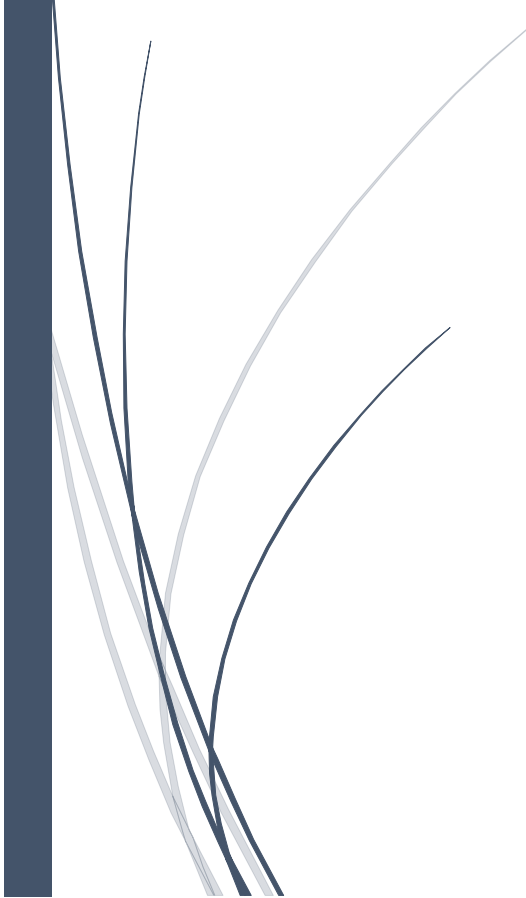




Final Project 2

PMG 497

Dr. Mona Moustafa Elashry
MIDOCEAN UNIVERSITY



Midocean University

Faculty of Management

Project Management



Effect Of Green Environment On Employees Performance At

Discovery Town Centre Saihat, Saudi

Arabia

"A Case study “

Eman Hassan Alsulais

Final Project - 2

Faculty of Management - Midocean University

Supervisor

Dr. Mona Moustafa Elashry

Faculty member- Faculty of management- Midocean University

Acknowledgment

I would like to express my deepest gratitude to all those who have contributed to the completion of this graduation project.

First and foremost, I extend my heartfelt appreciation to my supervisor, Dr. Mona Moustafa Elashry, for their invaluable guidance, encouragement, and unwavering support throughout the duration of this project. Their expertise, patience, and insightful feedback have been instrumental in shaping the direction of this research.

Special thanks are due to my family and friends for their understanding, patience, and continuous encouragement during this journey. Their unwavering support has been a constant source of motivation.

Lastly, I extend my appreciation to all the participants who generously contributed their time and insights to this study. Their participation was essential in gathering data and enriching the quality of this research.

This project would not have been possible without the collective effort and support of these individuals and institutions. I am sincerely thankful to each and every one of them.

Eman Al-sulais

Dedication

To my parents whose unwavering love, support, and sacrifices have been the cornerstone of my journey. Your endless encouragement and belief in my abilities have fueled my determination to reach this milestone.

To my husband and kids, whose encouragement and understanding have been a source of strength throughout this endeavor.

To my friends, for their camaraderie, laughter, and companionship, which have provided much-needed respite during challenging times.

To my teachers, mentors, and advisors, for their guidance, wisdom, and encouragement, which have shaped my academic and personal growth.

To all those who have inspired me along the way, your stories, wisdom, and kindness have left an indelible mark on my journey.

And finally, to anyone who may find value in this work, may it serve as a testament to the collective effort, dedication, and passion that went into its creation.

Abstract

While the natural advantages of green structures are proven and factual, the effect on representative prosperity and execution stays a functioning area of exploration. This study examines the expected connection between green structure plan and practices, and representative execution measurements in the working environment. This research intends to decide if green structures quantifiably affect worker execution markers like efficiency, non-appearance, and occupation fulfilment. An insert picked research strategy, e.g., field study system will be utilized. Information will be gathered from representatives working in both green-ensured and ordinary places of business. Representative execution information will be accumulated through overviews, self-announced measurements (e.g., presenters logs), or organization records (e.g., efficiency information). Moreover, data with respect to the green structure highlights and ecological quality (e.g., air quality, temperature, light levels) of the explored structures will be gathered. Measurable examination will be led to distinguish connections between green structure elements and worker execution information. Potential frustrating factors, for example, work type, work culture, and representative socioeconomics will be represented. This exploration is supposed to add to a developing collection of information on the connection between green structures and human execution. The discoveries can possibly illuminate building configuration rehearses, authoritative direction, and at last, representative prosperity and efficiency.

Keywords: green building structures, representative execution, efficiency, truancy, work fulfilment, maintainability.

Table of Contents

Acknowledgment	2
Dedication	3
Abstract	4
1. Chapter 1: Introduction.....	7
1.1. Research Background.....	9
1.2. Research Problem.....	12
1.2.1. Theoretical Gaps	14
1.2.2. Practical Gaps	15
1.3. Research Significance	18
1.3.1. At the theoretical level	18
1.3.2. At the practical level	22
1.4. Research Questions	23
1.5. Research Objectives	24
1.6. Research Hypotheses.....	24
1.7. Research Model.....	25
1.8. Scope of The Study	26
1.9. The Project Structure.....	26
2. Chapter 2: Literature Review	30
2.1. Introduction	30
2.2. The independent variable	30
2.3. The dependent variable	32
2.4. The relationship between the independent and the dependent variables	39
2.5. Conclusion.....	41
3. Chapter 3: Research Methodology	43
3.1. Introduction	43
3.2. Operational definitions for research variables	43
3.3. Research design (research onion).....	47
3.4. Research population & Sampling methods and technique.....	48
3.5. Data collection method.....	50
3.6. Types of data	52
3.7. Statistical analysis procedures.....	54
3.8. Conclusion.....	56
4. Chapter 4: Statistical Analysis & Findings discussion.....	57

4.1.	Introduction	58
4.2.	Sample profile (descriptive statistics for research sample)	58
4.3.	Validity & reliability tests for the questionnaires	59
4.4.	Descriptive statistics for research variables (answer research questions)	59
4.5.	Testing Hypotheses & Findings Discussion	60
4.6.	Conclusion.....	60
5.	Chapter five: Research limitations, Recommendations & Conclusion	62
5.1.	Research Limitations & Future Research.....	62
5.2.	Research Recommendations	63
	References.....	65
	Appendix.....	74

List of Figures:

List of Tables:

Chapter 1: Introduction

Natural change is a problem of the climate. Changes in the environment are primarily influenced by humans and natural ecological processes. As per the World Wellbeing Association, environmental change, ozone exhaustion, changes in biological systems, changes in hydrological frameworks, and the arrangements of freshwater, land debasement, urbanization, and weights on food-delivering frameworks are the worldwide ecological risks that impact to human wellbeing. Then again, an Earth-wide temperature boost and exhaustion of regular assets can't be dismissed. The Unified Countries Climate Program started to utilize the idea of "green economy" in the year 2009. **(WHO, 2018).**

In this way, the Worldwide Green New Arrangement, and the Association for Financial Collaboration and Advancement utilized the expression "green development". Be that as it may, in the year 2012, the World Bank had made the green idea official with "green and comprehensive development". A "green business" is one more related idea and it is featured that an association utilizes inexhaustible assets and considers itself responsible for the human asset part of their exercises Today, it is fundamental for move towards feasible strategic policies than any time in recent memory, due to the adverse consequences experienced because of the ecological changes. **(Chen and Chang, 2013)** As per the on-going setting on the planet, the greater part of the associations is attempting to embrace green practices. Be that as it may, improper green practices can be recognized among associations. Then again, restricted organizations that are committed to further developing green practices can be distinguished in various nations. With the developments of the financial climate, green practices will be a significant period of the Human Asset The board (HRM). **(North, 1997)** Green Human Resource

Management (GHRM) is an area of potential research in developing and emerging nations. Moreover, there could be no appropriate approach to gathering green practices related information in various nations. Subsequently, studies with respect to the green preparation are fundamental, and the discoveries of those reviews will help to make strategies as well as to make an arrangement of their endeavour working towards the ecological strategy. (**Opatha & Nawaratne, 2016**).

As a whole, it will serve as a resource for learning about how an organization's social responsibility affects the environment. GHRM is the utilization of HRM procedures to energize manageable utilization of assets inside business associations. It supports environmentalist ideals. Green preparation and improvement rehearses on the worker disposition towards their presentation should be visible as a missing perspective from the administration of associations. This examination centres around the issue of 'what is the impression of green preparation and advancement rehearses on representative execution among labourers?'. (**Jenny & Xin, 2016**).

In view of this foundation, the overall goal of this study was to distinguish discernments about green preparation and improvement rehearses on representative execution among work. How to strike a balance between economic growth and sustainable development is the world's greatest challenge today. GHRM is an answer for this. GHRM allows better-quality representative awareness and focuses on the manageability of the climate. In view of writing surveys, it shows that an expansive cycle to approach reference for GHRM still can't seem to arise. Giving natural preparation to the authoritative individuals to foster required abilities and information is a significant capability of GHRM. Likewise by giving natural schooling that in a difference in conduct among supervisors and non-administrative workers is required inside the associations. Improvement of both green unique capacities and green ground breaking initiative is helpful

primer highlights further develop green item advancement execution. A review has shown that GHRM factors including green enrolment, green preparation and improvement and green learning on firm execution essentially influence the presentation of the firm (**Bhutto & Auranzeb, 2016**).

1.1. Research Background

In recent years, the discourse surrounding workplace environments has undergone a significant transformation, with increasing attention being paid to the impact of environmental factors on employee well-being and performance. Among these factors, the concept of a "green environment" has emerged as a focal point of interest and investigation. A green environment refers to a workplace setting that prioritizes sustainability, incorporates elements of nature, and promotes eco-friendly practices. The green building structure development is picking up speed, with a developing spotlight on its capability to help the climate as well as improve worker performance. According to industry trends, green building features are positively correlated with worker productivity and well-being. Anecdotal reports of increased productivity in green spaces and improved employee satisfaction are highlighted in reports and conferences. Research is continuous, yet existing examinations investigating the effect of natural variables on laborers point towards promising conceivable outcomes. Improved air quality, access to natural light, and thermal comfort are all given priority in green building design. Creating productive and healthy work environments is becoming increasingly important as businesses strive to attract and retain top talent. As a result of this growing awareness, green buildings are seen as an important investment that could benefit both the environment and employee performance.

This study focuses specifically on exploring the effect of green environments on employee performance within organizational settings. While the importance of environmental sustainability has long been recognized from an ecological perspective, its potential influence on employee outcomes is a relatively new area of inquiry. By examining the relationship between green environments and employee performance, this research aims to contribute to our understanding of how organizational practices can impact individual productivity and well-being. A developing group of proof proposes a critical connection between green structures and worker execution. Green building design principles directly address these concerns, as industry trends highlight a shift toward workplaces that prioritize employee well-being and productivity. Studies investigating the effect of ecological variables on laborers point towards promising associations between highlights like superior air quality, normal light access, and warm solace, and measurements like worker fulfillment and efficiency. The objective of this research proposal is to investigate the quantifiable effect of green building features on employee performance in order to gain a deeper understanding of this connection. By laying out an unmistakable circumstances and logical results relationship, this examination can give significant experiences to organizations trying to streamline their work environments for both ecological and monetary supportability.

