS AND DISCUSSION

Response Rate

From the 200 questionnaires were distributed to the local communities within the case study area, only 160 were returned which is resulted 80% response rate. On the other hand, from the 30 questionnaires were distributed to the real estate practitioners, 20 were completely answered and resulted 66.7% response rate. Table 3(a) and Table 3(b) present the tabulation of respondents has been participated in this study.

Table 3(a): Respondents Profile – Real Estate Practitioner

Profile	**Frequency (N = 160)**	**Percentage (100%)**
Gender:		
Male	12	60
Female	8	40
Age Group:		
20 – 29 years old	3	15
30 – 39 years old	11	55
40 – 49 years old	3	15
Above 50 years old	3	55
Academic Qualification:		
Certificate / Diplom	7	35
Bachelor Degree	10	50
Master / Doctor Philosophy	3	15
Working experience:		
0 – 5 years	6	30
6 – 10 years	7	35
11 – 15 years	4	20
16 – 20 years	2	10
More than 20 years	1	5
Current position:		
Real estate Agent / negotiator	8	40
Valuer	3	15
Property manager	9	45

Table 3(b): Respondents Profile – Local Communities

Profile	**Frequency (N = 20)**	**Percentage (100%)**
Gender:		
Male	77	48.1
Female	83	51.9
Age Group:		
20 – 29 years old	44	27.5
30 – 39 years old	45	28.1
40 – 49 years old	40	25.0
Above 50 years old	31	19.4

Profile	Frequency (N = 20)	Percentage (100%)
Occupation:		
Government sector	37	23.0
Private sector	47	29.4
Self employed	50	31.3
Student / unemployed	26	16.3
Distance from case study area:		
Below 2km	34	21.3
2 km – 4 km	25	15.6
4km – 6km	37	23.1
6km – 8km	27	16.9
Above 8km	37	23.1

The Potential of Artificial Island Development on Property Market from The Real Estate Practitioners' Perspective

From the twenty returned questionnaires from the real estate practitioner who were participated in this study, several responses were compiles. Table 4 below summarises the responses from the respondents.

Table 4: The Potential of Artificial Island Development in The Property Market

Impact	Mean Score
The housing price is higher in the vicinity of artificial island development.	4.31
Artificial island is successfully recognized as a tourism area with potential to attract investors and visitors.	4.24
Artificial island development is the best way to boost property market sales	4.11
The demand of artificial island will be increased due to the scarcity of land demand	3.77
The real estate demand will be boomed in the artificial island area	3.72
Artificial island is needed to overcome the overpopulation issue.	3.48

In general, from the results, the development of artificial island has significant potential towards Malaysian real estate market. The housing price is higher in the vicinity of artificial island development as compared to other places due to several reasons especially increase of development costs.

Furthermore, majority respondents agreed that the artificial island is successfully recognized as tourism centre which are able draw a large number of investors and visitors flock to the region. Malaysia is currently working on three large-scale initiatives to create artificial islands, and the Melaka Getaway is Malaysia's largest and most ambitious Belt and Road venture, with close access to Singapore as well. It doesn't matter why these initiatives were started, since they all depend on the risky character of urban growth and substantial government backing at the subnational level (Kheng, 2020).

Moreover, the development of artificial island is having potential to boost property market sales in future. Since the Gateway is expected to cost RM 42 billion to build and attract 2.5 million tourists yearly, create 40-45,000 jobs, and produce RM 1.19 trillion in revenue for the state of Melaka, this may be accepted as a fact. The Malacca Strait is home to two of Malaysia's most important ports, but Melaka Gateway was previously considered part of a larger port partnership between Kuala Lumpur and Beijing aimed at enhancing bilateral trade as well as shipping and logistic support along China's much-heralded Maritime Silk Road.

The demand of artificial island will be increased due to the scarcity of land demand. Zheng et. al (2020) stated that the artificial island is in fact a man-made structure submerged in the ocean. There are several different types of aquatic structures that may be used to build an artificial island, including pilings and floating hydraulic structures. "Artificial island" refers to land that has been artificially formed in the water. It's possible to build an artificial island from scratch, or to expand an existing one or to join several small ones to form a larger one. Large-scale manmade islands are most often found in East and Southeast Asia, as well as the Persian Gulf and European countries to fulfil the demand of land advancement and betterment.

Respondents also agreed that the demand on real estate is higher within the artificial island vicinity. One of the most common reasons for this is because buyers often reassess how they live, invest, manage their time, prioritise their immediate environment, and participate in themes that are important to them, which is one of the most common reasons for this (Foo, 2020). As Kheng (2020) remarked, there has been a noticeable trend in the development of large-scale artificial islands in the last few years. Land reclamation has been practised on the Malay Peninsula for decades, but the recent fast phenomena of the landmass in the sea project shows a new logic for land-based growth. For economic reasons, several large towns in Malaysia are aggressively recovering land along coasts and planning urban island cities with attractive design.

Respondents also agreed the artificial island is needed to overcome the overpopulation problem. Hence, even more islands might be developed to prevent coastal erosion, or renewable energy sources could be employed to

generate electricity. Such efforts can offer up new chances and events for a place that previously lacked growth potential or faced an area deficit in the future. Take into account all facets of the scenario Artificial islands are impacted by several aspects including the air route and surrounding limits; an artificial port island's cargo transfer function; the cross-sea channel auxiliary artificial island's layout; and the cross-sea channel's economic hinterland (Zheng et al., 2020).

The Impacts of Artificial Island Development from The Community Perspective

In this study, the impact of artificial island is determined by four factors namely economic, social, environmental and geopolitical factor, and were categorized into positive and negative impacts. From the responses by 160 communities within the case study areas, several impacts were gathered as summarises in the Table 5 and Table 6 below.

