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The Value of the Interior Designer in the Management and Construction of Sustainable Buildings

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Declaration

I declare that this Research Report is my own, unaided work. It is submitted in fulfilment of the postgraduate degree of Master's Degree in the field of Master of Science in Building at the University of the Witwatersrand, Johannesburg.

It has not been submitted before for any degree or examination in any other university.
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Abstract

The aim of the research report is to determine and evaluate the value of interior design in the management and construction of buildings particularly sustainable buildings. The building industry has a significant impact on the environment due to the nature of its large footprint on the environment and usage of natural resources. Like any other industry, the building industry is gradually moving towards sustainable or green solutions to mitigate the negative impacts it has on the environment and improve quality of life for present and future generations. Sustainability in its definition includes not only the conservation of the environment but also creating healthy physical environments for human beings including indoor spaces where they spent majority of their existence.

The project management frameworks that have been developed for the implementation of green buildings entail a holistic and comprehensive design approach that requires all professions involved in the design process to be included in the initial phase of the Project Lifecycle Process for effective implementation of a sustainable building. However, in most building projects, interior designers are often not included in initial stages of the project but rather after construction due to many factors that will be explored in the report. Excluding the interior designer can result in design solutions that do not cater for human consideration and the end - user experience. This is qualitative research where a qualitative research method in the form of one-on-one semi structured interviews was utilized. The participants who took part in the one-on-one interviews consisted of 21 professionals within the built industry who were selected based purposeful sampling. The participants were pre-selected based on educational qualification within the built environment, experience in number of years and registration with a professional body in their respective fields. The participants were asked preformulated questions but the interviews themselves were semi structured to make room for more discussions, ideas and more questions to be explored to answer the research question.

The findings of the research based on the qualitative interviews and literature review revealed that interior design is still a developing profession in South Africa. It is a profession that is struggling to find its rightful place due to being misunderstood based on a general lack of knowledge and being perceived as an artsy career based on aesthetics rather than functionality and technicality. It finds itself having to compete with more developed and dominant professions within the building industry. This leads to interior designers being undervalued, underappreciated and underutilized. However, the study determined that there is indeed value in the inclusion of interior design in the inception phase of building projects particularly green building projects depending on the type and size of building project.

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I dedicate this research report to be my beloved and darling mother, Tswedi Aletta Ngandane, who has inspired me in everything I do. I would have never done, accomplished or achieved anything in my life without your support and motivation, your grace, humility, perseverance, strength and faith has motivated me and given me purpose. Your unconditional love has nurtured me, guided me, encouraged me, inspired me and gifted me with believe in myself. You poured out your love and soul unto me, watered me and allowed me to bloom like flowers in the spring time. In your presence I flourish. I say thank you, Tswedi Aletta Ngandane, my mother, my pillar, my strength, my joy, my sanctuary, my guardian angel, my best friend and reason for breathing.

My love for you is unconditional and knows no limit, I cherish you beyond words could say. When I have you, I have everything.

I pray for you continuously and hope God places his providence and blessings upon you always. May He keep nearby.

Thank you.

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List of Abbreviations

Abbreviation	Description
ASAQS	Association of South African Quantity Surveyors
ASID	American Society of Interior Design
BAS	Bachelor of Architectural Studies
BREAM	Building Research Establishment Environmental Assessment Method
CBE	Councils for the Built Environment
DHET	Department of Higher Education and Training
DPW	Department of Public Works
ECSA	Engineering Council of South Africa
Et al	et alia, meaning “and others”
FEL	Front End Loaded
FS	Feasibility Stage
GBCSA	Green Building Council of South Africa
IDEA	Interior Design/ Interior Architecture Education Association
IDoW	Identification of Work
IFI	International Federation of Interior architecture/design
IID	African Institute of the Interior Design Professions
IUCN	International Union for Conservation of Nature
LEED	Leadership in Energy and Environmental
NBRBS	National Building Regulations and Building Standards
ORS	Owners Requirement Specification
PDF	Portable Document Format
PLP	Project Life cycle Process
PMBoK	Project Management Body of Knowledge
UNISA	University of South Africa
RES	Renewable Energy Sources
SA	South Africa
SACAP	South African Council for the Architectural Profession
SACPCMP	South African Council for the Project and Construction Management Professions
SALGA	South African Local Government Association
SANS	South Africa National Building Standards
SAQA	South African Qualifications Authority
SBTool	Sustainable Building Tool
SIA	Safety Institute of Australia
SoAP	School of Architecture and Planning
UIA	The International Union of Architects
UNEP	United Nations Environment Programme
UP	University of Pretoria
WGBC	World Green building Council

1. Introduction

1.1 Background to the Study

The construction industry can have an enormous impact on the environment as it causes pollution, damage to the natural surroundings and uses large amounts of natural resources. According to the South African Local Government Association (SALGA) (2017) publication on Leadership in Green Buildings, buildings consume 50% of the energy generated in the world. The publication also states that global construction is responsible for 40% of the end-user energy consumption, 40% of the waste generated and 12% of fresh water usage. Hence there is an increasing need for the building industry to employ design, construction and management methods that facilitate sustainable buildings to reduce the environmental impact that buildings have on the physical surroundings.

Sustainable design of buildings is seen as a plausible solution in making construction of buildings more environmentally acceptable (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2014). Sustainability is defined as an approach that meets the needs of the present without compromising the needs of future generations by Widjaja (2018). Tsimplokoukou, et al (2014) define sustainable buildings as systems that aim to reduce the consumption of energy and resources for all the stages of a life cycle of a building from their planning and construction through their use, renovation and to their subsequent demolition. Sustainability is therefore concerned with finding long lasting solutions that not only solve present day problems but also ensures that the solution will still be viable in the future. It also encourages solutions that are environmentally friendly and utilise natural resources effectively.

The Implementation of sustainable buildings often requires complex design solutions that entail a holistic project management approach that will encompass and integrate all the necessary professions at the early stages of a project (Akadiri, Chinyio and Olomolaiye, 2012). An integrated design process can be defined as a collaborative process that focuses on the design, construction, operation and occupancy of a building over its complete life cycle in order to achieve high performance (sustainable) buildings (Düzgün and Alada, 2015).

The complex nature of sustainable buildings warrants an integration of various professions and management in the early stages of planning in order to effectively achieve sustainability throughout the life cycle of the building including its occupancy and operation (Bragança, Vieira and Andrade, 2013). Barbosa et al (2015) state that interior design as a profession is often undervalued as a profession with influence in promotion of sustainable buildings. This statement means that the interior designer is often neglected or underutilized in the implementation of sustainable buildings.

