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Objective

The Journal of Valuation and Property Services is a publication specifically intended for property professionals to keep abreast with the developments in the property industry as well as the real estate profession.

This journal serves as a platform for the exchange of information and ideas on property issues. It seeks to:

i. address areas of major interest and practical relevance to the real estate profesion.
ii. create awareness of new theories, techniques and applications as well as related concepts relevant to the real estate profesion.
iii. discuss policy issues and regulations and their implications on the property market.

We therefore welcome articles with theoretical and practical relevance to the real estate industry and profesion, property valuation, property management, property investment and market analysis.

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REFEREE PANEL

THE INCREASING IMPORTANCE OF THE ALTERNATE REAL ESTATE SECTORS

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ABSTRACT

The alternate real estate sectors (including healthcare, data centres, self-storage and university student accommodation) have taken on increased importance in recent years with institutional investors, as they have sought to broaden their real estate sector exposure. Key real estate investment factors have driven this increased importance, including the changing global demographics, advances in technology and the impact of COVID-19. Importantly, this trend is expected to continue and have a major influence on real estate investment strategies by institutional investors going forward; globally, in Asia and in Malaysia. Several Malaysian real estate investors are already investing in these alternate real estate sectors, as well as a number of international real estate investors investing in these alternate real estate sectors in Malaysia. Using a range of alternate real estate sectors across several countries, this paper examines the drivers, performance, investment opportunities and future outlook of these alternate real estate sectors. Case studies in each alternate real estate sector are presented, including Malaysian case studies. The strategic real estate implications for institutional investors going forward are also assessed.

Keywords: *Alternate real estate sectors, healthcare, data centres, university student accommodation, institutional investors, real estate investment strategy, Malaysia*

1. INTRODUCTION

Institutional investors (eg: pension funds, insurance companies, sovereign wealth funds) have over $80 Trillion in assets. Real estate has been an important asset class for these institutional investors; typically accounting for 5-10% of their overall portfolios. Their real estate portfolios have largely focused on the prime office, retail and industrial real estate sectors to get high-quality real estate exposure in their portfolios. This has been achieved by a variety of real estate investment structures and channels such as direct real estate, non-listed real estate funds, joint ventures (JVs), club deals, separate accounts, fund of funds and Real Estate Investment Trusts (REITs). High quality real estate exposure has been provided in both the domestic and international real estate markets, using both non-listed and listed real estate products.

However, the alternate real estate sectors have taken on increased importance in recent years with institutional investors, as they have sought to broaden and future-proof their real estate sector exposure. Key real estate investment factors, including the changing global demographics, advances in technology, transitioning to a green economy and the impact of COVID-19 have driven this increased exposure to the alternate real estate sectors. In particular, COVID-19 highlighted significant risk issues for office and retail property relating to CBD office closures and reduced retail activity. Importantly, this trend of increased interest in the alternate real estate sectors is expected to continue and have a major influence on real estate investment strategies by institutional investors going forward. The alternate real estate sectors include healthcare, data centres, self-storage, student accommodation, farmland, Build-To-Rent (BTR) housing, co-living accommodation, car parking, childcare centres, cold storage, petrol stations and convenience retail. Often these drivers for the alternate real estate sectors are less cyclical and less strongly linked to the typical real estate drivers for the core real estate sectors which are more strongly linked to economic factors.

Using a range of alternate real estate sectors across several countries (eg: US, UK) and different timeframes, this paper examines the drivers, risks, investment performance, investment opportunities and the future outlook in a post-COVID-19 environment of these alternate real estate sectors. Case studies in each alternate real estate sector are presented, including drilling into specific Asian and Malaysian case studies to highlight the local Asian context and dynamics. The strategic real estate implications for institutional investors going forward are also assessed; particularly in a post-COVID-19 context.

In particular, the alternate real estate sectors of healthcare, data centres and university student accommodation are discussed in detail in this paper. Typical examples of these alternate real estate assets in current institutional investor portfolios across various major countries are shown in Figure 1 (healthcare), Figure 2 (data centres) and Figure 3 (university student accommodation). Whilst not being real estate, infrastructure is a real asset and will also be impacted with the transition to a green economy with an expanded focus on renewable energy assets (eg: wind farms) in institutional investor portfolios (see Figure 4).

2.   PREVIOUS RESEARCH

Previous research on the alternate real estate sectors has been very limited. Part of this is due to data availability issues, where the earlier research focused on the alternate real estate sectors in REITs, rather than the analysis of the direct real estate in these portfolios. Excellent introductory papers on the features of the alternate real estate sectors are given by Investment Property Forum (IPF) (2015) and McIntosh et al (2017).

The earlier papers on the alternate real estate sectors largely focused on REIT portfolios in the US and Australia; including Newell and Peng (2006, 2008), Newell et al (2007) and Peng and Newell (2007). Data availability issues were a key driver for this initial REIT focus, with performance series for the direct alternate real estate sectors not available. Direct real estate performance series for these alternate real estate sectors have improved considerably in recent years; eg: MSCI direct real estate series.

More recently, Jufri Marzuki and Graeme Newell have done a number on papers on the analysis of direct alternate real estate in these portfolios; including healthcare real estate in the UK (Newell and Marzuki, 2018a), healthcare real estate in Australia (Marzuki and Newell, 2022) and UK university student accommodation (Newell and Marzuki, 2018b), as well as global infrastructure (Marzuki and Newell, 2021). Several recent papers for the alternate real estate sectors in REITs have also been done, including data centres (Marzuki and Newell, 2019), where direct real estate series for data centres are still not available. In each case, strong risk-adjusted performance and diversification benefits were evident; highlighting the role of these alternate real estate sectors in mixed-asset portfolios.

A number of recent papers have also considered specific aspects for university student accommodation (eg: external funding) (McCann et al, 2019), as well as the potential for investment in university student accommodation in Malaysia (Sulaiman et al, 2018). The academic research has been well supported by excellent real estate industry reports by CBRE, JLL and Colliers regarding the alternate real estate sectors, including healthcare, data centres and university student accommodation; often from an Asia perspective (eg: CBRE, 2021, 2022 a, b, c).

Importantly, this sees excellent real estate research opportunities to further explore issues for these alternate real estate sectors; particularly from an Asia and Malaysia investment perspective. The following sections will look at the alternate real estate sectors of healthcare, data centres and university student accommodation in detail.

2.1 Healthcare Real Estate

Healthcare real estate is a fundamental part of the social infrastructure needed in our society today; it is an essential part of the well-being of our communities. The underlying real estate assets to support this healthcare sector are important to facilitate high quality medical services. The context of COVID-19 globally has particularly reinforced the importance of these issues in the delivery of effective healthcare systems.

Strong social, real estate and investor perspectives to healthcare real estate internationally were clearly evident. Driven by the ageing population demographics in many countries and other healthcare sector-specific factors, this sees an important opportunity for institutional investors to be more actively involved in investing in healthcare real estate. Opportunities across the various healthcare sectors, including general practice, medical centres, hospitals, aged care homes, disability care centres and specialist services facilities are evident.

Key drivers for healthcare real estate investment have been the ageing population demographics, impact of our modern lifestyles, lack of suitable healthcare accommodation, advances in medical technology, need for modern medical centres, long leases for professional healthcare operators, indexed rental income, increased expectations of baby boomers in healthcare services, highly regulated industry, and the role of both government and the private sector (see Newell and Marzuki, 2018a). The ongoing impact of COVID-19 has also been a key driver. Whilst there are both real estate-specific and healthcare industry risk factors that investors need to be aware of, the healthcare real estate sector provides an excellent opportunity for institutional investors to be involved in delivering both performance and community/social benefits. These risk factors include the lack of quality stock, reputational risk, operator risk, achieving sufficient scale in the investor's portfolio and the need for highly-skilled staff (see Newell and Marzuki, 2018a).

A number of major institutional investors are already involved in this space, including GIC (Government of Singapore Investment Corporation), EPF (Employees Provident Fund), CPPIB (Canada Pension Plan Investment Board) and ADIA (Abu Dhabi Investment Authority), as well as real estate investment managers also actively involved in the healthcare real estate space, in establishing both non-listed and listed real estate vehicles (eg: AXA, LaSalle, Blackstone, Primonial). Healthcare REITs have been established in nine countries, including the US, UK, Australia, France, Japan and Malaysia.

Using the MSCI direct healthcare real estate performance indices, the risk-adjusted performance and diversification benefits of healthcare real estate in the UK and Australia has been assessed (Newell and Marzuki, 2018a; Marzuki and Newell, 2022), as well as the authors updating these analyses recently. In each case, the returns, risk, risk-adjusted returns, portfolio diversification benefits and mixed-asset portfolio role of healthcare real estate were clearly evident. Newell and Marzuki (2022) have also done these performance analyses for French healthcare real estate, with equivalent positive results; further validating the added-value of healthcare real estate in institutional investor portfolios.

Overall, healthcare real estate has strong real estate and social infrastructure drivers to see it as an attractive alternate real estate sector for institutional investors in their real estate portfolios. Clearly, these benefits will go well beyond COVID-19 to provide major ongoing benefits to our communities globally.

2.2   Data Centres

Data centres are an expanding alternate real estate sector, taking advantage of the growth in Information Technology (IT) -related technological requirements by business and communities today. The reliance on IT over the last ten years has driven the growth in technology-focused real estate assets, such as data centres. The advances in technology in recent years (eg: smart devices, home automation), cloud computing, e-retailing and media content delivery services present data storage challenges and opportunities. The relevance of data centres utilising modern, cloud-based technology makes it an attractive alternate real estate investment opportunity for institutional investors. Data centres are a specialised real estate asset, equipped with advanced networking, processing and data storage requirements.

The trend to Work From Home (WFH) during COVID-19 has seen an increased reliance on effective technology globally in both business and home environments. However, there is a clear risk of obsolescence due to rapidly changing technology advances that need to be factored into any data centre investment decisions by institutional investors, due to limited alternate use options for this space. Other operational risks include energy costs and high-power requirements.

Importantly, real estate investment managers have established both non-listed and listed real estate channels for institutional investors to access data centre investment opportunities. Major players in this space have set up data centre investment opportunities, often with significant multi-country portfolios to deliver geographic diversification benefits to their portfolios. For example, Keppel in Singapore have established a non-listed data centre fund comprising 20 data centres across 8 countries, with data centre assets of $3 Billion. Other players such as Mapletree and Brookfield are also involved in data centre investment management and development. Data centre REITs in several countries (e.g.: US, Australia, Singapore) have been active in establishing data centre portfolios. Often the data centre REIT sub-sector has seen significant data centre REITs (eg: US: Equinix (6th largest US REIT), Digital Realty (10th largest US REIT)), with over 90 data centres in each of their portfolios.

An analysis of the performance of US data centre REITs over 2016-2021 was recently performed (Marzuki and Newell, 2019). Strong metrics in returns, risk, risk-adjusted returns, portfolio diversification benefits and role in a mixed-asset portfolio were clearly evident, validating the role of data centre real estate as an attractive real estate sub-sector for institutional investors.

Overall, data centres as an alternate real estate sector have strong drivers from advances in technology, and the potential to add-value in an institutional investor's real estate portfolio.

2.3   University Student Accommodation

The significant growth in the international university student education market has facilitated the growth in the university student accommodation sector globally. The main countries in this international student cohort are China, India, South Korea, Canada and Saudi Arabia, with the

US, UK and Australia having significant international university student cohorts. The resulting demand for high-quality student accommodation (for both international and domestic university students) is clearly evident.

In addition to this international student demand, drivers in the university student accommodation space include supply/demand imbalance, regulatory changes, reduced role by universities in providing student accommodation, long-term leases for operators, attractive yields, low risk, steady income stream, resilience against market downturn, geographically diversified portfolios, increased role of regional markets versus main cities, professional operator platforms, low vacancy rates, fewer structural challenges than other real estate sectors, and the need for international market "brand" by operators (Newell and Marzuki, 2018b). All of these factors have contributed to a high level of investor demand for university student accommodation. While there are clearly risk factors involved, such as the impact of technology to see an increased role for online education versus on-campus study, the biggest risk factor recently has been the impact of COVID-19 on international student numbers where international travel to the student study locations was not possible. The impact of reduced international student numbers impacted most markets which are only now in the process of recovering from this COVID-19 impact.

Leading real estate investment managers have acquired substantial student accommodation portfolios (often as purpose-built student accommodation), and setting these up via both non-listed and listed real estate vehicles; including Blackstone, Mapletree, AXA, Allianz, Brookfield and M&G in the non-listed real estate space. Student accommodation REITs in the US (4) and UK (2) have also been established. A high level of institutional investor demand for investing in student accommodation was also evident, with leading players including GIC (Government of Singapore Investment Corporation) and CPPIB (Canada Pension Plan Investment Board). Multi-country student accommodation portfolios were established, with strong links to professional operators. Importantly, investors see university student accommodation as different to residential real estate in their portfolios; hence student accommodation is not seen as a replacement for residential real estate exposure.

Newell and Marzuki (2018b) analysed UK direct university student accommodation performance over 2011-2021 using the CBRE university student accommodation index. Strong performance was clearly evident in the metrics of returns, risk, risk-adjusted returns, portfolio diversification benefits and the role in a mixed-asset portfolio, validating the potential for university student accommodation as a real estate sector for institutional investors. Overall, university student accommodation has been a well-supported alternate real estate sector for institutional investor exposure to this important sector.

3. ALTERNATE REAL ESTATE SECTORS IN ASIA

How do these alternate real estate sectors fit into an Asian and Malaysian real estate context?

Excellent examples in the healthcare real estate sector include the Al-Aqar REIT in Malaysia and the Nippon Healthcare REIT in Japan; see Figures 5 and 6 respectively for examples of properties in their healthcare real estate portfolios. The Al-Aqar REIT has been established since 2006, including 23 properties valued at RM$1.7 Billion in the healthcare areas of hospitals (17), wellness/health centres (3), healthcare education facilities (2) and aged care/retirement villages (1).

Similarly in the data centres space, Keppel in Singapore has been active in developing data centre portfolios in both the REIT and non-listed real estate channels with multi-country portfolios; see Figure 7. Countries in Asia (6) (eg: Singapore, China, Hong Kong, Malaysia, Indonesia and Australia) and Europe (5) (eg: UK, Netherlands, Ireland, Germany and Italy) comprise the countries in this portfolio of 26 data centres in the Keppel portfolio via the Keppel DC REIT, and Alpha Data Centre Fund and KDC II Fund; seeing Keppel have a multi-billion dollar data centres portfolio.

The university student accommodation is a new sector in Asia. However, in Malaysia, the non-listed Alpha REIT have considerable experience (since 2017) in the area of investments in schools, with Figure 8 giving examples of schools in Malaysia in the Alpha fund's portfolio. The Alpha REIT has three Malaysian schools in their portfolio (Kuala Lumpur, Damansara, Kajung) using a long-term sale-and-leaseback model; as well as being Shariah-compliant.

Other examples of institutional investors and real estate investment managers being involved in Asia in the alternate real estate space include:
- Employees Provident Fund (EPF) investing in Australian healthcare real estate via Dexus
- Keppel investing in Australian healthcare real estate via Australian Unity
- GIC investing in Malaysian healthcare real estate via Sunway Healthcare
- Keppel establishing additional non-listed data centre funds
- Kumpulan Wang Persaraan (KWAP), Mapletree, GIC and Temasek investing in university student accommodation;

in most cases, this alternate real estate exposure has been via the developed real estate markets in US, UK and Australia.

Clearly, there is scope for expanding the level of institutional investment in this alternate real estate space in Asia, as these real estate markets further develop. Both local institutional investors as well as international institutional investors have opportunities in this space.