The primary objective of this study is to investigate the extent to which exposure to green environments in the workplace influences various dimensions of employee performance. These dimensions may include but are not limited to task performance, creativity, job satisfaction, and overall job engagement. By examining these specific aspects, we seek to uncover the mechanisms through which green environments exert their effects on employee behavior and performance. While proof recommends a positive connection between green structures and

representative execution, the degree of this effect stays a subject of dynamic examination. Existing studies suggest links between key features like natural light and air quality and worker satisfaction and focus, and industry trends highlight improved employee well-being and productivity in green spaces. However, there is a dearth of a comprehensive comprehension of the quantifiable effect that eco-friendly buildings have on a variety of aspects of employee performance, including absenteeism, productivity, and creativity. This exploration proposition means to address this hole by researching the causal connection between unambiguous green structure elements and representative execution measurements. This research has the potential to inform the design and construction of workplaces that maximize both environmental sustainability and employee well-being by providing a clearer picture of the extent to which green buildings influence employee outcomes.

Understanding the relationship between green environments and employee performance is crucial for organizations seeking to enhance their productivity and foster a supportive work environment. With the growing emphasis on sustainability and corporate social responsibility, businesses are increasingly turning to green initiatives as a means of promoting employee well-being and organizational effectiveness. By elucidating the linkages between green environments and employee performance, this research can inform the development of evidence-based practices aimed at creating healthier, more productive workplaces. There is growing interest in the connection between employee performance and green buildings, with potential benefits for people and the environment. Green structures, planned considering natural supportability, focus on highlights that can emphatically influence worker prosperity and efficiency. These elements incorporate superior indoor air quality with legitimate ventilation, expanded admittance to normal light, and enhanced warm solace. Studies propose that such elements can prompt a

critical effect on worker execution. Natural light exposure can increase alertness and focus, while improved air quality can reduce fatigue and respiratory issues. Comfortable temperatures can also help create a more positive work environment by reducing distractions. Overall, green buildings have the potential to make the workplace healthier and more productive, which benefits both employers and employees.

In light of the aforementioned considerations, this study poses the following research questions:

1. To what extent does exposure to green environments in the workplace impact employee task performance?
2. How does the presence of green elements in the work environment influence employee creativity and innovation?
3. What role does job satisfaction play in mediating the relationship between green environments and overall employee performance?

1.2. Research Problem

This study focuses on the private and the non-private places of business to grasp the effect of the board mediations like the green building structures on tenants' ways of behaving and, thusly, on their exhibition. Focusing on non-private structures as a particular structure typology to decide energy utilization in green structures was first featured by a report drove by creators. The structure life cycle represents over 40% of asset use, alongside the structure's creation, activity and upkeep. The groundwork of green structure configuration depended on worries about a lot of

waste and the high-energy utilization that happens during the existence pattern of tall structures. The increasing expenses for energy and garbage removal are probably going to effect on planners who, thus, are trying to embrace a more reasonable plan technique in the fabricated climate industry. Albeit numerous sorts of green structures exist, for example, schools, medical services, private and retail, this review centers around places of business. **(Bhutto & Auranzeb, 2016).**

While illustrations can be gained from other structure typologies, limiting the degree to the place of business will dispose of any extra components that could impact the outcomes. Moreover, it is trying to connect with associations situated as multi-occupants in business green structures. These difficulties remember contrasts for their interest arrangements, levels of activity and upkeep, and needs for further developing ways of behaving and connections because of the non-presence of proprietorship. The multi-occupant point of view is past the extent of this study which centers on associations' mediations to help worker ways of behaving bringing about superior execution in green structures. **(Chen and Chang, 2013)**

In contemporary organizational discourse, the significance of the work environment in shaping employee behavior and outcomes has garnered considerable attention. One area of particular interest is the influence of green environments – characterized by sustainable practices and the integration of natural elements – on employees' performance. While the concept of green environments holds promise for fostering employee well-being and organizational effectiveness, empirical research examining its specific effects on performance outcomes remains limited.

1.2.1. Theoretical Gaps

Identifying theoretical gaps in research helps highlight areas where existing literature may be insufficient or incomplete. Here are some theoretical gaps related to the effect of green environments on employees' performance:

1. Limited Integration of Environmental Psychology Theories: Despite the increasing interest in green environments, there is a lack of integration of theories from environmental psychology into organizational research. Exploring concepts such as biophilia (the innate human tendency to connect with nature) and attention restoration theory (the idea that exposure to nature restores cognitive resources) could provide a more nuanced understanding of how green environments influence employee performance.

2. Neglect of Moderating Variables: Existing research often overlooks potential moderating variables that could influence the relationship between green environments and employee performance. Factors such as individual differences in environmental sensitivity, organizational culture, and job characteristics may interact with green initiatives to affect performance outcomes. Investigating these moderating variables can enhance the applicability and generalizability of findings.

3. Inadequate Attention to Mechanisms of Influence: While studies have documented a positive association between green environments and employee performance, the underlying mechanisms driving this relationship remain poorly understood. Research has yet to elucidate the specific psychological, physiological, and social processes through which exposure to nature in the workplace enhances performance. Identifying these mechanisms is essential for developing targeted interventions and organizational practices.

4. Limited Examination of Long-Term Effects: Many studies in this area focus on short-term outcomes or immediate reactions to green interventions, neglecting the potential long-term effects on employee performance. Longitudinal research is needed to assess the sustainability of performance improvements associated with green environments over time. Understanding the durability of these effects is crucial for informing strategic decision-making and resource allocation within organizations.

5. Sparse Exploration of Cultural and Contextual Factors: Research on the effect of green environments on employee performance often lacks cross-cultural perspectives and fails to consider the influence of contextual factors. Cultural differences in attitudes towards nature, as well as variations in organizational practices and regulatory environments, may shape the effectiveness of green initiatives in different settings. Exploring these cultural and contextual factors can provide valuable insights into the boundary conditions of the relationship between green environments and employee performance.

Addressing these theoretical gaps can enrich understanding of how green environments contribute to employee performance and inform the development of evidence-based practices for creating healthier and more productive workplaces.

1.2.2. Practical Gaps

Identifying practical gaps in research helps to pinpoint areas where the application of findings may be limited or where practical challenges exist. Here are some practical gaps related to the effect of green environments on employees' performance:

1. Limited Implementation in Real-World Settings: While there is growing evidence supporting the positive impact of green environments on employee performance in controlled research settings, there is a lack of implementation and evaluation of green initiatives in real-world organizational contexts. Practical barriers, such as budget constraints, lack of organizational buy-in, and logistical challenges, may hinder the adoption of green practices in workplaces. Bridging this gap requires research that addresses the practical feasibility and scalability of implementing green initiatives within diverse organizational settings.

2. Insufficient Guidance for Implementation Strategies: Organizations interested in creating green environments may lack clear guidance on effective implementation strategies. Research often provides theoretical insights into the benefits of green initiatives but falls short in offering practical recommendations for designing and implementing sustainable workplace interventions. Developing evidence-based guidelines and best practices for incorporating green elements into the built environment can help organizations navigate the complexities of creating eco-friendly workplaces.

3. Lack of Outcome Measurement Tools: Evaluating the effectiveness of green environments on employee performance requires robust outcome measurement tools that capture relevant dimensions of performance. However, existing measures may be inadequate or insensitive to the unique features of green workplaces. Practical gaps exist in the development and validation of comprehensive assessment tools tailored to assess the impact of green environments on various aspects of employee performance, including productivity, creativity, job satisfaction, and well-being.

4. **Challenges in Sustaining Employee Engagement:** Maintaining employee engagement and commitment to green initiatives over the long term poses practical challenges for

organizations. While initial enthusiasm may drive the adoption of green practices, sustaining employee motivation and participation in eco-friendly behaviors requires ongoing support and reinforcement. Practical gaps exist in identifying effective strategies for fostering a culture of sustainability within organizations and sustaining employee engagement in green initiatives beyond the initial implementation phase.

5. **Limited Integration with Organizational Practices:** Green initiatives are often treated as standalone interventions rather than integrated into broader organizational practices and policies. This fragmented approach may undermine the effectiveness and sustainability of green efforts in driving employee performance. Practical gaps exist in understanding how to align green initiatives with existing organizational structures, processes, and goals to maximize their impact on employee performance and organizational outcomes.

Addressing these practical gaps is essential for bridging the divide between research findings and real-world applications, enabling organizations to leverage green environments as a strategic asset for enhancing employee performance and well-being.

- Compared to conventional office spaces, how much do specific green building features like improved ventilation systems or access to nature views increase employee productivity?
- Do employees who work in green-certified buildings have higher self-reported well-being and lower absenteeism rates than those who work in non-green buildings?
- How does the presence of regular light and biophilic plan components (plants and natural materials) in green structures impact worker imagination, critical thinking abilities, and direction contrasted with customary office conditions?

- Will green building features' potential to improve employee performance and reduce absenteeism translate into a measurable return on investment for businesses that implement sustainable building practices?
- Does the objectively measured impact of green buildings on key metrics like productivity and absenteeism differ from employee perceptions of their well-being and performance in these buildings?

1.3. Research Significance

There are a number of reasons why this study on how green buildings affect employee performance is important:

Bridging the Knowledge Gap:

Despite the fact that anecdotal evidence suggests a positive connection, the extent of the impact is still the subject of ongoing research. By providing a quantifiable understanding of how green buildings influence employee performance, this study aims to move beyond anecdotal evidence.

Illuminating Business Choices:

Organizations are progressively focusing on representative prosperity and efficiency. This examination can give important bits of knowledge to organizations considering green structure plan or remodel. The research can help businesses make data-driven decisions about their workplaces by establishing a clear cause-and-effect relationship between green buildings and employee performance. This could result in a win-win situation for both economic and environmental sustainability.

Optimizing Workplace Design:

The findings have the potential to provide architects, designers, and facility managers with information regarding the specific green building features that have the greatest impact on employee performance. Utilizing this knowledge, workplace design can be improved to boost productivity, creativity, and employee well-being.

Sustainability and employee well-being:

There is a growing body of evidence that green buildings can make work environments that are healthier and more productive. The development of environmentally and employee-friendly, sustainable workplaces could benefit from this research. This research has the potential to encourage a wider adoption of sustainable building practices by highlighting the positive effect that green buildings have on employee performance.

Establishment for Future Exploration:

This examination can act as an establishment for future examinations investigating the connection between green structures and representative execution in more detail. The long-term effects of working in green buildings, the impact on various employee demographics, or more in-depth examination of specific green building features are all topics for future research. By and large, this examination can possibly altogether affect the manner in which organizations approach working environment plan and development. The research has the potential to contribute to the development of sustainable, healthier, and more productive workplaces in the future by providing a clearer understanding of the connection between green buildings and employee performance. The examination into the effect of green structures on worker execution conveys huge load for both down to earth and hypothetical reasons:

1.3.1. At the theoretical Level:

Economic benefits: Businesses will see an increase in profits as a direct result of decreased absenteeism, increased employee retention, and increased productivity. Evaluating these enhancements through exploration will give substantial proof to organizations to legitimize interests in green structures. (Chen and Chang, 2013)

Benefits to society as a whole: A happier and healthier workforce is a direct result of improved employee well-being and reduced stress. (Slovik, 2013)

Benefits for the environment: By reducing energy, water, and carbon emissions, green buildings mitigate climate change and its effects and promote sustainability. (Jenny & Xin, 2016)

Acquiring an understanding of the mechanisms:

This research can delve deeper into the specific mechanisms by which employee performance is improved in green buildings. This could incorporate concentrating on the effect of further developed air quality, regular light openness, admittance to nature, and bio-philic plan on mental capability, feelings of anxiety, and inspiration.