The motivation for the study comes from trying to understand the value of interior design in the building and construction industry particularly in their integration in the Project Lifecycle Process (PLP). The interior designer is often not considered in the early planning and management of sustainable building projects and this can result in a gap particular in the comprehensive design of a sustainable building (Wang et al, 2018). Including the interior designer in the early stages can assist in achieving a holistic design approach for sustainable buildings which requires an integrated Design Approach (Paradise, 2015), the selection of less harmful construction materials which leads to recycling and reduction in pollution (Celadyn, 2018) and designing for natural light which leads to reduction in use of energy (Barbosa, et al, 2015). Integrating the interior designer can also introduce effective use of space which can have an impact in the building footprint (Hayles, 2015).

1.2 Substantiation of the Problem

The study seeks to evaluate the value of the interior designer and interior design as a profession in the planning, design, management and construction of buildings particularly in sustainable buildings and if interior design and the interior designer should be integrated in the early stages of the project management process.

Sustainable design of buildings is seen as a viable option in undertaking construction of buildings in an environmentally acceptable manner (Attia, 2018). There is a gradual movement in most industries to go green and implement sustainability in their design solutions according to Söderholm(2020). In psychology, the colour green is generally associated with nature and is deemed to symbolise growth,

harmony and fertility as explained in an article by Cherry (2021). Hence the term ‘green’ refers to the pursuit of all that is environmentally friendly. The building industry is one of the industries that is gradually moving in the direction of design and constructing buildings that are sustainable and environmentally friendly.

The complex nature of sustainable buildings warrants an integration of various professions and management in the early stages of planning in order to effectively achieve sustainability throughout the life cycle of the building including its planning, design, construction, occupancy and operation (Bragança, Vieira and Andrade, 2013). The role of interior design is often neglected until after construction in the project and construction management of sustainable buildings which might lead to a gap in their comprehensive design of sustainable buildings.

The consequences of neglecting interior design or not integrating it in the planning stages can include but is not limited to the need to consider human adaptation (Mahmoud, 2017). Other possible consequences could be failure to take into consideration sound sustainable design for the whole life cycle of the building, selection of materials, and introduction of effective use of space and might lead to customer or end-user dissatisfaction Sorrento (2012).

The main principle that governs sustainability design is finding the balance between resource conservation, cost efficiency and design for human adaptation (Akadiri, Chinyio and Olomolaiye, 2012). The consideration for human adaptation is often not taken into account by engineers, project managers, architects and other professionals in the industry, however it plays a significant role for the interior designer. It plays a significant role because designing interior environments can be defined as “determining the relationship of people to spaces based on psychological and psychical parameters, to improve the quality of life” (Mahmoud, 2017). This definition by Mahmoud, 2017 speaks to how human beings are affected by their environment psychologically and physically. A physical space can have an impact on a person’s health, mood, comfortability and production levels.

The Inscape Education Group (2020) defines Interior Design as the art and science of enhancing the interior of a building to achieve a healthier and more aesthetically pleasing environment for the people utilizing the space. It is still largely perceived as a profession concerned with style, fashion and luxury that offers visual aesthetics, however it can offer great contribution to developing sustainable methods through the selection of green and sustainable materials and effective utilization of space (Hayles, 2015). It is rare that an interior designer is included in the initial stages of project management for building construction (Baxter, 2019). The input of the interior designer is generally not taken into consideration in the project management and construction industry hence they are rarely integrated in the early stages of management (Lyre, 2018). Sorrento (2012) states that the sustainability and human story has at least two parts, both of which must involve interior designers. Th two parts involve interior design because the profession in its core is to design interior spaces for human adaptability and comfort.

Interior design can assist in creating design that takes into account the life cycle of a building particular in its operation and occupancy by human beings (Lyre, 2018). Sustainability includes the adaptation for human comfort since more than 70% of a person's lifespan is spent indoors (Mahmoud, 2017). A sustainable building that is suitable for human adaptation should offer aesthetics, security, sufficient space, healthy non-hazardous environment, natural light, cultural identity and accessibility (Hankinson and Breytenbach, 2012).

The counter argument is that there are other professions that can achieve the factors mentioned above and hence fill the gap of the interior designer, particularly a core profession such as architecture. The qualification and professionalization of interior design will also be explored in attempt to explain how it might bring value in the implementation of sustainable buildings. The lack of integration of interior design in the early stages might be a problem to the client, design team and sustainability principles which promote integration of all stakeholders (Jawdeh, 2013).

1.3 Problem Statement

In most building projects, the role of the interior designer is often neglected until after construction. This might lead to lack of certain design considerations relating to human adaptation and failure to take into account sound sustainable design solutions for the whole life cycle of the building. Hence causing dissatisfaction to the client and end-user as well as leading to misalignment of the project team.

1.4 Primary Research Question

The research question is ***what value can the interior designer contribute in the management and design of sustainable buildings when included in the initial phases of a project?***

1.5 Secondary Research Questions

From the primary question, the secondary research questions are identified as:

- What is the main function of the interior designer in the initial phases of a sustainable building project?
- What gaps are created in the absence of the interior designer in the initial phase of sustainable building projects?
- Who can efficiently undertake functions of interior designer in the initial phases of the project?

1.6 Research Aim

The aim of this research is to investigate the value of the interior designer in the management and design of sustainable building when included in the initial phase of the project.

1.7 Research objective

From the aim the following research objectives are identified:

- To investigate and determine the main function of the interior designer in the initial phases of a sustainable building project.
- To investigate the gaps that are created in the absence of the interior designer in the initial phase of sustainable building projects.
- To investigate and determine if other professions can efficiently undertake functions of interior designer in the initial phases of the project.

1.8 Hypothesis

Interior design as a profession can add value in the construction and management of sustainable buildings if it is integrated in the early stages of the project management process.

1.9 Limitations

The following limitations have been identified in this study:

- The study focuses on defining interior design and its professionalization; however, it will only mention the other disciples that are involved in the construction and management of buildings without going in depth. Architecture and interior decoration will also be defined and discussed with the aim of comparing them to interior design for the context of the research.
- The perception of interior design in the building industry is investigated in the literature reviews and in the interview research method with the interviewees. The participants are primarily structural engineers, architects, quantity surveyor and interior designers. The other professions such as mechanical engineers and electrical engineers were not interviewed in the study because they are not involved in designing or planning the core structure of a building and less likely to interact or work with interior designers in the initial phases of the project.

- The limitation of this research is mostly in that there is limited literature on this topic and a lack of data or reliable data. Literature in this topic particularly with the integration of interior design in the early stages of project management is challenging to find. This might serve as an obstacle in finding a trend and a meaningful relationship.

  The study will attempt to overcome this limitation by reviewing literature on the different elements of the research problem and correlate the information to draw reasonable trends and conclusion. For example, by investigating the Project Lifecycle Process (PLP) and the professionals that are normally involved in the initial stages, when interior design is usually included in a project and evaluate how the information feeds into the research study. As well as investigate and study current framework for implementation of sustainable buildings and the stakeholders that are mentioned in the concept of integration of design and draw patterns in terms of where Interior design is usually included.

