Jurnal Teknologi

Full paper

The Impact of Sustainability on the Value of Commercial Office Buildings in Malaysia : Russian-Doll Model Approach

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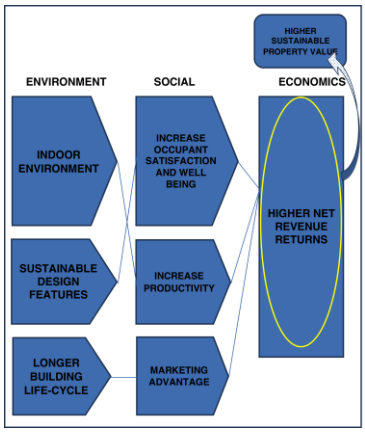
Article history

Received :6 February 2014
Received in revised form :
24 July 2014
Accepted :9 October 2014

Graphical Abstract



Abstract

The development of sustainable buildings continues to gain momentum in Malaysia due to its many benefits. The Kuala Lumpur City Hall stipulated that the construction of every commercial building must meet the requirements of green features with at least 'GBI Gold' level or equivalent. With the growing interest in green development, questions were raised on whether there is enhancement to the market value of green-rated properties and vice-versa. As most of the commercial office buildings are used for functions and office spaces by most organisations, they are considered a service oriented entity and can significantly benefit from having sustainability attributes. Hence, green properties are considered to be more marketable and attractive for investment purpose. However, at present, the differences in rental rates in Malaysia between green and non-green commercial office buildings are rather small. The difference is more to supply and demand factors within the specific location rather than green features factor. Therefore, this paper hopes to highlight the possible impact of economics, the environment and social attributes on the value of commercial office building incorporating with the Russian-Doll model. The highlighted sustainable attributes will provide guidance and justification in valuing real estate incorporating sustainability.

Keywords: Russian-Doll Model; sustainability attributes; commercial office building; market value; investor; valuer

Abstrak

Pembangunan bangunan mampan terus mendapat momentum di Malaysia berdasarkan kepada faedah banyak sebagaimana Dewan Bandaraya Kuala Lumpur yang menetapkan setiap bangunan komersial yang akan dibina perlu memenuhi keperluan ciri-ciri hijau dengan sekurang-kurangnya mencapai tahap 'GBI Gold' atau setaraf dengannya. Dengan minat yang semakin meningkat dalam pembangunan hijau, persoalan timbul sama ada terdapat peningkatan kepada nilai pasaran hartanah hijau yang diiktiraf atau sebaliknya. Ini kerana kebanyakan bangunan komersial pejabat berfungsi sebagai ruang dan tempat bagi kebanyakan organisasi dan ia boleh dianggap sebagai memainkan peranan berorientasikan perkhidmatan yang ketara dipengaruhi oleh sifat-sifat kemampanan. Oleh itu, harta tanah yang mempunyai ciri-ciri hijau dianggap lebih mudah dipasarkan dan menarik bagi tujuan pelaburan. Walau bagaimanapun, pada masa ini, perbezaan dalam kadar sewa di Malaysia di antara bangunan pejabat hijau dan bukan hijau adalah agak kecil. Perbezaan tersebut lebih menjurus kepada faktor lokasi tertentu dan bukannya kepada ciri-ciri hijau yang ada pada sesebuah bangunan yang telah diiktiraf sebagai hijau. Oleh yang demikian, kertas kerja ini akan menekankan kesan ciri-ciri kelestarian iaitu ekonomi, persekitaran dan sosial terhadap nilai bangunan komersial pejabat dengan penggabungan model Russian-Doll. Ciri-ciri kelestarian yang dibincangkan akan menjadi panduan dan justifikasi di dalam penilaian harta tanah. Kertas kerja ini juga mengambilkira faedah-faedah bangunan hijau yang seterusnya akan diterjemahkan kepada peningkatan sewa dan seterusnya nilai harta tanah.

Kata kunci: Model Russian-Doll; ciri-ciri kelestarian; bangunan komersial pejabat; nilai pasaran; pelabur; penilai

1.0 INTRODUCTION

The World Green Building Council is working within the Asia-Pacific region to promote the benefits of sustainable building practices, and Malaysia has embraced the potential green building, a sustainable and climate-friendly built environment (carbon-reducing buildings) in response to the climate change and environmental degradation. The construction of green building takes into account environmental, social and economic factors throughout its life cycle. When referring to real estate "sustainable development", green building has many terminologies such as "green building" (US term), "sustainable building" (UK and Australia term), "sustainable architecture" and "sustainable construction" (Mansfield, 2009 ; Sayce, Sundberg, & Clements, 2010). The term has also been used interchangeably to reflect "green features" in the development. In some countries, sustainable development has a deeper meaning than simply applying "green features" as it is used to handle a number of global issues such as poverty, inequality, hunger and environmental degradation. Nevertheless, in the context of property development in Malaysia, it can generally be referred to as practices that can lead to a more environmentally friendly and ecologically responsible decision and lifestyles, which can help protect the environment and sustain its natural resources for the current and future generations (Rahim, 2011). The Earth Summit in Rio, Brazil in 1992 was one of the major international efforts to bring sustainable development to the mainstream. Some of the Malaysian property companies are seen to be leading the sustainable property agenda, although the property company sector in Malaysia has room for improvement to better align itself with international best practice in sustainability (Newell & Manaf, 2008).

Green building has become the major perspective for the development of commercial building in recent years in Malaysia. DBKL has enforced a regulation which stipulates that every commercial building to be constructed must meet the requirements of green features with at least 'GBI Gold' level or equivalent. Boyd (2005) revealed that a good energy rating of a building may give it a market edge. Thus, Greenbuildingindex Sdn. Bhd, a group of Malaysian architects and engineers developed the system called Green Building Index (GBI) which provided guidelines to preserve and save the environment and a rating system for green. The assessment for GBI focuses on interchanging the six green criteria such as energy efficiency, indoor environment quality, sustainable site planning and management, materials and resources, water efficiency and innovation. 130 buildings covering over 54 million sq. ft. (5.04 million sq. m.) have been certified under the Green Building Index (GBI) since the launch of the national rating scheme in May 2009. These buildings included 66 new non-residential, 52 new residential buildings, 2 new industrial construction, 4 townships as well as six existing buildings that have been green-retrofitted (GBI, 2013).

As a property perspective changed, the major sustainable property perspective in relation to the building characteristics and performance has affected the property's worth and market value (D. P. Lorenz, Trück, & Lützkendorf, 2007). Ellison, Sayce, & Smith (2007) and McNamara (2008) take the view that buildings which lack sustainability features will begin to lag behind in terms of rental growth which will ultimately lead to adverse yield movements. In addition, studies often take the view that stock lacking sustainability features will require investors to expend further capital in order to reposition assets within the market (Sayce et al., 2010) and undertake more frequent and costly refurbishments, thus increasing the rate of depreciation.

1.1 ISSUES ON SUSTAINABLE COMMERCIAL PROPERTY

The development of sustainable buildings continues to gain momentum in Malaysia due to the abundant benefits of it. Every year, new buildings are added about 5% to 15% to the stock of buildings a country has. As the government does not plan to make the GBI mandatory for new buildings to be green-compliant in order for its certificate of fitness to be issued, the demand for developing green building needs to be market-driven (Cheng, 2011). However, since DBKL is enforcing the green requirement on commercial properties, there has been growing awareness among the market players which encourages the rapid development of green building in Malaysia especially in the Kuala Lumpur area.

