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Decisions by Key Office Building Stakeholders to Build or Retrofit Green in Toronto's Urban Core

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Abstract: The environmental impact of greenhouse gas emissions from buildings—especially in global cities such as Toronto—is well documented. Green mitigation of new and existing buildings has also been researched. Few studies, however, have focused on the decision to build or retrofit green. Are key stakeholders in Toronto's office building sector aligning their decisions to achieve sustainable environmental goals? Do they support LEED certification regardless of the impact on market valuation? Are tenants willing to pay higher rents in LEED office buildings? The study first obtained data on 16 LEED and 52 conventional buildings to determine if LEED certification has a significant impact on net asking rent. Pearson correlation and linear regression analysis did not find LEED certification to be statistically significant in explaining the variance in net asking rent (market value). The second stage included interviews with senior executives engaged in Toronto's office building sector. The expert informants were asked to assess if financial drivers are the deciding factor in decisions to pursue LEED certification. They concurred that LEED certification is not the primary driver. It is a combination of numerous factors that overall have an impact on a firm's financial bottom line.

Keywords: green buildings; LEED certification; real estate development process; drivers of sustainability



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1. Introduction

Global warming and climate change are well-established facts that call for mitigation and adaptation actions in the building sector [1]. Some argue that the potential to address climate change by green technology is underestimated. Action is needed both in new construction and deep energy retrofits in existing buildings [2–5]. It is especially important in Canada where the building sector accounts for 12 percent of overall greenhouse gas (GHG) emissions [6]. Toronto's GHG emissions emitted in 2018 from residential, commercial and industrial buildings totaled 55 percent or 8.9 megatonnes, an increase of 13 percent compared to 2017 [7]. Toronto's City Council declared a climate emergency on October 2, 2019, joining a global call to recognize the urgency of the climate crisis. To underscore this, the City Council adopted a stronger emissions reduction target for Toronto—net zero by 2050 or sooner [7].

The federal and provincial governments in Canada have also acted on climate change by setting carbon mitigation targets for the year 2030 based on the Paris Climate Agreement and the Pan-Canadian Framework. In December 2020 Ottawa announced plans to raise the federal carbon tax to Canadian dollar (CAD) 170 a tonne by 2030, up from the current

CAD 30 a tonne [8]. An increase in the carbon tax acts as a negative reinforcement to encourage energy efficiency improvements; this has proved to be successful in mitigating GHG emission [2]. The objective of these efforts is to link the efficiency and productivity of buildings to the goal of achieving the 2030 United Nations Sustainable Development Goals (SDGs) [9]. This will not be easy to achieve and leadership matters.

Interest in sustainable and ecologically benign green office buildings has gained momentum over the past 20 years in Canada. One indicator is the growth in LEED—Leadership in Energy and Environmental Design—certified projects in Canada. LEED is one of the most widely recognized green building rating systems in the world. Prior to 2005 Canada had less than 200 buildings registered with LEED [10]. According to the Canada Green Building Council (CaGBC) by the end of 2018 Canada had a cumulative total of 3254 LEED certified projects with a total of 46.81 million gross square meters [11]. The significant increase in projects indicates a strong commitment to buildings that promote a healthier, more sustainable future. In order for Canada to continue its position as a leader in the adoption of green commercial construction projects it is important to understand the factors that contribute to this growth in sustainable building development. Toronto—Canada's largest office market—is an ideal test site for understanding this issue.

The purpose of this study is to address the question: Why are key office building stakeholders—real estate developers, institutional investors and owner landlords—deciding to build or retrofit green in Toronto's urban core? The particular interest for this study is to determine (1) the impact of LEED certification on office building market rent valuation, and (2) to identify the financial and non-financial factors that influence the initial decision to build or retrofit green.

2. Conceptual Framework for the Study

Green construction and retrofitting of buildings will play an important role in reversing climate change. This calls for mitigation and adaptation actions at the local, national, regional and global level. This exploratory study looks at the decisions by key stakeholders to build or retrofit office buildings green in Toronto's prime commercial office market. The framework for this study is developed from an examination of contextual studies and process theories drawn from a number of different disciplines that address this decision.

2.1. Place-Based Context

Contextual place-based studies on the construction and retrofitting of commercial office buildings adds to our global understanding for green advocacy. More importantly, location specific research can lead to developing and implementing a range of approaches for green intervention that result in sustainable development strategies. This study helps to fill the gap in research on cities such as Toronto (central urban population 2.9 m/total greater Toronto area population 6.8 m) that have successfully transitioned to a post-industrialised economy. These cities have a large population and central business district (CBD) urban core with a prime commercial office building market.

Based on a review of studies that focus specifically on green office buildings in large urban settings, there are three studies that provide insight. These studies looked at buildings in Singapore, Milan and Hong Kong. The 2009 study of 400 users of commercial buildings in the city-state of Singapore (5.7 m) found that office occupants were reluctant to invest in and/or occupy a green building (GB) [12]. One wonders how these respondents would respond twelve years later. The study of Mangialardo et al. [13] published in 2018 analysed 55 office building projects in Milan (3.1 m), Italy's most flourishing real estate market. Their findings indicate that rent premiums and higher prices are generated in LEED certified properties. Additionally, green properties are absorbed by the market in less than half the time when compared to those without green certification [14]. The 2019 study that looked at the city of Hong Kong (7.5 m) by Wadu Mesthrige and Chan [15] found that developer and investor stakeholders were uncertain and sceptical about the financial rewards of green certification. The quantitative study tested the factual basis for these

inhibitors with the actions of the real estate market. A hedonic-model of rent (market) and building attributes including green certification was used to assess their sample of 67 green and non-green prime office buildings. The findings suggest that: green certified office space added value to the property; and tenants were willing to pay 10.9% higher rent than for comparable non-green space. These studies help to support the view that green real estate development can and does make a significant contribution to the economic, environmental and social sustainability of global cities such as Milan, Hong Kong and Toronto.

On the issue of place/location, the Simons et al. [16] study on the US city of Cleveland (1.8 m) points to the reality that land in a city's urban core is finite and most of it already has existing buildings. When a footprint in the urban core comes on the market a number of developers with competing uses vie for the property. Each developer's plan will have varying degrees of positive and negative environmental, social and economic impact. The point is that a green building project involves numerous stakeholders and potentially incompatible concerns.

2.2. Decision Process to Build Green

Our review of relevant literature included studies that examined the decision process in a green commercial office building project. Graaskamp [17] raises the question: 'Who participates in the decision process?' The answer is very few at the initial decision point, compared to the large number of persons who are involved in designing, selecting systems, engineering and government approval. This issue is investigated by Goubran and Cucuzzella [18]. Their Province of Québec study (2019) looked at how localised projects could integrate the 2030 SDGs Agenda into the building design team process. This team activity is moved downstream from the upstream process where the critical decision is made to build green. This initiating decision is an outcome of a logical process [19].

One widely used theoretical process approach for examining decision making at the micro-level is the entrepreneurial process model suggested by Timmons et al. [20]. It provides a framework for understanding the dynamics of aligning the three critical components—opportunity, resources and team—that will drive the decision. This approach would view the key stakeholders (real estate developers) as acting such as serial entrepreneurs who approach each new project as though it is the formation of a new venture.

Another widely used process framework for understanding decision-making is to look at a firm's business model as dynamic that is adjusting, balancing and evolving over time. As Teece notes:

'The essence of a business model is in defining the manner by which the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit. It thus reflects management's hypothesis about what customers want, how they want it, and how the enterprise can organize to best meet those needs, get paid for doing so, and make a profit' [21].

A firm's business model is reflected in the key internal stakeholders' decisions and motivations related to green office buildings [22]. Traditional business models view value creation in a one direction flow as opposed to business models that focus on sustainability [23]. A change to a firm's business model is not an insignificant change in the assumptions that guide the organization in shaping its value proposition to clients, balancing resources in its ecosystem and generates cash flow [20]. The business model canvas [24] is especially useful for analysis of the decisions that are made at the firm level, but it requires access to considerable internal information. Joyce and Paquin's [25] triple layered (economic, environmental and social) business model canvas study is a particularly useful approach.

However, Comin et al. [26] note that access to sufficient information is needed. Few sustainable business models presented in the literature offer explicit ways of operationalizing the proposed models. Pregnenella and Battistella's [23] bibliographic review presents an overarching theoretical framework for mapping the research streams of business models for sustainability. Based on their findings they concluded that the sustainability role in a

company business model is still undefined in the research. This points to the benefit of an exploratory study that focuses on the decision process.

Perhaps the best approach is to look at the field of real estate that has its own practitioner devised and applied process model. It takes into consideration that: (1) the metrics of each urban core real estate project are unique; and (2) the development process is often more political than economic. In a free market economy, each new building project is an opportunity for society and key stakeholders to negotiate, debate and reconsider who pays, who benefits, who risks and who has standing to participate in the decision process [17]. Whether conventional or green, most real estate development processes are similar. Zaccack [27] presents it conceptually as a six-stage process: idea inception, feasibility, pre-construction, construction, operation and measure. The first three stages of the process are directly applicable to this study. During the idea inception stage, the developer will do initial studies on the market, design, zoning, and financing to understand the possibilities available. This stage is typically conducted internally (developer, owner and investor) and rarely includes outside consultants. During the feasibility stage, external consultants are hired beginning with an architect and other professionals including LEED. Working with the firm they develop a feasibility study including conceptual designs, market studies, permit documents and information needed to decide whether to pursue the opportunity and implement the project. During the pre-construction stage, the developer has fully engaged a development team and an array of outside consultants to get the project ready for construction. The team will undertake value engineering and redesigning to ensure the project is within budget. A major part of this process includes obtaining public approval from governing agencies or departments and making public announcements and presentations to win support of the larger community. Marketing of office space will start early in this stage.

In summary, the three conceptual models of the development process—entrepreneurial, business and real estate—could be condensed into a single conceptual framework but the real estate development process model provides the most suitable framework for this specific study. The real estate development process starts with the idea inception stage and identifies those that will be directly involved in the decision to build green. It also indicates those who are not directly involved in the initiating decision. The real estate development process, however, does not provide details on the financial and non-financial influences that impact or drive the initiating decision to build green.