1.10 Assumptions

The following assumptions have been made in this study:

- The interior designer can add great value in the implementation of sustainable buildings when included in the initial design phases of the project.
- All disciples that are involved in the construction and management process of sustainable buildings are integrated in the initial stages of project planning because this is when key design decisions are made.
- The implementation and management of sustainable buildings follows a similar process to Project Lifecycle Process (PLP) that is employed in Project Management. The PLP process has four different phases which include the conceptual phase, the pre-feasibility phase, feasibility phase, and the execution phase which refers to construction and the close-out phase.

1.11 Research Constraints

The study might be the affected by the following constraints:

- The first constraint was to find and interview a sufficient number of participants in the research study. The initial aim of the research was to conduct 25 individual interviews with 25 participants. Unfortunately, this goal could not be reached due to difficulty in finding research participants that met the criteria developed for the population sample. This constraint was mitigated by approaching a number of organisations to recommend individuals who would meet the criteria and be interested in participating in this research. The interviewees were also asked to recommend individuals they know who might be interested at the end of each interview. The study was not able to achieve the desired 25 participants but did manage to interview 21 participants which is also sufficient numbers in qualitative research.

- The second constraint was the physical interview method which was interrupted by the Covid – 19 pandemic. The initial planned method for the interviews was one-on-one sit-down interviews with the researcher and the interviewee. However, this was not possible due to the Covid 19 Lockdown and social distancing rules that was imposed on the country at time the research took place. This constraint was overcome by conducting the individual semi structured interviews via other communication methods such telephonically and vis zoom meetings.

2. Literature Review

2.1 Introduction to the literature review

The literature will attempt to define and explore some key concepts which are relevant to the research such interior design, sustainability, sustainable buildings, architecture and the definition of value within the construction industry. The literature review will define interior design and the role of the interior designer and attempt to distinguish between interior design and interior decoration. It is important to distinguish between the two professions as they are often deemed as interchangeable and seen as performing the same function in the building industry which might be one of the reasons for the lack of appreciation of the interior designer. Architecture as a profession and the role of the architect will also be clearly defined, the study will also attempt to differentiate between architects and interior designer especially in terms of how they intersect and where they deviate.

The literature will discuss the possible value that can be offered by interior designers in sustainable buildings when introduced during the early stages of project management according to reviewed literature and the possible gaps that might arise due to the omission or underutilisation of the profession. Possible reasons as to why the profession is often under-valued will be explored based on the reviewed literature. In addition, the concepts of sustainability and sustainable buildings and the environmental impact of the construction industry will be discussed.

The literature review focused on recent studies that were written and conducted over the past 15 years, preferably within the past 5 years. The literature reviewed included books, journals, academic sources for qualification and professional definitions. Existing frameworks such as Leadership in Energy and Environmental (LEED) and Building Research Establishment Environmental Assessment Method (BREEAM) and Project management framework (PLP process) were utilized in an attempt to explain some concepts regarding management and integrated design. This was qualitative research therefore the research was also reviewed and used qualitatively to build upon and support the information found by the study.

2.2 Evaluating The Value of Interior Design in Management and Construction of Buildings in Pursuit of Sustainability Through Literature

2.2.1 Environmental Impact of construction industry

The construction industry can have an enormous impact on the environment as it causes pollution, damage to the natural surroundings and uses large amounts of natural resources (Yao, 2020). According to the South African Local Government Association (SALGA) (2017) publication on Leadership in Green Buildings, buildings consume 50% of the energy generated in the world. The publication also states that global construction is responsible for 40% of the end-user energy consumption, 40% of the waste generated and 12% of fresh water usage. According to Gibberd (2009) roughly 50% of all materials extracted from the earth's crust are manufactured into construction materials and products and subsequently these extracted materials also make up for 50% of the waste stream. Hence there is an increasing need for the building industry to employ design, construction and management methods that facilitate sustainable buildings to reduce the environmental impact that buildings have on the physical surroundings. Ahna Jungb and Jeonb, (2016) state that after identifying many negative environmental issues and potential social and economic benefits, Green Buildings are gradually becoming a strong momentum in the construction industry.

The building industry poses a threat to the environment in various ways including through the type of material that are utilized such as cement in the formulation of concrete (Petkar, 2014). Wang and Adeli (2013) in their study of sustainable building design state that concrete releases carbon dioxide (CO_2) when it ages as a result of chemical reaction that occurs due to the fact that it consists mainly of aggregates and cement paste. The paper declares that nearly one pound of CO_2 per pound of cement is emitted during its life time, this can be converted to 0,454 kg of CO_2 in 0,454kg of cement in South African measuring system. The paper does not give the average lifetime of concrete; however, it can be tied to the lifespan of a building. The construction of buildings can also impact the environment through the use of large volumes of resources due to the nature and massive size of construction (Yao, 2020). The construction process consumes fresh water, energy and utilize large footprints of land (Rahman at al , 2019). Therefore, the resolution has been to design and implement

buildings that aim to alleviate the negative impacts on the environment, these buildings are called sustainable buildings in the construction and building industry.

2.2.2 Sustainable buildings as a solution

Sustainable design of buildings is seen as a plausible solution in making construction of buildings more environmentally acceptable (Sayigh 2013). Sustainability is defined as an approach that meets the needs of the present without compromising the needs of future generations by Widjaja (2016). Sustainability is a broad term that can be implemented in many industries and in different ways to develop lasting solutions. The definition given by Widjaja (2018) is one that is broad enough to fit most industries, UNESCO (2006) defined sustainability in education as a "lifelong learning process that leads to an informed and involved citizenry having the creative problem-solving skills, scientific and social literacy, and commitment to engage in responsible individual and cooperative actions." UNESCO (2006) also defined sustainability in the context of sustainable human development which places the wellbeing of a human being at the center the three pillars of sustainability which are the environment, social and economic development. It is a concept that aims at protecting the environment to ensure that it continues to serve the basic needs of the human being and benefits the future generation.

It is imperative to define and understand sustainability in the construction and the building industry for the context of this study. Tsimplokoukou, Lamperti and Negro (2014) define sustainable buildings as systems that aim to reduce the consumption of energy and resources for all the stages of a life cycle of a building from their planning and construction through their use, renovation and to their subsequent demolition. The main principle that governs sustainability design is the balance between resource conservation, cost efficiency and design for human adaptation (Akadiri, Chinyio and Olomolaiye 2012). Therefore Tsimplokoukou, Lamperti and Negro (2014) explain it as developing solutions that ensure durable buildings that do not have negative footprint on the environment not only during construction but also during lifetime and use while Akadiri, Chinyio and Olomolaiye (2012) explanation is about finding a healthy balance in terms of resources, cost design while ensuring the final product is conducive for healthy human living. The solution to finding

the balance and mitigating some of the negative impacts of the construction industry on the environment is the design and implementation of green buildings according to Widjaja (2016).