With the increasing interest in green development, the critical questions have been raised by the Malaysian property buyers or investors (Rahim, 2011). Questions were asked on whether there is an enhancement to the market value of green-rated properties or vice versa. Will green properties be more marketable and attractive for investment purposes? This is because the investors are in the business of maximising their return on capital. Thus, they are looking for the "financial validation" before incorporating new criteria into their investment decisions (Chappell, 2012) which could enhance their socially responsible investments (SRI). In Malaysia, a comprehensive study on the valuation of green building has yet to be conducted. However, Malaysia can learn from the experience of countries that are more advanced in green initiatives.

Referring to a study on the need for Green features in buildings conducted by Havard Business Review in 2008, it was recommended that the building owners of "standard" buildings adopt Green features, otherwise their buildings would face massive obsolescence (Lockwood, 2008). Lorenz et al. (2007) suggested that one of the reasons for not buying or renting a commercial property was in response to an increasingly poor environmental and social performance, which in turn can affect the building life cycle (treated for valuation, insurance, lending and other decision making purposes) and increase pressure on valuers and professional property advisors on finding the real benefit and economic value of green building development. This is reflected in the estimated worth and market value of the property which is consistent with the view of Jayne and Skerratt (2003) as stated in (Sayce et al., 2010) that besides market value factors, there are other reasons which are very significant in the investment decision of sustainable buildings such as ethical and social motivation factors.

Germany, which is more advanced in its environmental movement, has recognised sustainability as a key environmental factor; building owners would have difficulty leasing their properties if environmental measures were not taken into consideration. In terms of rental rate, the rents for green offices were about 2% higher than rents for comparable buildings within the same area (Eichholtz, Kok, & Quigley, 2010).

According to the Executive Chairman of Rahim & Co group of companies in Malaysia, Datuk Abdul Rahim Rahman, the asking rental rate of Menara Worldwide, a GBI-certified office building at Jalan Bukit Bintang is RM6 psf which is comparable to the average rental rate of standard prime buildings in the city centre. Rental rates of existing prime office

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buildings within this area range from RM5.80 psf to RM7 psf. On the other hand, the asking rental rate of another GBI-certified office building, G Tower, which was completed in 2009 and also an MSC-status building is RM6.80 psf, about 13% higher than average rate of RM6 psf [6] (Rahim, 2011). In 2009, Shell People signed a 15-year lease at the rental rate of RM8.50 psf for office space at 348 Sentral, which is completed in 2012 consisting of 33-storey office tower and 21-storey serviced residence to be certified by LEED Gold Standards. Current rental rates of existing prime office buildings within this area range from RM6 psf to RM7 psf.

At present, the difference in rental rates in Malaysia between green and non-green commercial office buildings are rather small. The difference is more in the supply and demand factors within a specific location rather than green features factor (Rahim, 2011). These facts look even more serious when the valuation profession has been criticised for its deficiency in recognising the added value attributable to green buildings (Rahim, 2011 ; Lorenz et al., 2007). Valuers have been responsible for failing to produce financial justifications for investing in sustainability in commercial real estate (Armitage, Murugan, & Kato, 2011). Warren-Myers (2010) as sited in (Warren-myers, 2011) found that valuers currently have limited knowledge and are hesitant to recognise the benefits of sustainability.

Hence, it is important to valuers to undertake the assessment of sustainability accurately, especially if they are planning to incorporate it into valuation, because valuers have legal responsibilities to report accurately (API, 2007) as cited in (Warren-myers, 2011). Valuation professionals and their professional bodies also must deal with a new reality of changing value perceptions and systems among market participants due to the steadily growing interest in sustainability issues of various groups of property market performers (D. Lorenz & Lützkendorf, 2011). It is because if the market participants recognise additional benefits in the ownership of sustainable buildings, valuers have to consider this in assessing a property's market value (Schumann, 2010 ; Boyd, 2005 ; Lützkendorf & Lorenz, 2005 ; Reed & Wilkinson, 2007).

Francesco & Levy (2008) mention the key players in the investment environment can be identified as the owners of capital (or investors), the managers of capital (also referred to as fund managers) and the asset owners (or landlords). Due to the higher preliminary construction cost of sustainable building, with income-producing properties, those main players considers whether these costs will be offset by higher rents, improved occupancy, or savings in operating expenses associated with an energy-efficient building (Wiley, Benefield, & Johnson, 2008 ; RICS, 2009). At the end of the holding period, the property is expected to sell at a premium value based on an expected higher future cash flows (RICS, 2009).

Rational owners make decisions in the commercial property market based on the present worth of future income streams of the office properties (Emary, 1997) as quoted in (Warren-myers, 2011). From the developer's perspective, a major barrier to providing units with sustainable specifications is the perceived lack of impact on the capital value of the completed unit (Mansfield, 2009).

Since it was found that cost saving and higher property value benefits statistically influence respondents' willingness to invest in, or occupy green buildings, turning the sustainability support into realistic economic advocacy could ensure sustainability of sustainable real estate development (Addae-dapaah, Hiang, & Yen, 2009). Consequently, without the appreciation of green features in property valuation, the commercial investment communities are hesitant to invest in sustainability beyond the best practice (Warren-myers, 2011). This will bring the chaos within the market in the future. (Pivo, 2008) expressed a similar conclusion that investors will seek to include sustainable properties into their portfolios but only if a financial case for doing so can be verified.

In order to determine how sustainability impacts a building's value, it is vital that various sustainable attributes are recognised (Myers, Reed & Robinson, 2007) as commercial buildings represent a major mechanism that could allow environmental and social considerations to be more closely aligned with economic return (Lützkendorf & Lorenz, 2005 ; Dixon et al., 2008). However, the limited number of sustainable properties in the commercial real estate market in Malaysia may well be a result of inadequate information in identifying a relationship between sustainability and market value (Boyd, 2005 ; Warren Myers, 2012) and it can be seen as a barrier to the broader investment (Sayce and Sundberg, 2009) cited in (Warren Myers, 2012). Despite these difficulties, valuers must endeavour to evaluate the emerging impact of these sustainability factors as they will influence the decision of space occupiers with regard to deciding on the leasing options and on the acceptable level of rental Boyd (2005). R.Lowe & Chappell (2007) recognise that the relative infancy of sustainable buildings will require valuers to rely far more on their training and their acquired detailed understanding of the individual property being valued and its specific sustainability features rather than on a body of transactions and standard assumptions.

From the standpoint of valuation, the basic principle of all property valuation methods is comparison method and valuation input parameters are based on market-derived information (RICS, 2009). Thus, valuer must be able to compare and analyse the market based on current, comparable and reliable data (Warren-myers & Reed, 2010). However, due to the immaturity of the property market (Myers et al., 2007) and the lack of transaction data and rent levels (i.e. market evidence, sales data and lease transactions) for sustainable buildings, it may be difficult to evaluate its impact in the market place (Lützkendorf & Lorenz, 2005 ; Boyd, 2005 ; RICS, 2009 ; Warren, 2010).

Even though (D. Lorenz & Lützkendorf, 2008) in their research recognised the difficulty in establishing a quantifiable link, they believed that highlighting the sight of Gilbertson and Preston (2005) as cited in (Sayce et al., 2010), the valuers should reconsider their role in order to better advise clients on the potential benefits of sustainable buildings. Therefore, it is important to note that the valuation need to account for sustainability attributes only to the extent to which these attributes impact the competitive position of property assets in the market place (Schumann, 2010).

