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# How green features of building impact financial benefits and building life cycle: evidence from Sri Lanka

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The International Valuation Standard Council (IVSC) recognizes the pivotal role of green buildings in achieving sustainability goals, leading them to introduce guidance and standards for valuing sustainability features. Sri Lanka embraces green constructions, necessitating valuers to acknowledge and incorporate green features into property valuation. This study examines the perspectives of professional valuers on recognition and the significance of economic benefits associated with green features throughout a building's life cycle and across property types. We collected data through a structured questionnaires and analyzed the data using ANOVA and Tukey HSD tests. Findings indicate that valuers possess a moderate level of awareness, and that financial benefits vary across different phases of a building's life cycle. *Management*, *energy and atmosphere*, and *indoor environmental quality* are essential for all property types. Continuous awareness programs are imperative to enhance valuers' understanding and maximize financial benefits.

*Keywords:* green building council, green features, rating system, property valuation, Sri Lanka

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## Introduction

As global environmental concerns continue escalating, integrating sustainable practices has become paramount across various sectors. In property valuation, the conventional approach has typically revolved around location, size, condition, and market demand. However, with the growing emphasis on environmental consciousness, there is an emerging need to recognize the significance of green features and value in property valuation (Hindagoda et al. 2020). The World Green Building Council defines a Green building as "a building that, in its design, construction or operation, reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment and which preserves precious natural resources and improve our quality of life" (WGBC 2016). Hence, considering green

features in property valuation cannot be overstated. Green features refer to sustainable properties' economic, social, and environmental benefits. These benefits include energy efficiency, water conservation, waste management, indoor air quality, and environmental impact reduction. By acknowledging and quantifying these elements, valuers can provide a more comprehensive and accurate assessment of a property's worth, aligning it with the evolving demands of a greener future (Tsai 2022).

In line with the global interest in green features, the International Valuation Standard Council (IVSC)—as the international body for developing guidance on property valuation—has introduced some professional advice and standards on sustainability features in property valuation. Property valuation professionals recognize the importance of green features. As a result, local valuation bodies are responsible for developing their guidelines following the standards. Sri Lanka implements property valuation practices through a legally recognized body, the Institute of Valuers Sri Lanka (IVSL), a recognized body of the IVSC. Thus, the green feature consideration in property valuation is embedded in the standards of the local body too.

Green value is defined as "the net additional value obtainable by a green building in the market compared to conventional or non-green properties" (Edvardsen et al. 2011). That is, green value refers to the economic, social, and environmental benefits of sustainable and environmentally friendly practices in the real estate sector. It goes beyond the conventional financial valuation of a property and considers the positive impacts on the environment, energy efficiency, resource conservation, and occupant well-being (Abdullah et al. 2018). Therefore, before estimating the green value, it is important to know what green features are and their contribution or significance to property values. One of the emerging trends in green features is the construction of green buildings and the accommodation of green features. With this transformation, there are many benefits expected (Liu et al. 2012). It contributes significantly to saving the operational cost of the building and reducing carbon emissions to the environment.

Sri Lanka, known for its breathtaking landscapes and diverse ecosystems, has experienced rapid urbanization and development in recent past years. This growth has brought about both opportunities and challenges for the real estate industry. Parallel to the development, there is a significant increase in the demand for real estate. As the demand for properties rises, the necessity to evaluate their environmental impact and sustainability also increases. Professional valuers in Sri Lanka play a crucial role in assessing property values and their perspectives on incorporating green features into the valuation process are of utmost significance.

Further, the Green Building Council of Sri Lanka (GBCSL) has taken numerous steps to promote green buildings. Corresponding to that, the GBCSL has introduced two rating systems: the "GreenSL® Rating System" and GreenSL® Labelling System. Under the GreenSL® Rating System, GBCSL rates the already built environment using eight green features, and under the GreenSL® Labelling System, GBCSL rates the products/materials used in the construction industry. Hence, the consideration of green features in property valuation becomes more significant (Ismail & Masjid 2014). Including green features in property valuation is necessary to capture a property's actual value accurately and encourage sustainable practices, increase financial benefits, and enhance environmental stewardship.