2.3. Financial Factors

From a contextual place-based perspective, urban core office buildings are often referred to as prime properties based on the value that accrues to them because of their location. Based on geography, the bid rent theory holds that the price and demand for real estate declines as the distance from the CBD increases [28]. This rent gradient is the marginal cost of distance. Simons et al. [16] note that the rent gradient of a property significantly influences the competitive actions of real estate developers. Making decisions about prime property in the CBD rent gradient are high-stakes decisions.

Most studies start with the idea that the major influence on key stakeholders when making the decision to build green will be financial. This focus is evident from the number of empirical studies trying to assess the financial benefits of green buildings. These studies include research in the US [29]; US and Canada [30]; Singapore [31]; and England [32]. Wadu Mesthrige and Chan [15] looked at prime commercial office buildings in Hong Kong used a hedonic-model of rent and building attributes. A US study conducted in 2018 by Fuerst et al. [33] also used a hedonic model. They looked at the price investors paid in sealed bid auctions for foreclosed commercial real estate. Their study analyzed price paid (dependent variable) and various other building attributes including the classification of the building as eco-certified (independent variables). A significant finding was that in the Class A office market segment, eco-certified space (LEED and/or Energy Star) had become part of the Class A office sector and not a niche submarket. LEED building certification

had become a factor in the property's market valuation, defined as premium rent [34]. This calculation shapes the investment decisions of developers, investors and owner landlords in determining the degree to that they will pursue specific green building attributes. The question then is, has LEED become a major hedonic factor such as location, design, or age that define a commercial office building as 'investment quality'? [29].

2.4. Non-Financial Factors

There is an equally important body of empirical research that examines various categories of drivers that influence key stakeholders when making the decision to build green. This research stream was developed in 2010 by Falkenbach et al. [35] It is based on a comprehensive review of literature. They compiled a list of drivers that impacted decisions by real estate investors. They identified 10 drivers or benefits from environmentally sustainable buildings. Darko et al. [36] expanded this perspective from real estate investors to a number of stakeholders involved in building construction. This 2017 study identified 64 drivers from a review of 42 selected empirical studies. These were conceptualized in a theoretical framework consisting of five major classifications of green building decision drivers or inhibitors—corporate level, external level, property level, project level, and individual level. Darko et al.'s [36] expansion to include the perspective of more stakeholders follows Zhang's [37] 2015 review of literature. She looked at green development to identify the various stakeholders involved throughout the real estate development process.

Other studies have expanded this investigation of drivers. Whitney et al. [38] looked at the issue of energy usage in Canadian commercial office buildings. Taking a commercial property investor's perspective, a 2020 study by Leskinen et al. [39] reviewed 70 empirical studies that looked at the impact of green certification on discounted cash flow and value. They link these financial factors to property level drivers influencing sustainable building adoption that was suggested by Falkenbach et al. [35] and Darko et al. [36]. A relevant factor that Leskinen et al. [39] looked at is the growing interest in responsible property investing by real estate companies and real estate investment trusts (REIT). These investors are shifting from an asset level approach to a portfolio level approach. In summary, all of the studies that looked at drivers/influencers consider the financial and non-financial factors that shape the decisions of real estate developers, institutional investors and owner landlords.

There are several other conceptual areas of research on decision making that are worth noting. The first is the emerging area of game theory-based analysis of decision making for building or retrofitting green, especially in relation to state provided incentives and/or regulation of developers [40–42]. A second is the expanding area grounded in human behavior theories from psychology and sociology. Another approach deals with ethics and social responsibility discussed in the 2010 research of Eichholtz et al. [43]. They view their study as the first credible evidence on the economic value of a building's certification as green from the perspective of impersonal market transactions rather than engineering estimates. In addition to the direct effects of energy savings, they found that there were intangible effects of green certification that also have a role in determining the market value of green buildings in the marketplace. It is not just rental rates and construction cost per square foot. It can also be 'doing good' at the individual level and corporate social responsibility level. This raises the issue: is it actually 'doing good' or is it self-reporting that they are 'intending to do good'? Research in the field of consumer behavior has long recognized the gap between an individual's intention and behavior [44]. Zhang et al. [45] surveyed the driver mechanisms influencing 156 developers on their action to do redevelopment of industrial brownfields in China. The study concluded that altruistic motives (awareness of responsibility) can close the gap between intention and behavior. An awareness of consequences did not. They reasoned that real estate developers as a group are primarily seeking profit. The fact that green redevelopment could have positive influences on others was not a significant factor to voluntarily engage in green redevelopment.

Contextually, our exploratory study is the first empirical research that examines the impact of LEED certification on property values in Toronto's prime commercial office

market. Conceptually, it uses the real estate development process to identify the point that the decision to build green is initiated and the key stakeholders who make this decision. Finally, in a very general way, it seeks to identify financial and non-financial drivers that influence the decision to build or retrofit green. The importance of our research study is that it comes at a critical time for researchers, stakeholders and policy makers if they are to increase efforts to address the issues of global warming and climate change.

3. Decision to Build or Retrofit Green

It is increasingly recognized that real estate development solutions to support SDGs and GHG emission standards will require fundamental changes with regard to how business is conducted. The diversity and creativity in office building architecture suggests an industry open to change. A major part of the pre-construction stage of the real estate development process centers on engagement with government departments and the public suggesting transparency. However, as noted, the decision of whether to build/retrofit green is made by a few stakeholders early in a project's development process [30]. This is supported in the literature [38,39]. The key stakeholders are real estate developers, institutional investors and owner landlords. This suggests that it is a rather closed process.

3.1. Decision to Use LEED Certification

LEED certification in Canada is under the Canada Green Building Council (CaGBC). New and major commercial renovations come under LEED Canada NC (new construction) rating system. LEED Canada EB: O&M (existing building: operation and maintenance) provides an entry point into LEED certification for owner landlords of existing buildings [46]. In 2018 Canada placed third in number and square footage of LEED projects worldwide—after the United States and China [12]. Commenting on these efforts Thomas Mueller President and CEO of CaGBC notes:

‘Canada’s building industry is demonstrating how business and sustainability can go hand in hand . . . owners and developers are increasingly making LEED an integral part of doing business spurring demand for innovative products . . . in the process creating jobs and positive bottom lines’ [47].

Will these GB efforts be new office construction or retrofitting of existing buildings? Compared to other global financial centers, Toronto’s downtown CBD office space has an extremely low vacancy rate with demand outpacing supply. Downtown Toronto’s office vacancy rate fluctuated between one and two percent with an inventory of 91.3 million square feet prior to the Covid-19 pandemic. The asking rent (exclusive of premiums) at the start of the third quarter 2020 was CAD 39.02 per square foot. New office projects that are underway will add 9.4 million square feet. It is estimated that 10 to 15 new projects are anticipated in the next decade [48–50]. The greatest potential for addressing Toronto’s growing concerns on GHG emissions, energy-efficiency and operating costs will be created by the greening of existing non-green office buildings and renovating early GBs with older and less efficient green technologies [3–5]. In order for Canada to continue its position in LEED projects, especially in Toronto (Canada’s largest commercial real estate market), key stakeholders will need to lead this effort. It is important to understand: the role that key office building stakeholders have in making decisions to pursue a green agenda, and the factors that contribute to their decisions of whether to go green.

3.2. Decision-Making by Key Stakeholders

3.2.1. Real Estate Developers

Real estate developers have a key role in the real estate development process. They bring together all of the many stakeholders involved in this process—from idea inception to construction. It is during this process that decisions are made to build or retrofit green. In the absence of a government mandate, real estate developers are the ones who match market demand with the supply of green or conventional office buildings. Although environmental certification protocols such as LEED define, measure and evaluate various levels of green

in buildings it is the developer who balances a project's economic, environmental and social aspects. This is evident in the fact that real estate developers begin to market new office space well in advance of construction. Their goal is full occupancy, or a very high percentage of occupancy attained before construction is completed. Mangialardo et al.'s [13] study of office buildings in Milan found that LEED certified properties generated rent premiums and higher prices and they were leased in half the time compared non-green.

When a GB is selected for a new construction project it is critical to first determine which LEED protocols are achievable and incorporate them at an early stage in the project. At that point, these features can be integrated, effectively supporting each other throughout the project [51]. Sustainable buildings and efficiency measures are vital to both developer and tenants but the potential for efficiency and savings is not the same to both. The actual performance of a GB is inevitably connected to the behavior of its occupants—how they actually use energy and resources. These factors can significantly reduce a green building's positive environmental impact [52].

Real estate developers and institutional investors are understandably uncertain about how far to pursue environmental investments because much of the economic rationale for the development of GBs—especially energy costs—is based on site or sub-market specific evidence [29]. It is also difficult for developers to determine what the most cost-effective methods of greening their projects are because buildings can be sources of environmental degradation during their construction, operation, and demolition that requires a life-cycle or cradle-to-grave assessment [53,54].

3.2.2. Institutional Investors

The actions of institutional equity investors in commercial office building development can exercise considerable influence on how sustainable property-related issues are addressed. In 2000, Bartlett and Howard [55] challenged the traditional focus of GB decisions on cost benefit and value methods that indicated GBs cost 5% to 15% more to build. They suggested that decision-makers should consider the whole life cost and environmental impact of buildings. Ten years later, Chegut et al. [56] looked at income performance of the UK's green commercial real estate sector. They reported that GBs received 21% higher rental and 26% higher sales transaction prices both per net square meter, but they added a caveat—that rental contract features (lease term, rent free period, days on the market, etc.) decrease these rental premiums about 5%. Zhang et al.'s [57] "Turning green into gold" offers a comprehensive review of the financial side of 'going green'. They distinguish between profitability from a building life cycle perspective by major market participants and economic viability perspective by developers and occupants. Hsieh et al. [58] shifts the discussion from owner's benefits to an examination of capital markets including institutional investors and building green. Their findings indicate that the cost of equity capital for the development of LEED certification green buildings was lower. Prior studies have reported higher cost of equity capital during the development period [59].