On the other hand, although it is obvious that certain sustainable building attributes such as environment and social factors contribute positively to the value of property, it is very difficult to segregate these effects and determine its mutual interdependencies (Schumann, 2010). For instance, questions may arise as to what adjustments have to be made to the rental growth estimates for an office building with high thermal and acoustic comfort and with high quality indoor air indicating higher productivity and reduced absenteeism of workforce (Lützkendorf & Lorenz, 2005).

In the meantime, valuers need to know how to address sustainability impacts within the boundaries of the most probable market value definition. They also must know to what degree green features should (or should not) be valued (D. Lorenz & Lützkendorf, 2008). As yet, not every market believes green features increase the market value and it must be stressed that only aspects that have an impact on prices are reflected (Warren & Myers, 2009 ; Runde & Thoyre, 2010). No matter

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which valuation technique is used, it's essential that the appraiser understands whether the market values the green feature for which the appraiser is adjusting.

The market has identified that the environmental and social features of sustainable buildings such as improved productivity, wellbeing and occupational health and safety will have impact on building costs, operating and capital expenses as well as rental income (Boyd, 2005). However, the market acceptance is very limited on the impact of the environment and social features towards market value (Pengfei, 2011). The impact on building cost which can be measured directly is relatively easier to assess and the future operating and capital expenses can be estimated through life cycle costing exercises (Boyd, 2005). However, it is difficult to assess how much of the intangible benefits is actually passed on to the property owner and how to identify and separate the different sustainability attributes that influence the property's value (D. Lorenz & Lützkendorf, 2008 ; Schumann, 2010). This is consistent with the survey findings of (Boyd, 2005) which refers to the difficulty of assessing the productivity and health value components of sustainable buildings.

The above discussion suggests that further exploration is needed on the quantification of the intangible benefits (e.g. productivity improvement, enhanced reputation) and their impact on property value. It was because there is a large proportion of intangible value and externalities allied with sustainability which could not be totally reflected within the market value (Warren & Myers, 2009). Schumann (2010) and Boyd (2005) have suggested that the most appropriate way to evaluate intangible attributes is to find rent and sales comparable in the market place. However, to find rental and sales comparable for sustainable properties can be challenging for valuation professionals due to the paucity of comparable sales that exhibit sustainable features in Malaysia because it still in its infancy stage. Hence, it is difficult to quantify these intangible benefits and their impact on property value.

Although this study is not investigating the relationship between value and sustainability, there is an essential need for a study which identified and developed a weighting of the importance of sustainability attributes that are affecting the building's value (Hemphill, Mcgreal, & Berry, 2002). Thus, this paper discusses more on soft gain benefits as attributes of sustainable office building. It is important to identify which sustainable aspects of a commercial office building give impacts on property value. Even though the emphasis should be on the intangible attributes of sustainable commercial property, the tangible part needs to be considered as a benchmark of property value consideration too. The issues and literature related to sustainability in real estate are reviewed and the sustainable attributes of commercial property are collected and reported.

■2.0 SUSTAINABILITY IN REAL ESTATE

The significance of increasing the level of sustainability in the commercial real estate stock is vital for reducing the negative impact of the built environment throughout the building life cycle. It starts from design and construction, through the operational phase and to the end of the life cycle when deconstruction and recycling can be undertaken. There is a strong reason to shrink the carbon footprint of the construction sector as buildings are substantial greenhouse gas emitters which producing more greenhouse gases with the highest rank at 41%, compares to industry (31%) and transportation (20%). Accordingly, there is only one potential solution towards these issues which is to ensure that the design, construction and maintenance of the built environment are environmentally sustainable (Brown, Southworth & Stovall, 2005 ; Commission for Architecture and the Built Environment, 2007).

The aim of green buildings is to mitigate the environmental impact and also to provide better buildings and for this, there is a market and an enhanced value. Environmental concerns and social well-being are beginning to influence the property markets and the pricing of properties. Users and owners of properties have already begun to consider the benefits and risks connected with ownership and using sustainable buildings (Heralova, 2011).

It is essential to define sustainability first before adequately considering the impact of sustainability issues on property values (Sayce et al., 2010). Sustainability is to ensure that all businesses, public services, natural resources, the economy and communities have the capacity to continue in the future. According to the RICS research report, sustainability is "an end state in which all human activities can be maintained within the existing capacity of the planet". The concept of sustainability in the commercial property industry is being shaped and driven, as in most other industries, through the basic framework of sustainable development. In essence, the definition of sustainable buildings is attained through the definition of sustainable development and is continuing to evolve itself. There are a large number of definitions, however the most prominent and universal definition lies in the Brudtland Report (Brundtland, 1987) where environmental sustainable development is defined as "…development that meets the needs of the present without compromising the ability of future generations to meet their own needs". This internationally accepted definition has been in place since the early 1990s. Nevertheless, the term 'sustainability' has become popular more recently with the development of the triple bottom line of sustainable development evolved from these definitions. It involved the balancing of environmental protection with social and economic development (Myers et al., 2007).

Sustainable buildings can be viewed as a property with a range of features like more cost and energy efficient, functionally effective, profitable and marketable than conventional buildings. They also exhibit increased functionality, serviceability and adaptability as well as increased comfort and well-being of occupants while at the same time offering loss prevention benefits, risk reduction potential and decrease the impact on the environment throughout the building's entire life cycle (Kats, Alevantis, Berman, Mills, & Perlman, 2003 ; Heerwagen, Kampschroer, Powell, & Loftness, 2004 ; D. Lorenz & Lützkendorf, 2008). All of these which contribute to its impact on the triple bottom line: environmental, social and economic benefits (Sayce & Ellison, 2003).

For commercial property sector, aspects of sustainability that are becoming more common include accepting the link between property and social infrastructure, including the creation of a sense of place, contribution to social amenity and the inherent relationship between healthy workplaces and increased workforce productivity. Thus, sustainable commercial property buildings should maintain their place in the market and endure so that they attract good income without the need for major expenditure for upgrade or maintenance, or in the extreme case, demolition and replacement.

2.1 RUSSIAN-DOLL MODEL

Sustainability often perceived as based on the Triple Bottom Line (TBL) concept which focuses on social, economic and environment (Slaper & Hall, 2011). Kohler (1999) argues that this approach can be applied within the built environment,

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where economic sustainability refers to investment and maintenance costs, environmental sustainability refers to the protection of the ecosystem and usage of resources while social sustainability refers to human wellbeing/health issues. In the business case, it also can be argued that a sustainable real estate is not solely and exclusively economic and regardless of the various environmental and occupational benefits claimed (Mansfield, 2009).

The accepted models of sustainable development based on the Triple Bottom Line methodology was first developed by Elkington (1994) and also known as Three Pillar Model (Lützkendorf & Lorenz, 2005). It is shown in Figure 1.