Generalizability:

While existing exploration proposes beneficial outcomes, further investigations are expected to evaluate the generalizability of these discoveries across various kinds of work environments, work jobs, and social settings. (Slovik, 2013)

Improving plan:

Exploration can illuminate the ideal plan regarding green structures that boost their positive effect on representative execution, taking into account factors like space use, innovation combination, and individual inclinations. (North, 1997)

Policy development:

Government policies and building regulations can be influenced by solid evidence to encourage green building practices, resulting in broader societal benefits. Generally speaking, research in this space holds the possibility to:

- Give a convincing business case to green structures: By measuring the monetary advantages, exploration can convince organizations to put resources into supportable working environments.
- Guide the plan of viable green spaces: Understanding the components and ideal plan standards can prompt working environments that amplify representative prosperity and execution. (Slovik, 2013)
- Add to a more maintainable future: By advancing green structure rehearses, exploration can assist with relieving environmental change and establish a better climate for everybody. To realize this strategy's full potential for individual businesses and society as a whole, further research into the relationship between green buildings and employee performance is essential. (Opatha &Nawaratne, 2016).

The concept of green buildings has gained significant traction in recent years. Green buildings are designed and constructed with a focus on environmental sustainability, minimizing their impact on the environment throughout their lifecycle. This includes features that promote energy efficiency, water conservation, and the use of sustainable materials. While the environmental

benefits of green buildings are well-documented, the impact on employee performance is an area of ongoing research. This study aims to investigate the potential link between green building features and employee performance, exploring whether these sustainable workplaces enhance employee well-being, productivity, and overall satisfaction.

Integration of Environmental Psychology Theories: While there is a growing body of research on the effect of green environments on employee performance, there is often a lack of integration of theories from environmental psychology. Theoretical frameworks such as Attention Restoration Theory and Biophilia Hypothesis provide valuable insights into how exposure to nature influences cognitive functioning and well-being. However, practical applications of these theories within organizational contexts remain limited.

Understanding Mechanisms of Influence: Despite evidence suggesting a positive relationship between green environments and employee performance, the underlying mechanisms driving this relationship are not fully understood. There is a need for research that delves deeper into the psychological, physiological, and social processes through which exposure to nature in the workplace enhances performance. Identifying these mechanisms is crucial for developing targeted interventions and organizational practices.

1.3.2. At the practical level

Implementation Challenges: Practical barriers often hinder the implementation of green initiatives in real-world organizational settings. These barriers may include budget constraints, lack of organizational buy-in, and logistical challenges. Bridging this gap requires research that

addresses the practical feasibility and scalability of implementing green practices within diverse organizational contexts.

Guidance for Implementation Strategies: Organizations interested in creating green environments may lack clear guidance on effective implementation strategies. There is a need for research that provides practical recommendations for designing and implementing sustainable workplace interventions. Developing evidence-based guidelines and best practices can help organizations navigate the complexities of creating eco-friendly workplaces.

1.4. Research Questions

The primary objective of this research is to explore the relationship between green building features and employee performance. This will be achieved by:

- Identifying key green building features and their potential benefits for employee well-being and productivity.
- Investigating the impact of these features on employee outcomes through a combination of quantitative and qualitative data collection methods.
- Analyzing the data to determine if there is a significant correlation between green buildings and improved employee performance.
- Providing insights for companies and organizations considering the adoption of green building practices, highlighting the potential benefits for both environmental and business performance.

1.5. Research Objectives

The primary objective of this research is to explore the relationship between green building features and employee performance. This will be achieved by:

- Identifying key green building features and their potential benefits for employee well-being and productivity.
- Investigating the impact of these features on employee outcomes through a combination of quantitative and qualitative data collection methods.
- Analyzing the data to determine if there is a significant correlation between green buildings and improved employee performance.
- Providing insights for companies and organizations considering the adoption of green building practices, highlighting the potential benefits for both environmental and business performance.

1.6. Research Hypotheses:

H1: Employees working in green buildings will report higher levels of well-being compared to those working in conventional buildings.

H2: Employees in green buildings will demonstrate higher levels of productivity compared to those in conventional buildings.

H3: Employees working in green buildings will express greater satisfaction with their work environment compared to those in conventional buildings.

1.7. Research Model

This research will utilize a causal-comparative design. Data will be collected from two groups:

Group 1: Employees working in green buildings certified by a recognized green building standard (e.g., LEED)

Group 2: Employees working in conventional office buildings that are not green-certified

We will measure employee well-being, productivity, and satisfaction through a combination of methods:

Surveys:

Standardized questionnaires will be administered to collect data on employee well-being (e.g., perceived stress levels, sleep quality), productivity metrics (e.g., self-reported absenteeism, task completion rates), and satisfaction with the work environment (e.g., building features, air quality, comfort).

Focus Groups:

- Holding focus group discussions with a smaller sample of employees from both groups can provide deeper qualitative insights into their experiences working in their respective environments.
- By comparing data from the two groups, we can assess whether green building features are associated with positive changes in employee well-being, productivity, and satisfaction.

1.8. Scope of The Study

Target Industry: The initial study could focus on a specific industry known for knowledge work and sedentary office environments, such as:

- Technology companies
- Financial services firms
- Professional service firms (e.g., accounting, law)

Target Organization: An organization with a mix of green-certified and conventional office buildings within the chosen industry would be ideal.

1.9. The Project Structure

This structure outlines a research plan to investigate the impact of green buildings on employee performance. It can be adapted in order to fit the specific needs and resources of the study. Using a combination of methods, this research project will investigate the effect of green buildings on employee performance. The following phases will make up the structure of the project:

- **Writing about the Green Building Practices:** Characterize and investigate various parts of green structure plan and development. This could envelop energy productivity, asset protection (water, materials), indoor ecological quality (lighting, air quality, acoustics), and biophilic plan (association with nature).

- **Employee Performance:** Distinguish and characterize important measurements for worker execution in your review. Normal measurements incorporate efficiency, non-attendance, work fulfillment, mental capability, and inventiveness.
- **Existing research:** Lead an intensive survey of existing examination on the association between green structures and representative execution. Search for concentrates on that lay out a causal relationship and distinguish likely systems through which green structures could impact execution.

2. Research Plan

- **Research Question:** Form a particular exploration question that tends to the effect of green structures on representative execution. This question ought to be clear, brief, and quantifiable.
- **Research Strategy:** Pick an examination technique that best suits your assets and exploration question. Here are a few likely methodologies:

Field Study: Think about representative execution in green and traditional places of business. This could include reviews, efficiency information examination, and natural checking.

Lab Investigation: Establish a controlled climate to detach the impacts of explicit green structure highlights on worker execution.

Case Studies: top to bottom assessment of a solitary green structure project, investigating its effect on representative prosperity and execution.

Overview Exploration: Circulate studies to workers in green and traditional structures to survey their experience and execution.

3. **Information Assortment Worker Information:** Accumulate information on representative execution through studies, self-announced measurements (e.g., presenters logs), or organization records (e.g., efficiency information).
4. **Building Information:** Gather data on the green structure highlights and ecological quality (e.g., air quality, temperature, light levels) of the explored structures.

Control Factors: Distinguish and represent potential perplexing factors, for example, work type, work culture, and worker socioeconomics.

5. **Information Investigation:** Dissect the gathered information utilizing fitting factual techniques to decide whether there is a huge relationship between green structure elements and representative execution. Consider directing subgroup examinations to look at on the off chance that the effect of green structures differs relying upon representative socioeconomics or work type.
6. **Discussion and conclusion:** Decipher discoveries with regards to the current exploration and impediments of your review. Talk about the ramifications of exploration for building configuration rehearses representative prosperity, and in general hierarchical execution. Distinguish regions for additional examination to reinforce the comprehension of the connection between green structures and representative execution.
7. **Cost-Benefit Analysis:** While your essential center may be execution, consider including money saving advantage investigation to survey the expected monetary benefits of green structures corresponding to representative prosperity and execution upgrades. Longitudinal Review: In the event that assets permit, consider a longitudinal report plan to follow the drawn out effect of green structures on representative execution over the long haul.

This construction gives a structure to concentrating on the effect of green structures on representative execution. Define and explores different aspects of green building design and construction. This could encompass energy efficiency, resource conservation (water, materials), indoor environmental quality (lighting, air quality, acoustics), and biophilic design (connection to nature).

Chapter 2: Literature Review

2.1. Introduction

Each building works unequivocally or verifiably in view of how tenants act and answer (Day and O'Brien 2017). Likewise, the generally speaking natural advantages of green structures rely upon tenants' ways of behaving (Wener and Carmalt 2006). The actual parts of the structure give offices and space in which to live and work. Subsequently, these structures are intended to oblige the conduct, social and mental requirements of tenants. In this manner, it is essential to comprehend and foresee what exercises are expected to understand the maximum capacity of green structure plan. From the specialized point of view, architects and creators guarantee that energy and waste are minimized. Explicit human way of behaving basically decides the proficient utilization of these assets (Wener and Carmalt 2006).

2.2. The independent variable

Nonetheless, explicit mental and social issues limit the specialized and affordable arrangements given by green structures (Hoffman and Henn 2008). For instance, tenants could save energy when they are inside the structure. As Day and Gunderson (2015) expressed, when energy use is recorded as higher during non-working hours, this is most likely because of representatives leaving lights and hardware on even subsequent to completing work. In another model, inhabitants settle on conduct decisions to augment their own solace by utilizing unnatural light sources rather than regular day lighting hotspots for which the structure was planned (Wener and Carmalt 2006). These models are important for tenants' social issues that fundamentally shift the

proficiency of green structures. The need of associations by tenants with the green elements of green structures is frequently impacted by their absence of information and data about the structures (Day and Gunderson 2015). A few scientists have would in general form how they might interpret these issues through tenants' reactions in which they rate their fulfillment through conduct input (Heerwagen 2000).

For any originator, tenants' fulfillment and wellbeing are convincing drivers for informed choices. Be that as it may, the main detour in considering an tenant conduct technique in maintainable plan arrangements is the gigantic inter-individual contrasts between tenants (Wang et al. 2018; Cena and De Dear 2001; Haldi and Robinson 2011). The insights and, subsequently, the way of behaving of inhabitants are probably going to be profoundly factor and flighty. This is the fundamental area of concern; furthermore, architects frequently gripe that they can't accomplish great ecological quality since they have zero control over every tenant's way of behaving (Paul and Taylor 2008). From this point of view, the tenant situated plan process is a discussed subject, particularly at the point when creators may not be thinking about the inclinations and necessities of each tenant. While the representatives that working in their workplaces are not in charge or answerable for their current circumstance, they are more anxious (Paul and Taylor 2008). Subsequently, their exhibition, for example, efficiency and prosperity, at work may be most affected. Following this line of contention, workers' natural way of behaving at the working environment ought to consolidate both in-job and extra-job execution as a commitment to and production of significant worth for associations (Ramus and Steger 2000). Notwithstanding, representative ways of behaving for anticipating execution are to a great extent subject to the association's drives and practices.

2.3. The dependent variable

Green buildings are becoming more and more commonplace in offices because of their emphasis on occupant well-being and environmental sustainability in their design. This change is being driven by rising awareness of the benefits that green buildings may provide for worker satisfaction, health, and performance in addition to environmental concerns. The present study scrutinizes the extant literature concerning the correlation between green building attributes and employee performance, delving into the plausible processes that may underlie these associations.

Enhanced Quality of Indoor Environment (IEQ):

The emphasis that green buildings have on enhancing interior environmental quality (IEQ) is among its most well-known advantages. This covers things like improved ventilation, more natural light availability, improved thermal comfort, and lower noise levels. Research has indicated that higher IEQ can result in a number of advantageous consequences for workers, such as:

Enhanced cognitive function:

Fisk (2000) conducted research and discovered that there is a strong correlation between higher ventilation rates in office buildings and workers' increased capacity for memory, decision-making, and typing. (Fisk, W. J. (2000).