While there is no question that financial considerations play a primary role in the decisions of institutional investors, it is also true that over the past twenty years non-economic consideration have gained a place in the equation and in corporate public reporting [60]. The institutional investors partnering with real estate developers in commercial office buildings in Toronto include pension, endowment and mutual funds; insurance companies; and commercial banks. All of them have had to adjust to corporate social responsibility policies; socially responsible investment; and environmental, social and governance (ESG) sustainable investing. There is a direct link between investor's financial metrics, the efficiency and productivity of building projects and achieving the 2030 United Nations Agenda and its 17 SDGs [9]. Globally, society is expecting the public and private sectors to take the lead in adopting sustainable practices that address critical ESG issues.

Nevertheless, while some studies have found evidence on social and corporate responsibility with no strings attached—simply doing good [43]—much of the evidence points to financial motives [51]. In order to persuade developers, investors, and owners of the

benefits of eco-investments, the payoff from investment in green buildings needs to be identified. Early studies found the strongest drivers of responsible property investing to be traditional considerations such as opportunities to outperform the market [61]. Evidence continues to emerge that LEED labelled buildings achieve a higher financial return than conventional buildings in terms of rental and sales prices. Overall, a green premium is considered to be a potential driver of investment in labelled buildings [62]. To date, however, it is still unclear to what extent the adoption of green practices and expectation for financial performance are changing business models from traditional to sustainable, especially when applied to specific geographic markets [63].

3.2.3. Owner Landlords

Many commercial building owners are single occupant firms that contract for the construction of an office building on land they have purchased. This type of owner constructs a LEED certifiable building to house its employees and bear its corporate name. In this study the focus is on a separate category of owners—owner landlords—that seek an equity investment in an office building producing rental income from commercial tenants and leaseholders. Qui et al.'s [64] study of commercial buildings in the state of New York found that if the buildings were owner occupied there was less likelihood of green certification. Real estate developers and owner landlords are very often one and the same, but owner landlords can also be institutional investors such as pension funds that participate in the building's entire life cycle. Once constructed they usually contract with a property management firm or real estate agency to handle marketing, tenant relations and manage building operations.

LEED building characteristics are a factor in property market valuation (premium rents) and the operating cost for owner landlords. These calculations shape the investment decisions of developers, investors and owner landlords in determining the degree that they will pursue specific green building attributes. The main traditional hedonic factors that define a commercial office building as 'investment quality' are: location; condition; design; quantity and quality of floor space; amenities and service; adaptability to the requirements of a tenant; and infrastructure, proximity to transportation and communications [29]. In assessing the contributing value of these attributes, professional property appraisers such as the Royal Institute of Chartered Surveyors will search for and analyze comparable market data. Owner landlord decisions based on sustainability factors will focus on the 'green benefits' that accrue over the life of the building. Therefore, in the real estate development process, owner landlords will primarily be interested in the GB cost/benefit analysis [65] pre-construction phase or architect's design phase [66]. Once the developer hires an architect and consultants on sustainability, engineering, geotechnical, landscape, interior, general contractor, legal, etc., the work can begin. Operationally, building information modelling (BIM) tools are used to assess the buildings environmental sustainability that can include a life cycle assessment (LCA) and lifecycle costing (LCC) analysis [67].

Beginning in the pre-construction phase the developer will begin to market space in the new building, providing the first 'market test'. Tenants that choose to lease/rent space in a LEED certified office building usually sign a triple net lease. The tenants receive the direct benefits from operating cost reduction in LEED certified office space. The developers, investors or owner landlords receive the benefit of higher lease rates paid by tenants [68]. If tenants are willing to pay a higher rate it is an indication that the market is responding favorably to LEED certified office space. When determining to what extent investors and developers should bear additional costs—in efforts to design and construct more socially responsible property—it is important to keep in mind that market supply and demand factors dictate the rental level. Ultimately it is the business productivity of tenants that dictates the tenant's ability to pay [69]. For investors, this means that it is important to consider the economic impact that green buildings have on tenants, including economic benefits such as reduced employee health care costs and sick leave as well as increased performance of employees [13].

Research conducted at Carnegie Mellon University for the US government found that costs associated with employees amounted to 78 percent of total costs. Costs linked directly to the building—rent, operations, maintenance, and office—made up only 9 percent [70]. Many of the cost/benefit studies conducted in the past have used these figures in attempts to estimate the economic gains that can be attained from improvements in the indoor environment offered by green buildings. Even with the best information available, there is still a high level of uncertainty with estimates on health and associated economic gains from improvements in the indoor environment. The largest source of uncertainty is the degree that these health effects could be reduced through practical changes in building design, operation, and maintenance [71]. To date, indoor environment quality of green offices studies report occupants' positive responses but have a lack of evaluating research on the performance and identification of individual indoor environment quality factors [72]. Such research would help tenants decide if they wanted to rent in a green building and would guide developers and owners in the decision to build green.

4. Research Methodology

4.1. Study Objectives

This exploratory study has two objectives. The first is to determine the impact of LEED certification on the market value (expressed as asking rent) for Toronto's CBD urban core office buildings. Studies have found that there is a premium for LEED-labeled buildings both in terms of rent and sales price [73,74]. The literature suggests that green certification creates a market premium for green labeled buildings. This in turn increases green certification adoption and green construction and retrofitting by key stakeholder decision makers [62]. In accordance with the market and dynamics of Toronto's office building real estate, the existence of green rent premiums could potentially drive the investment and development of new LEED-labeled buildings, as well as the green-retrofitting of the existing uncertified buildings [75].

The second objective of this study is to identify the factors that influence key stakeholders—real estate developers, institutional investors, and owner landlords—with regard to whether or not to seek LEED certification for their office buildings. This initial decision takes place during the idea inception stage of the real estate development process [17]. It is primarily an internal decision with only a few executive level personnel participating in the decision [27]. Both quantitative [13] and qualitative [39] research studies suggest that the decisions by most stakeholders are driven by financial factors. Research studies that examine corporate sustainability performance such as meeting 2030 UN SDGs or ESG targeted-REITs, however, indicate that non-financial factors are the primary drivers during the decision-making process [42].

Based on these objectives, two hypotheses are proposed. Hypothesis (H_1): LEED certification will have a significant positive factor in the asking rent (market value) of office buildings in Toronto's CBD urban core. Hypothesis (H_2): Financial drivers will be more influential than non-financial drivers in a key stakeholder's decision to pursue LEED certification.

The study's research design uses two stages. The first stage was designed to obtain quantitative data for a statistical analysis of specific tangible building variables in relationship to market asking rent valuation to test Hypothesis (H_1). The statistical data provides an analysis, answer and insight on the first hypothesis. The second stage consisted of interviews with experts in Toronto's real estate development sector. It provided qualitative data to test Hypothesis (H_2). The interview data offers clarification, explanation and answers to many of the issues addressed in this study.

4.2. Stage One Research Design

Empirical studies continue to find that most decisions on the adoption of LEED certification are primarily influenced by financial implications. Traditionally one of the major considerations is market valuation, expressed as the asking rent of office space per

square foot. This study uses an approach used by similar studies that were conducted in Milan [14] and Hong Kong [16]. These studies use a hedonic model in the form of an ordinary least squares (OLS) linear regression model based on a fixed effects approach to the attributes of commercial office property on rental price.

The independent variables that have been shown to be significant determinants on the dependent variable asking rent are presented in Table 1.

Table 1. Studies of hedonic factors impacting office rents.

Author	Region	Sample Size	Dependent Variable	Independent Variables Found to Be Significant
Clapp [76]	Los Angeles metropolitan area	105	Average 1974 asking rent	size, age, number of floors, internal parking, prestigious address, property tax, air quality, amount of office space within a two-block radius, distance by road to nearest motorway junction, average community time for employees
Hough and Kratz 1983 [77]	Chicago central business district	139	Average 1978 asking rent	existence of 'good' architecture, distance from CBD, public parking, age, size, number of floors, availability of conference facility
Cannaday and Kang 1984 [78]	Champaign- Urbana, Illinois	24	Average 1979–1980 asking rent	age, minimum lease term in years, crow fly distance to the CBD, crow fly distance to a shopping centre, average unit size, average number of units per floor
Brennan, Cannaday, and Colwell 1984 [79]	Chicago central business district	29	Actual transacted lease values (incorporating lease terms) within a building from 1980–1983	size of building, size of each unit, lease terms, loss factor (proportion of area rented but not possible to use), position within the building, location with respect to centre of CBD
Glascok, Jahanian, and Sirmans 1990 [80]	Baton Rouge, Louisiana	675	Asking rents of office units from 1985–1988	location, building type, size, the year in which the property was let
Mills 1992 [81]	Chicago	543	Asking rents and the discounted rent over the period of a 15-year lease	age, size, parking, internal restaurant, internal bank, location outside the CBD (but not subsectors within the CBD)
Dunse and Jones 1998 [82]	Glasgow, Scotland	477	Asking rents 1994–1995	size, age, location, air conditioning, acoustic tiling, carpeting cellular layout, double glazing, internal parking, raised floors, tea preparation area

Building location (theory of rent gradient [28]), age and size were the variables found to most consistently explain the variation in the dependent variable asking rent. Each study shows that a variety of building attributes related to rent are significant, but they appear significant on a less consistent basis than location, age and size, possibly because the value attributed to them is unique to the particular office market studied. Although previous studies provide insight on which combinations of variables have been proven significant in other markets the results are not necessarily transferable to the commercial office market in Toronto. Based on a review of the independent variables, in these studies we generated a list of principal determinants of rent for local market areas that could then be used to construct a model for downtown Toronto. Data from a quantitative analysis will be used to determine the variance in office rents and whether LEED certification is a significant independent variable accounting for variance in office rents in the CBD and northern business district of Toronto.