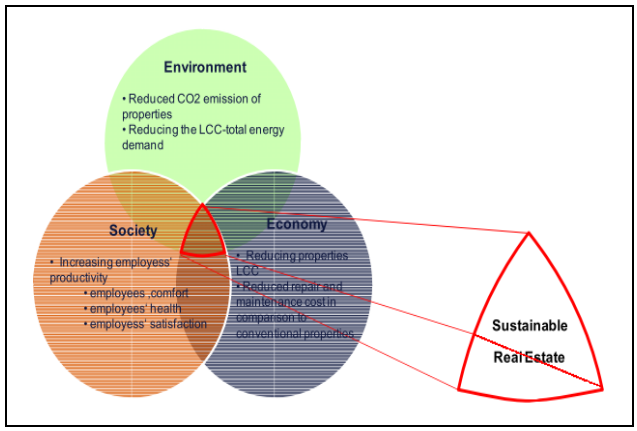

Figure 1 Three Pillars model of sustainable development
Source : Bienert et al., (2010)

In the Three Pillars model, sustainability is resolved at the centre and seen as the merging of economic enterprise and growth, as social well-being and as minimising the environmental impact. Boyd (2005) adds that sustainability "will balance economic and social performance measures with environmental protection". However, in reflecting the sustainability into property market value, this model is difficult to define and regulate and involves a lot of politicking between various interests (Schumann, 2010). With man-made environmental threats bearing down upon us, it becomes increasingly evident that the Three Pillar Model approach does not address the urgency of the situation. McGregor (2003) argues that the three pillars model does not implicitly recognise the environment limits of growth because the basis is a balancing mechanism, which effectively trades off economic growth against the other two pillars. Conversely, he claims that Russian Doll model implies that environment limits are an important constraining influence on economic growth. For that reason, this model has (since the Brundtland Report, 1987) been recognised as a "Weak Model" for sustainable development.

An alternative model called the "Strong Model" of sustainable development has emerged as a more-promising approach. It is expressed through a Russian-Doll model as shown in Figure 2.

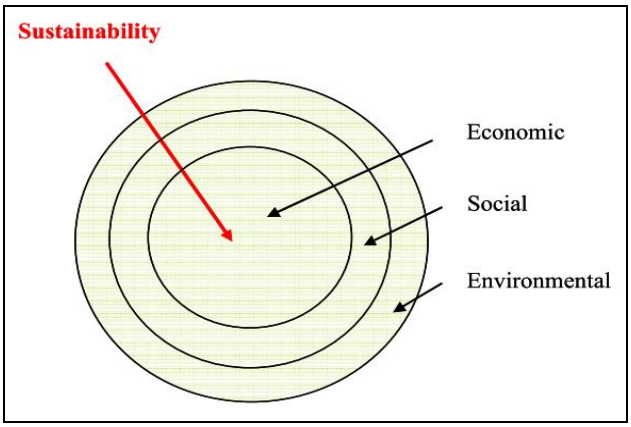

Figure 2 Russian-Doll model of sustainable development
Source : Schumann (2010) and Dixon et al. (2007)

The Russian-Doll model indicates environment, society and economy are viewed as three concentric circles: environment outermost, then society and economy at the centre. This alternative concept puts economic factors at the centre as the basis of wealth creation, driving the development engine, but at the same time is constrained by environmental and social considerations. In the Russian Dolls model, development is sustainable if it provides a good quality of life and stays within environmental limits. Thus, to better evaluate the economic effects within sustainable development, the environmental impacts on social actions must be considered. Current market practice appraises property assets in terms of their economic worth. Thus, a move to a triple bottom line approach requires that the environmental and social performances of a property are also reflected in any analysis. This enables social and environmental impacts to be explored whilst the fundamental of economic performance remains a fundamental part of the breakdown process (Ellison & Sayce, 2007). The inclusion of all three drivers of sustainability is central to any development of a potential property market response to sustainability.

Hence, in order to determine how sustainability impacts upon a building's value, it is important for the connection between the various sustainable attributes is established (Myers, Reed & Robinson, 2007) cited in (Mansfield, 2009) as commercial buildings represents a major mechanism that could allow environmental and social considerations to be more closely aligned with economic return (Lützkendorf & Lorenz, 2005 ; Dixon et al., 2008). Market had identified that the environmental and social features of sustainable buildings will impact on building costs, operating and capital expenses, as well as rental income (Boyd, 2005).

From the view point of investors, it is important for them to know whether the application of advancements in environmental and/or social factors will result in improved returns from the property. This accordance to the awareness of major companies of the changing business environment, evidenced by the enthusiastic embrace of non–economic performance self-reporting (Boyd & Kimmet, 2005). Runde & Thoyre (2010) also mentioned that not every green features is believed to increase the market value. This situation really corresponds more to Russian Doll model as building is sustainable if it provides a good quality of life and stays within environmental limits.

Consequently, with regards to the social and environment aspects, a question arises over which of these aspects drive the sustainability agenda which can in turn become a sign of economics performance. Therefore, as the valuers have legal

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responsibilities to report the property market accurately, it is important to note that the valuation needs to account for sustainability features only to the extent to which these features impact on the competitive position of property assets in the market-place (Schumann, 2010).

Therefore, through the abundance of research that has been conducted into the relationship between sustainability and market value in real estate, the purpose of this paper is to highlight the sustainability benefits as an attribute that influence the rental income increment. It also contributes to capital appreciation in the commercial office building's value as the sustainability are characterised by three pillars, which are the quality of the environment (both, internal and external), economic efficiency and economic constraints, and social and cultural context (Heralova, 2011).

2.2 BENEFITS OF INCORPORATING SUSTAINABILITY FEATURES IN OFFICE BUILDING

There are obvious economic, environmental and social benefits which advantage owners and occupiers of the sustainable building as it can provide extra loan security, additional income, higher rent, shorter absorption or sales duration, lower tenant churn or turnover, better rental stability, higher occupancy rates and reduced tenant inducements. These advantages can be expected to enhance investment returns, although the evidence about the impact on asset value is limited at present especially in Malaysia. Longer building life may in time also improve investment yields for green buildings.

2.2.1 ECONOMIC BENEFITS

The uptake of sustainability and sustainable practices in the buildings would be accelerated if investors understood the direct impact on the value of their property and portfolios. This was because the ownership of sustainable building results in multiple benefits to investors due to the various characteristics of such properties, ranging from lower operating costs to improved marketability, longer useful life spans, increased occupant productivity and well-being, as well as more stable cash-flows which in turn have economically quantifiable benefits (Kats et al., 2003 ; Addae-dapaah et al., 2009).

Eichholtz et al., (2010) revealed that there are at least four types of economic benefit as a result of investing in sustainable buildings: saving resources on energy, reducing water and waste disposal and reductions in other operating costs, saving against future energy price increases and reducing greenhouse gas emissions.

Bowman & Wills (2008) in their research mentioned that all the stakeholders in the real estate industry including investors, owners, managers and developers in Australia begin to consider the valuation of the green value of building as it is getting more and more important for lower building operating cost, ease of sale and rent, high tenant retention and higher occupancy rates.

A number of studies elsewhere show that the benefits of sustainability can be analysed back to tangible financial elements over sustainable buildings compared to non-certified buildings. It results in higher achievable rents and potentially increase the value of the property through reduced operating costs and risk, lower annual operating costs through more efficient asset management, further cost savings made through the sustainable building, increased occupant productivity and well-being, less absenteeism and less staff churn, marketing advantage, increased market value for asset, increased rents and higher relative investment returns (Lützkendorf & Lorenz, 2005 ; Cannon & Vyas, 2008 ; Addae-dapaah et al., 2009).

Fuerst & Mcallister (2011) conducted a study on rent and price effects of environmental and sustainable certification on US commercial real estate assets by using a hedonic regression analysis. The study indicates that rents for buildings with one Energy Star or a LEED Certificate are 11.8% higher than for non-certified buildings in the same metropolitan area. The result suggests that the higher rated the buildings are in terms of their environmental impact, the greater the rental premium for the building.