Decreased presenters and absenteeism: Research indicates that there is enhanced thermal comfort and air quality in green buildings that may contribute to a drop in sick leave among the employees. Moreover, (Singh et al., 2010) gave a review of the literature on the effects of indoor environmental quality (IEQ) on building inhabitants' health, well-being, and productivity.

Indoor and Built Environment: Furthermore, there's a chance that workers won't be as likely to miss work due to illness or discomfort (presenters).

Enhanced satisfaction and well-being of employees: By lowering tension, weariness, and headaches, there will be an improved IEQ that can help employees feel better about themselves. In (Park et al., 2014) a study on the connection between worker wellbeing and indoor environmental quality in buildings with green certification is also given thoroughly.

Building and Environment: Workers in green buildings expressed greater levels of satisfaction with their work environment than those in conventional buildings, according to a study by Heerwagen et al. (2000). A thorough literature review and conceptual framework for the salutogenic workplace are also provided.

The advantages of green design for psychology:

Green buildings frequently use design components that go beyond air quality and physical comfort. Some examples include having access to natural views, incorporating natural aspects into designs, and providing more possibilities for physical activity. These characteristics may significantly affect an employee's mental health, which could result in:

Enhanced problem-solving and creativity: Research indicates that being in nature can improve both cognitive function and creative thinking (Van Den Berg et al., 2010). There is also a review of the data regarding the health advantages of green workspaces which is given in the journal of Environmental Psychology, 30(4), 189-196. Through the creation of a more engaging and dynamic work environment, bio-philic design features can also help foster creativity and problem-solving skills. Access to nature and exposure to daylight have been related to lower levels of stress and happier moods (Ulrich et al., 1991). Stress recovery follows the exposure to

natural settings. Stairs above elevators are one example of a green building design that encourages physical exercise and can help reduce stress and improve mental health.

Increased worker engagement and output:

Workers are more likely to be engaged and productive if they are happy, healthy, and feel at ease in their workplace. Research indicates that incorporating green building elements into a workspace can boost worker enthusiasm, teamwork, and total output (Browning, et al. 2014).

Investing in healthy places:

There are economic and social benefits of dispersed green infrastructure. In order to expand on the understanding of management's involvement, systematic assessment of studies are also done by other authors that focus on productivity and well-being in green buildings to identify a research need. The systematic review's main goal is to examine the body of research on two important effects of green buildings: well-being and productivity. The research boundary for this study is clearly defined by the systematic literature review.

Because of its potential benefit to both environment and their residents, green buildings have gained attention in the field of built environment. Comprehending the three interconnected concerns linked to the impacts of green buildings is crucial (Eichholtz, Kok, & Quigley, 2010). The first problem is the goods, which include the components, the framework, and the controls needed to obtain any type of certification for green buildings. The second concern relates to people, or the various parties involved, including the government, financiers, designers, engineers, landlords, owners, and workers. The third concern relates to the procedures or results—maintenance, performance, and management, for example. To better comprehend how and to what extent green buildings affect their tenants, this section clarifies these three topics.

This section also covers the potential of green buildings, the stakeholders engaged, and the background of green buildings.

Given that green buildings can promote sustainability, there is a clear international interest in researching green buildings. Thus, governments, the built environment sector, private businesses, and the general public all support green construction initiatives (Zuo and Zhao 2014). The terms "green buildings" and "sustainable buildings," as well as "high-performance buildings," "energy-efficient buildings," "low-carbon buildings," "high-quality buildings," and "intelligent buildings," are frequently used in conjunction with one another when discussing buildings (Kozusznik et al. 2019). All of these concepts are referred to as "green buildings" in this thesis. There is ambiguity in the definition of green buildings (GBs) (Zuo and Zhao 2014). According to USEPA (2016), a green building is one that is planned with well-considered architecture and procedures that minimize resource use throughout the building's life cycle. A green building is one that minimizes waste, maximizes day lighting, recycles and reuses resources, and has a high interior environmental quality (IEQ) (Kibert 2016).

According to a different definition provided by the World Green Building Council (WGBC 2017), green buildings have the potential to completely replace conventional structures because of their remarkable capacity to significantly lower carbon emissions from the building process. Dwaikat and Ali (2016) defined a green building as an environmentally conscious commercial space that consumes fewer natural resources during construction and operation. Another way to define a "green building" is one that is certified green by an organization that certifies green buildings or that is built and maintained in compliance with any set of rules, regardless of whether the building is brand-new, remodeled, or already existing (Wener & Carmalt 2006).

Although definitions differ, they all come to the same conclusion: a building can be considered "green" if it strives to be resource-efficient and supports a healthy ecology.

A rating of some kind is one of the typical requirements for a building to be considered "green." With the introduction of the Building Research Establishment Environmental Assessment Methodology (BREEAM) in 1990, green building certification began to take shape (Gowri 2004). Several green building grading systems have gained popularity in some nations throughout the past 20 years. Several green building certifications are available, such as the Comprehensive Assessment, Promise in Finland, ECO-PRO in Germany, and Leadership in Energy and Environmental Design (LEED) in the United States.

System for Built Environment Efficiency (CASBEE) in Japan, Athena in Canada, LEED India and Green Rating for Integrated Habitat Assessment (GRIHA) in India, Green Star in South Africa, and Green Star and National Australian Built Environment Rating System (NABERS) in Australia and The Hong Kong Building Environmental Assessment Method (HK BEAM) in China.

Various nations have various construction codes. The majority of the debate in this study, which examines green buildings in Australia and India, focuses on contrasting Australia's Green Star which was introduced in 2003 and India's NABERS (introduced in 2000) rating systems with India's LEED (1993) system. The LEED and Green Star or NABERS are not interchangeable from the beginning. Nevertheless, in an idealized situation, a Platinum LEED building would be compared to a six-star building, a Gold LEED building to a five- or four-star building, a Silver LEED building to a three-star building, and a certified LEED building to a one- or two-star building (BRE 2008). Global leadership is associated with six-star buildings, Australian excellence is associated with five-star buildings, best practice is associated with four-star

buildings, good practice is associated with three-star buildings, average practice is associated with two-star buildings, and minimum practice is associated with one-star buildings (GBCA 2009). Similar to this, the NABERS grading system uses a five-star tool; a five-star rating denotes outstanding building performance, a four-star rating indicates strong and excellent performance, and a three-star rating denotes very good performance.

A structure should meet specific prerequisites to be thought of "green," incorporating being evaluated here and there. The Structure Exploration Foundation Ecological Evaluation Technique (BREEAM) was the impetus for the ascent of green structure confirmation in 1990 (Gowri 2004). In specific countries, various green structure rating frameworks have acquired prominence over the course of recent years. LEED in the US (USA), Commitment in Finland, ECO-Genius in Germany, the Thorough Evaluation Framework for Constructed Climate Proficiency (CASBEE) in Japan, Athena in Canada, the Hong Kong Building Natural Evaluation Technique (HK Pillar) in China, LEED India and Green Rating for Coordinated Living space Evaluation (GRIHA) in India, Green Star in South Africa, and Green Star and Public Australian Fabricated Climate Rating Framework (NABERS) in Australia are a couple of these green structure certificates. Each nation has a different construction law.

Like other rating frameworks, the NABERS rating framework depends on a five-star framework: five stars signify extraordinary structure execution; four stars show great and solid execution; three stars demonstrate generally excellent current market best practices; two stars demonstrate normal structure execution; and one star means insufficient energy the board or obsolete frameworks (NABERS 2019).

Several of these accreditations, when applied to proficient settings, award credits as indicated by specific rules:

- the area of the structure's development;
- the biological equilibrium of the building site both during and after development;
- the utilization of water-and energy-effective materials;
- And the decrease of waste connected with sewage and refrigerants.

Xiong et al. (2015); Altomonte et al. 2019; Arif et al. 2016; Steinemann, Wargocki, and Rismanchi 2017) is a list a couple of parts of this tool compartment that incorporate recognizing great IEQ, which underlines better utilization of day lighting, outside sees, warm solace, natural air course, and diminished poisons. These instruments are essentially used to survey how well the assembled climate can fulfill manageability guidelines by giving pointers to future development. As per Ehrholtz, Kok, and Quigley (2013), partners embrace these deliberate rules to progress and carry out their green structure configuration approach. The various 37 examinations on green structures feature the specialized parts of these authentications as qualifying advantages of green structures. The tendencies and activities of those incorporating these angles are as yet indistinct (Ding and YifeiZou 2016).

The Crucial Role of Green Buildings in Employee Performance and Prosperity:

A sound workplace is crucial for employee efficiency and prosperity. Green buildings are at the forefront of this concept. By prioritizing sustainability, these eco-friendly structures offer numerous benefits beyond just bringing down fossil fuel emissions; they also significantly impact your employees' daily routines at work. Green buildings are essentially designed with an emphasis on environmental concern, air quality standards, and energy efficiency (Von Paumgarten, 2003). However, choices that seem exclusively ecological can also greatly affect your employees' satisfaction, well-being, and productivity.

2.4. The relationship between the independent and the dependent variables:

The Performance Lift:

Since green workplaces incorporate better air quality, more natural light, and outside views, they have been associated with significantly higher levels of cognitive function. According to a Harvard T.H. Chan School of Public Health review, workers in green, well-ventilated work areas outperformed those in conventional workplaces on cognitive ability tests by 61% (Allen et al., 2015). Put another way, eco-friendly workspaces are more than just "good-to-haves." They play an essential role in improving daily experiences for your staff members and empowering better performance. Now, let's investigate a few specific ways that green buildings can contribute to your team's efficiency and prosperity:

Upgraded Air Quality:

Green buildings promote a superior indoor climate by emphasizing efficient ventilation systems and reducing indoor contaminants (Thatcher & Milner, 2012). By bringing down common health complaints including headaches, fatigue, and respiratory problems associated with "Sick Building Syndrome," these standards can reduce absenteeism and increase overall productivity (Singh et al., 2010).

Better Lighting:

Designs for eco-friendly buildings often take full advantage of natural light (Miller et al., 2009). As well as saving energy, this also makes the workspace more aesthetically pleasing, which

further improves mood and reduces eye strain – two factors that significantly affect productivity (Sathaye et al., 2012).

Temperature Control:

Office spaces with green elements have more efficient heating and cooling systems, which result in comfortable temperature ranges (Browning et al., 2014). The ideal temperature range for human performance was found in a study led by Lawrence Berkeley National Lab (cited in Ries et al., 2006). Any deviation from this range might cause discomfort and diminish output. Overall, transitioning to a comfortable workspace is a significant investment in your employees' productivity and well-being, as well as aiding the climate. A satisfied and healthy employee is, after all, a productive employee.

The Advantages of Natural Lighting for Expanding Employee Efficiency:

Natural light affects how productive employees are. There's more to it than what might be expected; it goes beyond simply lighting up the workspace. Let's explore how this pivotal part of sustainable design could increase workplace effectiveness (Miller et al., 2009). There are various benefits to moving back from artificial lighting and embracing the wonderful sun. The idea behind this is simple yet significant: the more we utilize natural light, the less we require artificial light, which saves energy as well as offers various health benefits (Park et al., 2014). Exposure to sunlight, most importantly, contributes to the maintenance of our circadian rhythms, which are internal body clocks that control our sleep-wake cycle. The ideal light for our bodies actually comes from the sun, as we evolved under its rays (Van Den Berg et al., 2010).