However, there is limited research in Sri Lanka (1) on the perceptions of professional valuers regarding green features and (2) about the importance of green features on the financial benefits during a life cycle of a building, and (3) whether there is a difference to the significance of green features according to property types. However, past studies examined only six green features (Shazmin et al. 2017) and five economic benefits of green features (Nurick et al. 2015).

The three objectives of the study are to (1) identify the awareness of green features introduced by GBSL and to determine impact of (2) green feature on financial benefits during building life cycle, and (3) green features across property types. The next section is devoted to literature review followed by methodology, analysis, results, discussion and conclusion.

## Literature Review

### Green Value

The "green value" is the net increased market value obtained by a green building over conventional or non-green properties (Edvardsen et al. 2011). It refers to the economic, social, and environmental benefits of sustainable and environmentally friendly practices in the real estate sector (Leskinen et al. 2020). It encompasses energy efficiency, resource conservation, indoor air quality, and environmental impact reduction. The consideration of green value in property valuation goes beyond traditional financial valuation methods, providing a more comprehensive assessment incorporating sustainable features' long-term advantages (Stasiak & Olbińska 2018). Although the Royal Institution of Chartered Surveyors (RICS) introduced the 'green value' concept in 2005, demonstrating whether sustainable development creates money (RICS 2009), the research on green value is still in its early stages. It is too early to draw generally accepted conclusions from these early efforts.

### Green Building

Different scholars and institutions give a wide range of definitions for green buildings. Green building is an endeavor to expand the sound effects of the built environment on nature and society while eliminating the negative ones (Kriss 2014). Green building means a structure with sustainability-related features and the process of constructing or remodelling a structure with sustainability-related features (APB Board 2015). The United States Environmental Protection Agency defines green building as the discipline of designing systems and using ecologically responsible and resource-efficient techniques in the life cycle of a building, from siting to design, construction, operation, maintenance, repair, and deconstruction (USEPA 2016). The World Green Building Council (WGBC)—a principal institution that promotes green building worldwide—defines a green building as a building that, through its design, construction, or operation, reduces or eliminates adverse impacts on climate and the natural environment while also having the potential to create positive effects, preserve precious natural resources and improve the quality of life (WGBC 2016). The development suggests that the earlier definitions also show the incorporation of sustainable features in their descriptions of green buildings.

### Green versus Efficiency

Green buildings mainly focus on the efficiency factor in design and development, energy, water, resource, and indoor environmental quality (Zafar 2019). However, green building can also include features that consider social responsibility (Schumann 2010). Hence, the most important fact on green building to be understood is, it is one of the drivers of principles of sustainability. Green buildings focus on the three main pillars of sustainability: economic growth, social progress, and environmental preservation (de Francesco & Levy 2008). Consequently, it is more than energy efficiency and it encompasses other features that are related to the sustainability concept. Hence, there is a clear distinction between "energy efficiency" and the term "green" as green building comprises water efficiency, sustainable site selection, indoor environmental quality, material selection, operations, maintenance, etc. Consequently, the energy-efficient building is not considered a green building as it only possesses less energy than other conventional buildings (APB 2015).

Green buildings reduce the maintenance cost of a property, operating expenses through energy cost reduction, repair cost, maintenance cost and waste costs (Wills & Bowman 2008). In 2005, RICS in the United Kingdom conducted a study that concluded that green buildings are not only good for the environment and provide healthier living and working environments, but they can also command higher rents and prices, attract tenants more quickly, reduce tenant turnover, and cost less to operate and maintain. In addition, previous research on the valuation of green buildings indicates that green office buildings command higher rental rates, rental growth, and operating cost savings advantages in the first year of operation compared to conventional buildings. It can also attain higher sale prices and effective

rental yield which increases investment return (Wills & Bowman 2008). Hence, it is vital for valuers to understand the distinction between green buildings and energy-efficient buildings because incorporating sustainability as one of the property features and reflecting the property's market value is the responsibility of a valuer (Lorenz & Lützkendorf 2011).