4.   REAL ESTATE IMPLICATIONS

High-quality office, retail and industrial real estate are the long-standing real estate sectors in institutional investor portfolios. They will clearly remain as the dominant real estate sectors in institutional investor portfolios due to their attractive long-term investment characteristics. However, there are also clear real estate, technology and social drivers for the inclusion of the alternate real estate sectors in these significant real estate portfolios to compliment the benefits of these traditional real estate sectors, as well as future-proofing these portfolios. This is more than just being based on prior performance analysis; it clearly factors in increasingly important issues such as ESG (Environment, Social, Governance) considerations and a changing social context that major investors are demanding. ESG considerations will take on increased importance for institutional investors, both in terms of their investment mandates, member expectations regarding the green economy and social issues, and the need for ESG considerations to be factored into future capital allocations to real estate fund managers with a strong ESG mandate. A structural change in real estate investment opportunities has become evident, as institutional investors seek to future-proof their real estate portfolios and respond to these challenges and emerge from the COVID-19 environment into the "new normal" for real estate investment.

Opportunities will also arise in the real estate space around emerging professional careers, as in-house investor requirements will see the need for highly-skilled professional teams in these alternate real estate assets that go beyond the skills needed in the traditional real estate sectors. Many of the leading real estate advisory players (eg: CBRE, JLL) are already establishing professional teams in this increasingly important real estate space. Real estate investment managers will also need to establish effective vehicles for alternate real estate sector exposure; both in the listed and non-listed spaces to satisfy this institutional investor demand.

5.   FUTURE OUTLOOK

This paper has clearly identified the opportunities for institutional investors to embrace the alternate real estate sectors as key elements in their real estate portfolios; in addition to the traditional real estate sectors of office, retail and industrial real estate. The dynamics of these alternate real estate sectors as shown by the performance analysis, as well as increasing institutional investor demand and increasing requirements for social commitment in investor portfolios has reinforced the stature of these alternate real estate sectors. The robustness of these real estate investment opportunities is further reinforced by these analyses being across countries (eg: US, UK, Australia), across sectors and over different time periods. In a post-COVID-19 context, these alternate real estate sectors will take on increased global importance for institutional investors, driven by real estate factors and social factors.

Significant real estate, technology and social drivers are also supporting these alternate real estate sectors going forward. Investors will also need to be aware of the risk factors involved and the operational issues in these new alternate real estate sectors, which are often unique and go beyond just real estate issues.

While this paper has focused on the alternate real estate sectors of healthcare, data centre and university student accommodation, opportunities will exist for this to expand to other alternate real estate sectors as these markets mature. Build-To-Rent (BTR) housing is an excellent example of an alternate real estate sector that will take on increased importance going forward; particularly as the issue of housing affordability impacts many markets and institutional investors take on mandates to support this important social issue. ESG considerations and the role of green infrastructure (eg: renewable energy) will also become increasingly important as economies transition to being greener economies.

Specifically, there are implications for Malaysia regarding the adoption of these alternate real estate sectors that go well beyond COVID-19. This will see significant implications for the social infrastructure in Malaysia. An excellent example of this concerns healthcare real estate in Malaysia, particularly concerning medical facilities and aged care facilities (eg: nursing homes). Growth in the aged care facilities in Malaysia will be needed over the next ten years, where the traditional model of caring for elderly parents by their children will be under pressure to be sustainable in the future. A key driver in this space will be the percentage of Malaysians over 65 years that will require increased healthcare. This over-65 years age group in Malaysia will increase from only 4.1% of the population in 2001, to 7.6% in 2021, to 13.1% in 2041 and to 21.9% in 2061; seeing a tripling of the levels from today over the next 40 years. This not unique to Malaysia, and is evident in many other Asian countries such as Japan, China, Singapore, South Korea, Taiwan and India (www.populationpyramid. net). With governments unable to fully fund this growth, an increased focus on institutional investors supporting the necessary health system infrastructure will be required.

Importantly, these alternate real estate sectors will provide major opportunities in Asia as these markets develop and investor demand increases. They will also provide important career opportunities for real estate professionals in Asia with strong practical and investment skills in these alternate real estate sectors; both with local players and international players. It is an exciting real estate space going forward; with significant investment and real estate career opportunities.

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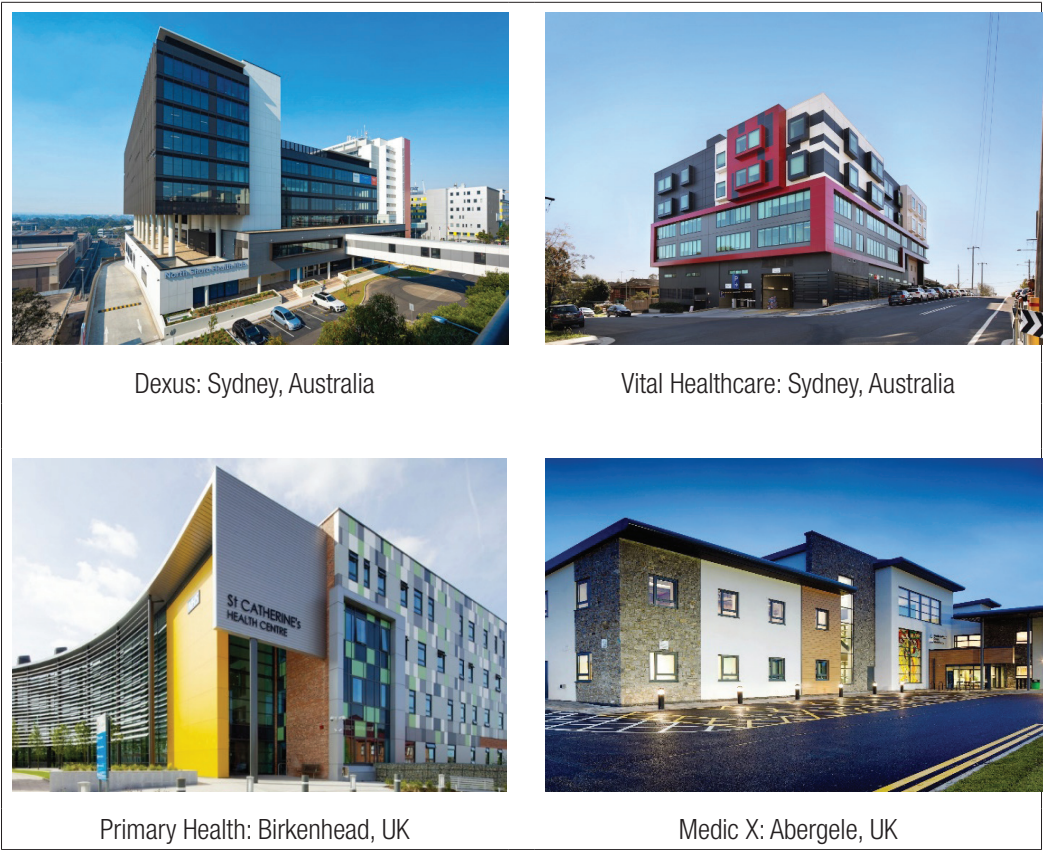
Dexus: Sydney, Australia

Vital Healthcare: Sydney, Australia

Primary Health: Birkenhead, UK

Medic X: Abergele, UK

Figure 1: Examples of healthcare properties in investor portfolios
Source: Authors' compilation

|	
Equinix: Silicon Valley, US	Equinix: Sydney, Australia
Digital Realty: Erskine Park, Australia	Digital Realty: Singapore

Figure 2: Examples of data centres in investor portfolios
Source: Authors' compilation

Victus: Bristol, UK

Victus: Bristol, UK

GSA: Madrid, Spain

UniLodge: Melbourne, Australia
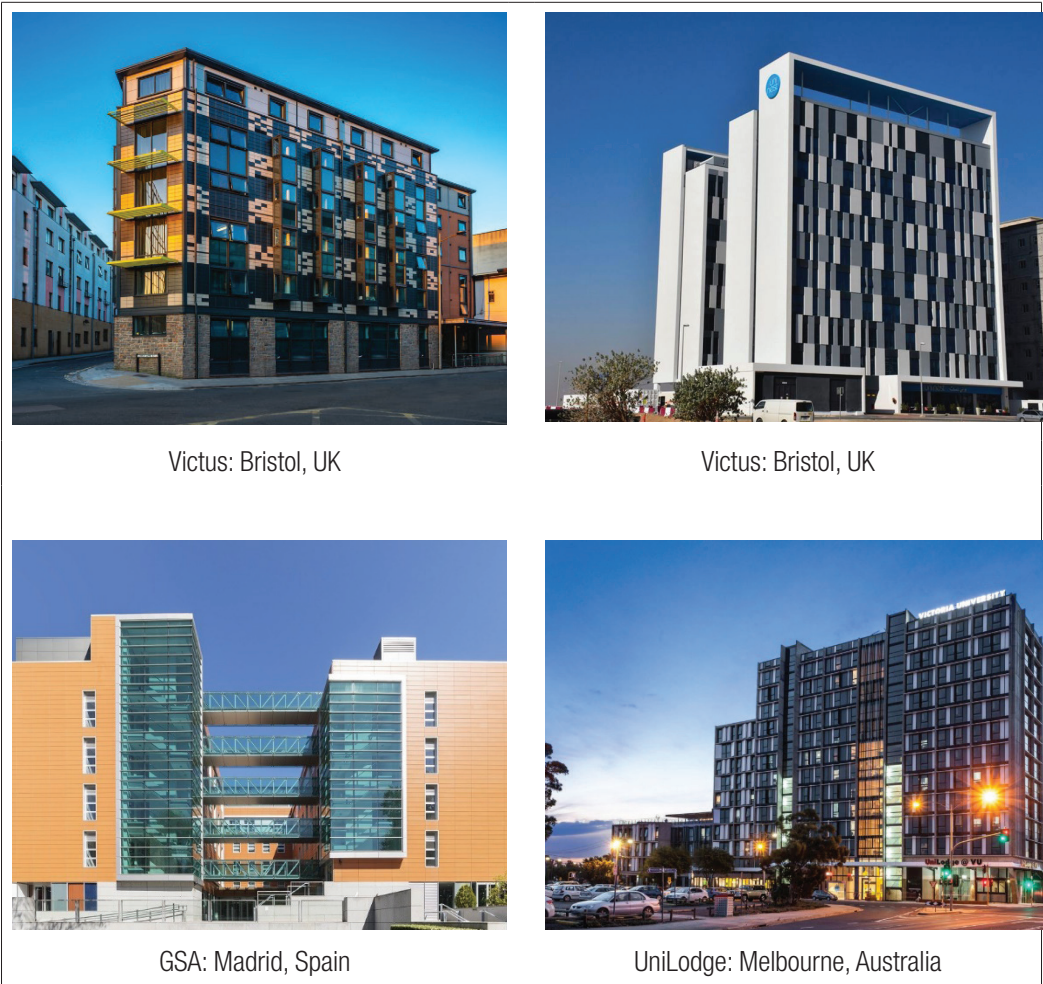
Figure 3: Examples of university student accommodation in investor portfolios
Source: Authors' compilation

<div align="center">OMERS: power plant: Canada   Carlyle: oil and gas facility: Spain</div>

<div align="center">Global Infrastructure Partners:
wind farm: Germany   Vinci: airport: UK</div>

Figure 4: Examples of infrastructure in investor portfolios
Source: Authors' compilation

KPJ Tawakkal Specialist Hospital, KL Malaysia   KPJ Penang Specialist Hospital, Penang Malaysia

KPJ Johor Specialist Hospital, Johore Malaysia

Figure 5: Examples of healthcare properties in the Al-Aqar REIT portfolio
Source: Authors' compilation

La'nassica Arakogawa, Nagoya Japan

La'nassica Arakogawa, Nagoya Japan

Figure 6: Examples of healthcare properties in the Nippon Healthcare REIT portfolio
Source: Authors' compilation
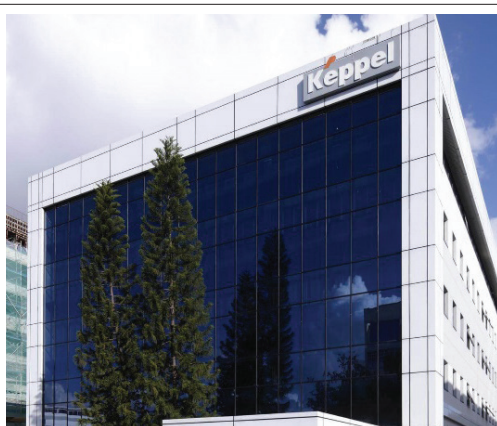
Keppel DC Singapore 2, Singapore

Intellicentre 2, Australia
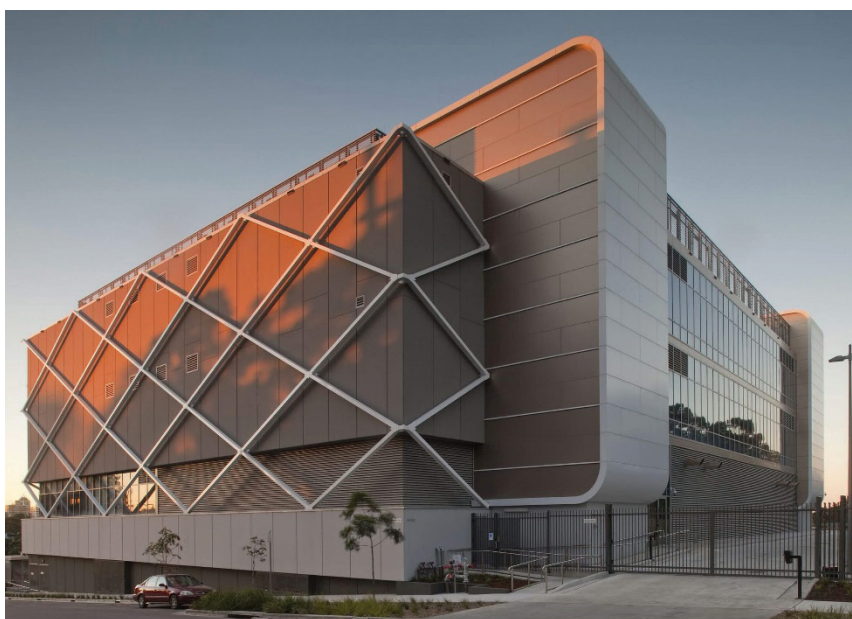
Gore Hill Data Center, Sydney Australia

Figure 7: Examples of data centres in the Keppel fund portfolio
Source: Authors' compilation

The International School @ Parkcity, KL Malaysia

Sri KDU International School, Selangor Malaysia

Figure 8: Examples of schools in the Alpha fund portfolio
Source: Authors' compilation

THE EFFECT OF COVID-19 PANDEMIC ON THE MALAYSIAN PROPERTY MARKET

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ABSTRACT

The economy has experienced several crises in the last decades and 2003 is the only one related to a disease outbreak, the severe acute respiratory syndrome (SARs) epidemic. However, the economy is again experiencing an unprecedented crisis which is associated with negatively impacting people's mental health, reducing income in households and poverty, affecting sectors in the economy, and halting many activities. Efforts by the government with multiple modifications solely intended to minimize the impact on the economy while saving lives and protecting their livelihoods have made it difficult for policymakers to balance between health and economic sustainability. The response towards COVID-19 has a definite impact and looking into the historical trend of responses adaptation and adjustment in each pandemic and endemic responses have different impacts strongly on the economic activities.

Keywords: *COVID-19, REITs, property market, movement control order, vaccination*

1. INTRODUCTION

On 31th December 2019, the Chinese authorities alerted the World Health Organization (WHO) of pneumonia cases discovered in Wuhan City, Hubei province, China, with an unknown cause. What started as a mystery disease was first referred to as 2019-nCoV and then named COVID-19. The year 2022 marked the second year the world struggled to adapt to the changes as the pandemic has caused chaos to the economy and brought the biggest threat to the health of human beings. The economic is coming to a halt, causing major discrepancies in the world economy involving all sectors. In Malaysia, this unprecedented encounter has forced the government to implement a new standard of operation to save lives and at the same time to ensure the economy can be sustained which in turn supports thousands of people from losing their income, jobs and businesses.