4.2.1. Data Collection, Sample and Variables

Data Collection. Information related to specific building variables for both LEED certified buildings and comparable non-LEED buildings was obtained from the Altus Group Altus InSite database, Canada Green Building Council and Toronto City Hall's property assessment database. The Toronto office market in 2016 included 1293 office buildings with about 160 million square feet of space, nearly three quarters of that is in the CBD. In addition, Toronto's downtown core is one that has the highest number of LEED certified buildings in Canada. This provided a sufficient sample size making it an ideal site for investigation [83].

Study Sample. Toronto's main office market has a total office inventory of 75.7 million square feet. The average gross rent is CAD 42.35 per square foot [84]. Gross rent is the

monthly rent charged to occupy an office space, calculated to include all operating costs (i.e., maintenance, taxes, utilities, etc.). Two geographic areas of Toronto's main office building market were selected for this study—the Downtown CBD and Northern Toronto (north part of the old Toronto district). Both of the areas were used. The comparison of two submarkets will provide for an accounting of various location characteristics that may impact the value of LEED in any given submarket but are not explicitly accounted for in this study [34]. CBD urban core office buildings in this study will refer to the area bounded by Bloor Street to the North, Lake Ontario to the south, the Don River to the East, and Bathurst Street to the West. Northern Toronto office buildings in this study fall outside of the CBD urban core. They are approximately 13 km North of 200 Bay Street and are within a 3.5 km radius of one another. For purposes of this study, 200 Bay Street is considered to be the center or rent gradient theory point with the most prestigious prime office area in Toronto. Additionally, when choosing the comparable office buildings for the study, only those properties selected were ones that had an area in excess of 30,000 square feet and had an owner landlord but were not owner-occupied (corporate headquarters or offices).

Initially a sample of 114 office buildings was obtained—24 LEED certified (Canada Green Building Council database) and 90 non-LEED comparable properties (Toronto City Hall's building database). The final sample—after being reduced because of study specifications and limitations related to data availability—provided 16 LEED certified buildings and 52 non-LEED certified comparable buildings. Geographically, the sample included 21 buildings from Northern Toronto (four LEED certified and 17 comparable buildings) and 47 buildings from Toronto's CBD (12 LEED certified and 35 comparable buildings). For each LEED building included in the study attempts were made to include three or more non-LEED certified but otherwise comparable office buildings (see Table 2).

Table 2. Sample of Toronto commercial office buildings.

Location	LEED Certified	Non-LEED	Totals
CBD Toronto	12	35	47
Northern Toronto	4	17	21
Totals	16	52	68

Study Variables. Eleven independent variables were selected and used in this study. Although this list is not exhaustive, the selection is consistent with the precedents of prior research (see Table 1). These eleven provide a comprehensive list of variables (independent variables) to be used in a hedonic regression analysis model in which the attribute of asking rent per square foot of an office space in a commercial office building is the dependent variable. This study uses asking rent as a proxy or measure for current market value. Attempts were made to obtain data related to actual transacted rents with a number of owner landlords, real estate brokers and research firms but those were unsuccessful—most did not want to disclose this information. Although concerns can be raised on the issue of using asking rents rather than actual transaction price this has been used in most studies. Dunse and Jones's [82] study of the office rental market in the city of Glasgow found initial asking rent and final transacted rent to have a correlation coefficient of 0.98, showing that the two variables are highly correlated. Oyedokun et. al. [34] cautioned that the academic hedonic regression models dealing with green rent premium studies need to guard against three things: missing variables; coefficients based on equilibrium assumptions during periods of market volatility; and distinguishing between a new and a green office premium when green offices represent a high proportion of new offices in a study.

Eleven building measurement factors were selected as independent variables. They were divided into five categories of attributes (see Table 3). The first is the attribute of green certification—indicated by whether a building is LEED certified. The second category focuses on a building's physical and structural attributes. This category included: age; total building office area, parking stalls per 1000 square feet of leasable office space; and BOMA metropolitan base definitions for three building Classes: A, B, or C [85]. The third

category is vacant office space at the time of the study—indicated by the direct percentage of building spaces available for lease from the landlord or as a sublease from existing tenants. The fourth category is based on a building’s common area size such as lounges, atrium, hallways, etc. It is measured by the total additional monthly rent per square foot that is charged to tenants above asking rent. This charge is the landlord’s costs for maintaining these areas. Total additional rent is also included due to its impact on the gross rent that tenants pay. The fifth category that impacts the variation in rent is the office building’s location (theory of rent gradient [28]). Due to the clustering of buildings in this study it was determined to calculate the distance of each building from Toronto’s CBD center point (200 Bay Street). This was used to define location. This Euclidian straight-line ‘as the crow flies’ distance approach was used to account for any variation in office rents related to building location—variance usually associated with a prestigious address. The address of 200 Bay Street is at the heart of Toronto’s business district, an area predominantly occupied by financial institutions and large professional practices. It also commands top rents for office space, providing justification for its use as the epicenter of the CBD in this study.

Table 3. Description of property attributes in the model.

Location	Variables and Abbreviation	Measure	Description	Expected LEED Correlation
Rental price	NET RENT	Continuous	Asking rent per square foot	+
Green certification	LEED	Dummy	LEED certified	1.0
	CLASS A	Dummy	Competes for premium users	+
	CLASS B	Dummy	Wide range of users, does not compete with Class A	-
Building’s physical structure	CLASS C	Dummy	Tenants require functional space	-
	OFFICE AREA	Continuous	Total building square footage	+
	PARKING	Continuous	Parking spots per 1000 square feet of leasable space	+
	AGE	Continuous	Age of building in years	-
Vacant office space	DIRECT	Continuous	% of building space available for lease from landlord at time of study	-
	SUBLET AVAILABLE	Continuous	% of building space available for lease from an existing tenant at time of study	-
Common area size	ADDITIONAL RENT	Continuous	Total additional charges (per square foot) over asking rent	+
Location	CROW FLY	Continuous	Euclidian distance from subject property to 200 Bay Street	-

4.2.2. Data Analysis

Data gathered in stage one was subjected to two techniques of statistical analysis. First, the generation of bivariate Pearson correlation coefficients (Pearson’s r) to statistically measure the strength and linear direction in paired dyadic relationships for all of the variables. A correlation matrix was produced from this paired relationship analysis revealing a range of values from strong negative (-0.931) relationships to strong positive ($+0.650$) relationships. The statistical significance of the correlation coefficients (r values) was measured by a two tailed test probability distribution for p -values at the 0.05 and 0.01 levels.

Second, in keeping with the approach used in a number of studies [86–89], an ordinary least squares (OLS) linear regression analysis was used. This analysis was used to develop a hedonic model that statistically accounts for the variance in office asking rents (the regressand) in relation to eleven office building attributes. Specifically, these findings will test Hypothesis (H_1)—LEED certification will be a significant positive factor in the asking rent (market value) of office buildings in Toronto’s CBD urban core.

4.3. Stage Two Research Design

After quantitative data was collected in the first stage of the research, qualitative data was obtained in the second stage. The method of collecting this information was one-on-one interviews with three executive-level experts. This was to obtain first-hand information on Toronto's office building sector, where it is on building green and where it is headed. This method of qualitative empirical research has wide acceptance in social science research [90]. Experts are considered knowledgeable on a particular subject. They are identified as experts by virtue of their knowledge, position, and status. As key informants, experts provide exclusive knowledge, relevant experience, and an executive perspective on the complexity of decision making involved in adoption of green initiatives such as LEED certification [88].

Several of Toronto's large and influential commercial real estate development firms were contacted and three executives agreed to be interviewed. Interviewee's statements were recorded, later transcribed for analysis and are included in the Appendix A. The credentials of the three executive-level experts were outstanding.

Interviewee 1: serves as Vice President for one of Canada's largest landlord developers, and in that role is responsible for the origination and execution of office, industrial, and land transactions, together with major property portfolios across Canada.

Interviewee 2: serves as Senior Vice President for one of Canada's largest landlord developers, and in that role is involved in informing the decision-making that provides the company with strategic direction.

Interviewee 3: serves as the National Director of Sustainability and Energy Management for one of Canada's largest landlord developers, and in that role informs company decision-making related to making the company more environmentally responsible and energy efficient.

A semi-structured expert interview approach was used to ensure that each interviewee was presented with the same questions; this was to increase the reliability and credibility of the data. The interviews focused on understanding the financial and non-financial factors that key stakeholder firms consider with regard to LEED certification during construction of new office buildings or retrofitting existing ones. Probing questions were asked as follow-on questions to obtain more in-depth information, especially if answers seemed insufficient in detail or more clarification to answers was needed. Special attention was given to reasons they see for changing their focus to green and assessing the impact that LEED has on market value of their properties. The interview data provides clarifications, explanations and answers for the second hypothesis: Hypothesis (H₂)—Financial drivers will be more influential than non-financial drivers in a key stakeholder's decision whether to pursue LEED certification. Analysis of the data, especially with a limited number of interviews, includes a summary by topics and ideas rather than a statistical analysis.

5. Stage One Results and Discussion

5.1. Findings from Correlation Coefficient Matrix

Our first step of analysis was to construct a correlation matrix to determine the explanatory power of each variable (see Table 4). The results of the correlation matrix indicate that the correlation of LEED certification with net asking rent is not significant at the 0.05 > level. This finding does not support Hypothesis (H₁) = LEED certification will have a significant positive factor in the asking rent (market value) of office buildings in Toronto's CBD urban core. The impact of LEED certification on the market value (asking NET RENT) of an office building was not found to be statistically significant. Although the correlation of 0.193 was found not to be statistically significant at the 0.05 > level a review of empirical studies suggests several possible interpretations. First, as Fuerst et al. [33] and Oyedokun et al. [34] suggest, office buildings with LEED certification generally have other attributes sought by premium office space renters, thus having a higher correlation with NET RENT. The 0.01 > level positive statistically significant correlation between NET RENT and ADDITIONAL RENT (0.873 **), PARKING (0.616 **), OFFICE AREA (0.566 **)

and CLASS A (0.489 **) are all quality building attributes that can demand higher rent per square foot. The high negative correlations between NET RENT and several other attributes support this conjecture about relationship to building quality. Negatively correlated with NET RENT are CROW FLY location (−0.608 **), CLASS B (−0.428 **), and CLASS C (−0.198). While Class A are prestigious buildings and compete for premier office users, Class B buildings are fair to good in attributes and location; and Class C buildings are below average for the area and compete for tenants seeking functional space [85].