**Sustainability in Green Building Valuation**

Integration of sustainability began into property valuation began in 1996 (Harrison & Seiler 2011). However, with the rapid growth of green building constructions and developments worldwide, different approaches, frameworks, and methods have introduced (Sayce et al. 2009, RICS 2009). For example, Lorenz and Lützkendorf 2011 emphasize the following four arguments to identify a property's green value. (1) The valuer must provide data on transactions detected in the market and predicted market progress. (2) Valuation professionals are responsible for sustainable development in the real estate and construction sectors as part of the appraisal profession's professional ethics and social responsibilities. (3) Proper property valuation; i.e. continuing the appraisal as standard, can lead to correct capital allocation and deterioration of financial, natural, and social resources. (4) Lack of awareness on the part of some market participants about the relationship between the sustainable performance of buildings and property risk and financial performance leads to a misinterpretation of personal property assets, assuming that smart investors can take advantage of settlement investment opportunities by purchasing conventional property at "low cost".

However, buildings (including traditional) possess sustainability challenges in its valuation, as these buildings are risky for being obsolete fast and a shorter economic lifespan. Although there is no prescribed framework for the implication of sustainability factors in property valuation, incorporating sustainability principles into the policies of property owners and occupants is beneficial. Also, interpreting them in their property decisions should still be easier (Abdullah et al. 2018). When valuing green buildings, valuers should use appropriate discounts or capitalization rates; green buildings have a lower risk. All green features related to sustainability cannot be easily presented or translated into market value. An advanced valuation method should account for the green value (Hindagoda et al. 2020). As such, RICS offers professional guidance annually to identify and estimate the sustainability factors in property valuation.

The valuer must identify those green features in a property with competence to address those factors (RICS 2009). In order to maintain the credibility and the accuracy of the valuation report, the valuer should consider sustainability features in property valuation. The valuers also should recognize that buildings constructed by specific "green" standards are more valuable than buildings that do not comply with such standards (Guidry 2004). However, sustainability factors should be reflected in market value only when market participants favor sustainable properties (Wilhelm 2012). Because the market valuation would assess the most likely selling price, the assessment should include sustainable property features only to the extent that these affect the property's competitiveness. The valuer appraiser needs to (1) identify the impact of a new market force on sustainability and green building, and (2) understand new property features (green features) because every market believes that green features increase market value and should only reflect the factors that impact prices (Abdullah et al. 2018).

Therefore, the validity of sustainability in the assessment process depends on the assessor's capacity, specificity, and experience. However, there is a debate in the valuation industry whether it is mandatory for valuers to identify green features to satisfy clients' desire. Regardless, the valuer has to follow the RICS guidelines and provide accurate information about the property considering sustainability factors in property valuation.

**Perspectives of Valuers on Green Building Valuation**

Studies indicate that valuers do not consider green features in property valuation and that green building

constructions in the market are not prominent (Abdullah et al. 2018). In another study, valuers expect an increment in the market value due to the green factors and low yield due to the low-risk premium, lower operating costs compared to conventional buildings, higher rents due to a "green" rent premium, a lower vacancy rate in comparison to conventional buildings, and lower exit yield due to gentler depreciation. And most valuers do not believe that the lack of a standardized and conceptual approach to valuing green buildings and well-defined ethics related to valuation professionals as barriers to considering the green factor in property valuation (Jasimin & Ali 2015). Further, the awareness of values on sustainability in property valuation is at a moderate level. Moreover, discount rate, risk premium, less depreciation, longer lease terms and marketing costs have less impact on property valuation in terms of sustainability (Wilhelm 2012). Considering the findings from the valuers' perspectives, operating costs, rental growth, and market rent are the key benefits that impact property valuation.