The South African Local Government Local Association (SALGA) (2017) describes green buildings as energy efficient, resource efficient and environmentally responsible. It further states that their design, construction and operational practices should take into account sustainability which will minimize a building's negative impact on the environment and people, while taking into consideration the financial implications. The Leadership in Energy and Environmental Design (LEED) (2018) framework defines a green building as the practice of designing, constructing and operating buildings to maximize occupant health and productivity, use fewer resources, reduce waste and negative environmental impacts, and decrease life cycle costs. Therefore, the ultimate objective in most literature that has been reviewed is to reduce the negative imprint on the natural environment and create a healthy physical environment for humans. In the context of the study, sustainability will be defined as the pursuit of environmentally friendly design and management of construction of buildings with the aim of creating buildings that have less of a negative impact on the environment and an indoor environment that promotes quality of human life.

2.2.3 Implementation of Sustainable Design

Implementation of sustainable buildings often requires complex design solutions that entail a holistic project management approach that will encompass and integrate all the relevant professions (Akadiri, Chinyio and Olomolaiye , 2012). An integrated design process can be defined as a collaborative process that focuses on the design, construction, operation and occupancy of a building over its complete life cycle in order to achieve high performance (sustainable) buildings (Düzgün & Alada, 2015). The implementation of such a building requires effective project management and a framework that considers all the factors that need be taken into consideration and how they can be managed individually and integrated holistically. Akadiri Chinyio and Olomolaiye ,(2012) summarised the objectives that can be utilized to formulate a framework for management and design of a green building in Figure 2.1. Akadiri Chinyio and Olomolaiye , 2012 developed a framework

based on the strategies developed by organizations such as LEED and Building Research Establishment Environmental Assessment Method (BREEAM).



Figure 0.1: Framework for implementing sustainability in construction (Akadiri, Chinyio and Olomolaiye, 2012)

Figure 2.1 lists the objectives and strategies of a sustainable building, the objectives include resource conservation, cost efficiency and design for human adaptation. The strategies to achieve the three objectives are listed to achieve each objective. The strategies for resource conservation include energy, material, water and land conservation while cost efficiency can be achieved through initial cost, cost in use and recovery cost. The strategies to design for human adaptation are protecting human health and comfort and protecting physical resources (Akadiri, Chinyio and Olomolaiye , 2012). This framework requires a holistic approach that entails integration of design and planning in the early stages of project management. Akadiri, Chinyio and Olomolaiye, 2012 define integrated design as an approach for incorporating all vital aspects of building design such as cost, sustainability, constructability and safety. It is formulated with the objective of enhancing and supporting designers in making key decision. In green building, all stakeholders including architects, contractors, and engineers need to collaborate to successfully complete integrated green design and construction that can eventually achieve the goals of sustainability in construction (Ahna, Jungb and Jeonb, 2016). The importance of involvement in the early stages of project management is that it is the conceptual phase where the initial concepts and designs are conceived from the client's

requirements. The first two initial phases are known as the conceptual phase and prefeasibility phase according to the Project Life Cycle Process of project management.

The majority of the literature assessed do not mention interior design when discussing integrated design in the early stages of project or design management. Interior design is briefly mentioned in some studies that aim to develop a framework for the implementation of sustainable buildings. It is however integrated in the later stages of development and not in the early stages of management when all the stakeholders and professions are integrated to design and implement the concept. Wang and Adeli (2013) defines sustainable building design as a wide and multidisciplinary research endeavor including mechanical, electrical, electronic, communication, acoustic, architectural, and structural engineering. It involves the participation of owners, contractors, suppliers and building users. Interior design is not included as one of the professions that should be included in the list of multidisciplinary endeavor by Wang and Adeli (2013).

Architecture and engineering professions are the most common professions that are listed in the literature reviewed regarding integrated design of sustainable buildings amongst other stakeholders. However, interior design is seldom cited particularly in the early stages of project management. In some frameworks that have been developed, it is mentioned in the later stages of implementation. Ahna, Jungb and Jeonb, (2016) listed the following stakeholders that should be incorporated in the integration process: architects engineers, contractors, construction managers, owners, building occupants, building operators, and government agents.

Therefore, the questions that arise are: does interior design as a profession add value in the design and management of sustainable buildings? What value can it contribute if it is integrated in the early stages of project management?. Another important question to ask is what crucial role can they play those other professions or professions cannot play? The next section will review literature regarding what interior design is and how it functions as a profession.

2.2.4 Defining Interior Design and its functions

The Inscape Education Group (est;1981) defines Interior Design as the art and science of enhancing the interior of a building to achieve a healthier and more aesthetically pleasing environment for the people utilizing the space. It is still largely perceived as a profession largely concerned with style, fashion and luxury that offers visual aesthetics, however it can offer great contribution to developing sustainable methods through the selection of green and sustainable materials and effective utilization of space (Hayles, 2015). It is a profession that seems to be greatly undervalued in terms of its contribution to the creation of a building, convincing the industry and other professionals in the building and construction industry of its value is a hard task seeing how it is still perceived as a luxury addition rather than a necessary function.

Königk (2010) defines interior design as a mode of cultural creation which engages in the design of enclosed spaces in existing structures, with emphasis on the design of volume. He further adds that it can then be claimed that built-space is created to facilitate inhabitation; in other words, built-space is conceived to provide interior space for people to take habitat. The paper makes it clear that a building or enclosed structure is constructed to create an interior space for use, therefore it makes a case for interior design with the fact that the whole point of a building is to create an interior space hence the need for interior design. Interior design is a field that is qualified to design, plan and manage interior space not only in the construction but also throughout its lifecycle and during its occupancy.

MWANZA (2016) defines Interior design as a multifaceted profession in which creative, technical and business solutions are applied within a structure to achieve a built interior environment. These solutions are functional, enhance the quality of life and culture of the occupants, and are aesthetically attractive. The study thrives to understand the professionalization of interior design across the continent. Interior design is a recognised profession the same way that an architect or engineer is a recognised profession with its own Body of Knowledge in South Africa. The highest qualification that one can attain is a masters and doctorate degree in an accredited University in South Africa, the institution requires a South African Qualification Authority (SAQA) and Department of Higher

Education and Training (DHET) accreditation to make the qualification valid. The African Institute of the Interior Design Professions (IID) is the only professional body representing the Interior Design industry in South Africa.

Interior Design as a Profession

The following section discusses interior design as a profession and its professionalisation. Professionalization is an important factor when taking into account the value of a profession particularly in high risk and technical industries that require specialist knowledge. The Australian Council of Professions (2003) defines a profession as a disciplined group of individuals who abide by ethical standards and are accepted by the public as having special knowledge and skills in a widely recognised body of learning. The Australian Council of Professions (2003) defines a professional as a member of a profession.