Table 5: The Impacts of Artificial Island Development from The Community Perspective – positive impacts

Impact		**Mean Score**
Economic	• To boost property market sales • A key player of tourism • Job opportunities • To accommodate, residential, industrial, and economic activities in the city • To manage and control commercial sea routes and strait	4.29 3.96 4.03 3.85 4.06
Social	• Enhancing standard of living • Develop urban lifestyle • To solve overpopulation issue in the city • To resolve unemployment issue • To preserve and improve the wellness of mankind	4.34 4.23 3.65 4.15 4.33
Environment	• Initiative of green city • A new ecofriendly surrounding • Operate low energy consumption building • Green architectural and design city • To resolve the rising of sea level	4.22 4.29 3.15 3.69 2.41
Strategic and geopolitical	• Betterment and advancement of land • To allocate additional center of government ministry and business • Transport linkage • Designate for maritime security	4.15 3.99 3.91 3.79 4.12

	• Manage the sea routes and control over the certain territory	

The artificial island is an initiative of Green City. "Smart City," "Healthy City," "Low-Carbon City," "Livable City," and so on are only a few of the many slogans that have formed and established the goal of sustainable urban development, which includes numerous phrases such as "Sustainable City" and "Green City." All of these ideas share the same fundamental presumption and end goal: to achieve optimal growth while using the fewest resources and having the least impact on the environment in order to ensure the well-being of humans and the planet as a whole.

Because of this, the investment in land or real estate development is also described as the investment in making land more usable by humans, dependent on the type of land utilised in specific places and other development features such as residential density (Hui & Yuh, 2016). In addition, Sulhi (2018) stated that the Gateway is estimated to cost RM 42 billion to develop and will draw 2.5 million visitors annually, create 40-45,000 jobs, and generate RM 1.19 trillion for the state of Melaka. In term of the strategic and geopolitical advantages, that artificial island development is able to manage the sea routes and oversee certain territory. This is because a final strategic objective is to monitor the island's neighbours and impose control over a certain area by putting in place probable defensive installations and monitoring activities on the man-made island.

In regards to the negative impacts of artificial island development, Table 6 below summaries the results from 160 respondents participated in this study.

Table 6: The Impacts of Artificial Island Development from The Community Perspective – Negative impacts

Impact		**Mean Score**
Economic	• Extreme expensive development costs	4.62
	• Unaffordable property prices in the vicinity of artificial island areas	4.34
	• Local vendor unable to pay leasing fees	4.17
Social	• Impact of current racial dynamics	4.32
	• Limited job offers for local resident	3.86
	• Letting such a large in flow of immigrant and foreigner	4.34
	• Language barriers	3.86
	• The native population lost their livelihood	4.74

Environment	• Damage to the marine environment	4.80
	• Deep water levels are fluctuating while work is done	4.17
	• Artificial "biodiversity" is increasingly replacing natural ecosystems including mangrove forests, seagrass beds, saltmarshes, and mudflats	4.45
	• Severe pollution such as noise pollution, air pollution, solid waste pollution as well as water pollution emerging in the vicinity	4.41
Strategic and geopolitical	• Power instability and political turnover had fallen short of artificial island development expectation	4.52
	• Local strata laws on maintenance fees and assessment tax are difficult to enforce if the owners are away or cannot be identified	4.28
	• Open to harm and insecurity of the region as it away from the mainland	4.16
	• Enforcing the regulations against absentee owners will be challenging	4.03
	• Many mangrove regions have little fishing enclaves and jetties nestled away in the	3.86

From the results, many Malaysians were not affording to own the property in the artificial island vicinity due to the extremely expensive of developmental project costs. Moreover, the artificial island development also contributed to the negative social problem such as the native population lost their livelihood. Apparently, the land reclamation may also result in the loss of a community's livelihood based on its tradition. Peter Gomes, a long-serving community leader, warns out that the land reclamation area might jeopardise the people's connection to the sea.

From the survey, the development of artificial island is identified to harm the marine environment. Likewise, a phenomenon known as "ocean sprawl" has emerged as a result of rapid expansion and construction in marine and coastal areas. The construction of man-made buildings affects or destroys marine habitats, with the most severe consequences occurring in sedimentary environments. Biological variety, fisheries productivity, and their position as major sites of nutrient change all contribute to the social, ecological, and economic relevance of marine sediments as a whole. The impact of coastal expansion on sedimentary environments has, however, been generally overlooked (Heery et al., 2017).

Furthermore, majority respondents were agreed that the power instability and political turnover had fallen short of artificial island development

expectation. The state administration has decided to scrap the Melaka Gateway Port, which was slated to be the region's largest when completed. It has been three years since the reclamation work began for Melaka Gateway, according to a letter to Melaka government from its developer. Legal action has been taken by the developer, however, who alleges that it is being treated unfairly (Hazlin, 2020). As stated by Khairie (2017), one of the most significant difficulties is the enormous cost of upkeep, which is contingent upon owners paying their dues. Due to the fact that the majority of purchasers appear to be investors and non-residents, industry experts point out that enforcing local strata rules on maintenance costs and assessment tax is nearly impossible if the owners are absent and cannot be traced.

CONCLUSION

The aim of this study is to study the artificial island development potential as a marketing tool to boost property market sales as well as to determine its impacts from public community perspective within Malacca Gateway, Malacca. The results show that majority respondents were agreed artificial island development influence the market sales of property in its surrounding area. Moreover, in terms of its impact towards community and buyers' perspective, were categorized under four elements namely social, economic, environmental and strategic and geopolitical. The most significant impact was an improvement in quality of life, while the most significant disadvantage was a possible harm to the marine ecosystem. These results will be benefitted to both government and private sectors, public community as well as the researcher to explore a new angle of development.

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