## Theory

Our research is grounded in the principles of sustainable development and property valuation theories. Sustainable development, covering environmental, social, and economic factors, aims for long term prosperity. Green building, a key component of sustainable development, prioritizes resource efficiency, energy conservation, and eco-friendly construction methods and support with more financial benefits to a property (Ragheb et al. 2016). This symbiotic relationship positions green building as a catalyst for broader sustainable development goals. Thus, promoting green buildings among owners and investors is crucial to align with global efforts to mitigate environmental impact. Property valuation is recognized as an important economic strategy because property value is a greater motivation for investment. The theory underlined in property valuation is to estimate the benefits to be derived from a property. Thus, the more the benefits, the more the value will be. Green building valuation theory recognizes property value extends beyond finances, encompassing owning or investing benefits (Ismail & Majid 2014, Nurick et al. 2015). Identifying tangible and intangible benefits like energy savings followed by less operational cost and community well-being, our focus is to recognize the weightage given on these green building advantages, emphasizing how green features boost property values. Incorporating the sustainability features into property valuation aspects presents the role of valuation in promoting green constructions. Our dual theoretical approach advocates integrating green buildings to enhance property values and foster environmentally conscious real estate development. Proper property valuation is crucial for market functionality, financial systems, and national economies.

The three objectives of the study are to (1) identify the awareness of green features introduced by GBSL and to determine impact of (2) green feature on financial benefits during building life cycle, and (3) green features across property types.

## Methodology

### Operationalization of the Variables

Green Features: The GBCSL has introduced GreenSL® Rating System which rates the built environment using the eight major green features: (1) *management* (2) *sustainable sites* (3) *water efficiency* (4) *energy and atmosphere* (5) *materials and resources and waste management* (6) *indoor environment quality* (7) *innovations and design process* and (8) *social and cultural awareness*. Table 1 lists the green features.

Financial Benefits: Incorporation of green features in a building contributes financial benefits. For the purpose pf the study, we use the 7 financial benefits indicators recommended by Muldavin 2010: (i) *Lower operating costs,* (ii) *higher rent,* (iii) *lower vacancy rate,* (iv) *lower depreciation,* (v) *lower discount rate,* (vi) *higher yield* and (vii) *no impact*. The six financial benefits were applied to this research to identify the views of valuers on the importance of considering green features in a property valuation during the life cycle of

a building. In addition, one more feature as 'no impact' was also added to validate the perceptions given by the valuers.

Building Life Cycle: Impact of green features and sub features on a property evaluation differs according to the building life cycle (Boyd 2005). To accommodate the time line, we identified the three phases of a building life cycle: Phase I≤15 years; 15≤Phase II≤30 and, Phase III≥30. Figure 1 depicts the Building Life Cycle, the major eight green features and the six financial benefits.