The Australian Council of Professions (2003) explains professionals further as '*governed by codes of ethics and profess commitment to competence, integrity and morality, altruism and the promotion of the public good within their expert domain'*. Susskind (2018) defines professionals as individuals who have the technical expertise in the form of experience, know- how, skills and wisdom. Susskind (2018) states that the professions were invented to create, manage, and apply these great bodies of practical expertise. Individuals can become professionals by pursuing careers in specific fields through the acquisition of both substantive and methodological knowledge through higher education and develop understandings of their roles that permit them to function as professionals in their fields according to (Levine and Bell, 2015). Levine and Bell (2015) elaborate further that the professionalization process requires one to develop skills, identities, norms, and values connected with becoming part of a professional entity. Professions are technical and cohere to norms and standards according to Königk (2015).

The professions are entrusted to act as gatekeepers, with each profession responsible for their own unique body of practical expertise (Susskind 2018). Königk (2015) writes that professionalism puts

emphasis on autonomous expertise, Maister (2017) declares that one does not label himself as a profession but rather a label you hope other will give to you. Interior designers are professionals in this regard as they possess skills, knowledge and training relating to the design of interiors although they have not always been perceived as professionals. Sullivan (2007) characterises a profession by three features: specialized training in a field of codified knowledge usually acquired by formal education and apprenticeship, public recognition of a certain autonomy on the part of the community of practitioners to regulate their own standards of practice, and a commitment to provide service to the public that goes beyond the economic welfare of the practitioner. Interior designers can be considered a professionals under the three characteristics defined by Sullivan (2007) as they requires a formal education, can regulate their own standards of practice and commit to providing service to the public via the professional body, the South African Institute of the Interior Design Professions (IID).

Königk (2010) in his article regarding the professionalization of Interior Design in South Africa wrote that the interior design occupation is not given any formal professional recognition in South Africa and that "The built environment professionals who have achieved occupational closure, as listed by the Council for the Built Environment (CBE), are the engineers, architects, landscape architects, property valuers, quantity surveyors, project and construction managers, planners and surveyors*"*.

The CBE is a statutory body established in terms of the Council for the Built Environment Act, 43 of 2000 (the CBE Act). It is an overarching body, regulating the activities of the six councils for the following built environment professions (the CBEP): engineering, architecture, landscape architecture, quantity surveying, property valuation and project and construction management (CBE, 2000). The CBE defines the scope of work for the different professional bodies. According to the CBE (2000, 3) "the range of work performed by a registered person in terms of a specific piece of legislation other than the legislation that created the councils for the professions, or the statutory duties which may be performed by a registered person". Interior design or the South African Institute of the Interior Design Professions (IID) was initially not regulated by the CBE.

The South African Institute of the Interior Design Professions (IID) was established in 2006. The interior design occupation was not given any formal professional recognition in South Africa before the establishment of the IID according to Königk (2010). The IID is the only professional body representing interior designers in South Africa (IID, 2020). In order to be considered as a profession, interior design has had to shift its emphasis from taste to skill (Maffei, 2008). Maffei (2008) noted that after the Second World War, interior design was positioned within architectural history or pertaining to connoisseurs by historians. The expansion and development of interior design was noted from 1961 to 1991 according to (Baxter, 1991). The expansion included greater sophistication and the developments of textbooks and training at various levels (Baxter, 1991). Interior design professionals have been trying to establish interior design as a distinct and valued profession for more than fifty years (Anderson, Honey and Dudek, 2007). The efforts undertaken to achieve professionalization include academic accreditation, apprenticeship, examination, licensure, and self-regulation through professional associations (Anderson, Honey and Dudek, 2007).

Königk (2010) expresses that the IID was established because the South African Council for the Architectural Profession (SACAP) took initiative to identify and monopolise architectural work. Therefore, interior design only became an independent profession because the council for architecture decided to create its own space within the built environment. This fact shows how interior designers have been deemed as inferior to the other professionals within the built environment. The IID was established to formally professionalize interior design which was prompted in 2004 when the South African Council for the Architectural Profession (SACAP) took initiative to identify and monopolize architectural work according to Königk (2010). The Interior Design/ Interior Architecture Education Association (IDEA) (2012) concurs that the threat and challenge of architects wanting interior design to just be an area of study of architecture and architecture education served as an incentive for interior designers to professionalize the occupation and establish a professional body.

The IID was then included as a voluntary association of the SACAP in April 2009 (Königk, 2010). The Architectural Department attempted to assist in the professionalization of interior designers by entering into a formal relationship with IID. The Architectural Department made a proposal to

SACAP to establish interior design as an architectural discipline (Königk, 2010). Königk, 2010 states that this was undertaken to allow interior designers practicing in South Africa to register as professionals with the SACAP. In 2015, Königk declared that the proposal would provide statutory recognition for the professional status of the interior design occupation and it will allow interior designers to have occupational closure. Occupational closure is a state where both the practice and title of the occupation become regulated (Stuth, 2017). Königk (2015) defines occupational closure as a point when a profession accomplishes establishment of a monopoly of service which is based on its technical authority.

The formal proposal consisted of registration categories for interior designers under Notice 55 of 2015 by SACAP. The proposed registration categories for interior designers included professional registration for a professional interior architect, professional senior interior designer and professional interior designer. The candidate registrations is categorized into candidate interior architect, candidate senior interior designer and candidate interior designer. The formal education required to be registered as a candidate is a Matric/ Grade 12 Certificate, three year Diploma/Bachelor degree, Honours/B Tech Degree, and Masters by Course Work/ M Tech Degree.

The IID is currently the only professional body representing practicing professionals, membership with IID represents your status as a qualified, experienced and ethical practicing interior design professional (Königk, 2010). The IID is also member of the International Federation of Architects/Interior Designers (IFI). The requirements for registration as a professional includes a minimum full time three-year diploma or degree from an accredited educational institution in the field of interior design along with a minimum of three years practical experience according to the IID registration application form for 2015. The individual is also expected to have satisfied the National Council of his/her professional competence by compliance with the competencies for the registration category.

Qualifications and professionalization are important factors when considering the value of a profession particularly in high risk and technical industries that require specialist knowledge.

Therefore, interior designers have a specialist knowledge in the design of spaces and have a specific role that only they can fulfill. In the study by Mwanza (2016), a profession is described as an occupation characterised by three features: specialized training in a field of codified knowledge usually acquired by formal education and apprenticeship, public recognition of a certain autonomy on the part of the community of practitioners to regulate their own standards of practice, and a commitment to provide service to the public that goes beyond the economic welfare of the practitioner. Buhai (2016) agrees that professions are basically entities that are engaged in the provision of services but not the sale of goods. Professionals all have extensive expertise that reveals the differences in the information available to the professional and the client, and therefore the client's ability to trust the professional is crucial (Buhai,2016). Hence interior design cannot be deemed as inferior compared to all the professions that have been cited as integral in the conceptual phase of interior design in the review literature. It cannot be relegated to an artsy degree with no technical significance when it has higher education accredited, body of knowledge and codes as well as being an independent field.