Malaysia recorded the first case of COVID-19 on 25 January 2020. The number of positive cases showed an increase of almost five-fold and from two to three digits starting on 15 March 2020. As of the time, this report is written, there were 590 million cases recorded with 6.43 million fatalities, meanwhile, for Malaysia, 4.73 million cases with 36,060 fatalities[1]. On 16 March 2020, the Prime Minister of Malaysia announced the Movement Control Order (MCO). MCO was launched to contain the transmission of COVID-19, as a result, the action has been able to provide security and sustain the well-being of the population but worsened the economy due to temporary closure and reduction in operating hours. The Malaysian economy recorded a contraction of 5.6 percent in 2020, as compared to 4.4 percent in the previous year (DOSM, 2021). The two years of struggles with many changes and new programs and actions, the Malaysian economy registered a growth of 5.0 percent in the first quarter of 2022 (4Q 2021: 3.6%).

Looking into the property market, for the most part, this is always one of the most favored investment options for long-term value retention and its ability to generate returns higher than any other investment. Over the past two decades, the development of the commercial real estate capital market, in particular- the expansion of the markets for equity and debt securities, has transformed the industry. This has provided exceptional capital availability and pricing, reshaping valuation metrics. However, COVID-19, paused new construction and development because of the lockdown, limiting the supply of residential property. Conversely, with the actions taken through announcing lower the overnight policy rate (OPR) and moratorium, demand has shot up and helped the owner to retain houses while facing difficulties. Similar depressing figures were also observed in the performance of the commercial market particularly the hotel and retail sectors that were severely affected by the lockdown restrictions. Total property transaction volume and value dropped by 27.9% and 31.5% during the first half of 2020 as compared to 2019.[2] There is the burgeoning impact of the COVID-19 pandemic on financial markets.[3]

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[1] As of 15 August 2022, World Health Organisation & Ministry of Health, Malaysia.
[2] Available at https://napic.jpph.gov.my/portal
[3] The literature has examined the impact of COVID-19 on employment rate (Coibion et al., 2020), consumption patterns (Chen et al., 2020), mutual fund performance (Pástor and Vorsaltz, 2020), treasury yields (He, Nagel and Song, 2020), stock market performance (Alfaro et al. 2020; Gormsen and Koijen, 2020), bond and equity issues (Halling, Yu and Zechner, 2020).

The financial sector expansion that took place has provided more opportunities for the real estate market. The evidence established that financial development has a positive effect on economic growth has become a stylized fact in the literature (Benhabib and Spiegel, 2000; Christopoulos, and Tsionas, 2004; Levine 2005; Levine 1997; Hassan et al. 2011; Liang and Teng, 2006). In particular, the spill-over effect of developed financial institutions and systems would benefit the country up to the certain point where mobilization of the capital in the economy would stimulate consumption, investment, as well as exports and imports activities and benefit the economic growth, On the other hand, the stability of the financial sector would remain as the concern in the monetary policy formulation.

This paper overview the impact of COVID-19 on the performance of the commercial property market in Malaysia. This paper examine how the commercial property market reacted during the first wave of the pandemic, how it reacted to the resurgence of COVID-19 cases and impact from the government's subsequent responses (lockdowns, fiscal support, and vaccination program) in dealing with the threat of COVID-19 pandemic. The issue is significant and contemporaneous since financial sector stability is an important agenda to prevent future financial crises such as the 2008 Subprime mortgage crisis. The urgency arises due to the need to attract foreign investors and domestic growth expansion, in the real estate industry.

There have been several economic downturns for the last few decades and 2003 is the only one related to a disease outbreak, the severe acute respiratory syndrome (SARs) epidemic (see Figure 1). The economic crisis that Malaysia experienced mostly happened due to other economic emergencies associated with a speculative financial bubble bursting, a stock market crash, a sovereign default, or a currency crisis (Hung, 2020). The COVID-19 pandemic however possesses a major global health threat and, in many studies, its economic impact is highly uncertain, which makes it difficult for policymakers to formulate an appropriate macroeconomic policy response. Significant reductions in income, a rise in unemployment, and disruptions in the transportation, service, and manufacturing industries are among the consequences faced by many countries including Malaysia and the government has started mitigating the effect by implementing several restrictions and changes to ensure the economy and health sustainability.
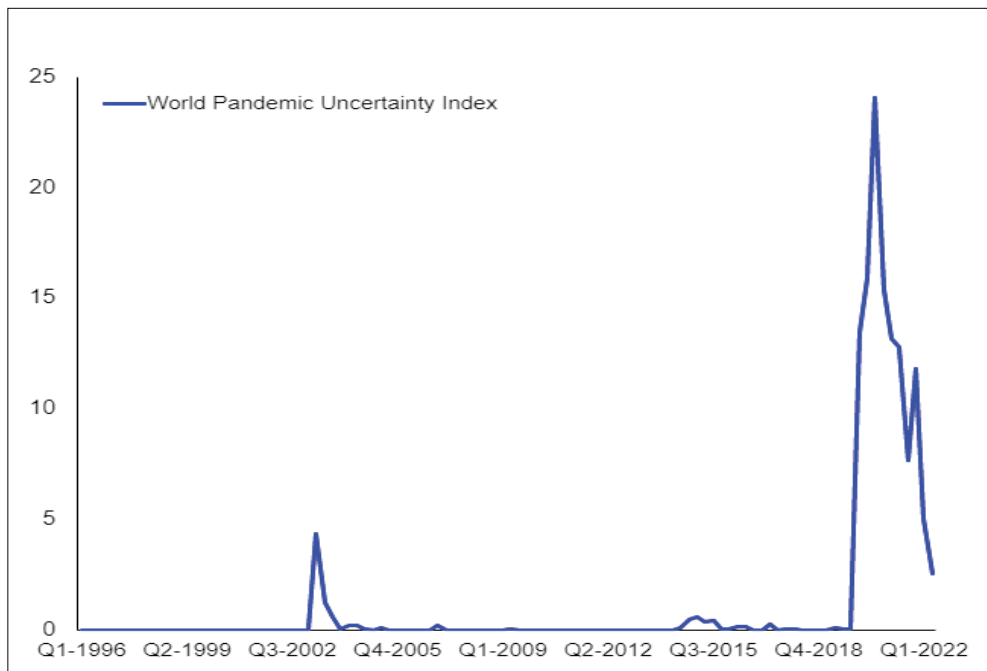
Figure 1: World Uncertainty Index Pandemics: 1996Q1 to 2021Q1
Source: https://worlduncertaintyindex.com

Looking back to 2019 and the beginning of 2020, the economy was very much in a confident state with low expected delinquency rates (Bhutta et al. 2019) where households were less vulnerable, and the only challenge was the effect of the global crisis. However, the announcement of the pandemic in March 2020 has changed the landscape of Malaysia's economy. The implementation of movement restriction measures has no doubt affected the performance of the general economy and commercial real estate market which is the focus of this writeup. When people stay or work from home, the demand for spaces in commercial properties (office, retail and industrial) will inadvertently go down which eventually affected the rents and prices of commercial properties. Assessing the impact of COVID-19 on commercial and real estate markets is challenging as the data availability is limited and it is difficult to separate the effect on the market as prices can be significantly affected by macroeconomic conditions which are largely affected during the pandemic (Belami, 2021).

As for the house price, over the last three decades, it has suffered a decline between 1998 and 1999 because of the 1997 Asian Financial Crisis. The property market then entered a recovery phase in 2001, and a few years later the mid-cycle dip took place during 2007-2009 because of the subprime mortgage crisis (MIEA, 2020). On the property market, according to a report released by iProperty.com.my (2020) on the effects of the COVID-19 outbreak on Malaysia's property landscape, property prices rose significantly from 2010 to 2015, with an increase as high as 13.4% a year. After 2015 there was another cycle of downturn led by the mismatch of house prices and affordability, property overhang, weak consumer sentiment, difficulty in getting financing, and the weakened ringgit

against other major currencies. However, the total number of transactions in Malaysia's property industry more than doubled between 1990 and 2019, from 148,000 to a staggering number of over 328,000. The main reason for the increment aside from the challenges stated formally is duly looking into the continuous significant growth in the economy together with an active own a house campaign, My Second Home (MM2H) Programme plus various incentives given for homebuyers. These numbers show that the Malaysian property market was quite resistant in terms of housing prices and even with uncertainty in the economy the market is still able to steadily grow.

How this difference during the pandemic is solely explained by the restrictions and Standard Operating Procedures announced by the government. The announcement and restriction are unprecedented which causes the announcement of MCO 1.0 a shock to the economy. The implementation of the first MCO has shut the economy and given a shock to all sectors, leading to a slowdown in the real estate industry market. Looking back into Malaysia's housing prices, a decline happened between 1998 and 1999 because of the Asian Financial Crisis. where a plunge of 47.6% in terms of housing value was recorded for the year 1998. During the pandemic, property prices, and experience delays in property transactions due to MCO continue to put the real estate industry uncertain about the possibility of recovery. With more economic activities being restricted during MCO 1.0, MCO 2.0 and MCO 3.0, more difficult to get a home loan approval, or even sufficient information regarding properties, as in-person visits to subscale homes and project showrooms are not allowed under strict lockdown measures. With the economy is now opening to its full capacity and liftering more restrictions have able to improve gradually the property markets.

Again, this has proven that the market can sustain the impact of the pandemic. To look further, this essay will explore the impact of COVID-19 on the real estate industry market and compare the current scenario with other viral diseases that have been reported in Malaysia. The finding is expected to show two important observations. Firstly, the scale of COVID-19 on the economy is worse than any other crisis that ever occurred in Malaysia. Secondly, the property market may be able to gradually recover and the impact may not be as critical as the 1997 financial crisis on the market.

2.   PANDEMICS IN THE PAST AND THEIR EFFECTS ON PROPERTY MARKET

An outbreak of a disease that occurs over a wide geographic area (such as multiple countries or continents) and typically affects a significant proportion of the population is defined as the pandemic outbreak of a disease (Merriam-Webster Dictionary).   Pandemic diseases are defined as events that cause a high level of costs for individuals and communities, the outcomes of which cannot be predicted but which can repeat themselves. While pandemic diseases can come out in different forms, they can influence various organs of the body. But respiratory track diseases have an important share among other epidemic diseases. It is known that with regards to this type of respiratory track disease being frequently observed throughout history, epidemics and pandemics have a destructive force that disrupts the community and economy severely and which causes a severe level of costs on a global scale.

The impact of these diseases globally is translated through the World Pandemic Uncertainty Index (WPUI). The world has seen not once but many pandemics and epidemics throughout the years, however, the latest occurrence of Coronavirus has three times the size of the uncertainty during the 2002–03 severe acute respiratory syndrome (SARS) epidemic and about 20 times the size during the Ebola outbreak.

In the past, we have encountered severe acute respiratory syndrome (SARS). Considered to be an infectious disease that can be spread among humans (WHO, 2003). Stated in late 2002 in the Guangdong province of China, and spreading fast to Australia, Brazil, Canada, China, Hong Kong, South Africa, Spain, and the USA (Farquharson & Baguley, 2003), infecting 8422 people worldwide with 916 fatalities. Even though the period of its impact lasted till July 2003, enough to raise concerns about public health and caused limited disruptions to the affected economy. Siu and Wong (2004) and McKercher and Chon (2004) both look at SARS and how diseases have an impact on the tourism sector. During this period industries that were hard impacted by the negative demand, shock suffers short-term negative impacts. China experienced no significant interruption to international commerce (Siu and Wong, 2004). During the same period China, Hong Kong, Singapore, and Vietnam reported $20 billion in lost GDP (McKercher and Chon, 2004). Tourism arrivals also fell by 70% or more across the rest of Asia, even in largely disease-free countries. The cause of this region-wide tourism collapse can be attributed more to how governments reacted to the perceived threat of the disease rather than to the real public health danger posed.

Malaysia, however, responded to epidemics like the severe acute respiratory syndrome (SARS) 2002-2003 and the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in the last few years. The implementation of the Malaysia Strategy for Emerging Diseases and Public Health Emergencies (MySED) has been able to control from facing severe impacts as the government ensures rapid response to public health emergencies and recovery. Malaysia reported the first case of Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in April 2014. There have been 2,123 cases reported by the World Health Organisation (WHO) by September 2012 and Malaysia reported only 2 cases while the Republic of Korea in 2015 led to the largest MERS outbreak outside of the Middle East. The outbreak resulted in 186 laboratory-confirmed cases and 36 deaths. Globally, since September 2012, WHO has been notified of 8460 laboratory-confirmed cases of infection with MERS-CoV in 27 countries, including at least 808 deaths.

Similar findings were found in past literature (Kim et al., 2005; Bhati & Sharma, 2016; Breda, 2004; Zheng et.al., 2005), as all these studies focused on the impact of SARS on the tourism industry in Malaysia. Tourism increased between 1995 and 2005 but also a 2-year decline was observed in 1998 and 2003. The most important decline took place in 2003 with a 19.8% drop in the numbers. The worldwide evolution of tourism as a consequence of the SARS crisis in 2003 events may explain this decrease (Ali et al., 2010). Ali et al. (2010) study show that the Malaysian stock market has significantly overreacted to the SARS outbreak, however, did not determine the types of these stocks. Chen et al. (2009) and Beutels et al. (2009) examined the impacts of the SARS outbreak on the stock market during the outbreak period in 2003 and found airlines, tourism, and retail stores are negatively

impacted by airlines and the tourism and retail store sectors. However, they found that the SARS outbreak tended to enhance the performance of biotechnology companies.

There is a lack of pre-existing literature that can help to justify Malaysia REITs or any other property or commercial market in the period of past diseases. Ling et al. (2017), raised concerns about property market imbalances in Malaysia, highlighting three main issues which very similar to the current ongoing issues:

i.   Supply-demand imbalances in the property market have increased since 2015.
ii.   Unsold residential properties are at a decade-high, with the majority of unsold units being in the above RM250,000 price category.
iii. The oversupply of office space and shopping complexes in the major states will be exacerbated by incoming supply, potentially becoming more severe than during the Asian Financial Crisis.

Based on the existing report for the house prices, over the last three decades, the real estate and property market suffered a decline between 1998 and 1999 because of the 1997 Asian Financial Crisis. The property market then entered a recovery phase in 2001, and a few years later the mid-cycle dip took place during 2007-2009 because of the subprime mortgage crisis (MIEA, 2020). On the property market, according to a report released by iProperty.com.my (2020) on the effects of the COVID-19 outbreak on Malaysia's property landscape, property prices rose significantly from 2010 to 2015, with an increase as high as 13.4% a year. After 2015 there was another cycle of downturn led by the mismatch of house prices and affordability, property overhang, weak consumer sentiment, difficulty in getting financing, and the weakened ringgit against other major currencies.

However, the total number of transactions in Malaysia's property industry more than doubled between 1990 and 2019, from 148,000 to a staggering number to over 328,000. The main reason for the increment aside from the challenges stated formally is duly looking into the continuous significant growth in the economy together with active own a house campaign, My Second Home (MM2H) Programs plus various incentives given for homebuyers. These numbers show that the Malaysian property market was quite resistant in terms of housing prices and even with uncertainty in the economy the market is still able to steadily grow.

To conclude, diseases may have impacted some sectors due to public concerns about health but the issues and the risks of property market imbalances in Malaysia. An ongoing situation has been happening for quite a long time and seems likely to continue for some time in the future. As such, it is time for all parties to act now to mitigate any potential risks to macroeconomic and financial stability.

2.1   2019 Coronavirus Disease (COVID-19) and Its Impacts

Coronavirus disease 2019 or COVID-19 is the third serious outbreak caused by a coronavirus (Wang et al., 2020). This virus now known as COVID-19 has caused a new dilemma to the

world, whether to choose between public safety and economic survival. Figure 1 shows the World Pandemic Uncertainty Index which describes the COVID-19 incidence as unprecedented, and the world is facing a new shock in the economy that asks countries to impose varying forms and degrees of action to offset the trade-off between public health and the economy.