Table 4. Correlation matrix.

	Net Rent	LEED	Class A	Class B	Class C	Office Area	Parking	Age	Direct	Sublet Available	Additional Rent	Crow Fly
NET RENT	1	0.193	0.489 **	−0.428 **	−0.198	0.566 **	0.616 **	0.089	0.214	−0.032	0.873 **	−0.608 **
LEED		1	0.394 **	−0.367 **	−0.102	0.230	0.190	−0.197	−0.060	0.025	0.240	−0.104
CLASS A			1	−0.931 **	−0.260 *	0.390 **	0.368 **	−0.196	0.001	−0.069	0.489 **	−0.110
CLASS B				1	−0.110	−0.348 **	−0.303 *	0.185	0.008	0.019	−0.406 **	0.081
CLASS C					1	−0.144	−0.201	0.042	−0.022	0.137	−0.256 *	0.085
OFFICE AREA						1	0.550 **	−0.089	0.198	−0.063	0.650 **	−0.297 *
PARKING							1	0.113	0.135	−0.230	0.649 **	−0.455 **
AGE								1	−0.109	0.058	0.031	−0.171
DIRECT									1	−0.038	0.172	0.060
SUBLET										1	0.015	−0.152
AVAILABLE											1	−0.576 **
ADDITIONAL												1
RENT												
CROW FLY												

** Correlation is significant at the 0.01 level (two-tailed). * Correlation is significant at the 0.05 level (two-tailed).

Next, consider the correlations between these building attributes and LEED certification. The only two attributes that LEED is significantly correlated at the 0.01 > level are positive with CLASS A (0.396 **) and negative with CLASS B (−0.367 **). The other attributes that LEED certification has high ratings that offer some insight. There is positive direction of relationship between LEED with ADDITIONAL RENT (0.240), OFFICE AREA (0.230) and PARKING (0.190). These three attributes relate to building area and are positively correlated with LEED because the buildings in the sample that were LEED certified tend to be larger buildings. It follows that larger office buildings are also those that are more likely to have a large amount of common area, parking and more amenities thereby increasing the amount of additional rent charged to tenants. There is negative direction of relation between LEED with AGE (−0.197), location CROW FLY (−0.104), CLASS C (−0.102) and DIRECT from landlord lease space available. The negative correlation coefficients with AGE, CROW FLY and DIRECT suggest that LEED buildings tend to be newer properties, situated near the center of the CBD, and have lower than average vacancy.

These negative correlations would suggest an interpretation that LEED certification is a strong positive factor in terms of its position among office building attributes as well as in relation to NET RENT. Then why doesn't LEED certification correlate significantly with NET RENT? Based on their UK study on the growth of green office buildings, Oyedokun et al. [34] would propose that green certification is becoming mainstream. Fuerst et al.'s [33] study of the US office market might go as far as to propose that LEED certified space is becoming a defining factor in Class A. Three points need to be stated with respect to this study. First, all LEED certified buildings included in the sample are Class A buildings thereby resulting in a strong positive correlation with CLASS A and a strong negative correlation with CLASS B. Furthermore, there were far fewer Class C buildings included in the study than Class A and Class B buildings. Second, this is a place-based study focused on Toronto's urban downtown core and not the Greater Toronto Area—the most populous metropolitan area in Canada. It would be expected that the office building sector would be dominated by Class A buildings. Third, the low level of significance for these variables based on the correlations makes it difficult to generalize about these beyond the study sample. However, as an exploratory study it provides the groundwork for further research.

5.2. Findings from Linear Regression Model

Once the correlation relationship (see Table 4) between an office building's LEED certification and the coefficients of the other building attributes were analyzed, the hedonic linear regression model was constructed. An ordinary least squares (OLS) analysis was conducted to determine which compilation of variables created the equation that best accounted for the variance in net asking rents (NET RENT). In the analysis, the independent variable with the highest partial correlation coefficient to NET RENT is entered first into the model. This process is continued by adding the variable with the next highest partial correlation coefficient to the model and the adjusted R^2 for the new model is evaluated to compare its explanatory power to that of the previous model. This process is continued until all of those variables with a partial coefficient significant at the 0.05 level have been added to the model to assess their impact on the model's explanatory power. In addition, as new variables are added to the model, previous variables are removed from the equation if their significance level falls below the 10 percent critical value.

The first variable included in the model was ADDITIONAL RENT which had the greatest positive partial correlation coefficient of 0.873 ** with NET RENT. The initial model returned an adjusted R^2 of 0.757, with ADDITIONAL RENT significant at the 99 percent critical value level. This high adjusted R^2 may be cause for concern that 'ADDITIONAL RENT' might be drowning out the effect that other variables (including LEED) might have on NET RENT, especially when considering the degree of correlation between ADDITIONAL RENT and the other predictor variables. The process of adding and removing variables from the model based on their partial correlation coefficients and significance levels was continued until arriving at a model consisting of ADDITIONAL RENT and CLASS B. The model produced an adjusted R^2 of 0.769, with ADDITIONAL RENT significant at the 99 percent critical value level and CLASS B significant at the 95 percent critical value level (see Table 5a–c). We describe the linear regression model as our 'best model'.

Table 5. (a) Linear regression model summary; (b) Linear regression ANOVA; (c). Linear regression Coefficients.

(a) Linear regression model summary.					
Model Summary					
Model	R	R Square		Adjusted R Square	Std. Error of the Estimate
CLASS B ADDITIONAL RENT	0.881 ¹	0.776		0.769	3.59315
(b) Linear regression ANOVA.					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2772.972	2	1386.486	107.390	0.000 ³
Residual	800.464	62	12.911		
Total	3573.437	64			
(c).Linear regression Coefficients.					
Coefficients ⁴					
Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	−5.585	2.340		−2.387	0.020
ADDITIONAL RENT	1.277	0.100	0.100	12.808	0.000
CLASS B	−2.195	1.087	1.087	−2.018	0.048

¹ Predictors: (Constant), CLASS B, ADDITIONAL RENT. ² Dependent Variable: NET RENT. ³ Predictors: (Constant), CLASS B, ADDITIONAL RENT. ⁴ Dependent Variable: NET RENT.

The exclusion of variables from the best model can be explained when we examine the relation of each variable to ADDITIONAL RENT while taking into consideration the characteristics of the sample buildings. The first variable that was removed from the model was PARKING which has a partial correlation coefficient of 0.616 ** but could still not be deemed significant in a model that already included ADDITIONAL RENT. This is because ADDITIONAL RENT is typically a composition of those costs associated with property taxes, common area maintenance, and any other additional expenses the owner may charge related to building maintenance and services. The greater the amount of common area a building possesses, the higher the ADDITIONAL RENT. Those buildings with the greatest amount of common area in downtown Toronto are located in the CBD, an area where reserved parking is rare and highly sought after. When linking the value placed on PARKING space in the CBD with the higher ADDITIONAL RENT in the area it is understandable why the significance of PARKING was drowned out by the ADDITIONAL RENT variable.

Going down the list of variables with high individual correlation coefficients we see that the same effect was had on CROW FLY location and total building OFFICE AREA. These variables too are affected by proximity to the centre point of the CBD. CROW FLY is affected because it is actually a measure of building proximity to the centre of the CBD while OFFICE AREA is affected because the buildings in downtown Toronto with the greatest amount of office space are those in the centre of the city's CBD. The only other variable excluded from the model with a significant individual correlation to net asking rent was CLASS A. CLASS A was excluded because it was replaced by CLASS B that reduced its significance and provided a model with a higher adjusted R^2 . The large changes in the regression coefficients produced by the inclusion of ADDITIONAL RENT in the model are an indication of multicollinearity. The tendency toward redundancy as noted is due to the nature of the model that included multiple factors that respond not only to the response variable NET RENT but also to each other. This explains the relationship between CLASS A and CLASS B although the multicollinearity that exists between these two variables was expected because both are indicators of building class. For this study we chose to evaluate both to see which contributed most significantly to the model.

In an attempt to reduce multicollinearity, a second stepwise regression analysis was performed that excluded ADDITIONAL RENT from the model. The first variable included in the new model was PARKING (partial correlation coefficient of 0.616 **), resulting in an adjusted R^2 of 0.370 with PARKING significant at the 99 percent critical value level. CROW FLY was added to the model next returning an adjusted R^2 of 0.501 while both coefficients maintained significance at the 99 percent critical value level. OFFICE AREA was then included, increasing the adjusted R^2 to 0.552. Although CROW FLY and OFFICE AREA remained significant at the 99 percent critical value level the significance of PARKING was reduced to the 95 percent critical value level.

When CLASS A is added to the model, we see the significance of PARKING and OFFICE AREA were reduced to the 90 and 95 percent critical value levels respectively while CROW FLY and CLASS A are significant at the 99 percent critical value levels and the model's adjusted R^2 moves to 0.604.

Finally, CLASS B is introduced to the model but subsequently removed due to its negative effect on the significance of the other variables and adjusted R^2 . This means that our best model is comprised of the coefficients PARKING, CROW FLY, OFFICE AREA and CLASS A, producing an adjusted R^2 of 0.604 (see Table 6a–c).

Table 6. (a) linear regression summary; (b) Linear regression ANOVA; (c) Linear regression coefficients.