The paper by Mwanza on Professionalization of Interior Design: A Framework Proposal for Kenya (2016) further defines the concept of Professionalization as the process of developing an activity into a generally recognized profession, through the setting up of professional organizations, the articulation and monitoring of standards and codes of conduct, the institution of clear educational routes and means of assessment, networking and gate-keeping. Therefore, interior design cannot be deemed as inferior or not qualified to bring value as compared to other professions in the implementation of sustainable buildings. The question that is then posed in this research is what value can interior design contribute in the management of sustainable buildings?

Differentiating Interior Designers from Interior Decorators

It is imperative to not only define the function of interior designers but to also distinguish their function from the core functions of interior decorators. The distinction is necessary and important especially for the context of the study because while they are similar in many ways, they also have imperative differences. The two fields are not interchangeable although they are often mistakenly

regarded as the same by some in the building industry or general population. New School of Architecture and Design (2020) describes interior design as the science of understanding and considering behaviours to assist property owners create a functional room within a building, including the forms of a room's walls, floors, and other interior elements. An interior designer works intimately with architects to design the interior space and has sufficient experience in the construction industry whereas interior decoration is the furnishing of a space with beautiful or fashionable elements (New School of Architecture and Design, 2020). Therefore, interior decorators merely decorate the space with furnishings while interior designers are actually more technical and provide technical design of the space in terms space planning, volume, ventilation and natural lighting.

According to Chron (2021), the terms interior designer and interior decorator are occasionally used synonymously, however, each has its own work description and function. In agreement, Leydecker (2013) states that the role of interior designers is often confused with being that of interior stylist. Flanagan (2020) differentiates between the two fields by the following important factors: education, qualification, who they work with and their core functions. In terms of education, interior designers are required to complete the specific SAQA approved bachelor's degree or formal training according to DHET in South Africa. Some of the modules or skills acquired by interior designers according to the Inscape Education Group (2021) includes computer-aided design (CAD) training, drawing, space planning, communication skills, leadership skills, furniture design, architecture and fundamental design skills.

Conversely to the requirements to be an interior designer, interior decorators are not required to acquire higher education or formal training due to the fact that the main focus is on aesthetics and do not nor can they undertake structural planning or refurbishments (Flanagan, 2020). If they are utilised by the client or project, they make their contributions after construction and structural planning has been executed. Although qualifications are not compulsory, an interior decorator can take it upon themselves to acquire certain skills to become competitive. Skills such as room layouts, courses on colour and textiles and fabrics as well furniture styles can be acquired through short-term courses. These courses can be obtained from institutes such as The Décor School and University of South Africa (UNISA) in South Africa to authenticate themselves within the field.

Flanagan (2020) states that interior designers can work with architects and contractors in designing and planning an interior space of hotels, offices, museums, property development, residential homes and any interior space. According to Chron (2021) they do not just enhance the look they also take into consideration function of an interior space therefore they draw the initial floor plans utilising computer aided design and be involved until the last detail of decorative accent. Interior decorators, on the other hand, can assist the client with determining a style, procurement of furniture and selection of a colour palette (Chron, 2021). Interior decorators rarely work with architects or contractors because they are not qualified to undertake structural planning. They do, however interact with furniture makers and upholsterers.

Hamstech (2017) differentiates between Interior designers and interior decorators according to their ability to build a space, whether it is a commercial or residential space. Hamstech (2017) describes the importance of space building in both commercial and residential spaces with the essential consideration of three facets which are purpose, functionality and appeal. Interior designers have the skill and ability through education and formal training to encompasses the three concepts and apply them into practices (Chron, 2021). The designer's ingenuity, aptitude, approach and imagination allow for the distinctiveness of spatial design which encompasses both interior designing and interior decoration according to (Hamstech, 2017). Rana (2017) describes interior decorators as people who design simply for common sense and good taste. Both interior designing and interior decoration create the efficiency and aesthetic appeal of any commercial or residential building. Therefore, interior designers are distinct for interior decorators and have an accredited educational, training and qualification that gives them a great advantage over interior decoration.

Hamstech (2017) further details the building process in terms of the involvement of the architect, interior designer and interior decorator. In the construction process, the architect designs and develops the concept and visualisation of the structure while the interior designer steps in when innovative and inspirational building plan is required. Sehgal (2017) states that then interior decorators may come in to make a beautiful home is an expression of emotions. The interior designer

also provides elaborate plans, develop spatial room layouts and plans interior features like natural light provisions and workspace distribution (Hamstech, 2017). The architect and interior designer work together to achieve the required goal and both are involved from initial stages project until close out.

The interior decorator, on the other hand, is introduced when construction has been completed and generates the visual concept for interior furnishings that reflects the characters and requirements of the client (Seghal, 2017). According to Rana (2017) decorators improve the appearance and ambiance of the interior by employing his skill at decorations, colours, furniture design and other stylish additions. He concerns himself with aspects like flooring, furnishings, colours and accessories that are important in a renovative or decorative context. therefore, the interior decorators only involvement is after construction when the building has been completed and it is not technical in nature but rather concerned with an aesthetics and has a decorative purpose, the function does not impair the structural properties of a building. The requirement of an interior decorator is solely up to the client and they are mostly utilised in residential homes whereas interior design is involved during construction and in any building space whether commercial or residential.

RMCAD (2018) states that “when many people hear the term, interior design, they often think of room makeover challenges, or decor DIY projects on Pinterest. But what they are actually thinking of is interior decorating”. Interior decorating is the art of creating functional, beautiful living spaces which differs from the function of an interior designer RMCAD (2018). According to Rana (2017) interior decorating is the furnishing or adorning of a room with decorative features to accomplish a specific aesthetic, while interior design is the art and science of understanding human being’s behaviour to create purposeful spaces within a building. Pelletier (2016) concludes that interior decorating is merely a smaller subcategory of interior design. In summary, interior designers can and may perform the function of a decorator, but decorators cannot design or perform functions of a n interior designer. The two disciples may appear similar; however, they are distinct in very key elements, qualification and skills.

RMCAD (2018) further describes why interior decorators do not need formal training or qualification, while interior designers are required to achieve a higher level of education. According to RMCAD (2018), the interior design process entails a systematic and synchronized methodology including analysis, research and integration of acquired knowledge into the creative process to achieve the requirements of the client. Interior designers are challenged with implementing technical and innovative solutions within a structure that are aesthetically pleasing, functional, and beneficial to the occupants' quality of life and culture whether involved in a commercial or residential space RMCAD (2018). Designers are expected to synchronize with the building edifice and take into consideration the social cultural context and physical location of the building (Sehgal, 2017). The technical and educational requirements are the key differences between the two professions that dictate that they should not be used or perceived interchangeably within the building industry or in general.

Differentiating Interior Designers and Architecture

Another imperative distinction that has to be made in the study is the difference between architecture and interior design. It is important to make the distinction because architecture plays a vital role in the building industry and has functions that overlap to that of interior design. The similarity in functions leads to one profession being overshadowed by the other. In this case architecture is the one that wins in most building projects where they end up playing the role of the architecture and interior designer simply based on the fact it is a profession that is more developed, established and understood with a historic body of knowledge.