COVID-19 is considered a deadly flu outbreak that has caused major global infectious disease threats, spread rapidly, and caused the deaths of millions of people worldwide. The outbreak has caused many socio-economic problems such as serious economic stagnation, and social and political turmoil. The pandemic has disrupted lives across all countries and communities and negatively affected global economic growth in 2020 beyond anything experienced in nearly a century. Estimates indicate the virus reduced global economic growth in 2020 to an annualized rate of around -3.2%, with a recovery of 5.9% for 2021 and expected to decelerate markedly in 2022 to 4.1%, reflecting continued COVID-19, especially with new mutation announced by the World Health Organisation (Quaglietti & Wheeler, 2022). Global trade is estimated to have fallen by 5.3% in 2020 (Weiss et al., 2020) meanwhile, the overall value of global trade reached a record level of $28.5 trillion in 2021. That was an increase of 25% in 2020 and 13% higher compared to 2019 before the COVID-19 pandemic struck (UNCTAD, 2021).

This number reflects how the pandemic has effect terribly in some sectors but can maintain high transactions in different sectors of the economy globally. The COVID-19 pandemic however poses a major global health threat and, in many studies, its economic impact is highly uncertain, which makes it difficult for policymakers to formulate an appropriate macroeconomic policy response. Significant reductions in income, a rise in unemployment, and disruptions in the transportation, services, and manufacturing industries are among the consequences faced by many countries including Malaysia and the government has started mitigating the effect by implementing several restrictions and changes to ensure the economy and health sustainability. This chapter will further explore the challenges and experiences of previous outbreaks and COVID-19 on Malaysia property markets.

The pandemic also forced the government of Malaysia to implement the Movement Control Order (MCO). In terms of economic impacts, Malaysia lost RM2.4 billion a day during the MCO period, with an accumulated loss of RM63 billion. In 2020, Malaysia's economy contracted by 5.6% as compared to 4.4% in 2019. Overall, all sectors recorded negative growth with the services sector decelerating 5.5% (2019: 6.2%), manufacturing 2.6% (2019: 3.8%) and agriculture 2.2% (2019: 2.0%) (DOSM, 2020). The government responded to the economic impact by announcing several packages, among others are the Prihatin Rakyat Economic Stimulus Package and Penjana Short-term Economic Recovery Plan. Higher public spending coupled with declines in fiscal revenues, however, has led to a narrowing of fiscal space. Therefore, reallocating expenditures towards priority areas, identifying new sources of non-tax revenue, and amending statutory borrowing limits could help to temporarily expand fiscal space (World Bank, 2020a). The government's stimulus packages and the short-term economic recovery plan have softened the impact of the COVID-19 pandemic and paved a path toward

economic recovery. Currently, the best approach to achieving herd immunity to COVID-19 is through vaccination rather than by acquiring it naturally, and since vaccination programs were activated, Malaysia has relaxed the MCO and opened its economic sector to relieve its economic burden.

Table 1: Chronology of Movement Control Order (MCO) in Malaysia

Event	Start Date	End Date
Movement Control Order 1.0 (MCO 1.0)	18 March 2020	3 May 2020
Conditional Movement Control Order 1.0 (CMCO 1.0)	4 May 2020	9 June 2020
Recovery Movement Control Order (RMCO)	10 June 2020	13 October 2020
Conditional Movement Control Order (CMCO 2.0)	14 October 2020	12 January 2021
Movement Control Order (MCO 2.0)	13 January 2021	4 March 2021
Conditional Movement Control Order (CMCO 3.0)	5 March 2021	6 May 2021
Movement Control Order (MCO 3.0)	7 May 2021	31 May 2021
Full Movement Control Order (FMCO)	1 June 2021	14 June 2021

The main challenge for the COVID-19 pandemic as compared to others is the response taken by each country to prevent the effect. The first COVID-19 case appeared in Malaysia in January 2020, but a local outbreak only emerged in March, prompting the introduction of a nationwide Movement Control Order (MCO) which helped significantly reduce the spread of the virus. Every MCO has been associated with negatively impacting people's mental health, reducing income in households and poverty, affecting sectors in the economy, and halting many activities. Efforts by the government with multiple modifications to the MCO into RMCO, CMCO, and FMCO which are solely intended to minimize the impact on the economy while saving lives and protecting their livelihoods have made it difficult for the policymakers to balance between health and economic sustainability. The response to COVID-19 has a definite impact and looking into the historical trend of responses adaptation and adjustment in each pandemic and endemic response have proven to have different impacts on economic activities and livelihood.

Balemi et al (2021) provide an overview of recent studies on the effects of the pandemic that are focused on the real estate market. The paper provides evidence of more than 50 scientific papers that appeared from March 2020 to mid-October 2020 assessing the impact of COVID-19 on real estate markets with more than half of these studies already published infield-specific or interdisciplinary peer-reviewed journals, the other half is in a working paper stage. Looking back on 2019 and the beginning of 2020, the economy is very much in a confident state with low expected delinquency rates (Bhutta et al. 2019) where households are less vulnerable, and the only challenge is the effect of the global crisis. However, the announcement of a pandemic in March 2020 has changed the landscape of Malaysia's economy. The implementation of

movement restriction measures has no doubt affected the performance of the general economy and commercial real estate market which is the focus of this writeup. When people stay or work from home, the demand for spaces in commercial properties (office, retail and industrial) will inadvertently go down which eventually affects the rents and prices of commercial properties. Assessing the impact of COVID-19 on commercial and real estate markets is challenging as data availability is limited and it is difficult to separate the effect on the market as prices can be significantly affected by macroeconomic conditions which are largely affected during the pandemic (Belami, 2021).

REIT sectors are an interesting investment that attracts investors due to rentals and value growth. The first listing was in 1989 by Amanah Harta Tanah PNB 2, followed by the Arab Malaysian First Property Trust (AMFPT) soon after. Nowadays investors can choose either conventional or Islamic REITs and the interest in these investments is growing intensely for the past decades. REITs are exposed to crises and each sectoral REIT is expected to be affected differently, where some may perform much better while others would perform much worse. Figure 2 described the pandemic impact on the REIT market which shows the market has suffered RM5.8 billion since the start of COVID-19.
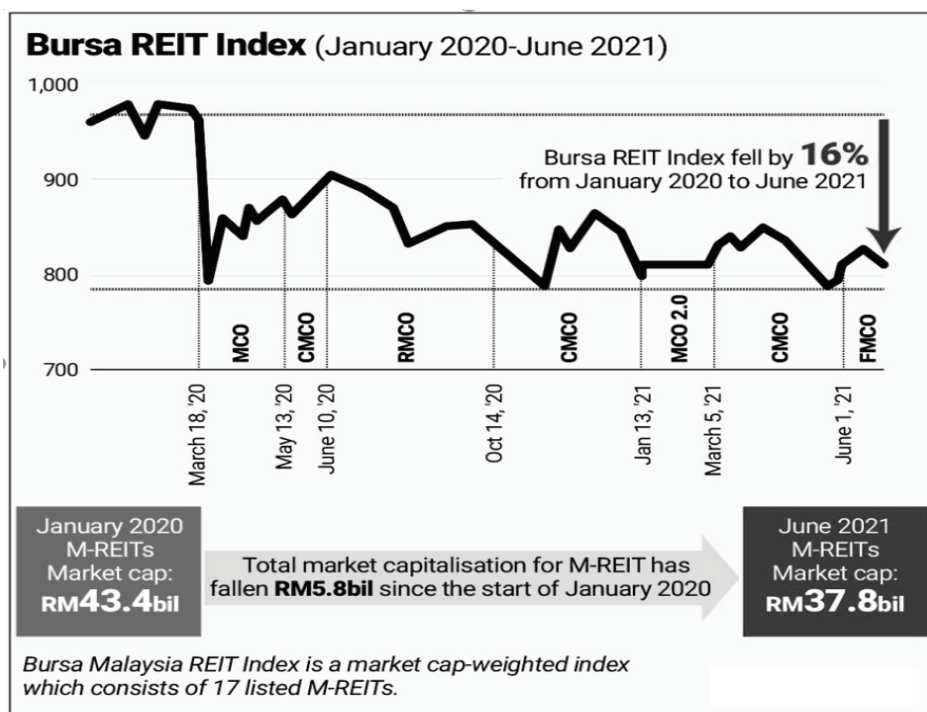
Figure 2: Bursa Malaysia REIT Index
Source: https://www.thestar.com.my/business/business-news/2021/07/31/post-pandemic-comeback-of-malaysian-reits

The REITs' performance is hinged on the property dynamics from the ground level, based on the sector, REITs would react disparately. Tourism and hospitality REITs, retail REITs and office REITs are likely to be more adversely affected due to the action taken by the government through the implementation of MCO. Tourism and hospitality REITs COVID-19 has shut down travel globally, as most countries have placed a ban on international travel to flatten the curve (Akinsomi, 2020). A lack of global travel would influence the hospitality industry adversely. Closure of airlines, hotels, entertainment spots, tourism spots, homestays and transport has contributed to huge losses to the sector. According to the Malaysian Association of Tour and Travel Agents Tourist arrivals to Malaysia fell by 83.4% in 2020 with Malaysia's tourist receipts also plunging by 85.3% from RM86.14bil in 2019 to RM12.69bil in 2020. The Malaysian Association of Hotels (MAH) reported that the hospitality sector recorded a loss of over RM6.53bil for the year of 2020. Hotels are estimated to lose RM300 million for every two weeks of MCO which according to MAH would add up to RM 5 billion in 2020. These scenarios are never precedent as Malaysia's MCO has never been implemented during other health crises. The movement restrictions and social distancing have particularly affected the retail sectors which have significantly reduced foot traffic in shopping malls; some landlords have resorted to renting concessions. Moreover, lease contracts in retail malls are mostly tied to sales. Property Investment Companies faced postponement or cancellation of deals as during the MCO were requested by the government to refrain from leaving the house, making it difficult to conduct business activity and participate in deal negotiations (CBRE, 2020).

Throughout, property markets are affected in different ways by the outbreak of the virus. Understanding these differences and their future consequences is crucial for governments, property developers, or investors to react and take appropriate actions to avoid the worst scenarios. In addition, future research should expand further on Malaysia's property and commercial market as the studies are scarce.

3. METHODOLOGY

To identify historical trends of similar events in the past (e.g., SARS, Bird Flu, Spanish Flu) on investment properties' performance. The main purpose of this study is to make a comparative evaluation of the impacts of previous outbreaks and coronavirus disease 2019 (COVID-19) on investment properties' performance. This study is a literature review and document search based. In this review, an evaluation of the impact of previous outbreaks and COVID-19 on investment properties' performance has been made based on statistics and previous research studies.

The information and figures obtained were expected to show that COVID-19 and previous outbreaks have such significant differences that cannot be compared. COVID-19 has been one of the worst to live in terms of spreading speed, the geography where it spreads, loss of lives and negative effects in the whole area. It is noteworthy that COVID-19 is very severe in terms of death cases and its impacts on the economy compared to other pandemics. It remains to be argued that COVID-19 can also be a reference in terms of possible new outbreaks in the future and is an effective actor in determining

future strategies not only for the development of an economy but also to find early responses for assuring the sustainability of investment properties' performance.

4.   DISCUSSIONS

Shocks in the economy can cause a substantial effect on macroeconomic outcomes and performance, furthermore, cause a devastating impact on the social well-being of the society. The occurrence of shocks is often unpredictable and is usually the result of events thought to be beyond the scope of normal economic and insists on quick government intervention to avoid deprivation situation that can bring an economy into a recession. The 1997 financial crisis is part of the history of economic shocks that changed the scenario of financial institutions globally. Southeast Asia is affected the most and several financial transformations have prepared these countries to be vigilant toward another economic crisis in 2008. However, the worst is not over, as the years ahead have shown how the event of health hazard occurrence has also brought a devastating impact on the economy globally and again have asked the world to begin a new journey into the new world of economics. As such the economic cycles may face profound changes and transform how the world sees the economy in the next many years.

The impact of these diseases globally is translated through the World Pandemic Uncertainty Index (WPUI). The world has seen not once but many pandemics and epidemics throughout the years, however, the latest occurrence of Coronavirus has three times the size of the uncertainty during the 2002–03 severe acute respiratory syndrome (SARS) epidemic and about 20 times the size during the Ebola outbreak. This virus now known as COVID-19 has caused a new dilemma for the world, to choose between public safety and economic survival. Figure 1 shows the World Pandemic Uncertainty Index which describes the COVID-19 incidence as unprecedented, and the world is facing a new shock in the economy that asks countries to impose varying forms and degrees of action to offset the trade-off between public health and the economy.

Health hazard occurrences have proved to be part of this exogenous factor that affected the economy. The direct consequences of the SARS epidemic in 2003, have put pressure on medical expenditures or demographics, however, for Malaysia, the effects seem to be rather small, showing the resilience of the Malaysian property market and its ability to weather economic and health crises. Similar recoveries were seen in national house price growth in the years 2001, 2006, and 2009, following the years of facing other health crises. Even during the recent pandemic, the property market remains resilient, supported by government actions to ensure the market stays strong and continues to evolve even though the outlook remains uncertain. According to data provided by Malaysia's National Property Information Centre (NAPIC), the property market is still able to emerge strong throughout the critical economic downturn. Figures 3 and 4 display the trend of Malaysia's volume and value of property transactions. Both show the property remains strong despite concerns about the COVID-19.
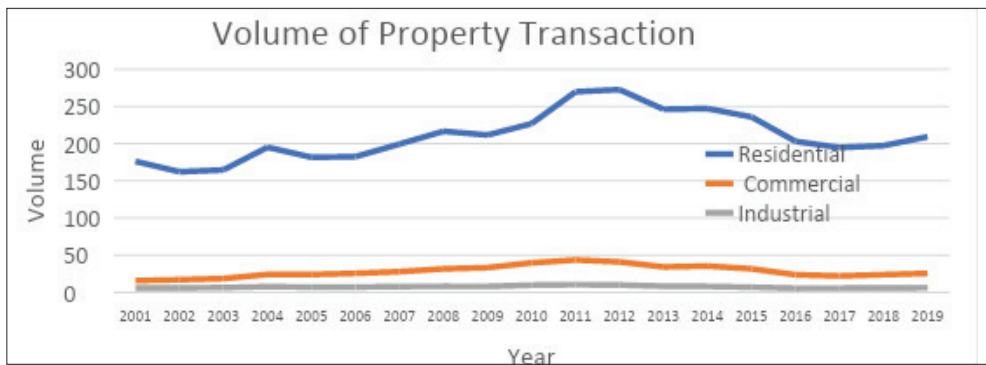
Figure 3: Volume of Property Transaction
Source: https://napic.jpph.gov.my/

These present strong demands despite cautious consumer sentiments, and the current climate of historically low-interest rates, low house prices and rich incentives introduced by the government presents attractive property opportunities for those with good financial stability. The government's focus on the continuation of megaprojects is expected to create a positive spill-over effect on the overall property market, creating new real estate and investment opportunities. Over the past decades, Malaysia has encountered several phases of economic downturn (see Figure 4). And as we match the health hazard with the economic development, COVID-19 have had serious consequences for the economy where productive activities have been disrupted, resulting in a steep rise in unemployment (Q12021: 4.8), with a consequent reduction in demand for goods and services, following the contraction[4] in GDP, are much worse than the experienced of the economic downturn in any past health hazard occurrences nor economic crisis (see Figure 4).

The COVID-19 outbreak occurred in the context of global economic uncertainties, since the 2008–2009 financial crisis. Malaysia's growth slowed down in 2019, due to a shrinking in private consumption and slower external demand as global growth remained weak in the fourth quarter of 2019. Further disruptions escalated as the COVID-19 emerged and the announcement by World Health Organisation (WHO) to treat COVID-19 as a Pandemic, causing a shock to the economy as well as on the social wellbeing of the society. The property market however resumes being marginally affected. Figures 5 and 6 plots the condition of the property market. The prices increased at a more moderate pace during the third quarter of 2020, as measured by the House Price Index (HPI).