Employees who have a sufficiently bright workstation with plenty of natural light are better able to stay asleep throughout the night and are thusly more alert and productive during the workday (Browning et al., 2014). Second, vitamin D, which is fundamental for immune system function, bone health, and even mood regulation, is abundant in sunlight. Regular exposure to daylight during working hours can bring vitamin D levels up in employees, which will help their overall health and well-being (Allen et al., 2015).

In the realm of design, it's said that "light is the first of the paintbrushes on the palette." While examining natural light in the workplace, this couldn't be truer (Miller et al., 2009). It changes the aesthetic appeal while also creating the impression of a happier, healthier, and more effective workplace. Additionally, a study completed by Northwestern University's Interdepartmental Neuroscience Program in Chicago found that a worker's efficiency rose in direct proportion to their exposure to daylight, which also improved their personal satisfaction and sleep patterns (Miller et al., 2009). Likewise, natural light has a relaxing influence that decreases stress in the workplace. It diminishes headache occurrence and eye fatigue, which brings down absenteeism.

2.5. Conclusion

Green structures can essentially upgrade representative execution in more ways than one. Further developed indoor air quality, accomplished through better ventilation and filtration frameworks, can prompt more keen concentration, decreased respiratory issues, and fewer days off. Vital utilization of normal light can support worker mind-set, energy levels, and in general prosperity. Also, green structure includes that associate inhabitants with nature, similar to admittance to plant life and patios, can additionally diminish pressure and work on mental capability. By

establishing better and more agreeable workplaces, green structures can possibly open huge upgrades in representative efficiency, imagination, and in general fulfillment.

Green structures hold the possibility to change the work environment climate, encouraging natural supportability as well as representative prosperity and execution. This exploration proposition researches the effect of green structure plan and practices on worker execution. By directing a [insert picked research strategy, e.g., field study] contrasting representative execution in green and regular places of business, this exploration expects to recognize a likely causal connection between green structure highlights and worker measurements like efficiency, truancy, and occupation fulfillment. Understanding these connections can be significant for building originators, engineers, and organizations trying to make work areas that advance both ecological obligation and representative prosperity. The discoveries of this exploration can add to the developing assemblage of information on the effect of green structures on human wellbeing and execution. Eventually, this examination endeavors to educate the plan and development regarding future work environments that are manageable as well as upgrade representative execution and prosperity, prompting a mutually beneficial arrangement for both the climate and the labor force.

3. Chapter 3: Research Methodology

3.1. Introduction

This research will investigate the impact of green buildings on employee performance using a mixed-method approach.

- **Quantitative data:** We will conduct a field study comparing employee performance in green-certified buildings to a control group working in conventional office spaces. Employee productivity metrics like task completion rates and error rates will be collected. Additionally, data on absenteeism rates and healthcare utilization will be analyzed.
- **Qualitative data:** Semi-structured interviews will be conducted with employees in both green and conventional buildings. This will allow us to gather insights into their perceptions of the work environment, well-being, and overall job satisfaction. These qualitative findings will help us understand the lived experiences of employees and potentially identify additional factors influencing performance.

By combining these quantitative and qualitative methods, we aim to gain a comprehensive understanding of the relationship between green building features and employee performance.

3.2. Operational definitions for research variables

- **Research Philosophy: Interpretivist**

An explanatory philosophy is in line with this research issue since it aims to comprehend how employees see and feel working in green buildings. Because these are subjective sensations best understood through an explanatory lens, our goal is to investigate how green aspects affect people's well-being, productivity, and overall performance.

- **Research Approach: Inductive**

We will Use an inductive method to gain a deeper knowledge of how green buildings affect the performance, beginning with staff experiences and observations. This makes it possible for us to spot new themes and connections that might not be immediately obvious when using a preconceived notion.

- **Research Strategy: Mixed Methods**

A mixed-methods approach will be used to gain a comprehensive understanding of the topic. This will involve:

Quantitative data: Conducting a survey with employees from green and non-green buildings to gather data on factors like employee well-being, productivity metrics, and absenteeism.

Qualitative data: Conducting semi-structured interviews with a smaller group of employees to delve deeper into their personal experiences and perspectives on working in green buildings.

- **Research Choice: Mixed Methods**

As mentioned above, a mixed-methods approach is chosen. Quantitative data provides objective measurements of performance, while qualitative data allows employees to express their lived

experiences and perceptions. Combining both methodologies creates a richer and more nuanced picture of the impact of green buildings.

- **Time Horizon: Cross-Sectional**

This initial study is probably going to use a cross-sectional design. We will be able to compare employee experiences and performance from green and non-green facilities since data will be gathered all at once. Future studies, however, might take into account a longitudinal design to monitor the long-term effects of green buildings on worker performance.

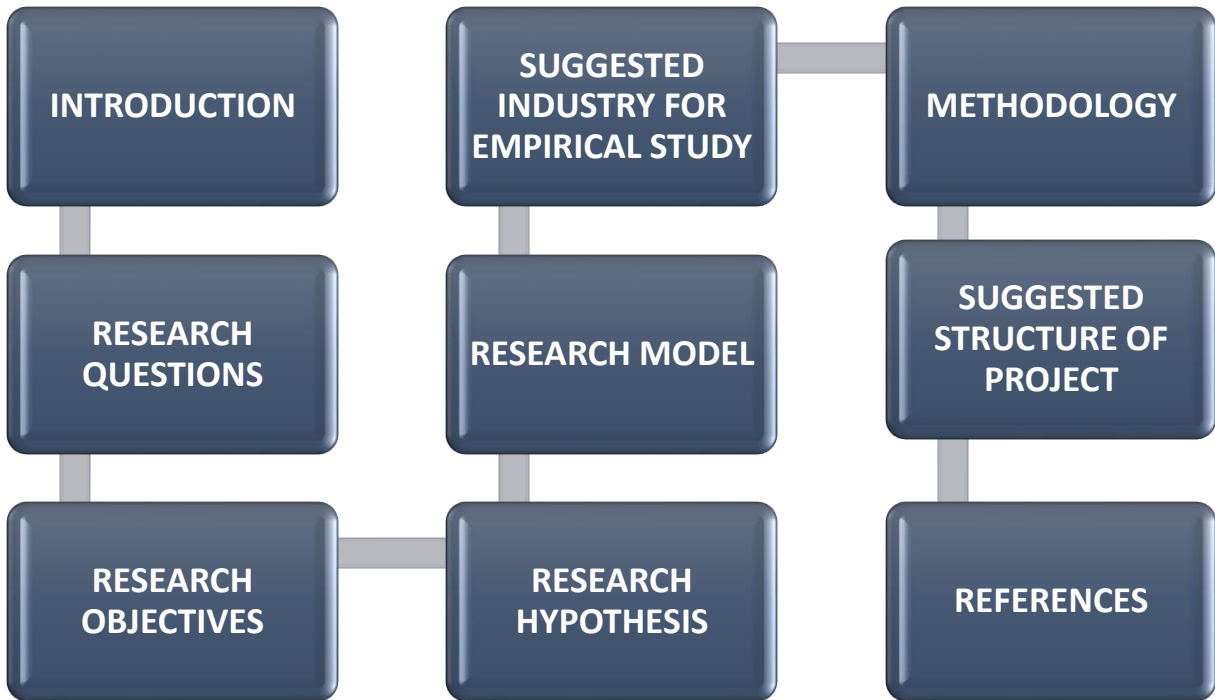
- **Data Collection and Analysis Techniques:**

Quantitative Data:

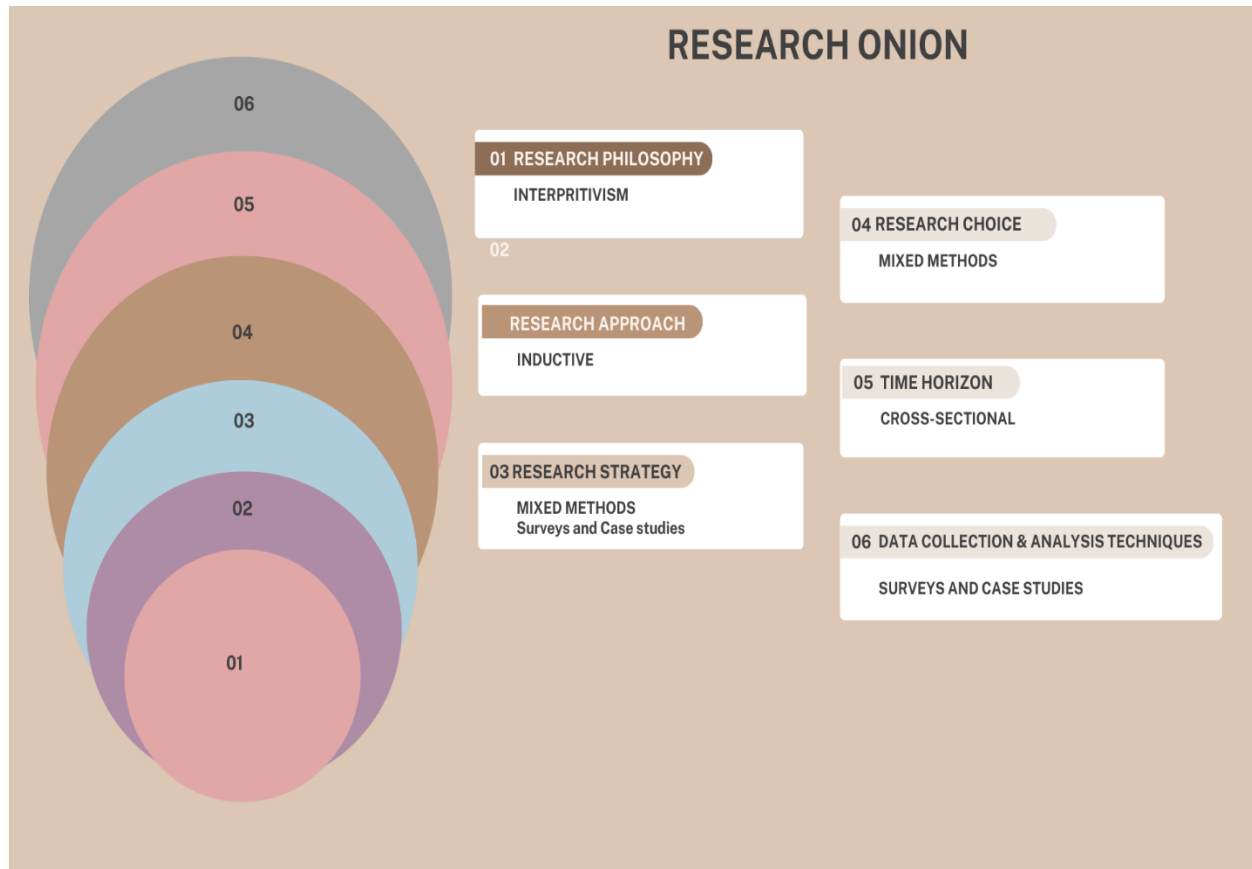
- An electronic version of a standardized survey will be created and given to staff members.
- To compare performance measures between groups operating in green and non-green facilities, data analysis will entail statistical approaches including calculating means, standard deviations, and correlations.

Qualitative Data:

- Semi-structured interviews will be carried out with a reduced number of workers from both kinds of structures.
- To find reoccurring themes and patterns in employee experiences and impressions of their workplace, thematic analysis will be employed.
- These methods of data gathering and analysis when combined allow us to fully comprehend the effects of green buildings on worker performance.



3.3. Research design (research onion)



3.4. Research population & Sampling methods and technique

Population of the Study:

The ideal examination populace for this study would envelop all representatives working in green-ensured structures. However, due to practical constraints, it is necessary to define a population that is more specific and accessible. Consider the following choices:

Industry specific:

Focus on employees in a particular industry (such as technology, finance, or healthcare) to reduce the impact of job type on performance.