Architecture and interior architecture fall under the Faculty of Engineering, Built Environment & IT School but specifically under the School of the Built Environment at the University of Pretoria (UP) according the undergraduate program prospectus for the year 2021. The University of the Witwatersrand has the School of Architecture and Planning (SoAP) which offers accredited professional degrees in architecture, planning, and related interdisciplinary urban studies and urban design (SoAP, 2020). The University of the Witwatersrand's SoAP offers accredited qualifications such as Bachelor of Architectural Studies (BAS) as well as postgraduate degrees such as BAS with

honours, masters and doctorate qualification. The University of Cape Town, University of Johannesburg, University of KwaZulu-Natal and many other institutes offer similar programs with approved accreditation in South Africa. Therefore, one has to undergo the required bachelor degree pregame and obtain the accredited qualification in order to be a qualified architect.

Architects have to register with a professional body before they are deemed as professional. The professional body for architects in South Africa is the South African Council for the Architectural Profession (SACAP). The requirements for registration for individuals who possess a Bachelor of Architectural Studies (BAS) or postgraduate degree is a minimum of 24 months of internship from date of registration with SACAP, submission of monthly records of experienced gained from internship and undergo two Professional Practice Examination (PPE) according to the Architectural Profession Act, 2000 (Act No. 44 of 2000).

The University of the Witwatersrand SoAP (2001) defines architecture as a profession that produces social and cultural heritage in the form of built spaces, it is a profession with enduring impact and significance for current and future generations. Verschaffel (2017) simply explains that the foundation and principle of architecture is the formation of an "interior". According to SoAP (2001) architects are principally accountable for the design of buildings and their surrounding environments, however, the profession is evolving to include other vital forms of design such building materials, space planning and the integration of the ecological and built environments. Therefore, like most professions, architecture is evolving and expanding based on the needs of today, technological, social and cultural advancements.

Farrelly (2012) states that architecture utilizes already existing models from social and cultural history and implements these inspirations to contemporary buildings, forms and structures. Farrelly (2012) further postulates that knowledge of the history of buildings is a vital part of architectural design due to the fact that it permits a connection between the material, physical and formal developments that have been previously explored by architects who came before. To accomplish an architectural structure necessitates engaging with a methodological way of thinking, drawing and

designing to ultimately generate a building to the client's requirements (Farrelly, 2012). It is thus a profession that not only requires technical ability and logic but also the creativity and aptitude to merge the technical aspects of forming a balanced structure with the cultural, historic and social aspect of the particular society.

The etymological definition of the word architecture illustrates the fundamental basis of the profession, the word comes for the Greek word arkhitekton which can be translated to chief builder (Farrelly, 2012). The Latin word arkhitekton evolved into the French word architecte which means one who plans and executes the construction of a building (Janetius, 2020). Webster's dictionary defines architecture as the art or practice of designing and building structures and especially habitable ones. Janetius (2020) defines architecture as Architecture is an art and science of designing and building space, structure and surroundings with aesthetics to achieve a particular purpose that gives a sense of excitement to the observer.

There are many aspects and considerations that have to be taken into consideration by an architect as an extensive impression has to be taken for efficient design including the context of the building which can be a landscape, city, suburban or rural area and a thorough comprehension of the building itself (Farrelly, 2012). According to Wearstler (2020), architects are skillful at structural problem-solving and creative design. The comprehension of the building includes elements such as fundamental concept, functions and its materiality and structure. According to Farrelly (2012) the extensive impression occurs at many levels and the next tier of understanding of building is visualizing it as a series of rooms, connected spaces that come from the external to the interior. Other important factors that have to be taken into account that bear resemblance to interior design are the acoustics in the rooms, control of light and the furniture that occupies the spaces. Wearstler (2020) concludes that the architect is a designer whose responsibility varies from designing a city to designing a chair. Janetius (2020) postulates that architecture is an art and a science in the sense that an architect is an artist with a natural aptitude for creativity but has to be creative in a scientific and technical manner.

Pelletier (2016) describes architecture as a profession that is concerned with not only conceptualizing the space and form of the structure but it also has to take into consideration engineering, life safety factors, exterior materials, and appliance to codes of practice. Pelletier (2016) further makes an example of the function of an architect in a residential house project, the architect would be responsible for conceptualization of the exterior of the house, performance of the house in terms of energy efficiency and handling of building compliance permits. There are architectural consultants who undertake the renovation and modernization of existing buildings, which is conventionally a primary field of interior design (Leydecker, 2013). Whereas, the interior designer's function is to design and conceptualise the interior of the house including selecting interior finishes such as floorings, tiling, hardwoods, and wallpaper as well as selecting furniture and beautifying the space. From the literature cited in this section defining architecture, the differences with interior designed can be observed and somewhat understood even though there is a grey area of similarities that can be observed. There are clear differences between the two professions, however there are points of intersection in terms of their function and ability.

According to Leydecker (2013), *Interior design is generally perceived as lying between the poles of architecture and design*. Interior designers should be working together with architects in an ideal project on the layout of the space or room, and on the finishings, cabinets and other work within the layout. This collaboration is important because it ensures that the spaces are sized accurately, windows are appropriately positioned, and that the entire space feels harmonious (Pelletier, 2016). The two professions have immense differences in the building industry, however they also come to a point where they intersect and fundamentally are capable of performing the same duties, it is important for both professions to be fully understood and appreciated as separate entities in the building industry where they can harmoniously function in the same space to achieve the requirements of the client and produce a purposeful building. The comparative diagram below, Figure 2, illustrates the differences between architect and interior designers as well where they intersect and can perform the same functions. The darker blue section is where the ambiguity resides in terms of services.

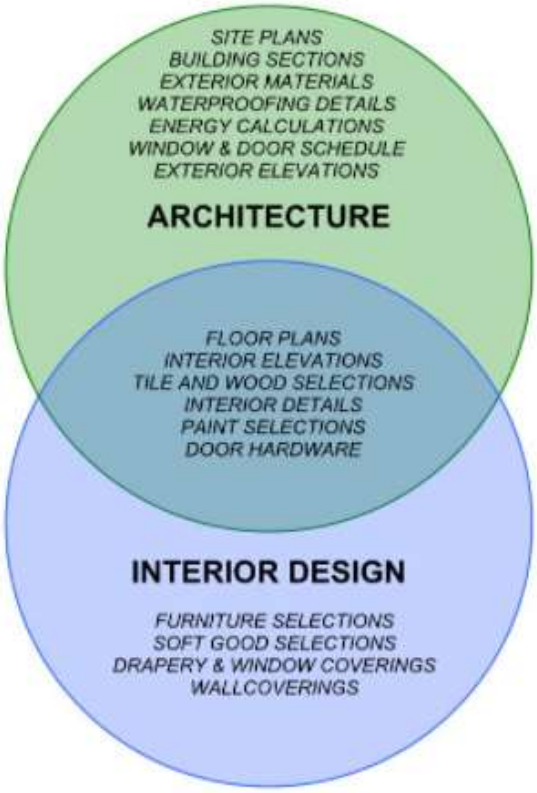

Figure 0.2: Comparative chart for differentiating architecture and interior design (Pelletier, 2016,2)

Narang (2018) positions that every building communicates a tale, a tale embedded in its walls and one told by its originators and that these tales are created by the intricate work of both Architects and Interior Designers. They craft these buildings to make them aesthetically appealing and functional by collaborating to make a building that is in sync. The primary purpose is to produce spaces in our settings that impact our psychology and well-being in a positive manner which falls under the umbrella of sustainability for human beings.