The Central Bank of Malaysia (BNM) Financial Stability Review for Second Half 2020 highlighted that the growth in housing market activity was more concentrated in the mid-to higher-priced property, mainly in the secondary market, where buyers are more likely to be those whose incomes have been less affected by the pandemic. The scenario may be supported by the housing loans expansion by the banking system which amounted to RM646.8 billion by December 2020. The non-residential property

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[4] Malaysia's Gross Domestic Product (GDP) contracted 3.4 per cent for the fourth quarter of 2020 as compared to a decline of 2.6 per cent in the preceding quarter. For overall year 2020, Malaysia's GDP contracted 5.6 per cent as compared to 4.3 per cent in 2019 (Malaysia Performance in Fourth Quarter 2020, DOSM)

segment has continued to face considerable challenges. For the hospitality industry, average hotel occupancies have improved but remained well below pre-pandemic occupancy levels. The shopping malls are expected to encounter recovery towards the end of 2020, but online purchases are likely to persist and will continue to partly weigh on demand for retail space amid pre-existing excess supply. Office and retail space have encountered slower supply as developers have taken drastic measures and deferred the completion date. With the challenges continues and the continue, MCO with most offices implement working from home, rental and occupancy rates for office and retail space are expected to remain lower especially in the more business challenging conditions.

5.   CONCLUSION

There is no doubt that Pandemic COVID-19 is the worst-case scenario in history. It is an unprecedented experience that causes a chaotic and uncontrollable issue to the global economy. This is the first time in history that a country needs to make a huge decision to have a balanced policy in ensuring the survival of an economy and the livelihood of people. In terms of its impact on the sector of the economy seems surreal and if the condition prolongs a country needs a much more stringent policy to overcome the fear of an economic downturn. Even though the housing market seems to have been able to sustain its development, the current epidemics may lure the economy to another cycle of economic growth as the demand may be affected. The following findings will be looking into the effect of a movement control order on the commercial property market and the spillover effect on other macroeconomics and financial institutions. These analyses will further discuss the impact of the pandemic and provide some indication of what is happening in the commercial market in Malaysia and the way forward.

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REAL ESTATE DEVELOPMENT VALUATION AND APPRAISAL: A BASIC UNDERSTANDING

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ABSTRACT

This working paper explains the basic application of the residual value approach in valuing and appraising a real estate development project. The Residual Method of Valuation is one of the valuation methodologies which use the income approach in valuing and appraising the market value of a development land. Besides that, this method also uses in determining the profitability and viability ratios of a real estate development project. Generally, there are two main components of this method known as the Gross Development Value (GDV) and Development Cost (DC). GDV refers to the total of the selling price of development units that could be constructed while DC comprises the costs required in a real estate development project. For valuation purposes, the additional valuation components required are the developer's profit, residue value (also known as Net Development Value or Future Site Value), and an acquisition cost which covers the stamp duty, legal fee, and estate agent fee. In the appraising exercise to determine the profitability and viability ratios of a real estate development project, the component of land cost (including land acquisition cost) to estimate the profit that could be generated from a proposed real estate development project. From this method, there are two approaches used either to calculate the market value of development land or estimate the profitability and viability ratios known as conventional and cash flow approaches. This paper also describes the simple valuation and appraisal models in determining the market value and the profitability of a real estate development project. To ensure this paper can be easily understood, the writers made a study through secondary resources such as the research papers and journals published by previous researchers and writers. At the end of this paper, the writers have established a simple valuation and appraisal models which use both conventional and cash flow approaches.

Keywords: *Real Estate Development Project, Real Estate Valuation & Appraisal and Residual Value Method of Valuation*

1. INTRODUCTION

The development process is a medium used by the government to develop an area or a settlement. Real estate development is one of the components of real estate investment. Based on the economic sector pyramid, the real estate development (or known as construction industry) sector is ranked at the second level of the three main economic sectors. Real estate development provides the platform and facilities for the purpose of another economic sector to operate. Real estate development also refers to a form of physical development which changes the land use and pattern. In the process of development, there are many requirements and terms which were provided by the authorities where the local authorities (also known as the local government) such as city hall, city council, municipal council, and district council implemented their main functions in the approval process. Some statutes and regulations purposely ensured that the development process is in line with such regulations. For instance, the regulations relating to the development process in the Malaysian context are National Land Code 1965, Town and Country Planning Act 1976, Road, Drainage and Building Act 1974, Uniform Building By-Laws 1984, Local Government Act 1976, and many more. While the interested parties involving the development process are the landowners, investors, professional consultants, banks and financial institutions, authorities, and others. Property valuers is one of the professional consultants also involved in real estate development. The valuers play their functions to provide and to assists the landowners or investors in the decision-making process and to prepare the report and valuation for the purpose to acquire loan facilities from the banks or financial institutions. The valuers' participation in the real estate development covers on the real estate development valuation and appraisal with taking appropriate valuation approaches and methodologies to determine the estimated market value of the property and analyzing the profitability and viability of a purpose land development project.

2. INTERPRETATIONS

2.1 Definition of the Real Estate Development Valuation

In general, a development valuation is a valuation approach used in determining the market value of development land. The suitable valuation methodology in valuing the development land is the Residual Method of Valuation where this method comprises of two approaches namely the conventional or traditional approach and cash flow approach. The principle of Residual Method of Valuation is based on the concept where the market value of development land is depending on the development potential itself. By using the Residual Method of Valuation, the development potential of land could be shown by the residue value between the Gross Development Value (GDV) and the Development Cost (DC). Usually, the Residual Method of Valuation is used to determine the value of land which having development or redevelopment potential based on the "Highest and Best Use" principles. This method is also the most suitable method in determining the value of development land which has been approved by the authority based on the submitted layout of a proposed development plan. The Residual Method of Valuation model is shown below:

Gross Development Value (GDV)...X

Less: Development Cost..x

        Developer's Risk and Profit...xx.................................XX

Net Development Value (NDV) or Residue Value...XXX

Multiply: Present Value@ i% for n years...XXXX

Current Site Value...XXXXX

Less: Acquisition Cost..x

        Holding Cost...xx........................XXXXXX

MARKET VALUE...XXXXXXX

Figure 1 shows the main components used in the valuation process by using the Residual Method of Valuation:

MAIN COMPONENTS OF RESIDUAL METHOD		
	Gross Development Value	Total revenue from the selling of real estate development units such as residential, commercial, industrial and mixed units.
	Development Cost	Total development cost such as approval, construction, financial, fees, marketing, developer's profit and contigency.
	Discounting Factor	The use of Present Value RM1.00 factor to discount the future value in determining the current value.

Figure 1: The main components of Residual Method of Valuation Model

The market value of development land can be determined by estimating the expected total revenue (refers to GDV) from the units to be develop on the land, based on the proposed development plan approved by the local authority, deducting all development costs required (refers to DC) and developer's risk and profit. The result from this equation is known as NDV or Residue Value which will be discounted by the Present Value (or PV) of RM1.00 by taking into account the construction period and financing interest in order to determine the current site value.

2.2 Definition of Real Estate Development Appraisal

Real estate development appraisal is a financial appraisal approach that provides the developer to determine the profitability and viability of a proposed real estate development project. The purpose of development appraisal is to assist the investor/developer to identify the degree of profitability and viability of a proposed real estate development project by taking into account various obligation views which able to influence the trend and pattern of financial projection in that particular development appraisal. This approach is also used to determine the profitability ratio or percentages that can be achieved by the developer or investor in the real estate development project based on the simple calculation where the revenues deduct the cost resulting in either normal profit abnormal profit, or loss. The other purposes of development appraisal are as follow :

- To identify the flexibility process of the proposed development project comprising the construction costs, fees and revenues.
- To forecast the future situation by taking into consideration the inflation rate and growth that may influence the fluctuation of development cost.
- To specify the implementation development period.
- To detail the flow and projection of cost and revenue during the implementation of a development project.
- To determine the profitability and developer's risk can be achieved from development project and the factors that may influence it.
- To evaluate and analyse the profitability and viability that can be derived from the development project.

According to the Royal Institution of Chartered Surveyors (RICS), UK, development appraisal can be interpreted as an objective financial viability test of the ability of a development project to meet its costs including the cost of planning obligations, whilst ensuring an appropriate site value for the landowner and a market risk-adjusted return to the developer in delivering the project. To determine the profitability and viability index or ratio by using the development appraisal analysis, there are three main components to be considered namely GDV, DC (excluding the developer's risk and profit), Land Cost (also known as the Land Acquisition Cost), and Holding Cost. The differences between development valuation and development appraisal can be shown as follow:

Table 1: The differences between Development Valuation and Development Appraisal

Factors	Development Valuation	Development Appraisal
Developer's Profit and Risk	√	X
Land Cost	X	√
Holding Cost	√	√
Financing Cost	√	√

The land cost refers to the costs relating to the acquisition of land and land purchasing costs. Land purchasing can be in form of open market purchasing between seller and buyer, compulsory purchase through any land acquisition laws, land alienation according to the land law (payment of premium to the state authority) or inheritance of land. Market value is a basic use in the acquisition process of land while for the development acquired from the inheritance, the engagement of the valuer is required to determine the value of the land on the death date of the deceased person before inheriting the estate to the heirs.

The reason why the land acquisition is taken into account in the development appraisal process is, to determine the capital gain on land between before and after the land was developed. Land acquisition cost is comprising the land purchasing cost and additional costs required to acquire the land such as stamp duty, legal fee, estate agent fee, and others. While the holding cost refers to the annual expenditures to defence and upkeep the ownership of land such as assessment rate and quit rent during the construction period.

The appraisal model used in determining the expected profitability from the proposed development project is as follow:

Gross Development Value (GDV)..X
Less :   Development Cost...x
         Land Cost (including land acquisition and holding costs)..........xx........................XX

Developer's Risk and Profit..XXX

The developer's risk and profit are in a form of financial return to the developer from the proposed development project. It can be determined or estimated in terms of monetary value e.g. RM and it can be shown in certain percentages by using a specified formula such as Return on Investment (ROI) and Return on Cost (ROC). In the development appraisal context, the Return on Investment is known as Profit on Gross Development Value, while the Return on Cost is known as Profit on Total Development Cost. The formula is as follow:

$$\text{Profit on GDV} = \frac{\text{Developer's risk and profit}}{\text{Gross Development Value}} \times 100$$

$$\text{Profit on TDC} = \frac{\text{Developer's risk and profit}}{\text{Total Development Cost}} \times 100$$

There are three important components used in the development appraisal such as GDV, TDC, and land cost. Both conventional and cash flow approaches can be used in determining analysis on the profitability and viability of the proposed development project.

3.   MAIN COMPONENTS IN THE REAL ESTATE DEVELOPMENT VALUATION AND APPRAISAL MODEL

3.1   Gross Development Value

Gross Development Value (GDV) can be defined as a sum of revenue acquired from the development of land which is referred to as the development units or products constructed on the land. The Highest and Best Use is an important component to be considered in developing the land where it refers to the current land use, the possibility of changes in category of land use, current demand, supply factors and surrounding development. Secondly, the suitability of proposed development and marketing of development units. Thirdly, the detail of plans, specifications and others relating to the proposed development project. And finally, to study the development proposal in terms of expecting project completion, selling and tenancies rates, selling price and rental and other surrounding/adjacent development projects. In determining GDV, the valuers may use other valuation approaches and it depends on the type of development project to be constructed. The following examples show the valuation methodologies to be used in determining the GDV:

a)   Comparison Method

By using the following model:

GDV   =   Price per Unit x Numbers of unit

Example 1: Determine the GDV of a proposed development project in an urbanization area. The information relating to the proposed development project was extracted from an approved development plan by the local authority:

Types of Development	Nos. of Unit	Price per Unit (RM)
Single Storey Low-Cost Terrace Houses	60	42,000.00
Single Storey Terrace Houses	80	180,000.00
Double Storey Terrace Houses	45	220,000.00
Double Storey Shop Offices	20	450,000.00

Valuation

Types of Development	Nos. of Unit	Price per Unit (RM)	Total (RM)
Single Storey Low-Cost Terrace Houses	60	42,000.00	2,520,000.00
Single Storey Terrace Houses	80	180,000.00	14,400,000.00
Double Storey Terrace Houses	45	220,000.00	9,900,000.00
Double Storey Shop Offices	20	450,000.00	9,000,000.00
		GDV	35,820,000.00

b) **Investment Method**

The following GDV is determined by using the Investment Method of Valuation where in this model, there are three main components required such as rental per square feet (psf) or per square metre (psm), net lettable area square feet (sf) or square metre (sm) and the All-Risks Yield:

```
Rental psf/psm…………………………………………X
X Net Lettable Area (sf/sm)……..……………......…...XX
----------------------------------------------------------------
Market Rental Value…………………………....…….XXX
X Year's Purchase…………………………....…….XXXX
----------------------------------------------------------------
Market Value/GDV……………..……............….XXXXX
----------------------------------------------------------------
```

Example 2: Determine the GDV of a proposed development project of a commercial complex located in a city centre. The land is a freehold interest and it's estimated that the total gross floor area is 100,000 square feet while its net lettable area is estimated at 85,000 square feet. Based on a market study made, the estimated market rental value of similar properties is RM5.00 psf per annum net and all risks yield is 8.5% per annum net.

Valuation

```
Rental psf pa……..………………………………RM5.00
X Net Lettable Area (sf)……..………………..……..85,000
------------------------------------------------------------------
Market Rental Value pa net ……………....RM425,000.00
X YP in-perp. @8.5%………………….………..11.7647
------------------------------------------------------------------
Market Value/GDV………..……..…….RM5,000,000.00
------------------------------------------------------------------
```

c) Profit Method

The following shows formula of Profit Method to be used in determining the GDV :

```
Annual Gross Revenue…………………………………......…………X
Less: Annual Operating Cost………………….………........……......XX
--------------------------------------------------------------------------------
Divisible Balance……………………………………….......…..XXX
Less: Operator's Share……………………….………........…..XXXX
--------------------------------------------------------------------------------
Gross Annual Rental……………………….………........…..XXXXX
Less: Outgoings……………………………………........….XXXXXX
--------------------------------------------------------------------------------
Net Annual Rental………………………………...........XXXXXXX
x YP………………………………………………........…XXXXXXXX
--------------------------------------------------------------------------------
Market Value/GDV…………………………..............XXXXXXXX
--------------------------------------------------------------------------------
```

Example 3: A piece of vacant development land has been proposed to develop a hotel which is located within a town area. The land is a 99-year leasehold having an unexpired term of 76 years. According to the market study and business plan made, the estimated average annual revenue and operating cost of similar hotel properties are as follow:

Estimated Average Revenue per annum

No.	Types of Room	Nos. of unit	Rate per day (RM)	Occupancy Rate (%)		
				2017	2018	2019
1.	Suite	10	450.00	80%	75%	65%
2.	Super Deluxe	60	250.00	75%	67%	60%
3.	Deluxe	110	180.00	75%	85%	75%
4.	Superior	150	120.00	86%	88%	84%

Letting Area

No.	Area/Space	Floor Area (mp)	Rental (RM)
1.	Night Club	200.00	30.00 sf per month
2.	Banquet Hall (annual average occupancy rate is 70%)	200.00	1,000.00 per day
3.	Gymnasium	70.00	15.00 sf per month
4.	Souvenir Shop	70.00	30.00 sf per month

Other Income

No.	Sources	Nos. of unit	Rate (RM)
1.	Parking Bays	200 unit	2,500.00 per month
2.	Food and Beverage	50% from the room rate	

Estimated Annual Operating Cost

No.	Expenditures	Total (RM)
1.	Salary, EPF and SOCSO	5,220,000.00
2.	Electricity and water	1,500,000.00
3.	Laundry and Linen	250,000.00
4.	Taxes	130,000.00
5.	Insurance	15,000.00
6.	Telephone and Internet	52,000.00
7.	Promotion and Marketing	220,000.00
8.	Audit and Administration	28,000.00
9.	Vehicles Maintenance	120,000.00
10.	Building and Machinery Maintenance Costs	1,500,000.00

Purchasing and Replacement

No.	Types	Total (RM)
1.	Furnitures and Fittings	55,000.00

Operator's Share and Profit

1. Working Capital is RM5,000,000.00.
2. Interest on Capital is 8% per annum.
3. Risks and Uncertainties is 20% from the divisible balance.
4. Operator's remuneration is 10% from the divisible balance.