(a) linear regression model summary					
Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
PARKING	0.793 ¹	0.629	0.604	4.70200	
CROW FLY					
OFFICE AREA					
CLASS A					
(b) Linear regression ANOVA					
ANOVA ²					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2246.908	4	561.727	25.407	0.000 ³
Residual	1326.528	60	22.109		
Total	3573.437	64			
(c) Linear regression coefficients					
Coefficients ⁴					
Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	17.839	1.404		12.710	0.000
PARKING	0.001	0.001	0.200	1.907	0.061
CROW FLY	0.000	0.000	−0.409	−4.616	0.000
OFFICE AREA	0.000	0.000	0.226	2.324	0.024
CLASS A	4.311	1.432	0.264	3.010	0.004

¹ Predictors: (Constant), PARKING, CROW FLY, OFFICE AREA, CLASS A. ² Dependent Variable: NET RENT.

³ Predictors: (Constant), CLASS B, ADDITIONAL RENT. ⁴ Dependent Variable: NET RENT.

According to the correlation matrix the correlation of LEED with net asking rent is not significant at the 0.05 level. This would normally disqualify it from inclusion in the model, but regressions were still conducted to assess the impact of LEED on the explanatory power of our best model. Ultimately, when LEED was introduced to the model all original model coefficients fell within their original significance levels, but LEED was not shown to be statistically significant (0.528), pulling adjusted R^2 down to 0.600. It was therefore concluded that LEED certification should remain excluded because it did not improve the explanatory power of the model.

When CLASS A is added to the model the significance of PARKING and OFFICE AREA are reduced to the 90 and 95 percent critical value levels respectively while CROW FLY and CLASS A are significant at the 99 percent critical value levels and the model's adjusted R^2 moves to 0.604.

As previously noted, the Pearson correlation coefficient matrix (Table 4) reveals that the correlation of LEED certification with NET RENT is not significant at the 0.05 level which causes Hypothesis (H_1) to be rejected. This would normally disqualify LEED from inclusion in the model, but regressions were still conducted to assess the impact of LEED on the explanatory power of our best model. Ultimately, when LEED was introduced to the model all original model coefficients fell within their original significance levels, but

LEED was not shown to be statistically significant (0.528), pulling adjusted R^2 down to 0.600. It was therefore concluded that LEED certification should remain excluded, because it did not improve the explanatory power of the model with regard to the NET RENT (i.e., asking rent as market value) of green buildings (see Table 7a–c).

Table 7. (a) linear regression model summary; (b) Linear regression ANOVA; (c) Linear regression coefficients.

(a) linear regression model summary					
Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
LEED CROW FLY OFFICE AREA CLASS A PARKING	0.795 ¹	0.631	0.600	4.72555	
(b) Linear regression ANOVA					
ANOVA ²					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2255.920	5	451.184	20.205	0.000 ³
Residual	1317.517	59	22.331		
Total	3573.437	64			
(c) Linear regression coefficients					
Coefficients ⁴					
Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	17.839	1.411		12.651	0.000
PARKING	0.001	0.001	0.200	1.897	0.063
CROW FLY	0.000	0.000	−0.411	−4.615	0.000
OFFICE AREA	0.000	0.000	0.231	2.351	0.022
CLASS A	4.620	1.520	0.283	3.040	0.004
LEED	−0.922	1.451	−0.055	−0.635	0.528

¹ Predictors: (Constant), LEED, CROW FLY, OFFICE AREA, CLASS A, PARKING. ² Dependent Variable: NET RENT. ³ Predictors: (Constant), LEED, CROW FLY, OFFICE AREA, CLASS A, PARKING. ⁴ Dependent Variable: NET RENT.

6. Stage Two Research Results and Discussion

Stage Two was designed to obtain information on the issues examined in this study relative to the development of office buildings in Toronto. Three executives in key stakeholder firms in Toronto were interviewed using a semi-structured format and a five-question protocol with follow-on questions to ensure that their answers were complete and explanatory. These interviews were recorded and transcribed for analysis; the full transcripts are included in the Appendix A.

Reports on LEED certification show that the number of green office buildings in Toronto have increased during the past twenty years [8,83]. Using an interview format rather than a written questionnaire provides an opportunity to obtain first-hand knowledge on the role of key stakeholders in decisions related to building or retrofitting green and the factors that impact their decisions. Answers to the questions posed to the expert interviewees provide valuable insight related to the second hypothesis: Hypothesis (H₂)

= Financial drivers will be more influential than non-financial drivers in the decision of whether to pursue LEED certification.

A brief synopsis of the three expert's qualifications is provided.

Interviewee 1: Serves as Vice President for one of Canada's largest landlord developers. In that role is responsible for the origination and execution of office, industrial, and land transactions, together with major property portfolios across Canada.

Interviewee 2: Serves as Senior Vice President for one of Canada's largest landlord developers. In that role is involved in informing the decision-making that provides the company with strategic direction.

Interviewee 3: Serves as the National Director of Sustainability and Energy Management for one of Canada's largest landlord developers. In that role informs company decision-making related to making the company more environmentally responsible and energy efficient.

6.1. Findings from Interviews

Each interviewee was asked the same questions, although the follow on probing questions changed with each interview. Their insights are valuable, so readers are encouraged to examine the full transcripts in the Appendix A. Table 8 provides a summary of interviewee responses to the five-question protocol used.

Table 8. Summary of interviewee responses.

Questions	Interviewee 1	Interviewee 2	Interviewee 3
Does LEED certification currently have a significant impact on achievable gross rent?	No	No	No
Moving forward, do you think LEED is going to be the new benchmark (i.e., the new Class A)?	No	Yes	Yes
Could a building built in compliance with LEED, but without certification (label), achieve the same returns as a LEED certified (labelled) building?	Yes	Yes	Yes
Will LEED certification help attract more potential purchasers/tenants?	Yes	Yes	Yes
Do you plan on retrofitting existing buildings to LEED standards?	No	Yes	Selectively

6.1.1. Question 1: Does LEED Certification Impact Achievable Gross Rent?

Interviewees were asked if LEED certifications currently have 'a significant impact on achievable gross rent'. The question refers to achievable gross rent rather than net asking rent (the dependent variable in this study) because, as noted in the research [91], we wanted to distinguish the impact of LEED certification from factors that impact those of operating costs on rents. LEED buildings tend to have lower operating costs so it is assumed that owners will increase the net rent portion of the formula to keep their properties comparable to the market on a gross rent basis [92]. Although potential savings in operating expenses allows for possible increases in net asking rents the expert interviewees did not see LEED as having a significant impact on achievable gross rent. All interviewees noted that the lead tenants, institutional investors (especially pension funds) and occupants linked to firms with corporate social responsibility policies wanted sustainability green platforms in buildings. This agrees with the finds of Eichholtz, et al. [43].

6.1.2. Question 2: Is LEED Going to Be the New Benchmark (New Class A)?

Office buildings in Canada are subjectively classified and ranked in descending order A, B., or C [85]. As LEED certified buildings already carry a premium asking rent, we wondered whether LEED is going to be the new benchmark (new Class A)? Interviewees 2 and 3 said yes, they felt it would. Interviewee 1 differed from the others in response to this question. The reason for the difference of opinion was that Interviewee 1 approached the question from the standpoint of what tenants' value which is gross rent. If LEED is not considered to have a significant impact on gross rent it is not likely to become a factor in developing a new building standard. Interviewee 2 approached the question from the standpoint of what valuation professionals consider during the property appraisal process, noting that there is a factor built into appraisal methodology that gives green buildings more value because they last longer. Finally, the Interviewee 3 noted that when they first decided to pursue LEED certification it was a marketing advantage (strategy) while now it is becoming the accepted standard. Based on a review of the literature, the interviews and LEED certification data indicate that LEED is becoming part of new office buildings standards although it is not yet the new benchmark [33,34]. Perhaps a more important question is, who are the drivers for the focus on green office buildings? Are the owner landlords, real estate developers and valuation appraisal professionals creating or following the market? Are institutional investors and tenant/occupants demanding or responding? This leads to the importance of LEED certification branding or labelling.

6.1.3. Question 3: Could Buildings without Certification Achieve Same Returns?

All interviewees were asked: 'Could a building built in compliance with LEED, but without LEED certification (label), achieve the same market results as a LEED certified (labelled) building?' Interviewee 1 felt the LEED label would attract more buyers. Interviewee 3 felt that just copying LEED rather than meeting LEED standards for certification would not result in the same thing. However, all of them did feel that a non-LEED certified building could achieve the same returns as an otherwise comparable LEED labelled building. This unanimous opinion seems to have originated from the knowledge that the returns currently generated from LEED buildings stem from a reduction in operating costs. Are the key stakeholder firms shifting their business model toward sustainability or is it still bottom-line finance driven? The answers by the expert interviewees might suggest that they may be tilting toward sustainability; but no, all three still focused on financial gains, albeit due to lower operating costs produced by LEED generated efficiency and not gains in higher rent premiums due to the branding appeal of LEED by those seeking office space. Interviewee 1 made a blunt statement with regard to the LEED label: 'Am I going to get more value for it? No, I don't think so.' This question on the energy efficiency of LEED certified buildings was noted earlier in this paper. A review of research by Amiri et al. [92] on LEED certified buildings likewise noted concerns with regard to the performance of LEED certified building in the areas of energy and atmosphere.

6.1.4. Question 4: Will LEED Certification Attract More Purchasers/Tenants?

LEED certification of office buildings is not without the cost of time and effort. We asked the experts representing stakeholder firms if it was worth it—'will LEED certification help attract more potential purchasers/tenants?' All of the interviewees indicated that LEED certification does attract potential purchasers/tenants. The consensus, however, seems to be that potential tenants are not willing to pay a premium on a gross rent basis for a building that is only advancing the development of green buildings. This is a very interesting position. Interviewee 1 stated, 'frankly most are driven by the bottom line.' As Xie et al.'s [93] study on consumers would suggest that pro-environment behavior plays a key role because the number of LEED certified office buildings in Toronto continues to increase. Tenants/occupants are obviously willing to pay a rental premium for space in these offices. A reading of the interview transcripts strongly suggests that the development of LEED buildings is tenant demand-driven. As earlier studies by Eichholtz et al. [86]

found, tenants/occupants were in part conscious of environmental issues and responsive in their real estate choices.