Geographic location:

Limit the study to employees in a specific city or region that has a good mix of traditional and green office buildings.

Organization Size: Target representatives in organizations of a particular size reach to control for expected varieties in organization culture and work rehearses.

Methods of sampling:

The participants will be from chosen population using a variety of sampling techniques:

By giving everyone in the population an equal chance of being chosen, probability sampling ensures a representative sample.

Simple Random Sampling: A random number generator gives each person an equal chance of being chosen.

Stratified Random Sampling: In this scenario the selected participants are chosen proportionally from each subgroup by dividing the population into subgroups (such as department or job role).

Non-Probability Sampling: This method is easier to use, but it may not be statistically representative.

Convenience sampling: Choose participants who are easily accessible, which may result in biased results.

Quota sampling: To ensure some degree of representativeness, quotas are set for various population subgroups.

Method of Sampling: After selecting your sampling method, you must decide how to reach participants and recruit them. Some methods include:

Online Reviews: Circulate studies electronically to workers in green and ordinary structures inside your picked populace.

Workplace collaboration: Join forces with organizations in green structures to enlist members and accumulate information on location.

Collaboration with HR departments: Gain access to employee data, such as absenteeism rates, by working with HR departments of other businesses.

Extra Contemplations:

Sample Size: Based on your research question and desired level of confidence in the results, choose a sample size that is statistically significant.

Matching: To isolate the effect of building features, match participants according to factors like job type and experience level when comparing green and conventional buildings. This is how it can be ensured that the study gathers reliable data that accurately reflects the impact of green buildings on employee performance by carefully defining research population, selecting an appropriate sampling method, and utilizing an effective sampling technique.

3.5. Data collection method

This research will use a mixed method approach, joining quantitative and subjective information assortment strategies to acquire a far reaching comprehension of the effect of green structures on worker execution.

Quantitative Information:

- **Metrics for Employee Performance:**
- **Company Data:**

Access the employee performance data by working with the HR departments of participating companies (in both conventional and green buildings). This could include:

- Task consummation rates and mistake rates
- Meeting project deadlines
- Figures for sales (if any)
- **Software Usage:** If achievable, investigate utilizing efficiency following programming (with worker assent) to screen factors like keystrokes, time spent on undertakings, and meeting participation.

- **Health Statistics and Absenteeism:**

- Analyze anonymized HR department data on employee absenteeism and healthcare utilization (sick leave days, healthcare claims) in both building types.

Qualitative Data:

- **Semi-organized Interviews:** Direct detailed interviews with a more modest gathering of workers from both green and traditional structures. This considers investigating individual encounters and insights. Questions like these will be addressed in the interview guide:
 - Perceptions of the workplace, such as lighting, air quality, and noise levels
 - Worker prosperity and fulfillment
 - Seen effect of the workplace on concentration, inventiveness, and by and large execution
- **Worker Surveys:** Disperse on the web or paper reviews to a bigger example of representatives. Surveys can collect information on:
 - View of the workplace and building highlights
 - Well-being and job satisfaction as reported by themselves
 - Work routines and levels of productivity (subjectively reported)

Considerations:

Data Protection: Guarantee namelessness and privacy of all representative information all through the examination cycle.

Pilot Testing: Direct pilot tests for the two meetings and reviews to refine questions and guarantee clearness.

Information and Data Security: Execute secure information stockpiling and the board rehearses. By the data collection of both quantitative and qualitative parameters, there will be a

deeper and more nuanced understanding of the effects of green buildings. By doing so, there will be a record of both objective performance metrics and subjective employee experiences.

3.6. Types of data

Two main types of data will be collected for this study on how employee performance is affected by green buildings:

1. **Quantitative Information:** This alludes to mathematical information that can be estimated and measurably examined. In this review, quantitative information will zero in on measurements connected with worker execution and prosperity. Here are a few models:
 - **Metrics for Employee Performance:**
 - Task consummation rates (e.g., number of errands finished each day/week)
 - Rates of errors (such as the number of errors made)
 - Project cutoff times met (level of tasks finished on time)
 - Marketing projections (if material, for representatives in deals jobs)
 - Non-attendance rates (number of days off taken)
 - Data on healthcare utilization. (such as the number of doctor visits and claims).
2. **Qualitative Data:** This alludes to graphic information that includes perceptions, encounters, and assessments. Qualitative data will shed light on how employees perceive the work environment and how it affects their performance and well-being. Here are far to gather subjective information:

- **Semi Structured Interviews:** Open-ended questions about employees' experiences working in green and conventional buildings will be asked in semi-structured interviews. Instances of inquiries include:
 - How might you portray the general workplace concerning lighting, air quality, and commotion levels?
 - Do you think that working in this building makes you feel better and makes you happy?
 - As you would like to think, how takes the necessary steps climate influence your concentration, inventiveness, and by and large capacity to play out your work?
- **Worker Overviews through the Surveys:** Reviews can assemble information on a more extensive scale and cover comparative topics as the meetings, yet with a more normalized design. Survey questions include the following:
 - Give your workspace's lighting, air quality, and noise levels a score based on how satisfied you are with them.
 - How frequently do you feel exhausted or stressed at work?
 - Do you think that the environment of the building helps you be more creative and productive?

This study will get a complete picture of how green buildings affect employee performance by collecting both quantitative and qualitative data. While qualitative data offers valuable insights into employee experiences and perceptions, quantitative data provides objective measures of performance.

3.7. Statistical analysis procedures

The quantitative data collected on employee performance and well-being in green and conventional buildings will be analyzed using a variety of statistical analysis techniques in this study. Here is a breakdown of a few possible methods:

1. Descriptive Measurements:

- **Central Tendency:** To comprehend the average performance levels (such as task completion rates) and absenteeism rates in both building types, calculate measures like mean, median, and mode.
- **Variability:** Determine how dispersed the data points are for each performance metric for each building type by analyzing measures like variance and standard deviation.

2. Testing the Hypothesis:

- Make hypotheses about how employee performance is affected by green buildings. For instance:
 - **Null Hypothesis (H0):** There is no measurably huge distinction in representative execution measurements (e.g., task finish rates) among green and traditional structures.
 - **Alternative Hypothesis (H1):** Representative execution measurements are altogether better in green structures contrasted with regular structures.
- Contingent upon the information conveyance (typical versus non-ordinary) and test size, pick fitting factual tests:
 - **Parametric Tests:** On the off chance that information is regularly conveyed and tests are adequately enormous, use tests like:

- On performance metrics like task completion rates or absenteeism rates, an Independent Samples t-test is used to compare two groups—green versus conventional buildings.
- If you have data from different green building certification levels (such as LEED Gold vs. LEED Platinum), you can compare multiple groups using a one-way ANOVA. Silver LEED).
- **Non-parametric Tests:** Use tests like these if the data are not normally distributed or the sample sizes are small:
 - Non-parametric alternative to the t-test, the Mann-Whitney U test
 - A non-parametric alternative to ANOVA is the Kruskal-Wallis test.
- 3. **Analysis of Correlations:** Explore likely connections between unambiguous green structure highlights (e.g., normal light levels, ventilation rates) and representative execution measurements. The strength and direction of these relationships can be evaluated with the help of tools like the parametric Pearson's correlation coefficient or the non-parametric Spearman's rank correlation coefficient.
- 4. **Extensive Examination:** To investigate how a number of green building features might interact to influence employee performance metrics, construct a regression model, such as linear regression. This lets you control for things like job type or level of experience that could cause confusion.

Software Tools: To interpret the statistical significance of the findings, reports with tables, charts, and p-values can be generated using statistical analysis software like SPSS, R, or Statistics.

Additional Factors to Consider:

Cleaning and preprocessing the data: Prior to analysis, make sure that the data are complete and accurate. Handling outliers or missing values might be part of this.

Power Investigation: Direct a power examination to decide the base example size expected to accomplish measurably critical outcomes. The research can get useful conclusions regarding the quantitative impact of green buildings on employee performance by utilizing these methods of statistical analysis.

3.8. Conclusion

Green building structures are progressively perceived for their capability to help both the climate and representative prosperity. A comprehensive strategy for examining the impact of green buildings on employee performance has been outlined in this research proposal. The research will capture both objective performance metrics and subjective employee experiences through the use of a mixed-method approach that combines quantitative and qualitative data collection. Then, procedures for statistical analysis will be used to determine whether green buildings and conventional buildings have significantly different employee performance and absenteeism rates. Moreover, the examination will investigate possible connections between unambiguous green structure highlights and worker prosperity, inventiveness, and generally speaking position fulfillment. The discoveries of this exploration can have huge ramifications for organizations trying to streamline their working environments. Companies can make informed decisions regarding building design and construction practices by comprehending the quantifiable impact of green buildings on employee performance. Eventually, this examination can add to the developing group of proof supporting the making of reasonable and useful workplaces that benefit the two representatives and the planet.

4. Chapter 4: Statistical Analysis & Findings discussion

4.1. Introduction

4.2. Sample profile (descriptive statistics for research sample)

4.3. Validity & reliability tests for the questionnaires

4.4. Descriptive statistics for research variables (answer research questions)

4.5. Testing Hypotheses & Findings Discussion

4.6. Conclusion

5. Chapter five: Research limitations, Recommendations & Conclusion

5.1. Research Limitations & Future Research

5.2. Research Recommendations

5.3. Conclusion

References

1. Von Paumgarten, P. (2003). The business case for high performance green buildings: Sustainability and its financial impact. *Journal of Facilities Management*, 2(1), 26-34.
2. Thatcher, A., & Milner, K. (2012). The impact of a 'green' building on employees' physical and psychological wellbeing. *Work*, 41(Supplement 1), 3816-3823.
3. Miller, N., Pogue, D., Gough, Q., & Davis, S. (2009). Green buildings and productivity. *Journal of Sustainable Real Estate*, 1(1), 65-89.
4. Ries, R., Bilec, M. M., Gokhan, N. M., & Needy, K. L. (2006). The economic benefits of green buildings: a comprehensive case study. *The engineering economist*, 51(3), 259-295.
5. Allen, J. G., MacNaughton, P., Laurent, J. G. C., Flanagan, S. S., Eitland, E. S., & Spengler, J. D. (2015). Green buildings and health. *Current environmental health reports*, 2, 250-258.
6. Sathaye et al. (2012). Retrieved from <https://doi.org/10.1016/j.buildenv.2012.03.010>
7. Park et al., (2014). Retrieved from <https://www.sciencedirect.com/science/article/pii/S0360132314001449>
8. Van Den Berg et al., (2010). Retrieved from <https://doi.org/10.1016/j.envsci.2010.03.008>

9. Browning et al.(2014). Retrieved from <https://doi.org/10.1016/j.buildenv.2014.02.008>
10. Parida,S(2020). The Effect of Green Buildings on Employees' Performance. Retrieved from <https://espace.curtin.edu.au>
11. Sathaye et al. (2012). Retrieved from <https://doi.org/10.1016/j.buildenv.2012.03.010>
12. Park et al., (2014). Retrieved from <https://www.sciencedirect.com/science/article/pii/S0360132314001449>
13. Van Den Berg et al., (2010). Retrieved from <https://doi.org/10.1016/j.envsci.2010.03.008>
14. Browning et al.(2014). Retrieved from <https://doi.org/10.1016/j.buildenv.2014.02.008>
15. Altomonte, Sergio, and Stefano Schiavon. 2013. "Occupant Satisfaction in LEED and Non- LEED Certified Buildings." Building & Environment 68 (1): 66-76.
16. Altomonte, Sergio, Stefano Schiavon, Michael G. Kent, and Gail Brager. 2019. "Indoor Environmental Quality and Occupant Satisfaction in Green-Certified Buildings." Building Research & Information 47 (3): 255-274.