All risks yield of the similar hotel properties is 12% per annum.

Valuation

Gross Revenue per annum

Rooms rate

1 suite	: 10 unit x 450.00 per day x 365 days x 73%	= RM 1,204,500.00	
	: 60 unit x 250.00 per day x 365 days x 67%	= RM 3,686,500.00	
	: 110 unit x 180.00 per day x 365 days x 78%	= RM 5,661,150.00	
	150 unit x 120.00 per day x 365 days x 86%	= RM 5,650,200.00	RM 16,202,350.00

(+) Other Income :

1 Food and Beverage	: 50% RM 16,202,350.00	= RM 8,101,175.00	
2 Parking Bays	: RM 2,500.00 pm x 12 months	= RM 30,000.00	
3 Banquet Hall	: RM 1,000.00 pm x 365 days x 70%	= RM 255,500.00	RM 8,356,675.00
		Total Gross Revenue per anmum	**RM 24,589,025.00**

(-) Operating Cost per anmum

1 Salary, EPF and SOCSO	RM 5,220,000.00	
2 Electrical and water	RM 1,500,000.00	
3 Laundry and Linen	RM 250,000.00	
4 Taxes	RM 130,000.00	
5 Insurance	RM 15,000.00	
6 Telephone and Internet	RM 52,000.00	
7 Promotion and Marketing	RM 220,000.00	
8 Audit and Administration	RM 28,000.00	
9 Vehicles Maintenance	RM 120,000.00	RM 7,535,000.00
Total Operating Cost		**RM 17,054,025.00**

(-) Purchasing and Replacement

1 Furnitures and Fittings		RM 55,000.00
	Divisible Balance/Net Profit	**RM 16,999,025.00**

(-) Operator's share

1 interest on Capital	: 8% x RM 5,000,000.00	= RM 400,000.00	
2 Risks and Uncertainties	20% x RM 17,054,025.00	= RM 3,410,805.00	
3 Operator's remuneration	10% x RM 17, 054,025.00	= RM 1,705,402.50	RM 5,516,207.50
		Total Gross Rental per anmum	**RM 11,482,817.50**

(+) Other rental income

1 Night Club	: 200 sm x RM 30.00 psm pm x 12 months	= RM 72,000.00	
2 Gymnasium	: 70 sm x RM 15.00 psm psm x 12 months	= RM 12,600.00	
3 Souvenir Shop	: 70 sm x RM 30.00 psm psm x 12 months	= RM 25,200.00	RM109,800.00
		Total Gross Rental per anmum	**RM 11,592,617.50**

(-) Outgoings

1 Building and Machinery Maintenance Costs:		RM 1,500,000.00	
2 Fire Insurance Premium	: 3% x RM 11,592,617.50	= RM 347,778.53	
3 Assessment Rate	: 5% x RM 11,592,617.50	= RM 579,630.88	
4 Quit Rent	: 5% x RM 11,592,617.50	= RM 579,630.88	
5 Management	: 2% x RM 11,592,617.50	= RM 231,852.35	RM 3,238,892.63
		Net Rental per anmum	**RM 8,353,724.88**
			0.998485571
X YP for 76 years @ 12%		Market Value/GDM	**RM 8,353,724.88**
		Say	**RM 8,341,000.00**

3.2 Development Cost

Development cost refers to the costs required in a real estate development project such as initial cost, construction cost, management, professional fees, marketing, financing, and contingency cost. The amount of development costs can be determined based on per unit rate or per square feet/metre (psf/psm). The following shows types of development costs required in a project:

Table 2: The Development Cost

Nos.	Development Cost	Types of Cost
a)	Pre-Construction Cost	Initial cost, contour, site clearing, earthwork, Environmental Impact Assessment (EIA) Report (only for a development land having an area of more than 50 acres) and Development Proposal Report submitted to the local authority.
b)	Construction Cost	Building construction cost.
c)	Surveying and Registration of Titles	Surveying cost pay to the Licensed Land Surveyor and amount to be paid to the Registration of Titles office for issuing individual titles.
d)	Infrastructure Cost	A sum of the cost required to build public infrastructure and facilities such as road, drainage and sewerage system, water piping system, communication and telecommunication lines, etc.
e)	Contribution to the Authorities	Refers to the infrastructures and facilities either to be reserved or constructed and these facilities will be surrendered to the appropriate authorities to manage such as TNB substation, sewerage treatment plant and etc.
f)	Professional Fees	The amount of professional fees paid to the professionals such as architect, quantity surveyor and engineers who are provide professional services such as preparation of plans, estimating cost and preparing Bill of Quantities and etc. All these fees are subjected to the provisions as stipulated in their legislations and professional bodies.
g)	Landscaping Cost	Refers to the cost required to provide landscaping plans by the Landscape Architecture.
h)	Legal and Promotion Fees	A sum cost to be paid to the solicitor who provides the sale and purchase agreement and the amount of professional fee paid to the estate agent who is marketed the development units.
i)	Financing Cost	Refers to the amount of financing interest paid to the bank and financial institutions who are provide financing facilities to the developer. The financing facilities provided are known as Bridging Finance. The amount of financing interest paid is subject to the construction method either Build then Sale (BTS) or Sale then Build (STB).
j)	Contingency Cost	A sum of the cost to be allocated as preparation in the event of increasing of existing cost, project delaying and etc.

3.2.1   Present Value Factor

The residue value is calculated by the differences figure between GDV and DC that produce the expected site value after the development project is completed. It is also known as Net Development Value (NDV). To determine the future site value at the current value, the Present Value (PV) factor is required in order to discount the NDV computed. The PV factor must consider two main components namely development period and financing interest. The formula of PV of RM1.00 is as follow:

$$\text{PV of RM1.00} = \frac{1}{(1 + i)^n}$$

Where,

i refers to the financing interest
n refers to the construction period

3.2.2   Total Development Cost

Total Development Cost (TDC) comprises three main costs required in a real estate development project. The costs are land cost, holding cost and development cost. The land costs include land purchasing and land acquisition costs, while the development cost is the total costs as stated in the previous topic. Holding cost refers to the quit rent and assessment rate. The summary of these costs is as follows:
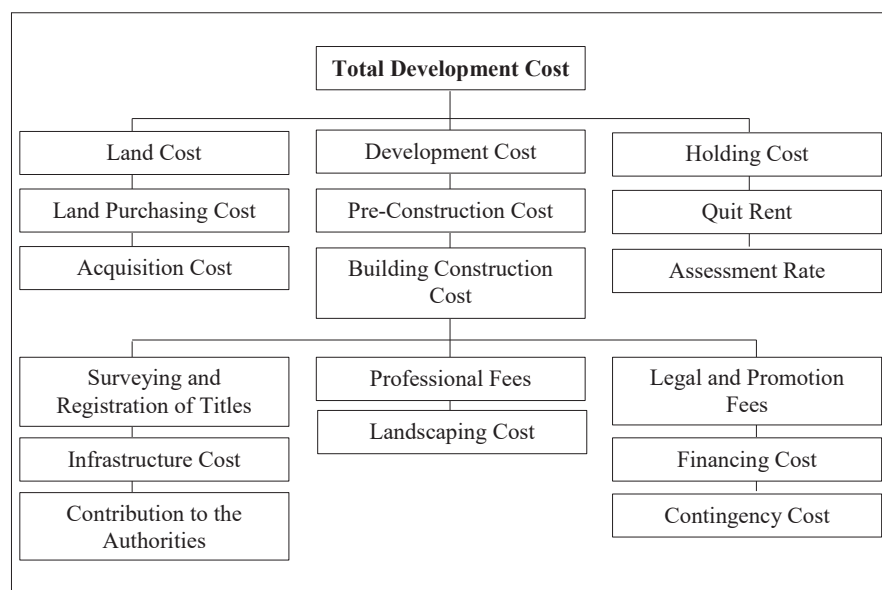
Figure 2: Summary of TDC

Example 4: Determining the Land Purchasing and Holding Costs based on the following data:

Cost	Types of Cost	Rate
Land Purchasing and Acquisition Cost	Stamp Duty	150,000.00
	Legal Fee	200,000.00
	Estate Agent Fee	130,000.00
Land Holding Cost	Quit Rent	150,000.00 per annum
	Assessment Rate	80,000.00 per annum

Site Valuation					
Gross Development Value				RM	35,820,000.00
Less: DC				RM	29,804,902.16
		Residue Value/Net Development Value		RM	6,015,097.84
X PV for	2 years @	8.75%			0.8456
			Current Site Value	RM	5,086,091.45
Less: Land Purchasing and Acquisition Cost					
1 Stamp Duty	:		RM 150,000.00		
2 Legal Fee	:		RM 200,000.00		
3 Estate Agent Fee	:		RM 130,000.00	RM	480,000.00
Less: Land Holding Cost					
1 Quit Rent	:	RM 150,000.00 pa. x 2 years =	RM 300,000.00		
2 Assessment Rate	:	RM 80,000.00 pa. x 2 years =	RM 160,000.00	RM	460,000.00
			Market Value	RM	4,146,091.45
			Say	**RM**	**4,146,000.00**

3.2.3   Developer's Profit and Risk

Developer's profit and risk is a part to be allocated and targeted by development as the profit and risk to be liable during the project construction. It is referring to the developer's right to acquired profit from the development project. Normally, the ideal portion of developers' profits is between 15% to 20% from the GDV. However, in determining the profit rate, an analysis is required to indicate whether a proposed development project will gain normal profit, abnormal profit or loss. This analysis can be calculated by using the Internal Rate of Return (IRR). IRR refers to a condition where the Net Present Value (NPV) is equal to zero. The NPV can determine through a result where the NPV deducts the TDC by using the cash flow approach.

3.3   Development Valuation

The following topics show the example of development valuation workings to determine the site value by using both conventional and cash flow approaches.

Example 5: You are required to value a piece of development land located in a town area by using the Conventional Residual Method of Valuation. Recently, the land had acquired development approval from the local authority for a mixed residential development project. The land area is 15 acres and ready to develop. The expected construction period is 2 years and the composition of development is as follow:

Nos.	Types of Units	Land Dimension	Selling Price (RM/unit)
a)	Single storey low-cost terrace houses	14' X 45'	RM42,000.00
b)	Double storey terrace houses	22' X 75'	RM180,000.00
c)	Single storey semi-detached houses	35' X 80'	RM300,000.00
d)	Single storey detached houses	40' X 85'	RM450,000.00
e)	Double storey shop offices	18' X 60'	RM350,000.00

The expected development cost as follow:

Nos.	Types of Cost	Cost (RM)
1.	Initial Cost	RM10,000.00 per acre
2.	Site Clearing	RM8,000.00 per acre
3.	Survey and Subdivision	RM350.00 per lot
4.	Registration of Land Titles	RM100.00 per lot
5.	Building Construction Cost	40% from GDV
6.	Infrastructure Cost	RM500.00 per unit
7.	Contribution to the Authorities	RM20,000.00
8.	Professional Fee	5% from building and infrastructure costs
9.	Landscaping	RM4,000.00 per acre
10.	Project Management	RM300,000.00 per month
11.	Marketing	1% from GDV
12.	Financing Interest	8.25% per annum
13.	Contingency Cost	10% from item 5-11
14.	Developer's Risk and Profit	20% from GDV

Approach 1: Conventional Residual Method of Valuation

Determine the lot size of development units

Land Area : 15 acres
Lot Size   :
SSTLCT   : 14 feet x 45 feet = 630 sf
DST   : 22 feet x 75 feet = 1,650 sf
DSSD   : 35 feet x 80 feet = 2,800 sf
SSD   : 40 feet x 85 feet = 3,400 sf
DSSO   : 18 feet x 60 feet = 1,080 sf

Determine the numbers of units to be developed

Land allocation for development

Building construction allocation @ 60%   = 9 acres x 43,560 sf = 392,040 sf
Infrastructure (including the open space) @ 40% = 6 acres x 43,560 sf = 261,360 sf

Assuming the development portions:
Building construction = 392,040 sf

SSTLCT : 30% = $\dfrac{117,612 \text{ sf}}{630 \text{ sf}}$ = 190 units

DST   : 30% = $\dfrac{117,612 \text{ sf}}{1,650 \text{ sf}}$ = 70 units

DSSD   : 15% = $\dfrac{58,806 \text{ sf}}{2,800 \text{ sf}}$ = 20 units

SSD   : 15% = $\dfrac{58,806 \text{ sf}}{3,400 \text{ sf}}$ = 20 units

DSSO   : 10% = $\dfrac{39,204 \text{ sf}}{1,080 \text{ sf}}$ = 40 units

Total   : 100%   340 units

Gross Development Value

1 SSTLCT   : 190 units x RM 42,000.00 per unit   = RM 7,980,000.00

2 DST
Open   : 49 units x RM 180,000.00 per unit   = RM 8,820,000.00
Bumiputera : 21 units x RM 171,000.00 per unit   = RM 3,591,000.00

3 DSSD
Open   : 14 units x RM 300,000.00 per unit   = RM 4,200,000.00
Bumiputera : 6 units x RM 285,000.00 per unit   = RM 1,710,000.00

4 SSD
Open   : 14 units x RM 450,000.00 per unit   = RM 6,300,000.00
Bumiputera :   6 units x RM 427,500.00 per unit   = RM 2,565,000.00

5 DSSO
Open   : 28 units x RM 350,000.00 per unit   = RM 9,800,000.00
Bumiputera : 12 unit x RM 332,500.00 per unit   = RM 3,990,000.00

Gross Development Value RM 48,956,000.00

Development Cost

1 Initial Cost	:	15 acres	X	RM	10,000.00	per acre				=	RM	150,000.00
2 Site Clearing	:	15 acres	X	RM	8,000.00	per acre				=	RM	120,000.00
3 Survey and Subdivision	:	340 lots	X	RM	350.00	per acre				=	RM	119,000.00
4 Registration of Land Titles	:	340 lots	X	RM	100.00	per acre				=	RM	34,000.00
5 Building Construction Cost												
SSTLCT	:	190 units	X	RM	16,800.00	per unit	=	RM	3,192,000.00			
DST	:	70 units	X	RM	72,000.00	per unit	=	RM	5,040,000.00			
DSSD	:	20 units	X	RM	120,000.00	per unit	=	RM	2,400,000.00			
SSD	:	20 units	X	RM	180,000.00	per unit	=	RM	3,600,000.00			
DSSO	:	40 units	X	RM	140,000.00	per unit	=	RM	5,600,000.00	=	RM	19,832,000.00
6 Infrastructure Cost	:	340 units	X	RM	500.00	per unit				=	RM	170,000.00
7 Contribution to the Authorities										=	RM	20,000.00
8 Professional Fee	:	5%	X	RM	20,002,000.00					=	RM	1,000,100.00
9 Landscaping	:	15 acres	X	RM	4,000.00	per acre				=	RM	60,000.00
10 Project Management	:	24 months	X	RM	300,000.00	per month				=	RM	7,200,000.00
11 Marketing	:	1%	X	RM	48,956,000.00					=	RM	489,560.00
12 Financing Interest	:	8.25% pa.	X	RM	29,194,660.00		X	2 years		=	RM	1,204,279.73
13 Contingency Cost	:	10%	X	RM	28,771,660.00					=	RM	2,877,166.00
14 Developer's Risk and Profit	:	10%	X	RM	48,956,000.00					=	RM	4,895,600.00

Development Cost = **RM 38,171,705.73**

Valuation

Gross Development Value		RM	48,956,000.00
Less : Development Cost		RM	38,171,705.73
Residue Value		RM	10,784,294.28
X Present Value of RM1.00 for	2 years @ 8.25%		0.8534
	Current Site Value RM	9,203,137.70	
Less : Land Acquisition Cost	: 5%	RM	460,156.88
	Market Value RM	8,742,980.81	
	Say RM	**8,743,000.00**	