6.1.5. Question 5: Interest in Retrofitting Existing Buildings to LEED Standards?

Policy makers and scholars agree that in urban core areas such as Toronto it will not be green construction but green retrofitting that will most significantly impact climate change and global warming. However, the interviewees were generally quite positive about LEED certification and agreed on the idea of achieving sustainability in new green office buildings. But the question then is, did this support by key stakeholder firms go deeper to embrace retrofitting of existing buildings? Would they make the decision to 'have their building LEED certified and pay the additional costs associated?' Interestingly only Interviewee 2 stated that the firm currently had LEED applications on a number of their office complexes. Interviewee 1 said LEED status would probably not increase occupancy or translate into higher net rent so the answer is no. Interviewee 3 hedged and said maybe for some properties where tenants wanted it. But for others with strong markets (meaning low vacancy rate), long-term leases, utilities performing in peak range, or with serious utilities issues it wouldn't be considered. A case study of the strengths and weakness of retrofitting an existing building is presented by Sun et al. [94] A building belonging to the University of Hong Kong underwent a significant LEED EBOM Gold project retrofit with the expectation of energy savings of 30% however actual building performance was 16% savings on energy. The interviewees were not eager to move in this direction.

6.2. Discussion of Interview Findings

The three expert interviewee responses are summarised in Table 8. The three are similar in their responses with respect to views on the impact of LEED certification on achievable rent, ability to lease/rent, attitudes of prospective tenants and ESG based investing by institutional investors. Their responses explain and provide an answer to the second hypothesis: Hypothesis (H₂) = Financial drivers will be more influential than non-financial drivers in a key stakeholder's decision whether to pursue LEED certification?

Our interpretation of the interviewee responses to the five questions is that they perceive financial drivers as being very influential in the decision but with several caveats. First, the interviewees mention a growing interest in LEED certification by institutional investors that is also reported in research by Eichholtz et al. [43] and Fuerst et al. [33]. Based on their description of investor pressure to build or retrofit green we viewed this as financial influence at the initiating decision point and not as ESG drivers. Second, the interviewees mention the interest in LEED certified office space by current and perspective tenants. They state that tenants are willing to pay rent premiums for LEED certified office space. We also view this as financial influence on the key stakeholders and not environmental or social. The interviewees' comments suggest that tenant interest in LEED is taking as being less of an influence compared to that of investors. This again is viewed as an indication of the strength of financial influence. The rejection of Hypothesis (H₁) seems to have been anticipated by the interviewees. At least for the present, Toronto's urban core Class A office space, whether LEED or not, has a very low vacancy rate and asking rent is not an issue. Third, interviewees' view of owner landlords—a group that also includes institutional investors and real estate developers—was quite interesting. While acknowledging their influence and importance the interviewees seem to scorn owners as out-front innovators (a quality of entrepreneurs) leading the change to green buildings. A study by Li et al. [95] suggests a framework for addressing such 'capital' barriers that inhibit the promotion of green buildings.

In general, the results from the interviews are in line with previous findings such as the recent research by Oyedokun et al. [34], Cook et al. [91] and Chegut et al. [96]. As markets continue to evolve and tenants and stakeholders place an increasing amount of importance on sustainability, we are likely to see LEED certification become a more significant factor in the determination of office rents. However, in the future LEED will probably become

a standard attribute of Class A office buildings before Class B or C. In addition, as more new and retrofitted LEED certified buildings come on the market, future studies can have a larger sample size. This will allow for the investigation of with more subtle impacts on the model and LEED certification as a significant contributor to property value.

7. Conclusions, Limitations and Future Directions

7.1. Conclusions

This study contributes to the literature on green certification and labelling of office buildings in global cities. This study focuses on office buildings in the CBD urban core of Toronto, an area where the financial valuation of green labelling has not attracted sufficient research. The first stage was designed to obtain quantitative data to determine if LEED certification (independent variable) has a significant impact on net asking rent (dependent variable). Pearson correlation and linear regression analysis did not find LEED certification to be statistically significant in explaining the variance in net asking rent (market value). Although this is an exploratory study it is important because it provides an understanding of office buildings in the urban core of Toronto. It is also helpful in setting parameters for future studies on the decisions by key office building stakeholders to build or retrofit green.

The second stage of this study was designed to examine the financial and non-financial factors that influence the decisions by key stakeholders to pursue a green agenda. Qualitative data were obtained from interviews with senior executives who are engaged in Toronto's office building sector. The interviewees provided valuable data to assess if financial drivers are the deciding factor in the decision to pursue LEED certification. They report that institutional investors are most influenced by clients who will only invest in an office building if it meets green standards. Owner landlords are primarily focused on the long-term benefits of LEED certification based on energy efficiency gains that then translate into lower GHG emissions and federal carbon taxes. With respect to real estate developers who are directly involved in the construction of new and existing office buildings, they are responsive to investor preferences, tenant trends and owner concerns. On the issue of whether their decisions are impacted by financial considerations the answer is yes. However, the answer is no on the one factor of LEED certification but on the overall impact of factors/benefits that impact their bottom line. In general, key real estate development stakeholders in Toronto seem unwilling to 'step out and lead' with a focus only on green, but they are also unwilling to be left without green office buildings in their portfolio. Basically, they are cautious in their commitment to support an all-out endorsement of a green agenda. It appears that they are ruled by long-standing and slowly evolving traditions—where the pack stays together, few leap-ahead and few are left behind.

7.2. Limitations

Despite efforts made to ensure the best possible design for this study, there were several areas of limitation. First, Toronto's urban core is one that has the most LEED certified office buildings in Canada. Although this made it an ideal test site because it provided a sufficient sample it also had one limitation. Most of the office buildings with LEED certification are rated as Class A, already command premium rent, and are located in the most prime office area in the city. The sample of conventional (non-LEED) office buildings that met our criteria were primarily Class B and a few Class C buildings located outside of the prime urban core. Although the office buildings included in our sample were all located in the geographic area selected for the study, their rent gradients (CROW FLY) were not. This suggests that a study of the submarkets within Toronto would increase the number of office buildings with a sample of different ratings (Class A, B, and C). This would be similar to the study by Oyedokun et al. [34] that looked at the green office market in the context of local markets. Another study could be designed to focus only on Class A office buildings in the prime urban core of Toronto. However, in such a study the significance of LEED certification could easily be overshadowed by other factors that are associated with leasing office space in the market's prime location.

A second limitation is the fact that importance and growth in numbers of green office buildings in Toronto is still developing. Data and analysis in this study, however, do provide an understanding of the increasingly important role that LEED certification has on the office building sector. This will continue in the future. As this movement matures, longitudinal studies related to changes in costs and benefits in LEED certified construction, measured over a period of time and over varying economic conditions, would provide valuable assistance for addressing the environmental issues of climate change.

Third, there were limitations in terms of how much specific information we could ask interviewees to provide. The three Toronto real estate development executives volunteered as anonymous industry experts, not as informants representing their firms. This restricted depth of questioning on specific examples or on their own positions and firms. A survey questionnaire of top tier executives from the dozen or so key firms in the Toronto office building market might have produced data on drivers and influencers for statistical analysis but obtaining that information is very difficult. This was considered as the research design was developed but the reality of actually getting a large enough sample of office building developers seemed unachievable. It also seemed that personal interviews with a few of the executives in different firms might only produce ‘sound good statements’ rather than actual reality [43,45].

Finally, it would have been informative to include actual rent paid per square foot. As stated earlier, most of the firms view information related to tenant lease contracts as proprietary and confidential. The best alternative was to use average net asking rental rates for each building as a proxy. Future studies could try to include information related to actual transacted leases to construct a model that explains the variance between actual transacted rents and hedonic independent variables such as LEED certification.

7.3. Future Directions

Although this is the first study that looked at issues related to LEED certified buildings in Toronto, we hope that scholars will add to our research in ways suggested in the limitation section. These efforts are needed, especially as the challenges of climate change and global warming increase the pressure to build and retrofit green. Interest and pressure are mounting on key stakeholders to address the broader accompanying aspects of sustainability such as social and corporate governance factors that are gaining traction in the public and political arena. Considering these developments, we feel our choice of that the expert interview format to gain first-hand information is a promising direction for future research.

The framework of this study—looking at the issue from a context dimension (place-based gradient setting) and process dimension (real estate development process)—was an excellent approach for understanding the market and decision dynamics on the issue of building and retrofitting green. Perhaps the question for further study is, should these issues be viewed at the individual executive level (motivation and ethics) or firm level (value proposition and business model)? Either approach would provide a theoretical platform to understand the drivers and barriers that impact this decision. Further research could look at the cascading decisions and stakeholders involved in the implementation of this decision.

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Data Availability Statement: Interview data are provided in the Appendix A, statistically analysed data may be obtained by contacting the sources identified.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A. Transcription of Expert Interviewees

Interviewee 1

Profile: serves as Vice President in one of Canada's largest landlord developer firms. In that role is responsible for the origination and execution of office, industrial, and land transactions, together with major property portfolios across Canada.

In your experience, do you feel that LEED certification has a significant impact on achievable net rents?

Having a LEED building certainly does cut down the operating expenses, allowing you to achieve a greater net rent while still remaining competitive with other buildings on a gross basis. You might be higher on a net basis, but you will be lower on a gross basis because you are able to achieve some net savings that you can pass on to the tenant.

But above and beyond that—take 18 York Street for example—that is a building that Gowling WLG is building on behalf of BCIMC [British Columbia Investment Management Corporation], and their big tenant they have right now is PWC. When these guys pulled the trigger back in 2008 at a point when the market had already shifted down into tenant favour. Nobody was leasing space. There was a credit crunch. Investment transactions were few and far between and yet BCIMC still went ahead to develop that building. And the reason why was because they wanted to be able to say that they owned a downtown building that was LEED certified. Their thought was that large tenants on a go forward basis—banks, insurance firms, law firms—will make it a requirement. That any space that they lease has to be in a LEED building that is reflective of their overall objective with respect to the environment in their business plan model. So yeah, I think that over time you are going to see that rents are only going to go in one direction for LEED buildings.