17. Åmo, Bjoern Willy. 2006. "Employee Innovation Behaviour in Health Care: The Influence from Management and Colleagues." *International Nursing Review* 53 (3): 231-237.
18. Armitage, Lynne, and Ann Murugan. 2013. "The Human Green Office Experience: Happy and Healthy or Sick and Frustrated?" *The Australian and New Zealand Property Journal* 4 (1): 35-41.
19. Cardona, Pablo, Barbara S. Lawrence, and Peter M. Bentler. 2004. "The Influence of Social and Work Exchange Relationships on Organizational Citizenship Behavior." *Group & Organization Management* 29 (2): 219-247.
20. Cheng, Hongwei, Xuming Hu, and Rui Zhou. 2019. "How Firms Select Environmental Behaviours in China: The Framework of Environmental Motivations and Performance." *Journal of Cleaner Production* 208 (1): 132-141.
21. Ciocirlan, Cristina E. 2017. "Environmental Workplace Behaviors: Definition Matters." *Organization & Environment* 30 (1): 51-70
22. Cohen, Linda M. 2007. "Bridging Two Streams of Office Design Research: A Comparison of Design/Behavior and Management Journal Articles from 1980-2001." *Journal of Architectural and Planning Research* 24 (4): 289-307.

23. Ananthram, Subramaniam, and Christopher Chan. 2016. "Religiosity, Spirituality and Ethical Decision-Making: Perspectives from Executives in Indian Multinational Enterprises." *Asia Pacific Journal of Management* 33 (3): 843-880.
24. Daily, Bonnie F., and Su-chun Huang. 2001. "Achieving Sustainability through Attention to Human Resource Factors in Environmental Management." *International Journal of Operations & Production Management* 21 (12): 1539-1552.
25. Deshwal, Parul. 2015. "Green HRM: An Organizational Strategy of Greening People." *International Journal of Applied Research* 1 (13): 176-181.
26. Deuble, Max Paul, and Richard John de Dear. 2012. "Green Occupants for Green Buildings: The Missing Link?" *Building and Environment* 56 (1): 21-27.
27. Diener, Ed, Ed Sandvik, and William Pavot. 2009. "Happiness Is the Frequency, Not the Intensity, of Positive versus Negative Affect." In *Assessing Well-Being*. 213-231. Springer.
28. Esfandiari, Masoud, S. M. Zaid, M. A. Ismail, and A. Aflaki. 2017. "Influence of Indoor Environmental Quality on Work Productivity in Green Office Buildings: A Review." *Chemical Engineering Transactions* 56 (1): 385-390.

29. Etzion, Dror. 2007. "Research on Organizations and the Natural Environment, 1992-Present: A Review." *Journal of Management* 33 (4): 637-664.
30. GBCA (Green Building Council of Australia). 2009. "Green Star Eligibility Criteria." Accessed October 11, 2019, 2019.
<https://www.gbca.org.au/uploads/192/960/Green%20Star%20Eligibility%20Criteria%20281009.pdf?ga=2.74253589.604919080.1570783917-918441689.1570175014>
31. GBCA (Green Building Council of Australia). 2015. "Mid-Tier Commercial Office Buildings Pathway Project." Green Building Council of Australia.
<https://doi.org/https://www.gbca.org.au/uploads/97/36449/Mid-Tier%20Commercial%20Office%20Buildings%20Pathway%20report.pdf>
32. GBCA (Green Building Council of Australia). 2018. "Support for Stronger Construction Standards." Green Building Council of Australia.
<https://doi.org/https://new.gbca.org.au/news/gbca-media-releases/support-stronger-construction-standards/>
33. Geng, Yang, Wenjie Ji, Zhe Wang, Borong Lin, and Yingxin Zhu. 2019. "A Review of Operating Performance in Green Buildings: Energy Use, Indoor Environmental Quality and Occupant Satisfaction." *Energy and Buildings* 183 (1): 500-514.

34. Arulrajah, A.A. , **Opatha, H.H.D.N.P. &Nawaratne, N.N.J., (2016).** Employee green performance of job: a systematic attempt towards measurement. Sri Lankan Journal of Human Resource Management. 6(1), pp.37–62. DOI: <http://doi.org/10.4038/sljhrm.v6i1.5631> [Accessed 17 Aug. 2018].
35. Bhutto, S.A. and Auranzeb, (2016), Effects of Green Human Resource Management on Firm Performance: An Empirical Study on Pakistani Firms”, European Journal of Business and Management, No.16, Vol.8,pp.119- 125 Available at: <https://www.iiste.org/Journals/index.php/EJBM/article/view/30983> [Accessed 17 Aug. 2018].
36. **Chen, Y.S. and Chang, C.H. (2013).** Towards green trust: The influences of green perceived quality, green perceived risk, and green satisfaction. Management Decision, 51(1), 63-82. <http://dx.doi.org/10.1108/00251741311291319> [Accessed 17 Aug. 2018].
37. Jie S, **Jenny D & Xin D. (2016).** Employees perceptions of green HRM and non-green employee work outcomes: the social identity and stakeholder perspectives' Group & organization management, [pdf] the University of South Australia, Available at: <http://search.ror.unisa.edu.au/record/9916084008401831/media/digital/open/9916084008401831/12145031340001831/13145031330001831/pdf> [Accessed 15 Aug. 2018].

38. Mezher T, (2011). Building future sustainable cities: the need for a new mindset, Construction Innovation, Vol. 11 Issue: 2, pp.136-141, Available at <https://doi.org/10.1108/14714171111124121> [Accessed 17 Aug. 2018].
39. **North K. (1997)**, Environmental Business Management – An Introduction, 2nd ed. International Labor Office: Geneva
40. OECD, (2009), Declaration on Green Growth Adopted at the Meeting of the Council at Ministerial Level on 25, C/MIN(2009)5/ADD1/FINAL.
41. PNUMA, (2009), Nuevo Acuerdo Verde Global: Informe de Política, March
42. Rajput S, Pachauri V, (2018). A study of employees' perception towards green HRM initiatives. International Journal of Academic Research and Development, [online] Volume 3; Issue 2; Page No. 807-810. Available at: [file:///C:/Users/DTC/Downloads/3-2-188-549%20\(1\).pdf](file:///C:/Users/DTC/Downloads/3-2-188-549%20(1).pdf) [Accessed 15 Aug. 2018].
43. **Slovik, K. (2013)**. Nine Steps to Greening Your Business, Available at <http://www.startupnation.com/steps/93> [Accessed 17 Aug. 2018].

44. World Bank, (2012), Inclusive Green Growth: The Pathway to Sustainable Development. Washington D.C., The World Bank.
45. **WHO, (2018).** Climate change and human health (online) Available at <http://www.who.int/globalchange/environment/en/> [Accessed 13 Aug. 2018].
46. Miller, N., Pogue, D., Gough, Q., & Davis, S. (2009). Green buildings and productivity. *Journal of Sustainable Real Estate*, 1(1), 65-89.
47. Von Paumgarten, P. (2003). The business case for high performance green buildings: Sustainability and its financial impact. *Journal of Facilities Management*, 2(1), 26-34.
48. Thatcher, A., & Milner, K. (2012). The impact of a ‘green’ building on employees’ physical and psychological wellbeing. *Work*, 41(Supplement 1), 3816-3823.
49. Heerwagen, J. (2000). Green buildings, organizational success and occupant productivity. *Building Research & Information*, 28(5-6), 353-367.
50. Thatcher, A., & Milner, K. (2016). Is a green building really better for building occupants? A longitudinal evaluation. *Building and Environment*, 108, 194-206.

51. Elnaklah, R., Fosas, D., & Natarajan, S. (2020, October). Indoor environment quality and work performance in “green” office buildings in the Middle East. In *Building Simulation* (Vol. 13, pp. 1043-1062). Tsinghua University Press.
52. Ries, R., Bilec, M. M., Gokhan, N. M., & Needy, K. L. (2006). The economic benefits of green buildings: a comprehensive case study. *The engineering economist*, 51(3), 259-295.
53. Nurick, S., & Thatcher, A. (2021). The relationship of green office buildings to occupant productivity and organizational performance: A literature review. *Journal of Real Estate Literature*, 29(1), 18-42.
54. Rashid, M., Spreckelmeyer, K., & Angrisano, N. J. (2012). Green buildings, environmental awareness, and organizational image. *Journal of Corporate Real Estate*, 14(1), 21-49.
55. Newsham, G. R., Veitch, J. A., & Hu, Y. (2018). Effect of green building certification on organizational productivity metrics. *Building Research & Information*, 46(7), 755-766.

Appendix

Overview Inquiries for Green Workplaces and Representative Execution:

General Discernment:

- How fulfilled would you say you are with the general green components in your office climate (e.g., normal light, plants, admittance to nature)?
- How much do you accept green components in your office add to your prosperity and generally speaking solace?
- Do you feel that green elements in your work area decidedly affect your capacity to concentration and concentrate?

Explicit Green Components:

- How much light comes from the sun in your workspace?
- Does it influence your mind-set or efficiency?
- Are there plants integrated into your office climate?
- Do they have an effect as far as you can tell?
- Do you approach open air spaces or perspectives on nature from your work area?
- How frequently do you utilize them?

- Does your office have highlights like great ventilation, air quality control, or agreeable temperature settings?
- How would they influence your work insight?

Well-Being and Performance:

- On a size of 1-5, how useful do you feel at work?
- Do you suppose this is connected with the greenness of your office?
- How frequently do you encounter pressure or weakness at work?
- Do you suppose the workplace climate assumes a part in this?
- How satisfied are you with your engagement and overall job satisfaction?
- Do you believe that green elements are a factor in this?
- How frequently do you take debilitated leave or feel unwell at work?
- How about the workplace climate be adding to this?

Extra Inquiries:

- Would you be willing to pay a slight premium to work in a greener office climate?
- What explicit green highlights do you suppose could be generally advantageous to add to your office?
- Do you have any ideas for working on the greenness of your on-going work area?

Frequent Asked Questions about the Green Buildings:

- [What is "green building"?](#)
- [What makes a building "green"?](#)
- [What are the benefits of green building?](#)
- [How is green building related to smart growth and sustainable development?](#)
- [How do buildings affect natural resources?](#)
- [How do buildings affect climate change?](#)
- [What is the history of green building in the U.S.?](#)
- [What building types can be green?](#)
- [Where can I see an example of a green building in my area?](#)
- [How can I incorporate green building concepts into my home?](#)
- [Is there federal or state legislation related to green buildings?](#)
- [What is Life-cycle Assessment?](#)
- [What are the economic benefits of green or sustainable building and development?](#)
- [Are green buildings more expensive to construct and operate?](#)
- [Where can I find sources of funding for my green building project?](#)
- [Can I get a tax break for building green?](#)
- [Where can I find more information about the components of green building, like energy efficiency or reduced waste?"](#)
- [What standards exist for green building?](#)

- [How are buildings certified as green in the U.S.?](#)

Table 2 Summary of studies investigating the perception and satisfaction of thermal comfort (TC) and IAQ in green buildings compared to non-green buildings, benchmark or to the scale midpoint

Study	Country or region	Buildings covered		Occupants surveyed		Outcome [†]		POE methods [‡]	Statistical metrics [§]	
		Green	Non-green	Green	Non-green	TC	IAQ		<i>p</i>	<i>d</i>
Brown et al. (2010)	Canada	1	1	104	145		A	I		
Thatcher and Milner (2016)	South Africa	3	2	211	69		A	I	•	•
Thatcher and Milner (2012)	South Africa	1	1	161	79		A	I	•	
Thomas (2010)	Australia	1	—	238	—		A	I, II	•	•
Tham et al. (2015)	Singapore	1	1	32	33	A	A	I, III	•	•
Liang et al. (2014)	Taiwan of China	3	2	134	99	A	A	I, III	•	
Sediso and Lee (2016)	R.O. Korea	2	2	222 [*]		A		I	•	
Pei et al. (2015)	Mainland of China	10	42	500	500	A		I, III	•	
Gou and Lau. (2013)	Mainland of China	1	—	182	—	A		I, III		
Gou et al. (2014)	Mainland of China	9	5	774	477	B		I	•	•
Ravindu et al. (2015)	Sri Lanka	1	1	70 [*]	—	B	B	I, III	•	
Paul and Taylor (2008)	Australia	1	2	40	53	B		I	•	
Collinge et al. (2014)	USA	1	—	48	—	B		I, II	•	
Altomonte and Schiavon (2013)	Global ^a	65	79	10,129	11,348	B	C	I	•	•
Menadue et al. (2014)	South Africa	4	4	600 [*]	—	C		I, III	•	•
Leaman and Bordass (2007)	UK ^b	177	—	—	—	C	C	I	•	•

Notes:

[†] Study outcome: A = higher satisfaction in green buildings, B = lower satisfaction, and C = no difference found.