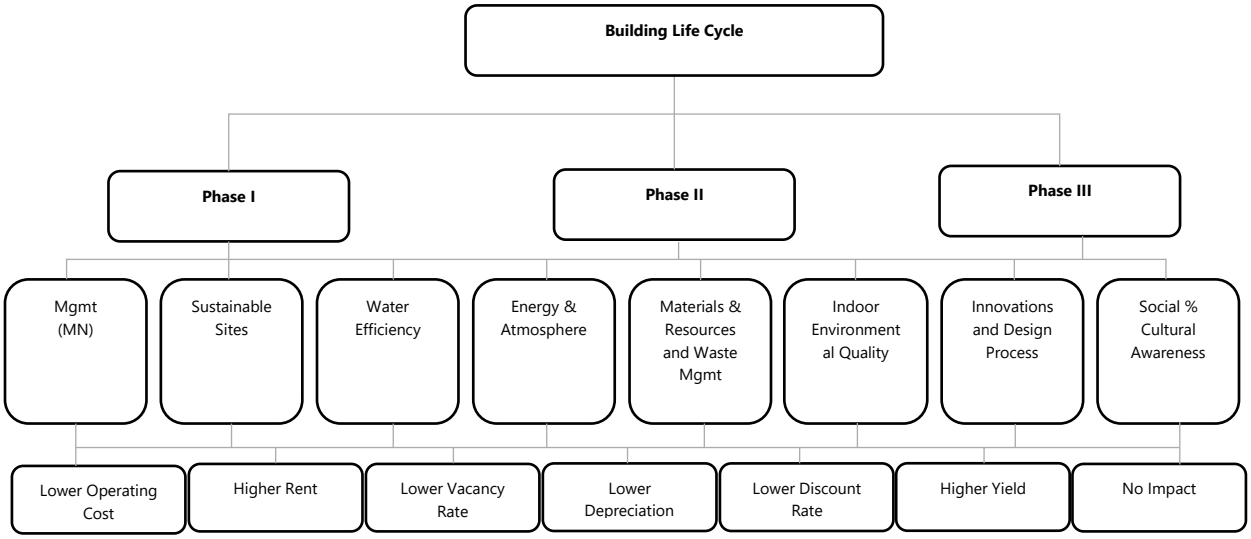


**Figure1. Building Life Cycle, the major eight green features and the six financial benefits.**
*Source: the authors*

**Data Collection and Sample Characteristics**

The sampling frame consists of all professional valuers in Sri Lanka from both private and public sectors. We used convenience-sampling method to collect data using a structured questionnaire with the 5-point Likert scale to measure importance of green features according to type of the property. The questionnaire structured with three distinct sections: (1) seven questions focusing respondent's profile and the awareness on green features (2) fifteen questions exploring the perspectives on the application of green features and the financial benefits during the life cycle (3) six questions for the perspectives on the impact of green features across the property types. The sample size was 60. The consent of each respondent to answer the questionnaire was obtained using the first question asking whether they agree or disagree to answer and it is noteworthy that all chosen professionals exhibited a positive response to the questionnaire. Consequently, the non-response rate in this research is zero. Respondents were the members of IVSL (78%), private sector (35%) and public sector (53%). The gender distribution is male (49%) and female (51%). Age over 40 constituted (51%).

**Analysis**

Based on the first objective the awareness on the green features in property valuation was collected through professionals' perspectives and analyzed using descriptive statistics. Secondly, it was tested the impact of green features on financial benefits during building life cycle and the professional`s perspectives on the effects of green features introduced by GBCSL and the financial benefits related to the building life cycle was gathered through 5-point Likert Scale and analyzed using descriptive statistics. The third objective is to determine the impact of green features across property types. This was tested on the three

types of properties, i.e. condominiums, larger commercial buildings, and offices as presented in Table 2. The perceptions were collected to each sub-green feature in a 5-point Likert Scale and analyzed using the mean values later were aggregated under each main green feature, as presented in Table 1. To confirm the impact across the property types, we used One-way ANOVA test, whereas to compare whether there is a difference in between groups across the three types of properties, we conducted the Post Hoc Test as the sample size is equal among the three groups. Table 2 reports ANOVA test results.

## Results

Our descriptive analysis results indicate that under the professionals' perspectives on the awareness of incorporating green features in property valuation, 78 percent and 17 percent of the respondent's has a moderate and low level of awareness respectively. About 90 percent of the respondents agreed that green features have an impact on the value of a building. 60 percent account green features as special facility or convenience of the property while 12 percent consider green features as scenic view that add value. However, 42 percent and only 15 percent of them agreed that there is a lack of guidance from the working organizations and professional organizations such as the RICS in terms of green features in property valuation respectively. Also, 57 percent of the respondents have agreed that there is a duty to inform their clients on sustainable benefits as they might influence the value stability and value development of the subject building.