Miller, Spivey, & Florence (2008) based their study on Energy Star and LEED certified office buildings concluded from this that certified buildings perform better in terms of occupancy rate, rental level and sales price (per sq ft), over non-certified counterparts over the period of 2005-2007. Several similar studies indicate the same results which found a positive relationship between sustainability, rents and values (Eichholtz et al., 2010 ; Pivo & Fisher, 2009).

According to McCabe who serves as a panellist in Leadership Roundtable, which is moderated by Cannon & Vyas (2008), green buildings inherently have a lower risk of exposure to volatility in price and resource availability, which should logically result in lower capitalisation and discount rates.

RICS (2005) through their empirical study across Canada, the United Kingdom and the United States by conducting interviews with developers, owners and occupiers of sustainable buildings shows that sustainable buildings display higher asset value. This is because sustainable buildings command higher rents and prices, and cost less to operate and maintain. In utmost cases, sustainable buildings can secure tenants more quickly and enjoy lower tenant turnover as well as improving business productivity for occupants, affecting churn, renewals, inducements and fitting- out costs among others.

Green buildings command a premium by the advantage of the "award" which is granted by the rating systems and the affiliated brand name which investors use in marketing (Shiers, 2000; Holmes and Hudson, 2001; Jones Lang LaSalle, 2006; Reed and Wilkinson, 2006) cited in (Addae-dapaah et al., 2009). This makes the sustainable buildings attract higher profile tenants so as to command above-market rentals and thus capital values (Wasiluk, 2007) as cited in (Addae-dapaah et al., 2009). [58] also identified that energy efficiency and good indoor environmental quality in sustainable buildings translated into lower operating cost whilst causing the higher net operating income, capital value and productivity comparative to conventional buildings.

According to the research findings by (Kats et al., 2003 ; Paumgartten, 2003 ; LaSalle, 2006 ; Madew, 2006 ; Bowman & Wills, 2008), the financial benefits in sustainable building are as follows:

• Improved tenant retention	• Shorter letting-up periods
• Enhanced brand and marketing edge	• Mitigation against future regulatory impacts
• Increased market share	• Reduced vacancies
• Higher net revenue return	• Higher rents
• Reduced operating costs	• Potential for reduced depreciation and obsolescence
• Efficient reporting to stakeholders	• Corporate Social Responsibility (CSR)

Table 1 Financial benefits of sustainable building

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2.2.2 SOCIAL BENEFITS

The intangible benefits that are often cited on the social side appear to support a positive relation between green workplaces and worker satisfaction which can lead to higher staff retention, reduced absenteeism and better health (Heerwagen & Ph, 2000 ; Wetering & Wyatt, 2011; Too & Too, 2011). According to Office Tenant Survey by Colliers International, major companies perceived green buildings to offer not only cost savings through reduced energy consumption but also benefits such as increased productivity, decreased employee turnover, less sick leave and better morale (Too & Too, 2011). These positive benefits of green buildings are important justification for a firm's shift to a green workplace.

Miller & Buys (2008) reported that respondents in their research felt that to be located in a sustainable building would help staff morale and public perceptions. Through sustainability, companies can improve their competitive advantage in the recruitment and retention of talent. This was because health and comfort are becoming increasingly important with the growing concern about staff welfare. Paevere and Brown (2008) in (Addae-dapaah et al., 2009) stated that green building can be used as one of the employee benefits to attract and retain high quality workers.

Based on the close relation between workers' health and productivity, Taggard (2009) in (Gough, Davis, Collichio, & Hill, 2010) believed that through sponsored company wellness programs, employees can and will change their lifestyles if approached in the right way and when consistently reinforced through the process hence can be a two-fold advantage for the company. Firstly, worker productivity will improve in the future for the organisation. This advantage is supported by RICS (2005) and Singh, Syal, Grady, & Korkmaz (2010) who's mentioned that the most significant impacts of green building on occupants include increased occupant productivity and satisfaction. Secondly, company morale will increase due to the company's interest and success in the betterment of employees' health.

Kats et al. (2003) and Yudelson (2007) amongst others have demonstrated the links between indoor environment, occupier health and productivity as a function of the building environment. Consequently, by considering the link between the indoor environment and productivity, one begin to understand how the quality of the indoor environment can directly impact the financial performance of an organisation and increased value of buildings (Clements-croome & Baizhan, 2000).

For instance, Kats et al. (2003) in their study involving 33 green buildings found that the productivity benefits are between $37 and 55 US dollars per square foot as a result of less sick time and greater productivity from workers while the Property Council of Australia estimated productivity benefits from green buildings to be between 4 and 10 per cent. As mentioned by Kemmila and Lonnqvist (2003) in Gough et al. (2010), productivity is an important success factor for all organisations. Improvements in productivity have been recognised to have a major impact on many economic and social phenomena, e.g. economic growth and higher standard of living.

Dixon et al. (2008) revealed that improved indoor air quality helps to reduce the health and safety risks to occupants from Sick Building Syndrome (SBS). Better indoor air quality can also reduce asthma attacks and allergies by limiting the spread of contaminants and pathogens about 9%–20% (Fisk, 2002) in Addae-dapaah et al. (2009). Sick buildings with poor indoor air quality also have been linked to headaches, eye, nose, and throat irritation, dizziness and fatigue among occupants (Too & Too, 2011).

Rask and Kato (2008) in Armitage et al. (2011) found in their study based on 12 Green Star-rated buildings and their occupants, that 100 per cent of employers and employees alike thought that the green building was better than expected with all things considered and the majority of occupiers indicated that they would not like to relocate to a non-green office building. In the same study, they found that 80 per cent of business managers believed staff absenteeism had decreased since they moved into the new Green Star-rated building.

The common of prevailing research claims that green buildings produced happier and more productive workers (Fisk, 2000a ; Fisk, 2000b ; Singh et al., 2010). Whilst, the extensive research conducted by Kumar & Fisk (2002) and Heerwagen et al. (2004) recognised strong correlations between sustainable design features (e.g. natural lighting, thermal comfort, air quality, worker-controlled temperature and ventilation, etc.) and reduced illness symptoms, reduced absenteeism and significant increases in the measured productivity of the workforce.

2.2.3 ENVIRONMENTAL BENEFITS

Sustainable buildings offer a lower level of environmental risk by helping to minimise the environmental footprint of the real estate industry on the environment. A longer building life-cycle and a healthy environment for occupants are found to be some of the attributes commonly promoted as positive characteristics of a sustainable building (Ang & Wilkinson, 2008).

The rational use of natural resources and appropriate management of the building stock will contribute to saving limited resources, reduce energy consumption and improve environmental quality (Roper & Beard, 2006). According to Klassen and McLaughlin (1996) in Murphy (2002), firms that receiving environmental achievement awards realised subsequent increases in market value, while negative publicity was followed by decreases in market value. This is consistent with the green recognition concept rewarded to the building which attains multiple benefits from it.