Approach 2: Payback Method

	1 5%	2 10%	3 20%	4 25%	5 15%	6 10%	7 10%	8 5%
Gross Development Value								
1 SSTLCT	399,000.00	798,000.00	1,596,000.00	1,995,000.00	1,197,000.00	798,000.00	798,000.00	399,000.00
2 DST								
2.1 Open	441,000.00	882,000.00	1,764,000.00	2,205,000.00	1,323,000.00	882,000.00	882,000.00	441,000.00
2.2 Bumiputera	179,550.00	359,100.00	718,200.00	897,750.00	538,650.00	359,100.00	359,100.00	179,550.00
3 DSSD								
3.1 Open	210,000.00	420,000.00	840,000.00	1,050,000.00	630,000.00	420,000.00	420,000.00	210,000.00
3.2 Bumiputera	85,500.00	171,000.00	342,000.00	427,500.00	256,500.00	171,000.00	171,000.00	85,500.00
4 SSD								
4.1 Open	315,000.00	630,000.00	1,260,000.00	1,575,000.00	945,000.00	630,000.00	630,000.00	315,000.00
4.2 Bumiputera	128,250.00	256,500.00	513,000.00	641,250.00	384,750.00	256,500.00	256,500.00	128,250.00
5 DSSO								
5.1 Open	490,000.00	980,000.00	1,960,000.00	2,450,000.00	1,470,000.00	980,000.00	980,000.00	490,000.00
5.2 Bumiputera	199,500.00	399,000.00	798,000.00	997,500.00	598,500.00	399,000.00	399,000.00	199,500.00
Cash Inflow	**2,447,800.00**	**4,895,600.00**	**9,791,200.00**	**12,239,000.00**	**7,343,400.00**	**4,895,600.00**	**4,895,600.00**	**2,447,800.00**
Less : Development Cost								
1 Initial Cost	75,000.00	75,000.00						
2 Site Clearing	48,000.00	72,000.00						
3 Survey and Subdivision		119,000.00						
4 Registration of Land Titles			34,000.00					
5 Building Construction Cost	1,983,200.00	1,983,200.00	2,974,800.00	1,983,200.00	1,983,200.00	1,983,200.00	2,974,800.00	3,966,400.00
6 Infrastructure Cost			34,000.00	42,500.00	51,000.00	17,000.00	17,000.00	8,500.00
7 Contribution to the Authorities				5,000.00	10,000.00	5,000.00		
8 Professional Fee					400,040.00	300,030.00	300,030.00	
9 Landscaping					12,000.00	18,000.00	18,000.00	
10 Project Management	720,000.00	720,000.00	720,000.00	720,000.00	720,000.00	1,080,000.00	1,080,000.00	1,440,000.00
11 Marketing	48,956.00	48,956.00	48,956.00	48,956.00	48,956.00	73,434.00	73,434.00	97,912.00
12 Contingency Cost	287,716.60	287,716.60	287,716.60	287,716.60	287,716.60	431,574.90	431,574.90	575,433.20

Cash Outflow	3,162,872.60	3,305,872.60	4,099,472.60	3,087,372.60	3,512,912.60	3,908,238.90	4,894,838.90	6,100,245.20
Net Cash Flow	(715,072.60)	1,589,727.40	5,691,727.40	9,151,627.40	3,830,487.40	987,361.10	761.10	(3,652,445.20)
X Interest @ 1.00%	(7,120.98)	(7,191.90)	8,567.63	65,333.48	157,119.72	196,829.93	208,622.59	210,707.71
Cummulative Capital Outstanding	(722,193.58)	860,341.92	6,560,636.95	15,777,597.84	19,765,204.96	20,949,395.99	21,158,779.68	17,717,042.19

Less : Developer's Profit and Risk	
Residue Value	4,895,600.00
	12,821,442.19
X PV RM1.00 @ 1.00%	0.9238
Current Site Value	11,844,288.40
Less: Land Acquisition Cost @ 5%	592,214.42
Market Value	11,252,073.98
Say	11,252,000.00

Determine the interest rate per quarter

$$Interest\ Rate = (1 + i)^n = (1 + i)$$
$$= (1 + i)^8 = (1 + 0.0825)$$
$$= (1 + i) = 1.0825 ^{(1 / 8)}$$
$$= (1 + i) = 1.0825 ^{0.125}$$
$$= (1 + i) = 1.0100$$
$$i = 1.0100 - 1$$
$$i = 0.0100 \quad @ 1.00\%$$

Approach 3: Net Terminal Value Method

Gross Development Value	1 5%	2 10%	3 20%	4 25%	5 15%	6 10%	7 10%	8 5%
1 SSTLCT	399,000.00	798,000.00	1,596,000.00	1,995,000.00	1,197,000.00	798,000.00	798,000.00	399,000.00
2 DST								
2.1 Open	441,000.00	882,000.00	1,764,000.00	2,205,000.00	1,323,000.00	882,000.00	882,000.00	441,000.00
2.2 Bumiputera	179,550.00	359,100.00	718,200.00	897,750.00	538,650.00	359,100.00	359,100.00	179,550.00
3 DSSD								
3.1 Open	210,000.00	420,000.00	840,000.00	1,050,000.00	630,000.00	420,000.00	420,000.00	210,000.00
3.2 Bumiputera	85,500.00	171,000.00	342,000.00	427,500.00	256,500.00	171,000.00	171,000.00	85,500.00
4 SSD								
4.1 Open	315,000.00	630,000.00	1,260,000.00	1,575,000.00	945,000.00	630,000.00	630,000.00	315,000.00
4.2 Bumiputera	128,250.00	256,500.00	513,000.00	641,250.00	384,750.00	256,500.00	256,500.00	128,250.00
5 DSSO								
5.1 Open	490,000.00	980,000.00	1,960,000.00	2,450,000.00	1,470,000.00	980,000.00	980,000.00	490,000.00
5.2 Bumiputera	199,500.00	399,000.00	798,000.00	997,500.00	598,500.00	399,000.00	399,000.00	199,500.00
Cash Inflow	**2,447,800.00**	**4,895,600.00**	**9,791,200.00**	**12,239,000.00**	**7,343,400.00**	**4,895,600.00**	**4,895,600.00**	**2,447,800.00**
Less : Development Cost								
1 Initial Cost	75,000.00	75,000.00						
2 Site Clearing	48,000.00	72,000.00						
3 Survey and Subdivision		119,000.00						
4 Registration of Land Titles			34,000.00					
5 Building Construction Cost	1,983,200.00	1,983,200.00	2,974,800.00	1,983,200.00	1,983,200.00	1,983,200.00	2,974,800.00	3,966,400.00
6 Infrastructure Cost			34,000.00	42,500.00	51,000.00	17,000.00	17,000.00	8,500.00
7 Contribution to the Authorities				5,000.00	10,000.00	5,000.00		
8 Professional Fee					400,040.00	300,030.00	300,030.00	
9 Landscaping					12,000.00	18,000.00	18,000.00	12,000.00
10 Project Management	720,000.00	720,000.00	720,000.00	720,000.00	720,000.00	1,080,000.00	1,080,000.00	1,440,000.00
11 Marketing	48,956.00	48,956.00	48,956.00	48,956.00	48,956.00	73,434.00	73,434.00	97,912.00
12 Contingency Cost	287,716.60	287,716.60	287,716.60	287,716.60	287,716.60	431,574.90	431,574.90	575,433.20

Cash Outflow	3,162,872.60	3,305,872.60	4,099,472.60	3,087,372.60	3,512,912.60	3,908,238.90	4,894,838.90	6,100,245.20
Net Cash Flow	(715,072.60)	1,589,727.40	5,691,727.40	9,151,627.40	3,830,487.40	987,361.10	761.10	(3,652,445.20)
X Amount of RM 1 @ 1.00%	1.0718	1.0613	1.0508	1.0404	1.0302	1.0200	1.0100	1.0000
Net Outlay	(766,433.63)	1,687,110.73	5,980,831.02	9,521,651.51	3,946,067.43	1,007,124.10	768.68	(3,652,445.20)
Cummulative	(766,433.63)	920,677.10	6,901,508.12	16,423,159.64	20,369,227.07	21,376,351.17	21,377,119.85	17,724,674.65

Less : Developer's Profit and Risk	4,895,600.00
Residue Value	12,829,074.65
X PV RM1.00 @ 1.00%	1.0000
Current Site Value	12,829,074.65
Less: Land Acquisition Cost @ 5%	641,453.73
Market Value	12,187,620.92
Say	12,188,000.00

Determine the interest rate per quarter

$$\text{Interest Rate} = (1 + i)^n = (1 + i)$$
$$= (1 + i)^8 = (1 + 0.0825)$$
$$= (1 + i) = 1.0825 ^{(1 / 8)}$$
$$= (1 + i) = 1.0825 ^{0.125}$$
$$= (1 + i) = 1.0100$$
$$i = 1.0100 - 1$$
$$i = 0.0100 \quad @ \ 1.00\%$$

3.4 Development Appraisal

To determine the profitability and viability ratios of a proposed real estate development appraisal, two approaches can be applied namely conventional Residual Method of Appraisal and cash flow approaches. By using these approaches, both analyses will produce a result to assist the investor or developer in the decision-making process for the proposed real-estate development project. The developer's profit and risk can be derived from the differences between GDV and TDC. Therefore, from the developer's profit and risk, the valuer will determine both profitability and viability index by using the formulas as given before. The profitability index is a ratio between the developer's profit and risk and GDV (known as the Profit on GDV) and between the developer's profit and risk and TDC (known as the Profit on TDC). Both analyses show the minimum and maximum of the profitability ratio can be derived from the project. The result from the profitability index will be compared with indicators (also indicate as the viability index) such as rate of return, development yield (or known as the IRR), financing interest rate and etc. Basically, the investor or developer may use an IRR analysis as a common indicator to compare the expected profitability index and the development yield. As discussed before, the development yield or IRR can provide a platform to assist the investor or developer to indicate the IRR is at a minimum profit which is the developer only gains capital invested after the project is completed with the assumption that, all units are sold.

Example 6: You are required to determine the profitability and viability ratios on a piece of development to develop a commercial complex in a town centre. The land is a freehold interest and has the land area at 1 acre 3 rod and 02 poles. The plot ratio and plinth area gazetted by the local authority is 1:5 and 50% respectively, while the estimated net lettable area is 80% from the total gross floor area. According to the market study, the expected market rental value of similar properties is RM30.00 psf per annum net, the occupancy rate is 75% and the all-risks yield is 9% per annum net. The development cost (excluding the developer's profit and risk) is as follows:

Nos.	Types of Cost	Amount
1.	Initial Cost	RM5,000.00 per acre
2.	Site Clearing and Preparation	RM5,000.00 per acre
3.	Building Construction Cost	40% from GDV
4.	Infrastructure Cost	RM30,000.00
5.	Contribution to the Authorities	RM20,000.00
6.	Professional Fees	5% from building construction cost, infrastructure cost and contribution to the authorities
7.	Landscaping	RM10,000.00
8.	Project Management	RM50,000.00 per month
9.	Marketing	1.5% from GDV

Nos.	Types of Cost	Amount
10.	Financing Cost	8.25% from item (1) to (8) BTS.
12.	Project duration	18 months

The land acquisition and holding costs are as follow:

No.	Types of Cost	Amount (RM)
1.	Land Purchasing Cost	RM8,000,000 per acre
2.	Land Acquisition Cost	
	2.1 Stamp Duty	Refers to the item 32(a), First Schedule, Stamp Act 1949
	2.2 Legal Fee	Refers to the Solicitor's Remuneration Order (Amendment) 2017
3.	Land Holding Cost	
	3.1 Quit Rent	RM2.80 psm
	3.2 Assessment Rate	11% on the Annual Value.

Based on the information provided, determine:

a)   The profitability index by using the Conventional Residual Method, Payback and Net Present Value approaches, and

b)   The viability index by using the Internal Rate of Return approach.

Valuation

Determine the profitability index of proposed real estate development project:

Convert to acre

Land Area = 1 acre + 3 rod   + 2 pole
            = 1 acre + 3/4 acre   + 2 / 160 acre
            = 1 acre + 0.75 acre + 0.0125 acre

Total Gross Floor Area

Land Area (sf) = 1.7625 acres x 43,560 sf
                = 76,775 sf

Plot Ratio   = 1: 5   Land Area = 1
                      Gross Floor Area = 5

                  = Land Area   : 1x   76,775= 76,775 sf
                    Gross Floor Area   : 5x   76,775= 383,873 sf

                  = **383,873 sf**

Plinth Area   = % x Land Area
                 = 50% x 76,775 sf
                 = **38,387 sf**

Nos. of bldg   =   Gross Floor Area
storey   Plinth Area

                 =   383,873 sf
                        38,387 sf

                 = **10 storey**

Net Floor Area

Net Floor Area = 80% x   Gross Floor Area
                 = 80% x   383,873 sf
                 =   **307,098 sf**

Floor Area each =   Net Floor Area
                      Nos of bldg storey

                 =   307,098 sf
                            10 sf

                 =   **30,710 sf**

Gross Development Value

Ground Floor	: RM 30.00 psf pa X 30,710 sf = RM	921,294.00 per annum
Level 1 (-20%)	: RM 24.00 psf pa X 30,710 sf = RM	737,035.20 per annum
Level 2 (-30%)	: RM 21.00 psf pa X 30,710 sf = RM	644,905.80 per annum
Level 3 (-40%)	: RM 18.00 psf pa X 30,710 sf = RM	552,776.40 per annum
Level 4 (-50%)	: RM 15.00 psf pa X 30,710 sf = RM	460,647.00 per annum
Level 5 (-50%)	: RM 15.00 psf pa X 30,710 sf = RM	460,647.00 per annum
Level 6 (-50%)	: RM 15.00 psf pa X 30,710 sf = RM	460,647.00 per annum
Level 7 (-60%)	: RM 12.00 psf pa X 30,710 sf = RM	368,517.60 per annum
Level 8 (-60%)	: RM 12.00 psf pa X 30,710 sf = RM	368,517.60 per annum
Level 9 (-60%)	: RM 12.00 psf pa X 30,710 sf = RM	368,517.60 per annum
Total Rental Value		RM 5,343,505.20 per annum
Less : Outgoings @ 25%		RM 1,335,876.30 per annum
Net Rental Value		RM 4,007,628.90 per annum
X Occupancy Rate @ 75%		0.75
Adjusted Rental		RM 4,007,628.90
X YP in-perp. @ 9%		11.1111
		RM 44,529,210.00
	Gross Development Value	**RM 44,529,000.00**

Land Cost and Holding Cost

Land Purchasing Cost : 1.7625 acres X RM 8,000.000.00 per acre =   RM 14,100,000.00

Plus :

Land Acquisition Cost

1 Stamp Duty	:	1%	X RM	100,000.00 =	RM	1,000.00
	:	2%	X RM	400,000.00 =	RM	8,000.00
	:	3%	X RM	1,500,000.00 =	RM	45,000.00
	:	4%	X RM	12,100,000.00 =	RM484,000.00	RM 538,000.00
2 Legal Fee	: 1.0%		X RM	500,000.00 =	RM	5,000.00
	: 0.8%		X RM	500,000.00 =	RM	4,000.00
	: 0.7%		X RM	2,000,000.00 =	RM	14,000.00
	: 0.6%		X RM	2,000,000.00 =	RM	12,000.00
	: 0.5%		X RM	9,100,000.00 =	RM 45,500.00	RM 80,500.00

Land Holding Cost   :

1 Quit Rent	: 7,132.58 sm X RM	2.80 =	RM 19,971.24	
2 Assessment Rate	: 11% X RM	1,621,500.00 =	RM 535,095.00	RM 555,066.24