Under the second objective of impact of green features on financial benefits during building life cycle, Table 1 presents the importance of financial benefits according to the green features. We find that sustainable site, *water efficiency,* and *innovation* and *design process* green features have a greater impact on the financial benefits in the Phase I during the life cycle of a building specially on higher rent (50%), lower operating cost (50%), lower discount rate (25%) and higher yield (48%). Environment management, and energy and atmosphere show a greater impact on financial benefits, especially on lower vacancy rate (40%) and lower operating cost (56%) in the phase II. Environment Management and Innovation and design process show an impact on financial benefits especially on lower operating cost (45% and 38%) in the Phase III the building life cycle.

**Table 1. Importance of Financial Benefits for Green Features**

| Features | *Building Life Cycle* | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Phase I (%) | | | | | | | Phase II (%) | | | | | | | Phase III (%) | | | | | | |
| | Financial Benefits | | | | | | | Financial Benefits | | | | | | | Financial Benefits | | | | | | |
| | i | ii | iii | iv | v | vi | vii | i | ii | iii | iv | v | vi | vii | i | ii | iii | iv | v | vi | vii |
| MN | 10 | 37 | 38 | 15 | 2 | 7 | 17 | 42 | 8 | 50 | 10 | 20 | 8 | 5 | **45** | 12 | 42 | 12 | 25 | 8 | 12 |
| SS | 17 | **50** | 42 | 5 | 3 | 7 | 5 | 22 | 43 | 50 | 5 | 0 | 8 | 10 | 18 | 5 | 35 | 8 | 5 | 8 | 25 |
| WE | **50** | 8 | 12 | 3 | 3 | **48** | 17 | 41 | 5 | 8 | 10 | 4 | 38 | 11 | 52 | 5 | 20 | 3 | 3 | 49 | 10 |
| EA | 37 | 29 | 16 | 11 | 8 | 24 | 13 | **56** | 36 | **40** | 11 | 13 | 27 | 10 | 36 | 25 | 31 | 7 | 8 | 14 | 17 |
| MR | 12 | 8 | 18 | 16 | 3 | 12 | 28 | 15 | 10 | 20 | 16 | 8 | 10 | 39 | 14 | 10 | 15 | 7 | 8 | 11 | 39 |
| IE | 16 | 12 | 19 | 3 | 18 | 10 | 5 | 29 | 11 | 21 | 3 | 8 | 10 | 0 | 28 | 10 | 25 | 8 | 3 | 6 | 0 |
| ID | 31 | 16 | 17 | 10 | **25** | 19 | 28 | 44 | 20 | 15 | 11 | 15 | 39 | 14 | **38** | 17 | 25 | 20 | 18 | 12 | 28 |
| SC | 8 | 10 | 15 | 0 | 10 | 5 | 56 | 5 | 3 | 11 | 0 | 12 | 3 | 50 | 3 | 7 | 14 | 0 | 15 | 5 | 48 |

*Source: the authors*

Note: MN=Management, SS= Sustainable sites, WE= Water efficiency, EA=Energy and atmosphere, MR=Material and resources, IE=Indoor environment quality, ID=Innovation and design process, SC=Social and cultural awareness.
FB=Financial benefits. i=Lower operating cost, ii=Higher rent, iii=Lower vacancy rate, iv=Lower depreciation, v=Lower discount rate, vi=Higher yield, and vii=No impact.
Building Life Cycle: Phase I≤15 years; 15≤Phase II≤30; and, Phase III≥30