[‡] POE methods covered: I = subjective assessment, II = energy performance, III = IEQ measurement.

[§] Whether studies use inferential statistics in determining outcomes: *p* indicates use of *p*-value for significance testing and *d* a generic measure of effect size, most commonly Cohen's *d*.

^{*} These studies do not explicitly provide per group sample sizes.

- Elnaklah, R. , Daniel Fosas, D. , Natarajan, S. 2020, by Indoor environment quality and work performance in “green” office buildings in the Middle East retrieved from <https://d-nb.info/1220279315/34>

**GREEN BUILDING QUESTIONNAIRE
(COMMERCIAL BUILDING and MULTI-FAMILY HOUSING)**

Applicant: _____
 Project Address: _____
 Multi-Family: _____ Sq. Ft. Area _____ Units
 Commercial: _____ Sq. Ft. Area _____ Units

Instructions for Use: The following questionnaire is a non-binding document used to both educate the applicant about Green Building measures (and how these can save money over time) and to inform the Borough's Department of Building, Housing and Codes Enforcement and the BLUER Committee about the Project's specific green initiatives. Applicants will find detailed information on each question by clicking on the highlighted link embedded within each question (or referencing associated footnote on the last page). Each applicant is asked to complete and sign the questionnaire to indicate they reviewed the questions and submit to the Borough's Department of Building, Housing and Code Enforcement with their Land Development Application for record. Additional information is available through www.westchester.org and www.westchester.com.

GENERAL			
☐ YES	☐ NO	☐ N/A	Is the Project pursuing LEED Certification ¹ from the US Green Building Council?
☐ YES	☐ NO	☐ N/A	Is the Project designed to achieve the ENERGY STAR ² ?
☐ YES	☐ NO	☐ N/A	Is the Applicant aware of Rebates ³ available through local utilities and tax incentives for Projects that incorporate energy efficient measures?

ENERGY EFFICIENCY			
☐ YES	☐ NO	☐ N/A	If the Project is a Renovation, does the scope include Heating, Ventilation and/or Air Conditioning Equipment efficiency upgrades ⁴ ?
☐ YES	☐ NO	☐ N/A	If the Project is a Renovation, does the scope include electrical and lighting equipment efficiency upgrades ⁵ ?
☐ YES	☐ NO	☐ N/A	Does the Project include Fundamental Commissioning ⁶ of the building energy systems?
☐ YES	☐ NO	☐ N/A	Is the project designed to meet minimum levels of energy efficiency ⁷ as Established by ASHRAE 90.1-2007?
☐ YES	☐ NO	☐ N/A	Does the Project utilize a whole building Energy Model ⁸ ? If yes, please submit copy for record with Building Permit Application.

Borough of West Chester Green Building Questionnaire

1

☐ YES	☐ NO	☐ N/A	Does the Project utilize or make allowances for renewable energy technologies ⁹ ? If yes, what percentage of the total energy usage: _____
☐ YES	☐ NO	☐ N/A	Does the project utilize Energy Star rated appliances and equipment ¹⁰ ?
☐ YES	☐ NO	☐ N/A	Does the Project utilize high efficiency light fixtures and/or energy efficient lighting controls ¹¹ such as occupancy sensors as well as daylight sensors?
☐ YES	☐ NO	☐ N/A	Does the Project utilize individual electrical metering ¹² in multifamily units to reduce electricity consumption?

SITE DESIGN			
☐ YES	☐ NO	☐ N/A	Does the Project incorporate tree preservation or enhancement ¹³ in order to provide urban habitat for wildlife, provide cooling effect for pavement and rooftops, reduce stormwater runoff and provide for cleaner air?
☐ YES	☐ NO	☐ N/A	Are native plantings ¹⁴ with minimal water requirements incorporated into the non-stormwater related landscaping features?
☐ YES	☐ NO	☐ N/A	Are low impact design (LID) techniques ¹⁵ incorporated into the site design, (i.e. vegetated conveyance techniques, rain gardens, permeable pavements, vegetated ("green") roof, stormwater planters, or vegetated curb extensions, etc.) to provide for stormwater infiltration and evapo-transpiration?
☐ YES	☐ NO	☐ N/A	Does the Project utilize methods to minimize the heat island effect ¹⁶ generated from rooftops, parking areas, streets and driveways?
☐ YES	☐ NO	☐ N/A	Does the Project provide preferred parking for Low-Emitting/Fuel-Efficient Vehicles ¹⁷ and/or car pooling?
☐ YES	☐ NO	☐ N/A	Does the Project allow for reduced parking requirements, credit for shared parking or street parking, or under-structure parking ¹⁸ ?
☐ YES	☐ NO	☐ N/A	Does the Project provide smart transportation options ¹⁹ , including access to public transit, along with bicycle racks, signage and storage facilities?

Borough of West Chester Green Building Questionnaire

2

MATERIAL RESOURCE			
☐ YES	☐ NO	☐ N/A	Does the Project provide easily-accessible dedicated area or areas for the <u>collection and storage of materials for recycling</u> ²⁶ for the entire building? Materials include: paper, corrugated cardboard, glass, plastics and metals.
☐ YES	☐ NO	☐ N/A	If trash is removed by a private hauler, does the building owner or tenant have a contract in place for <u>recycling collection</u> ²⁷ ?
☐ YES	☐ NO	☐ N/A	If the project includes a restaurant, does the building owner or tenant have a waste food collection program in place for <u>compost</u> ²⁸ ?
☐ YES	☐ NO	☐ N/A	Is there a requirement specifying a <u>diversion (from landfilling)</u> ²⁹ for Construction, Demolition or Renovation materials?
☐ YES	☐ NO	☐ N/A	Does the Project make allowances for green renovations or technologies that retain the historic character of <u>registered historic properties or resources</u> ³⁰ ?
☐ YES	☐ NO	☐ N/A	Does the Project promote the use of <u>environmentally responsible materials</u> ³¹ ?

WATER EFFICIENCY			
☐ YES	☐ NO	☐ N/A	Is the use of <u>high efficiency</u> ³² and innovative plumbing fixtures and fittings, such as WaterSense labeled, utilized to reduce water consumption?
☐ YES	☐ NO	☐ N/A	Does the Project utilize <u>individual metering</u> ³³ in multifamily units to reduce water consumption?
☐ YES	☐ NO	☐ N/A	Is the use of <u>rainwater harvesting systems</u> ³⁴ utilized for outdoor irrigation to reduce unnecessary use of potable water?
☐ YES	☐ NO	☐ N/A	In lieu of the above, is there a requirement for using <u>native plants</u> ³⁵ that will reduce the use of water for landscape maintenance?
☐ YES	☐ NO	☐ N/A	Are <u>innovative waste water technologies</u> ³⁶ utilized to reduce generation of waste water and potable water demand?

☐ YES	☐ NO	☐ N/A	If yes to the above, please explain:
------------------------------	-----------------------------	------------------------------	--------------------------------------

INDOOR AIR QUALITY			
☐ YES	☐ NO	☐ N/A	For multi-tenant residential buildings, does the project <u>prohibit smoking</u> ³⁷ in common areas and design building envelope and systems to minimize ETS transfer among dwelling units?
☐ YES	☐ NO	☐ N/A	Does the Project make provisions for bettering the <u>indoor air quality</u> ³⁸ (i.e., meeting the standards of ASHRAE 62.1-2007 (sections 4-7), among others)? This may also include separate ventilation for Janitor's Closets, copy rooms and maintenance shops, entry way systems or high efficiency air filters.
☐ YES	☐ NO	☐ N/A	Does the Project utilize <u>low-emitting materials (low or zero VOC)</u> ³⁹ ?
☐ YES	☐ NO	☐ N/A	Does the Project reduce the potential presence of <u>mold</u> ⁴⁰ through preventive design and construction measures AND training of maintenance personnel?

By signing below, you indicate that you have read and completed the above questionnaire.

(signature of applicant) (date)

(printed name of applicant) (date)

GREEN BUILDING QUESTIONNAIRE (COMMERCIAL BUILDING and MULTI-FAMILY HOUSING) retrieved from <https://west-chester.com/DocumentCenter/View/287/BLUER-questionnaire---November-17-2011-PDF> <https://forms.gle/cDsVEroBFS7FF1p57>

The Impact of Green Environment on Employee Performance at Discovery Town Centre

The Impact of Green Environment on Employee Performance at Discovery Town Centre, Saihat, Saudi Arabia

Thank you for participating in this study. The aim of this research is to understand how the presence of green environments affects employee performance at Discovery Town Centre in Saihat, Saudi Arabia. Your participation and honest responses are greatly appreciated.

Instructions:

Please read each question carefully and provide your responses based on your personal experiences and observations. Your responses will remain confidential and will only be used for research purposes.



discoverycare1@gmail.com [تغيير الحساب](#)

غير مشترك

* تشير إلى أن السؤال مطلوب

*

Demographic Information

_____: Position

_____: Years of Employment at Discovery Town Centre

إجابته

*

Section A: Perception of Green Environment

How often do you visit green spaces (e.g., parks, gardens) around Discovery
?Town Centre

Daily ☐

How often do you visit green spaces (e.g., parks, gardens, around university)? Town Centre

Daily ☐

Weekly ☐

Monthly ☐

Rarely ☐

Never ☐

* To what extent do you agree with the following statements? (Please rate on a scale of 1 to 5, where 1 = Strongly Disagree and 5 = Strongly Agree)

▼ اختيار

* Section B: Employee Performance
How would you rate your overall job performance in the past six months

Excellent 1 خيار ☐

Good ☐

Average ☐

Below Average ☐

Poor ☐

* Do you believe the presence of green environments has influenced your job performance positively? If yes, how? (Open-ended response)

اختيار

Do you believe the presence of green environments has influenced your job performance positively? If yes, how? (Open-ended response)

إجابته

*

Section C: Suggestions and Additional Comments

In your opinion, what additional green initiatives could be implemented at
?Discovery Town Centre to further enhance employee performance

إجابته

* Please provide any additional comments or suggestions related to the impact of
.green environments on employee performance

إجابته

Thank you for completing this questionnaire. Your feedback is valuable for our
research. If you have any further comments or would like to participate in a follow-
.up interview, please contact [Researcher's Contact Information]

إجابته

محو النموذج

إرسال