There are plethora of previous studies which indicate the positive impacts of respectable environment and company performance. Hart & Ahuja (1996) found that pollution prevention and emissions reduction initiatives have positive impacts on a firm's return on assets (ROA), return on sales (ROS) and return on equity (ROE) within two years, and that firms with the highest initial emissions levels show the larges 'bottom-line' gains. Russo & Fouts (1997) correspondingly indicate the matching notion that a firm's return on assets (ROA) improves as a firm's environmental performance improves while White (1995) in Murphy (2002) determined that a portfolio of firms with good environmental reputations earned significantly greater returns than both a portfolio of firms with neutral environmental reputations and a portfolio of firms with bad reputations.

A correlation between the physical aspects of the office environment has been described by the various studies through some benefits of a physically, socially and pleasant office environment. For instance, reduction of sick leave and lower staff turnover, commitment of workers, enhancement of quality and improvement of productivity and efficiency (Atkin & Brooks (2009).

Many property organisations and tenants recognise that workplace productivity is linked directly or indirectly to the quality of the built environment. Building improvements such as better lighting or access to sufficient fresh air are likely to have a positive effect on productivity. It appears that small increases

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in productivity and staff retention can lead to significant monetary savings in tenants' workforce costs.

Loftness, Hartkopf, Gurtekin, Hansen, & Hitchcock (2003) in their study by applying the cost benefits analysis had identified that productivity gains may increase due to the factors of lighting (0.7-23%), quieter working conditions (1.8-19.8%), improved ventilation (0.6-7.4%) and workstation controls (0.2-3%) whilst Kats et al. (2003) reported that productivity gains from less sick time and greater worker productivity are primarily generated from better ventilation, lighting and general environment.

According to Carassus, Sanchez, & Ernest (2011), the sustainability expectations of the market in office buildings are heavily dependent on energy, CO_2 emissions and health. Indoor air quality affects the health and productivity of occupants, which has a higher impact on market rents for offices than other types of building. Thus, the risk premium is much reduced for offices with a global environmental performance (HQE, BREEAM, LEED).

Murphy (2002) concluded, based on an extensive literature review, the companies that score well according to objective environmental criteria deliver stronger financial returns than the overall market and companies that score poorly have weaker returns.

Workers' increased satisfaction, health and productivity in green buildings are mainly the result of better airflow, increased amounts of natural light and views, use of less-toxic building materials and furnishings, reduction of glare, increased thermal comfort, satisfying noise levels and individual controllability of systems (www.gbca. org.au). Wilkinson, Reed, & Jailani (2011) pinpointed that thermal comfort and lighting are the main attributes linked to workers' increased productivity and satisfaction in green buildings.

Haynes (2007) in (Gough et al., 2010)[66] proposes that office productivity can be linked to the physical office environment through office layout and office comfort. It can also be linked to the behavioural environment, which is likely to have a greater impact on office productivity. Haynes (2007) established a model to represent the concept of office productivity with the dimensions of both the physical and behavioural environment. His model used seven distinct components to represent office productivity as follows:

1. Distraction (interruptions, crowding, noise, privacy, overall atmosphere)
2. Environmental services (ventilation, heating, natural lighting, artificial lighting)
3. Office layout (personal storage, general storage, work area, desk, overall office layout, position of colleagues, circulation space
4. Interaction (social interaction, work interaction, physical security, creative physical environment)
5. Designated areas (informal meeting areas, formal meeting areas, quiet areas)
6. Comfort (decor, cleanliness, overall comfort)
7. Informal interaction points (position of equipment, refreshment areas)

According to the findings from an extensive literature review on the factors affecting the value of sustainable office building, the benefits of sustainable office building attributes with the specific indicators is reflected in the higher value of the property; highlighted and summarised with regard to the Russian-Doll model in Figure 3.

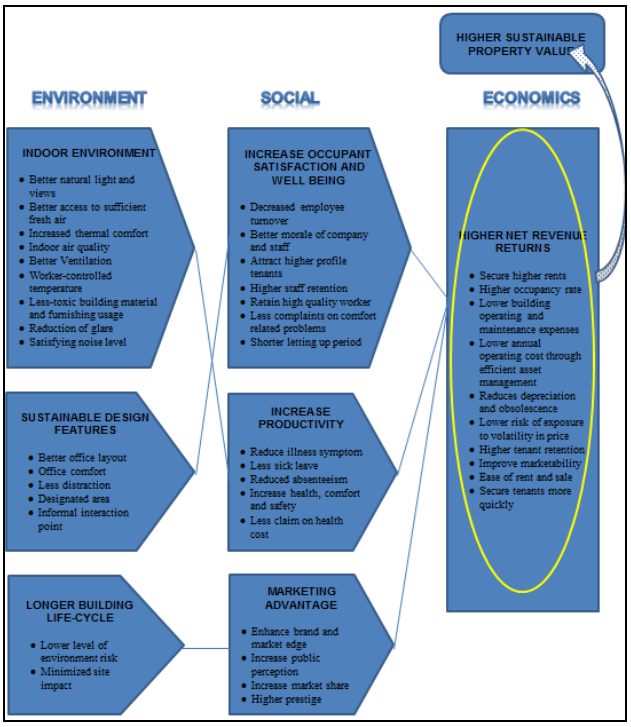

Figure 3 Sustainable office building attributes
Source : Author, 2013

Based on Figure 3, the factors and their various attributes under environment and social aspect is segregated into three avenues which resulting economic effects in the centre as the basis of wealth creation. The obvious economic aspects of green commercial building impacting the value of property are anticipated through the factor of rental growth with the assumption there is a direct relationship between rent and occupier's costs. Any reduction in occupier costs will increase the amount available for rent achieved through lower building operating and maintenance expenses, lower annual operating cost through efficient asset management, secure higher rents, higher occupancy rate and also lower the risk of exposure to the volatility in the property price and resource availability. The depreciation factor is commonly used by valuers to reflect refurbishment costs with reduced depreciation and obsolescence while the lower risk of exposure to volatility in price may directly impact the cash flow factor. As awareness of green factors increases within the property investment and occupier communities, properties that perform poorly under specific sustainability criteria may take longer to sell than better performing assets within their class.

The potential value of green buildings is generally attributed to attractiveness for occupiers due to the environmental aspect which brings an impact to the social action according to Concentric Ring model, and hence impacting the economic aspect. There are various attributes that contributes t0wards an environmental aspect of a property. These are better office layout, office comfort, less distraction, designated area, informal interaction point, accessibility (location quality), waste management, water management, less pollution, energy efficiency, functionality, flexibility and adaptability and also quality of building services. All these attributes directly affects the social action such as decreased employee turnover, better morale of company and staff, attraction of higher profile tenants, higher staff retention, retaining high quality worker,

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lesser complaints on comfort related problems, shorter letting up period, reduced illness symptom, lesser sick leave, reduced absenteeism, increased health, comfort and safety, lesser claim on health cost, enhanced brand and market edge, increased public perception, increased market share and attaining higher prestige.

3.0 SUSTAINABILITY AND MARKET VALUE

It is important to notice the effect of sustainability on property value as sustainability becomes increasingly prominent in the world today. As climate change and the concept of sustainability becomes increasingly more prominent, the need to accurately determine the impact of sustainability on the market value is required if we want green building continue to increase in the market (Myers et al., 2007 ; Moran, 2010).

The connection between sustainability and its impact upon a building's market value is increasingly important to the investment community. Investors and occupiers need to know the extent to which sustainability is impacting property worth if they are to respond effectively to sustainability issues (Sayce & Ellison, 2003). This will require an analysis of how the market value is determined for commercial office buildings.