With respect to impact of green feature on property types, Table 2 reveals that the green feature of *management* is a significant ($p$=.00) feature in the valuation of condominium (3.41), commercial building (2.16) and office building (2.86) depicting high significance in the valuation of condominium (3.41). In the green feature of *sustainable sites*, there is a significant ($p$=.00) difference in valuing between condominium (2.72) and commercial building (3.34), but there is no significant ($p$=.54) difference between condominium (2.72) and office building (2.60). Also, there is a significant difference ($p$=.00) in valuing commercial building (3.34) between condominium (2.72) and office building (2.6). In the green feature of *water efficiency*, there is no significant difference ($p$=.07) in valuing between condominium (3.64) and commercial building (3.43), condominium (3.64) and office building (3.42) ($p$=.06), commercial building (3.43) and office building (3.42) ($p$=.99). In the green feature of *energy* and *atmosphere*, there is a significant ($p$=.00) difference between condominium (3.72) and commercial building (2.58) and office building (2.14) ($p$=.00) and there is a significant ($p$=.00) difference between commercial building (2.58) and office building (2.14). In the green feature of *materials and resources and waste management*, there is no significant ($p$>.05) difference in the valuation between condominium (3.38) and commercial building (3.2), but there is a significant difference ($p$=.00) between condominium (3.38) and office building (2.91), and commercial building (3.20) and office building (2.91) ($p$=.00). The green feature of *indoor environmental quality* is a significant feature in the valuation of condominium (4.37) ($p$=.00), commercial building (3.41) ($p$=.00) and office building (2.91) ($p$=.00) depicting high significance in the valuation of condominium (4.37) ($p$=.00). The green feature of *innovations and design process* is not a significant feature in the valuation of all the three property types: between condominium (1.52) and commercial building (1.67) (p=.68), condominium (1.52) and office building (1.65) ($p$=.74) and between commercial building (1.67) and office building (1.65) ($p$=.99). Finally, the green feature of *social and cultural awareness* is not a significant feature in the valuation of all the three property types: between condominium (1.57) and commercial building (1.76) ($p$=.34), condominium (1.57) and office building (1.61) ($p$=.96) and between commercial building (1.76) and office building (1.61) ($p$=.48).

**Table 2. Importance of Green Features across Type of Property**

| Green Features | Mean values/Tukey HSD/$p$-value | | | F** | Sig. |
|---|---|---|---|---|---|
| | Condominium | Comm. Bldg. | Office Bldg. | | |
| Management | 3.41/.00/.00 | 2.16/.00/.00 | 2.86/.00/.00 | 105.01 | .00 |
| Sustainable Sites | 2.72/.00/.54 | 3.34/.00/.00 | 2.60/.54/.00 | 26.20 | .00 |
| Water Efficiency | 3.64/.07/.06 | 3.43/.07/.99 | 3.42/.06/.99 | 3.30 | .03 |
| Energy and Atmosphere | 3.72/.00/.00 | 2.58/.00/.00 | 2.14/.00/.00 | 87.50 | .00 |
| Materials and Resources | 3.38/.05/.00 | 3.20/.05/.00 | 2.91/.00/.00 | 17.70 | .00 |
| Indoor Environmental Quality | 4.37/.00/.00 | 3.41/.00/.00 | 2.45/.00/.00 | 91.60 | .00 |
| Innovations and Design Process | 1.52/.68/.74 | 1.67/.68/.99 | 1.65/.74/.99 | .41 | .66 |
| Social & Cultural Awareness | 1.57/.34/.96 | 1.76/.34/.48 | 1.61/.96/.48 | 1.10 | .33 |

*Source: the authors*

*Note: The $p$ values for HSD Test, presented within the slashes, represents under the first column as the significance between Condominium and Commercial, and Condominium and Office Building, respectively. The second column represents the significance of Commercial Building between Condominium and Office Building and the significance of Office Building between Condominium & Commercial building respectively in the third column.

** ANOVA test results are depicted in the last two columns of Table 2

## Discussion

Our results indicate that the level of awareness of many of the respondents on green features in property

valuation is at a moderate level in Sri Lanka, which is consistent with the findings of past studies (Jasimin & Ali 2015, Wilhelm 2012). Thus, unawareness of green features in property valuation is a crucial feature among valuers. Further, half of respondents do not appear to consider the green features in property valuation due to the lack of proper guidance. Similar results were found in other countries mentioning that most of the valuers do not get a proper guideline to consider green features in property valuation (Skillington et al. 2022).