RM 15,273,566.24

Development Cost,

1 Initial Cost	: 1.7625 acres	x RM 5.000.00 per acre	= RM	8,812.50
2 Site Clearing and Preparation	: 1.7625 acres	x RM 5.000.00 per acre	= RM	8,812.50
3 Building Construction Cost	: 40%	x RM 44,529,000.00	= RM 17,811.600.00	
4 Infrastructure Cost	:		= RM	39,000.00
5 Contribution to the Authorities	:		= RM	20,000.00
6 Professional Fees	: 5%	x RM 17,861,600.00	= RM 17,811.600.00	
7 Landscaping	:		= RM	10,000.00
8 Project Management	: 18months	x RM 50.000,00 per month	= RM	900,000.00
9 Marketing	: 1.5%	x RM 48,956,000.00	= RM	734,340.00
10 Contigency Cost	: 10%	x RM 2,587,420.00	= RM	258,742.00
		Development Cost	**= RM 20,675,387.00**	

Approach 1: Conventional Residual Method

Development Apprrisal				
Gross Development Value			RM	44,529,000.00
Less:				
Development Cost	RM	20,675,387.00		
Land Purchasing Cost	RM	14,100,000.00		
Land Acquisition Cost	RM	618,500.00		
Holding Cost	RM	555,066.24	RM	35,948,953.24
Developer's Profit and Risk			**RM**	**8,550,046.76**

Profitability Ratio

Profit on GDV = $\dfrac{\text{Developer's Profit and Risk}}{\text{Gross Development Value}}$ X 100

$\qquad = \dfrac{\text{RM} \quad 8,580,046.76}{\text{RM} \quad 44,529,000.00}$ X 100

$\qquad =$ **19.27%**

Profit on TDC = $\dfrac{\text{Developer's Profit and Risk}}{\text{Total Development Cost}}$ X 100

$\qquad = \dfrac{\text{RM} \quad 8,580,046.76}{\text{RM } 35,948,953.24}$ X 100

$\qquad =$ **23.87%**

Investment Appraisal by using the Cash Flow Approaches

Determine the interest rate per quarter

Interest rate per quarter
Interest Rate = $(1 + i) \wedge n \qquad = (1 + i \qquad)$
$\qquad = (1 + i) \wedge 6 \quad = (1 + 0.0825 \,)$
$\qquad = (1 + i) \qquad = \; 1.0825 \qquad \wedge (1 \;/\; 6)$
$\qquad = (1 + i) \qquad = \; 1.0825 \qquad \wedge 0.166667$
$\qquad = (1 + i) \qquad = \; 1.0133$
$\qquad\qquad\quad i \qquad = \; 1.0133 \qquad - 1$
$\qquad\qquad\quad$ **i** $\qquad$ **= 0.0133 @ 1.33%**

b) Payback Method

	0	1	2	3	4	5	6	7	8	Exit Value
Gross Development Value										
1 Ground Floor								92,129.40	138,194.10	-
2 Level 1 (-20%)								73,703.52	110,555.28	-
3 Level 2 (-30%)								64,490.58	96,735.87	-
4 Level 3 (-40%)								55,277.64	82,916.46	-
5 Level 4 (-50%)								46,064.70	69,097.05	-
6 Level 5 (-50%)								46,064.70	69,097.05	-
7 Level 6 (-50%)								46,064.70	69,097.05	-
8 Level 7 (-60%)								36,851.76	55,277.64	-
9 Level 8 (-60%)								36,851.76	55,277.64	-
10 Level 9 (-60%)								36,851.76	55,277.64	-
Cash Inflow	-	-	-	-	-	-	-	**534,350.52**	**801,525.78**	**44,529,000.00**
Less : Development Cost	15,273,566.24									
1 Land Cost	15,273,566.24									
2 Initial Cost		4,406.25	4,406.25	4,406.25						
3 Site Clearing and Preparation		2,203.13	2,203.13							
4 Building Construction Cost		1,781,160.00	4,452,900.00	5,343,480.00	2,671,740.00	1,781,160.00	1,781,160.00			
5 Infrastructure Cost		3,000.00	7,500.00	9,000.00	4,500.00	3,000.00	3,000.00			
6 Contribution to the Authorities			5,000.00	10,000.00	4,000.00	1,000.00				
6 Professional Fees		89,308.00	223,270.00	267,924.00	133,962.00	89,308.00	89,308.00			
7 Landscaping			1,000.00	3,000.00	3,000.00	1,500.00	1,500.00			
8 Project Management		90,000.00	135,000.00	180,000.00	225,000.00	135,000.00	135,000.00			
9 Marketing		73,434.00	110,151.00	146,868.00	183,585.00	110,151.00	110,151.00			
10 Contigency Cost		38,811.30	38,811.30	51,748.40	51,748.40	38,811.30	38,811.30			
Less : Outgoings										
1 Internal Repairs								66,793.82	66,793.82	
2 External Repairs								66,793.82	66,793.82	
3 Insurance								40,076.29	40,076.29	
4 Management								26,717.53	26,717.53	
5 Quit Rent								66,793.82	66,793.82	
6 Assessment Rate								66,793.82	66,793.82	
Cash Outflow	15,273,566.24	2,082,322.68	4,980,241.68	6,016,426.65	3,277,535.40	2,159,930.30	2,158,930.30	333,969.08	333,969.08	
Net Cash Flow	(15,273,566.24)	(2,082,322.68)	(4,980,241.68)	(6,016,426.65)	(3,277,535.40)	(2,159,930.30)	(2,158,930.30)	200,381.45	467,556.71	44,529,000.00
X Interest Rate @ 1.33%	(203,136.35)	(203,136.35)	(233,532.64)	(302,875.13)	(386,920.98)	(435,657.75)	(470,178.72)	(505,145.51)	(509,198.83)	-
Modal Terkumpul	(15,273,566.24)	(17,559,025.26)	(22,772,799.57)	(29,092,101.35)	(32,756,557.73)	(35,352,145.78)	(37,981,254.79)	(38,286,018.85)	(38,327,660.98)	6,201,339.02

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Profitability Ratio

$$\text{Profit on GDV} \quad = \quad \frac{\text{Developer's Profit and Risk}}{\text{Gross Development Value}} \times 100$$

$$= \quad \frac{\text{RM } 6,201,339.02}{\text{RM } 44,529,000.00} \times 100$$

$$= \quad \textbf{13.93\%}$$

$$\text{Profit on TDC} \quad = \quad \frac{\text{Developer's Profit and Risk}}{\text{Total Development Cost}} \times 100$$

$$\frac{\text{RM } 6,201,339.02}{\text{RM } 35,948,953.24} \times 100$$

$$= \quad \textbf{17.25\%}$$

Payback Period

$$\text{Payback Period} \quad = \quad \text{Period before break-even} \quad + \quad \frac{\text{Unrecovered Amount}}{\text{Cash Flow in Recovery Period}}$$

$$= \quad \text{Period- 7} \quad + \quad \frac{\text{RM } 38,286,018,85}{\text{RM}44,529,000.00}$$

$$= \quad (7 + 0.86) \times 4$$

$$= \quad 7.86 \times 4$$

$$= \quad \textbf{31.44 month}$$

c) Net Present Value Method

	0	1	2	3	4	5	6	7	8	Exit Value
Gross Development Value										
1 Ground Floor								92,129.40	138,194.10	
2 Level 1 (-20%)								73,703.52	110,555.28	
3 Level 2 (-30%)								64,490.58	96,735.87	
4 Level 3 (-40%)								55,277.64	82,916.46	
5 Level 4 (-50%)								46,064.70	69,097.05	
6 Level 5 (-50%)								46,064.70	69,097.05	
7 Level 6 (-50%)								46,064.70	69,097.05	
8 Level 7 (-60%)								36,851.76	55,277.64	
9 Level 8 (-60%)								36,851.76	55,277.64	
10 Level 9 (-60%)								36,851.76	55,277.64	
Cash Inflow	-						-	534,350.52	801,525.78	44,529,000.00
Less : Development Cost										
1 Land Cost	15,273,566.24									
2 Initial Cost		4,406.25	4,406.25	4,406.25						
3 Site Clearing and Preparation		2,203.13	2,203.13							
4 Building Construction Cost		1,781,160.00	4,452,900.00	5,343,480.00	2,671,740.00	1,781,160.00	1,781,160.00			
5 Infrastructure Cost		3,000.00	7,500.00	9,000.00	4,500.00	3,000.00	3,000.00			
6 Contribution to the Authorities			5,000.00	10,000.00	4,000.00	1,000.00				
6 Professional Fees		89,308.00	223,270.00	267,924.00	133,962.00	89,308.00	89,308.00			
7 Landscaping			1,000.00	3,000.00	3,000.00	1,500.00	1,500.00			
8 Project Management		90,000.00	135,000.00	180,000.00	225,000.00	135,000.00	135,000.00			
9 Marketing		73,434.00	110,151.00	146,868.00	183,585.00	110,151.00	110,151.00			
10 Contigency Cost		38,811.30	38,811.30	51,748.40	51,748.40	38,811.30	38,811.30			
Less : Outgoings										
1 Internal Repairs								66,793.82	66,793.82	
2 External Repairs								66,793.82	66,793.82	
3 Insurance								40,076.29	40,076.29	
4 Management								26,717.53	26,717.53	
5 Quit Rent								66,793.82	66,793.82	
6 Assessment Rate								66,793.82	66,793.82	
Cash Outflow	15,273,566.24	2,082,322.68	4,980,241.68	6,016,426.65	3,277,535.40	2,159,930.30	2,158,930.30	333,969.08	333,969.08	
Net Cash Flow	(15,273,566.24)	(2,082,322.68)	(4,980,241.68)	(6,016,426.65)	(3,277,535.40)	(2,159,930.30)	(2,158,930.30)	200,381.45	467,556.71	44,529,000.00
XPV of RM1 @ 1.33%	1.0000	0.9869	0.9739	0.9611	0.9485	0.9361	0.9238	0.9117	0.8997	0.8997
Discounted Cash Flow	(15,273,566.24)	(2,054,991.57)	(4,850,365.32)	(5,782,620.26)	(3,108,819.12)	(2,021,854.11)	(1,994,392.89)	182,680.26	420,659.22	40,062,594.27
								Net Present Value (NPV)		5,579,324.24

Profitability Ratio

Profit on GDV $\quad = \quad \dfrac{\text{Developer's Profit and Risk}}{\text{Gross Development Value}} \times 100$

$\quad\quad\quad\quad\quad\quad = \quad \dfrac{\text{RM } 5{,}579{,}324.24}{\text{RM } 44{,}529{,}000.00} \times 100$

$\quad\quad\quad\quad\quad\quad = \quad$ **12.53%**

Profit on TDC $\quad = \quad \dfrac{\text{Developer's Profit and Risk}}{\text{Total Development Cost}} \times 100$

$\quad\quad\quad\quad\quad\quad\quad\; \dfrac{\text{RM } 5{,}579{,}324.24}{\text{RM } 35{,}948{,}953.24} \times 100$

$\quad\quad\quad\quad\quad\quad = \quad$ **15.52%**

The viability index or development yield by using the Internal Rate of Return approach:

	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9
Gross Development Value										
1 Ground Floor								92,129.40	138,194.10	
2 Level 1 (-20%)								73,703.52	110,555.28	
3 Level 2 (-30%)								64,490.58	96,735.87	
4 Level 3 (-40%)								55,277.64	82,916.46	
5 Level 4 (-50%)								46,064.70	69,097.05	
6 Level 5 (-50%)								46,064.70	69,097.05	
7 Level 6 (-50%)								46,064.70	69,097.05	
8 Level 7 (-60%)								36,851.76	55,277.64	
9 Level 8 (-60%)								36,851.76	55,277.64	
10 Level 9 (-60%)								36,851.76	55,277.64	
Cash Inflow	-							534,350.52	801,525.78	44,529,000.00
Less : Development Cost										
1 Land Cost	15,273,566.24									
2 Initial Cost		4,406.25	4,406.25	4,406.25						
3 Site Clearing and Preparation		2,203.13	2,203.13							
4 Building Construction Cost		1,781,160.00	4,452,900.00	5,343,480.00	2,671,740.00	1,781,160.00	1,781,160.00			
5 Infrastructure Cost		3,000.00	7,500.00	9,000.00	4,500.00	3,000.00	3,000.00			
6 Contribution to the Authorities		1,000.00	5,000.00	10,000.00	4,000.00	1,000.00				
6 Professional Fees		89,308.00	223,270.00	267,924.00	133,962.00	89,308.00	89,308.00			
7 Landscaping		1,500.00	1,000.00	3,000.00	3,000.00	1,500.00	1,500.00			
8 Project Management		90,000.00	135,000.00	180,000.00	225,000.00	135,000.00	135,000.00			
9 Marketing		73,434.00	110,151.00	146,868.00	183,585.00	110,151.00	110,151.00			
10 Contigency Cost		38,811.30	38,811.30	51,748.40	51,748.40	38,811.30	38,811.30			
Less : Outgoings										
1 Internal Repairs								66,793.82	66,793.82	
2 External Repairs								66,793.82	66,793.82	
3 Insurance								40,076.29	40,076.29	
4 Management								26,717.53	26,717.53	
5 Quit Rent								66,793.82	66,793.82	
6 Assessment Rate								66,793.82	66,793.82	
Cash Outflow	15,273,566.24	2,082,322.68	4,980,241.68	6,016,426.65	3,277,535.40	2,159,930.30	2,158,930.30	333,969.08	333,969.08	-
Net Cash Flow	(15,273,566.24)	(2,082,322.68)	(4,980,241.68)	(6,016,426.65)	(3,277,535.40)	(2,159,930.30)	(2,158,930.30)	200,381.45	467,556.71	44,529,000.00
X PV of RM1 @ 3%	1.0000	0.9709	0.9426	0.9151	0.8885	0.8626	0.8375	0.8131	0.7894	0.7894
Discounted Cash Flow	(15,273,566.24)	(2,021,672.50)	(4,694,355.43)	(5,505,882.67)	(2,912,047.75)	(1,863,174.85)	(1,808,070.14)	162,928.45	369,093.58	35,151,603.79
NPV R1										1,604,856.25
X PV of RM1 @ 4%	1.0000	0.9615	0.9246	0.8890	0.8548	0.8219	0.7903	0.7599	0.7307	0.7307
Discounted Cash Flow	(15,273,566.24)	(2,002,233.34)	(4,604,513.38)	(5,348,581.38)	(2,801,651.00)	(1,775,305.26)	(1,706,233.98)	152,273.43	341,639.10	32,536,904.14
NPV R2										(481,267.91)

$$IRR = R1 + (R2 - R1) \ X \quad \frac{NPVR1}{NPVR1 + NPVR2}$$

$$= 3 + (4 - 3) \ X \quad \frac{1,604,856.25}{1,604,856.25 + 481,267.91}$$

$$= 3 + \frac{1,604,856.25}{2,086,124.16}$$

Profit on TDC $= 3 + 0.7693$

$= $ **3.7693%**

Result: According to the appraising and analysis on both profitability and viability index, the proposed development project shows that the profitability index is higher than the viability index. The expected viability ratio is 3.7693% is below than the profitability index which can be derived between 12% and 16%. Therefore, the proposed development project is profitable and viable.

4.   SUMMARY

Real estate development is one of the property investments sectors where the revenue from the property development is a gross return to the developer or investor from the capital invested in early. To calculate and appraise the potential and profitability from the investment, analysis on Earnings Before Interests and Taxes (EBIT) as a basic component in the income approach will be used. From this data and information, a development valuation and appraisal model will be developed which is known as the Residual Method. From this method also, the conventional and cash flow approaches can be applied. In the development valuation process by using both conventional and cash flow approaches, the valuer is able to determine the project value, site value, market value and the viability of a proposed development project. The development appraisal exercise used by using both approaches also can help the valuer to analyse and determine the profitability and viability of the proposed development project. There are two different factors to distinguish between the development valuation and development appraisal namely the land cost (use in the development appraisal) and the developer's profit and risk (as one of the development costs uses in the development valuation). In simple terms, the development valuation uses to determine the site value and the market value of vacant development by taking into account the development potential of the land. Besides that, the development appraisal will help the valuer to assist the developer or investor to determine the profitability and viability of the project in order to determine whether the proposed project can be benefited from every capital invested by them.

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