'Market value' is defined by the International Valuation Standards Committee (IVSC) as "the estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arms' length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without compulsion" (IVSC, 2005). Rational investors and developers make judgments in the office property market based on the current worth of future income streams of the office buildings (Emary, 2005) cited in Myers et al. (2007).

Sustainable buildings are mostly more resistant to obsolescence and the service could be cheaper which offer higher quality of life, hence increase the owner's image. This can be reflected in higher market value of sustainable buildings in comparison with conventional buildings (Heralova, 2011). This is reliable with Boyd (2005) which stated that sustainability features will not negatively impact a property's performance but would more likely have a positive influence.

There were numerous researches that have been conducted which addressed the question of whether sustainable buildings are worth more. The research undertaken by RICS (2005) through RICS Green Value investigation project has shown the significance of characteristics or benefit of sustainable building resulting in increased rents and prices, reduced tenant churn, reduced operating and maintenance costs and significant improvements in occupier health and productivity.

Sayce & Ellison (2003) together with the Kingston University have developed an appraisal model that allows integrating sustainability issues into calculations of value. They have recognized a set of different sustainable criteria in connection with the use of the traditional cash flow approach to assess the value of sustainable properties. They adjust key variables (rental growth, depreciation, risk premium and cash flow) for the various sustainability criteria and assess the value of each property using standard valuation factors. Their finding is that the incorporation of the weighted sustainability criteria reduces the value of any property that fails to meet sustainable criteria thus proving that sustainable building generates the higher value due to the sustainability criteria than conventional building.

A study undertaken by Robinson (2005) investigated the increased worth of an office building included an additional income factor obtained through reduced employee expenses, like absenteeism and increased productivity. Boyd (2005) in his paper states '…the rent currently being paid relates to the existing level of sustainability of the building. If the building had a higher level of sustainability the rental level may be higher'. Therefore it could arguably be suggested that the "less sustainable" building is correctly valued by the market and that a "more sustainable" building would have a higher value. Robinson (2005) who also undertook an investment valuation approach to evaluate the impact of sustainability on property value indicated that sustainability increased the net residual value of the property. With refer to Moran (2010) review study on the demand of sustainable building, concluded that the higher demand of green buildings resulted in an increase net income through the factors of higher rents, lower vacancies, lower operating expenses. Hence, the value of the green building is responding accordingly.

From the standpoint of valuation, it is well known that the value of a property is affected by the situation in the relevant market segment, the supply and the demand for a type of property, stability or vice versa, market volatility, the competitive environment, expectations and anticipated changes, trends, types and size of risk, economic, social, demographic and physical effects. All relevant factors should be analysed and evaluated with regard to the purpose of appraisal (Heralova, 2011).

4.0 SUSTAINABILITY FACTORS AFFECTING COMMERCIAL OFFICE BUILDING VALUE

Past research indicated the lack of ability to define sustainability with an accurate dollar amount. Although the market value of sustainability is hard to assess, market value is not the only value that sustainability can add to a building. As property market players are aware, sustainability also offers values that positively affect health, efficiency and productivity. These sustainable features result in monetary savings, thus increasing the property value (Moran, 2010). Analysis made by Robinson (2005) which focuses on the occupier perspective verified that in terms of worth, sustainable buildings can produce higher values or benefits.

The apparent financial benefit of sustainable buildings is the saving in energy cost, repairs and maintenance costs and waste reduction leading to lower operating expenses. The financial benefits of energy savings and waste reduction can be measured fairly precisely by using the energy performance certificate which specifies the total energy-related operating costs. A tenant with a net lease who rents space in a sustainable commercial building, with associated savings in operating costs, may be willing to pay a higher rent per square meter if the tenant can identify long-term savings.

Apart from the above mentioned savings, there are a number of intangible benefits, which cannot be described through the change of construction or user costs. The RICS (2005) case study exhibits that the largest single area of value from green buildings lies in the soft gains that can be difficult to value with conventional accounting methods. An example of a soft gain is healthier employees with fewer absences and better productivity due to an improved interior environmental quality such as better air quality and lighting. That kind of building may provide a company (tenant) with a cost advantage thus meeting its corporate responsibility targets and improving its standing with investors and customers. The benefits to the tenant than may lead to reduced risk of an unoccupied building for the

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investor and the tenant may be willing to pay a higher net rent (Schumann, 2010).

There might be a positive image advantage for tenants due to the fact that leasing space in a sustainable property may send a sign that the tenant is socially responsible. An organisation's approach to CSR may affect its judgment about occupying a sustainable building, because of perceived benefits to reputation, health and productivity of employees, or impacts on the environment or society. Study by Eichholtz et al. (2010) on the American real estate sector found that companies within the mining and construction sector, public administration and organisations employing higher levels of human capital are more likely to lease a green office to comply with the company's CSR policy. The study also indicates that it is the right thing to do to reap the benefits of a superior indoor climate (which could have a positive impact on the employment productivity and well-being). Increased wellness among company's employees is essential as salary costs constitute the overall largest share of a company's total costs [Woods, 1989 cited in Armitage et al. (2011)].

This can in sequence, affect the perceived value of a commercial building. It could be argued that a company with a transparent CSR policy would find greater acceptance in broader society, which in turn may be converted to higher demand by prospective shareholders. Accordingly, tenants may be willing to pay a higher rent which leads to the reduction on the vacancy rate of the sustainable building. Orlitzky & Benjamin (2001) report the relation between corporate social performance and risk, and argue that the better a firm's social reputation, the lower the total market risk. Furthermore, Eichholtz et al. (2010) highlight that if this relationship also applies to the real estate sector, developing sustainable buildings may result in lower cost of capital and higher property values, even if higher rents are not achievable in sustainable properties.

Marketing benefit is another advantage for sustainable buildings (Kimmet, 2009 ; Schumann, 2010 ; Moran, 2010). It is more of an indirect form of value to the owner. This advantage results in a decreased time on the market, which leads to cost savings from additional mortgage payments. Sustainability delivers an opportunity to market the sustainable building as distinguishing from competing buildings from an investor's perspective or promote the sustainable lease as benefiting the tenant's image. An occupant's decision to rent space in a building may depend on a property's certification. This advantage can have an impact on the demand of buildings and secured better rental accordingly due to higher occupancy rates (RICS, 2005).

Sustainable buildings should, have a longer economic life due to less depreciation and lower volatility in market value due to less environmental and marketability risk which logically result in lower capitalization and discount rates (Cannon & Vyas, 2008). Sustainability features have the ability, to varying degrees, to slow depreciation and obsolescence (especially physical, functional and/or economic obsolescence) in a commercial building over the long term. This leads to reduced risk premiums.

Benefits to tenants/occupiers may also be explicit when a commercial building is located closer to the labour market, resulting in environmental effects such as transport cost savings and reduced smog. Furthermore, a building may require lower "embodied" energy due to the use of local construction materials instead of imported materials. These benefits are difficult to measure accurately but they may be attributes that stakeholders can identify and be willing to pay more for.

Sustainable buildings thus may also have influence on the following property specific risks summarised by Schumann (2010) as follows :

- reduced vacancy risk due to higher attractiveness of the building from an occupier's perspective
- reduced risk of tariff changes for energy, water supply and disposal
- reduced appearance of Sick-Building Syndromes
- lower legislation and liability risk
- lower risk changes in the market

Well-designed, enduring and environmentally friendly buildings commonly referred to as 'green buildings', are not the sole expressions of sustainable property. They are a culmination of a process which must recognize and generate added value throughout the full property life cycle. Sustainable property also encompasses the property's physical and social interaction with its surroundings and the communities upon which it has an impact.