Do you think that LEED buildings are going to be considered the new A class?

Tenants are only concerned with the gross rents. They do not care what the net rent is, they do not really care what the taxes and operating costs are. They want to know what their gross rents are. So as long as their gross rents are competitive to Class A buildings and they know that their carbon footprint is less and they are doing a good thing for the environment they'll go there. Although some tenants will make that a requirement and will pay more just to be in that building. But, if you are able to track a comparison between LEED buildings and comparable Class A buildings, I think you are going to see at least a \$2–3/sq. ft. savings, and I think that you will be able to make up for that in net rent.

Above and beyond additional rent savings, do you think that from a marketing perspective, over the long term, LEED buildings will be able to achieve significantly higher rents?

No. There is an inherent value that you are adding. From a liquidity standpoint, let's say, if I am the broker and I have got two buildings I can sell. One is the triple A office building downtown, and the other is similar building that is LEED certified I believe the LEED building will attract more buyers because people are feeling conscientious. Am I going to get more value for it? No, I don't think so.

Do you think that from a sales standpoint LEED certification is going to help you attract more potential purchasers?

Yes. I believe that, but I do not think that will necessarily translate into more value. And that relates back to your earlier question where you asked me if I thought a tenant would be willing to pay more for a LEED building, and I said no. And the reason I say no is that tenants have their own going concerns that they are worried about and rent represents a really big part of their obligations, their costs, especially if you are renting four floors of downtown office space and frankly they are driven by the bottom line. Yeah, you do

have some big companies such as maybe PWC that were motivated by the fact that it was a LEED building, but I think it was just that they were the lead tenant in that project, so undoubtedly GWL gave them a bit of a concession to get them in and then they could attract others.

If I had a Class B building that I was planning on retrofitting to bring it up to date with the aim of reducing my operating costs in an effort to increase my achievable net rent, do you think I should undertake to have the building LEED certified and pay the additional costs associated with that? Or do you say if you can reduce additional costs for your prospective tenants then that is good enough?

I would say—and it's unfortunate—it's probably the latter. We are selling a building right now where they have BOMA BEST certification, where they have acknowledged that they have been able to reduce operating costs through efficiencies. It is a Class A building and it is in the suburbs, but at the end of the day if they were able to attain LEED status I don't think that would increase their occupancy, or necessarily translate into more net rents, and it's unfortunate, but I really don't think that is the case.

Interviewee 2

Profile: serves as Senior Vice President for one of Canada's largest landlord developers. In that role is involved in informing the decision-making that provides the company with strategic direction.

I understand you have a building in downtown Toronto that you are getting LEED certified, why did you decide to prescribe to LEED certification, and why this building specifically?

It goes back some years, while we had the site under contract and we closed in December of that year. Imagine a board meeting where I was making a presentation to three owners in September. Three different owners: The first one was the Menkes Family, who had a 20 percent interest in the property. Their comment was—we have no clue what LEED is, and this was before LEED was even a thing in Canada—we understand in terms of the world sustainability is going to be necessary. We are responsible developers, so if you think it is the right thing to do then it will be one of our specifications and we will figure it out as we go. That's 20 percent. Then the hospitals of Ontario Pension Plan, who owned 50 percent. They say—we also don't know what it is because we haven't seen anything, no building exists in Canada. But we, representing our pensioners, all 40,000 of them and wish to respect sustainability in everything we do. That's 50 percent. The Harvard endowment fund, who represented 20 percent, said—if this is not a LEED building we will not invest, simply because we are setting the standards in terms of regulations of the sort worldwide. Our people are, our graduates are, and sustainability is a must. That is where it all started. So, we started as responsible citizens, and then as investors, and then as owners of real estate in Canada. The LEED manuals didn't even hit the table until two years later. So, we were ahead of the curve, and in hindsight every single tenant who walked into the building asked about our sustainability platform. Every single tenant who walked into the building wanted a green platform.

Seeing the success, you have achieved with this building, are their plans for the certification of others?

We have another office development downtown and the building will be somewhere in the 900,000 square feet range and we too will be LEED Gold core and shell. Moving forward it is simply the only standard we have.

Are you only looking to certify new developments, or are you looking at retrofits as well?

In terms of existing buildings, we have numerous applications in for LEED on a number of our office complexes. No industrial.

Is there a reason why you are not for industrial but are for office buildings?

The tenants are more interested in it. And on industrial it is next to impossible to achieve on an existing industrial space. You can achieve it moving forward with a new LEED development, but moving backwards, no.

Comparing your LEED certified building to others in your portfolio and others you compete with in that market, do you think that the LEED certification has been a factor in achievable gross rent.

Zero. Now let's qualify that. There is no history. Everything we put into 25 York was a projection. People had to believe it was going to happen. I had no ability to get any higher rent than another office tower in downtown Toronto which doesn't have it, because there was no proof. Many a time tenants ask—Well, how do you know? and we would reply—Because our engineers tell us. And they reply—SO, you know the Prime Minister of Canada tells us we are going to be debt free too... show me! Ask that question in 5–10 years. Then the green buildings will stand out.

So, do you think that moving forward LEED is going to be the new standard?

Definitely! As markets go forward and, from an appraisal point of view, there will be a factor built into all appraisals which give green buildings more value because they will last longer.

What do you think the impact of LEED certification will be as markets fluctuate?

If it is a tenant's market, LEED will win first. If it is a landlord's market, nobody gives a shit.

Additional discussion.

Every single tenant that moved into our LEED building insisted on construction to LEED standard. When asked: are you going to certify? One tenant said that, according to their corporate platform, they wished to be one of the top 50 sustainable companies in the world. So, they went through a certification process. Every other tenant said—I don't need a certification; I don't need to pay for all that bullshit. I get nothing for the certificate on the wall. I just want to know myself I did the right thing.

Apart from the reduction in operating costs, do you find any value in the LEED label itself?

Not today.

So, if you had an otherwise comparable property, are you saying that you would not bother getting the building LEED certified?

You asked me do I perceive any value! Me the landlord. Examining it from the tenant's point of view. Not one tenant believes one landlord! Therefore, I have to get a certification by a third party in order for the tenant to believe me. The tenants perceive value in the buildings. Long term, LEED count. It may not be called LEED in 10 or 15 years, but sustainability counts. And what is happening with these buildings is that, over and over, the manufacturers of materials and equipment are pursuing certification themselves because they are listening to the politicians saying that it is coming, we have to save the world. More importantly they are listening to their kids.

On top of that, every single pension plan, the Caisse (Caisse de depot et placement du Québec)amaz, [unintelligible], Teachers Pension Plan of Ontario, BCIMC, IMCO [Investment Management Corporation of Ontario]. They have said, they have decreed, they have policies, if we are developing new office buildings, they shall be green. Representing their pensioners, their pensioners are average everyday people. It started with BCIMC out of British Columbia, as it should, that is where the green movement started.

Interviewee 3

Profile: serves as the National Director of Sustainability and Energy Management for one of Canada's largest landlord developer firms. In that role informs company decision-making related to making the company more environmentally responsible and energy efficient.

Do you have any LEED certified buildings?

Yes, we do.

Are they new builds or retrofits?

New builds, but we are also going to have a couple of retrofits coming up this year.

With respect to the buildings that you already have certified and the ones that are soon to be certified, why did you decide to certify these buildings?

Two reasons. At the time LEED was beginning to be considered a competitive advantage, and for the buildings we decided to have certified it was not a complicated process and the cost premium was not that significant.

When you talk about competitive advantage, are you talking about making it easier to lease the space thereby reducing vacancy, or are you talking about an ability to achieve higher gross rents.

When we develop the building pro forma, we put together the project and we start marketing it so that the building is already tenanted by the time it is delivered. So, as we were marketing the property some of our clients liked the fact that it was LEED certified. They see it through two perspectives: One is the PR. Marketing wise they see it as something they can make use of and portray their companies as more environmentally conscious with a higher CSR status.

The second is that there is a higher level of predictability when it comes to utilities. So, they know that if they are coming into a certified building there are higher environmental and ethical standards, and that the building is going to perform closer to what they have budgeted for in future years. So, the level of certainty is important, especially for those companies where real estate is a big component of their finances.

Did LEED certification meet your expectations in terms of competitive advantage for your buildings?

Yes. Additionally, some of the tenants in our non-LEED certified buildings are looking for LEED certified space.

Are you noticing LEED as a factor for other potential tenants?

Yes. When we are building a property, potential tenants will ask—do you guys plan on building it to LEED certified standards; and we say—yes, and that becomes part of the negotiation. And the big thing is that we wouldn't do it any other way. We wouldn't do it any other way because it is now the market expectation to have your building LEED certified.

Are you saying that from now on when you build it is going to be LEED certified?

Yes, pretty much. When we had decided to certify one of our buildings about 10, maybe almost 15 years ago, it was a marketing advantage, while now it is becoming the standard and I am not sure how far down the road it is going to be detrimental in some cases where we will have to LEED certify.

Do you think that you could have built to LEED certification standards without getting the buildings certified and achieved the same results?

Yes, however collecting the data and following the protocols is not as efficient if you do not have to comply with a certification. The moment you say that we need to do this to get the certification things start to happen faster. Even if you don't have the certification you should be able to do the work to that standard, but at the end it doesn't seem to work that way. The certification process acts as a guide throughout the development process.

Do you plan on retrofitting all your buildings as well to be LEED certified?

Not all of them. There are some buildings where it makes a lot of sense, where we have tenants that want to be in a certified building, some buildings where we have challenges with utilities, and so on. But there are properties where there is no need for it. It could

be because they are in a very strong market, because we have long-term leases, because the building is performing in peak range, so in those cases it wouldn't be necessary to pursue certification.

Are there some buildings where you will not look to retrofit because of the difficulty in getting the building to a state where it complies with LEED standards?

Yes. The capital required to bring some buildings up to LEED standards makes it impossible for us to get them certified. There are also issues with retrofitting existing industrial and multi-residential properties, so currently we are only retrofitting office buildings. However, we are pursuing LEED certification for all new builds.

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