However, most respondents agree that the green features of a building have an impact on its value. Given the present situation in Sri Lanka, it is not peculiar considering other countries; various perspectives have been found in previous research. For example, Abdullah (2018) has found that most of the valuers in Malaysia did not believe that green features have an impact on its value. Most of the valuers in UK believed that the green features of a building have an impact on its value (Wilhelm 2012). Further, some valuers in South Africa have stated that the value of the green-certified buildings is greater than the non-green certified buildings (Nurick et al. 2015). Hence, though the world assessment varies, the valuers in Sri Lanka agree that the green features of a building have an impact on its value and property valuation.

The study finds that the impact of green features on property valuation is greater in the middle phase of the building than the first and last phase of the building life cycle. Further, the *operating cost* is the most affected valuation variable by green features. Second, affected valuation variable is "lower vacancy rate". A similar result has been discovered in the researches done by (Halburd & Elain 2015).

In summary, our study reveals that *environment management, sustainable sites, water efficiency, energy and atmosphere, materials and resources, materials and resources and innovation and design process* are the green features which have greater impact. The materials and the design of the green buildings reduce the costs of operating, costs of repair, maintenance and replacement of materials which ultimately increases the net operating income impacting the property valuation. The same result was discovered in this study as well. Hence, we support that the green features incorporated into building designs and construction Impact on the financial benefits during the building life cycle.

The study reveals that green features of *management*, *sustainable site*, *energy and atmosphere*, *materials and resources and waste management* and *indoor environment quality* are significant in valuation of all three property types. Also, Green Building Council of Australia indicates that energy efficiency is the key green feature that impacts commercial properties in Australia. As per the results, there is no significant difference in the valuation of all three property types in terms of *water efficiency, innovations and design process* and *social and cultural awareness*. However, it was found that energy efficiency, water efficiency, and innovations have significant impact on valuation of different property types (Ismail & Majid 2014). It was also found that *management* is the most important feature that contributes to rental depreciation for conventional office buildings, whereas the second important feature is energy efficiency (Rodi et al. 2022). So we support that the green features incorporated into building designs and construction Impact on the valuation across property types.

## Conclusion

There is a growing necessity to identify the green features in a building in property valuation as the value of the building depends on the opinion of the professional valuer. Valuers are in the opinion that incorporating green features in a building enhances more financial benefits which in turn increases the market value of a property. The results of the study find that although professional valuers need to consider green features in property valuation, their awareness and knowledge of green features is at a moderate level, and most of the valuers do not consider green features in property valuation due to the lack of proper guidelines and framework. It was also identified that different green features are important at different phases of the life cycle of a building but mostly it is important at Phase II. Further, the findings reveal that the importance of considering the green features in property valuation varies according to the

type of building, whereas management, sustainable site, energy and atmosphere, materials and resources and waste management and indoor environment quality are the main green features that have a greater impact on valuation aspect from the perspectives of valuers in Sri Lanka. This is because the market characteristics are different from property to property. The majority are highly important in the condominium properties. The findings of the study should be interpreted in light of the fact that we could contact only 60 valuers; however, we believe that the sample is representative of the populations as findings support previous findings, giving credence to the study. This study focuses only on the green features introduced by the GBCSL and does not consider other factors that are included in the concept of sustainability. But, those are not the only green features can be seen in green buildings and there may have another green features impacted on property valuation.

In sum, we conclude that environment management, sustainable sites, water efficiency, energy and atmosphere, materials and resources, and innovation and design process are the main green features that have a greater impact on valuation aspect from the perspectives of valuers in Sri Lanka. Future study could consider on constructing a framework as a guideline to consider green features in property valuation.

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