Boyd (2005) formed a model that effectively shades a current picture of how sustainability impacts upon a buildings' value from an overall point of view of investment value as shown in Figure 4.

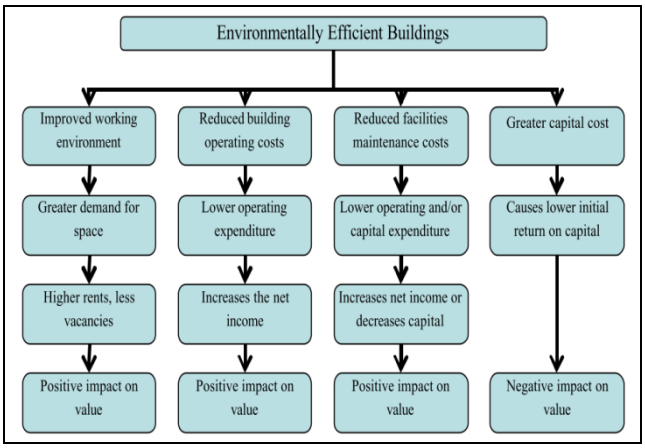

Figure 4 Value Impacts of Environmentally Efficient Buildings
Source : Boyd (2005)

Apart from the traditional direct monetary value of a property, other values can be associated with green buildings such as decreased operating costs and decreased cost losses. These other values, even though not directly calculated into the formal definition of market value increases the perception of value (Moran, 2010).

Building's user gains the significant value through decreased operating costs. The decrease in operating costs actually makes a property less expensive to operate over the long run. Even if the property is slightly more costly to the buyer, overtime they would be saving money that would have been spent on the operating costs. If a person is saving money on monthly operating expenses and their mortgage or rent remains the same, the value is increased by decreasing their monthly operating expenses.

Cost losses are another value adding characteristic of green buildings. Green buildings are presented to have increased occupant productivity and well-being, increased sales and decreased absenteeism. This is due to the increased indoor environmental quality. Robert Watson (1999) in Moran (2010)

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estimated that companies working in LEED buildings experience gains more than $170 million due to increased productivity that will increase to $2 billion by 2020. To the owner or renter of the building this means huge savings and profits and an increase in their property value.

■5.0 THE IMPORTANCE OF INTANGIBLE ATTRIBUTES TO SUSTAINABLE COMMERCIAL OFFICE BUILDING

Sustainability has the potential to affect a building's operation and the property's value through the creation of both real and intangible benefits (D. Lorenz & Lützkendorf, 2008 ; Schumann, 2010). Real benefits which are also recognised as direct cost savings are directly gained by the building owner through reduced initial construction cost, reduced energy consumption, lower maintenance requirements and deferred replacement (Kwong, 2004 ; Mansfield, 2009). This is the dominion of traditional life-cycle costing of the building. Meanwhile, indirect gains give benefits to the users of the building. An improved building environment enables people to be healthier, work and feel better about themselves. Both the individual and organization will indirectly gain from a more sustainable environment (Kwong, 2004).

Indirect benefits of sustainability design address indoor air quality, thermal comfort, environmental control and day lighting. Most of these are related accordingly to the improvement in indoor environmental quality (IEQ). Even though these benefits are less quantifiable, yet could be more significant than the direct benefits in reflecting the business performance and property value Kwong (2004) and Morton, (2003) cited in Mansfield (2009).

D. Lorenz & Lützkendorf (2008) mentioned that investors should not only focus on the mere economic aspects of an investment but also follow ethical principles and take into account environmental and social aspects. This was because ignoring the environmental and social concerns within investment decision-making can be financially risky. Furthermore, there is inevitability for the investors to know whether the application of advancements in environmental and/or social factors will result in improved returns from their property.

The intangible aspects are matters that firms are considering more closely as there are links being identified between a corporate's real estate, its corporate identity and corporate values to its ability to attract skilled labours (Breslau, 2007) as cited in Mansfield (2009) and to grow the corporate brand. Additionally, the early findings of on-going research investigating the impact of sustainable space on employee health, productivity and job satisfaction are compelling. The public perceives that companies associated with sustainable real estate are modern, altruistic and dynamic (Canada Green Building Council, 2005) as cited in Mansfield (2009) which in turn may be powerful incentives to CRE executives to occupy them.

Figure 5 shows the relationship between intangible benefits of sustainability in building pre and post-adaption. Given that employee salary and on-costs equate to approximately 85% of a typical business, quantifying the levels of employee productivity, absenteeism and churn in sustainable buildings could have significant financial benefits to businesses. This is consistent with Clements-croome & Baizhan (2000) that mentioned owners and researchers argue that there are many benefits from sustainable buildings including increased productivity, less absenteeism and less churn rates than non-sustainable buildings.

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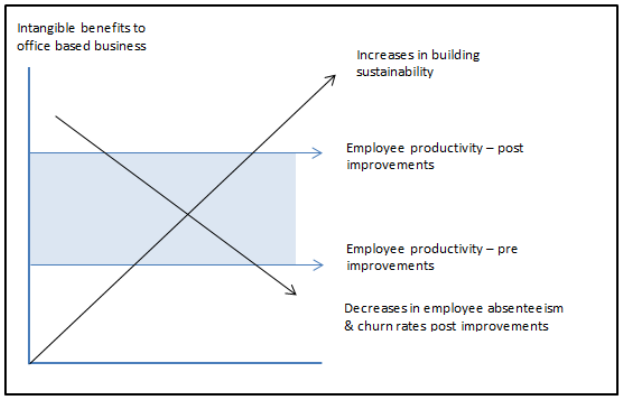

Figure 5 Relationship between Intangible Benefits of Sustainability in Building Pre and Post-adaption.
Source : Wilkinson, Reed, & Jailani, 2011

■6.0 CONCLUSION

The sustainable properties have a higher standard and added-value in comparison with conventional buildings. Hence, the market value of sustainable property is reasonably higher than conventional building (Heralova, 2011). The difference of value between sustainable property and non-sustainable property will increase as environmental and social sustainability policies are endorsed by all stakeholders. This effort is towards mitigating the impact of global warming and improving the working and living conditions in the built environment.

With sustainability becoming an increasing concern in office buildings, the value of such sustainable attributes is important to evaluate. Current valuation methods only take into account minimal cost benefits of sustainable office building. It is important to develop a more comprehensive system of measuring the value of sustainable office buildings with consideration of the soft gains. Furthermore, property value in monetary terms is not the only component of value that should be considered when evaluating a green building. The values of intangible benefits also add an implicit form of values and in the long run they may produce a significant savings which are important to acknowledge.

There is an essential need to study, identify and develop a means of weighting the importance of sustainability attributes. These attributes can affect the building's value and should be incorporated into the valuation exercise (Hemphill et al., 2002) as sustainability has a multi-faceted relationship with the various variables affecting the building's value. There is a large proportion of externalities allied with sustainability which may not be totally reflected within the market value (Warren & Myers, 2009). Therefore, it is essential that the recognition, identification and adoption of indicators of sustainability in the valuation method be explored (Babawale & Oyalowo, 2011). Thus, according to the findings from extensive literature review, the 42 attributes of sustainable office building with seven indicators under economics, social and environmental factors were highlighted and identified which affects the sustainable office building's value.

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