Narang (2018) further postulates that the reason that people in the building industry and the public in general often confuse the two professions is due to the fact that both architects and anterior designers have an analogous work profile that comprises of designing. However, Narang (2018) differentiates between the two professions by stating that an architect designs the structure of a building, whereas an interior designer designs what is inside the building. The two professions are

often confused with one having a more obscure reputation, which is interior design. This leads to architecture being higher on the hierarchy because it is more established, more technical and key role players in conceptualizing the building structure.

All the details that are present on the exterior of a building are the effort of an architect, an architect is one who designs, reviews, and oversees the construction of buildings (Narang, 2018). The architects' primary function is to create a structure on a specified setting that is not only functional but is aesthetically pleasing. The building should comply with city regulations and standards in terms of safety and government zoning requirements, it should also be suitable with the social and cultural surrounding environment.

Architects and interior designers differ greatly as well in terms of qualification and training requirements. According to Leydecker (2013) an architect is skilled in creating and producing a structural building that complies with national, state and local building codes. The interior designer, on the other hand, is trained in creating a purposeful, efficient and quality interior environments. The requirements of an interior designer in a building project are to focus on designing for the human psychology and emotional aspects of spaces while the requirement for an architect is the technical requirements like form, material, ventilation and climate (Narang, 2018). Therefore, architecture is a much more technical profession than interior design, however interior design still serves a great purpose in the completion of a building.

The question of the research is the value of interior design in the management and construction of building industry particularly pertaining to sustainable buildings, on whether they should be included in the initial phases of the project management process. The literature reviewed thus far reveals that one of the reasons that interior designers may seem to be undervalued is due their perception in their industry, the profession in still quite obscure in South Africa even within the building industry itself. The fact that they might share similar functions with architects makes it even more difficult to stand out or be considered valuable or necessary in the initial phases of the PLP process the same way an architect, civil engineer, project manager or quantity surveyor might be deemed compulsory.

König and Bakker (2012) postulates that "Although the subtext is not said out loud, it still is clear: interior design is inferior to architecture. In spite of many postmodern/poststructuralist reassessments during the last thirty years, the duality that places architecture as the dominant term in a binary opposition with interior design remains largely unreconstructed". This statement might be considered bold or even controversial but it rings mostly true in the building industry in South Africa, the literature reviewed on current practices in the industry illustrates how undervalued interior design is as a profession. Tuchek (2020) found that interior design is perceived as a feminine profession while architecture is perceived as a masculine profession with high prestige. Tuchek (2020) also found that interior design as a professions had uncertain value within the public sphere. Despite efforts to distinguish interior design from architect and having a formal professional body to create a space for it in building projects, it is still largely obscure, unrecognized and even deemed unnecessary in certain projects where architects are utilized to conduct interior design work.

König and Bakker (2012) argue that in order for interior design to thrive, it has to explore and promote its differences from architecture and discontinue to emulate architecture. According to the König and Bakker (2012) interior design has potential to offer impartial, satisfactory, sustained and transformative accounts of the world since it occupies such a marginal position in the industry. Therefore, interior design can offer solutions that are just as innovative and impactful as architecture in building projects if the profession places an emphasis on the elements that it can produce that architecture cannot necessarily produce to eliminate playing similar roles as architects. Although architects can perform similar functions as interior designers, the question should be can they perform them to the same amount of detail, creativity and give the same amount of consideration to human psychology as interior designers are trained to do.

It can be difficult for professions that are marginal, obscure or not yet fully understood to create space for themselves in an industry where there are ones that have an autonomy such as architecture largely due to perception König and Bakker (2012), this is often a problem with closely related disciples. König and Bakker (2012) hypotheses is that interior design is architects' abject other,

however, other is not implying a harmonious or sympathetic relationship but rather an exterior, inferior or alterity relation. The word abject is used with two different meanings in König and Bakker (2012), the first one is where there is a quest for separation and establishment of identities. The second usage is more negative implying a threat to an identity or a foreign object. This implies that interior designers are often perceived as inferior to architects, it is a profession that even when recognized, it is recognized as a second tier to a superior and much more understood profession. This practice or perception leads to architects conducting interior design work which could be adequately performed by an interior design in a building project. The separation of identities is thus important to leave sufficient room for the more marginalised profession to gain recognition.

König and Bakker (2012) in their hypothesis that interior design is architects' abject other further postulate that "Interior design is a profession that threatens and questions the identity and boundaries of the architectural profession". This postulation speaks to the professional boundaries that are often crossed by architects in the building industry where they undertake work or activities that should ideally be done by an interior designer. Therefore, if interior design develops further as a profession, it might pose as a threat to architecture in term of certain activities as well as professional boundaries that might be crossed. It might lead to the building industry or professions within the industry itself to start question why architects undertake certain functions when interior designers exist. It is important to note that in most building projects, it is not the architect who presumes to undertake interior design functions but the current practice in the industry due the lack of knowledge of interior design.

Architects are not only more established but are also legally protected to undertake activities that can be deemed as interior design activities. Architects are allowed due to the Identification of Work (IDoW) policy on the identification of work for the architectural profession under the architectural profession act no. 44 of 2000. Two of the objectives of the SACAP IDoW includes; to protect the public by defining the work that each registration category of the Architectural Profession can undertake and to provide a framework for the IDoW and the demarcation of work between categories of registration in the Architectural Profession (SACAP IDoW Policy, 2020).

SACAP drafted the IDoW for persons registered as architects and the scope work. Architects are also regulated by the Architectural Compliance Certificate which is a document that substantiates the fact that an individual listed can undertake the work according to category of registration assigned, which recognises requisite skill and competence. Architectural Work means work which comprises the characteristics, scope, competencies and skills as set out in Schedule 3 of the IDoW by SACAP. Activities that might be deemed to be interior design activities can be performed by architects under SACAP IDoW Policy, 2020. This is perhaps the biggest handle for interior designers when competing for interior design jobs with architects, interior designs do not have a governing body that legally prevents or prohibits architects from undertaking interior work.

Dawkins (2014) states that although distinctions between the two professions have been recognized, traditional roles executed continue to endure constant re-definition. Dawkins (2014) is in agreement with König and Bakker (2012) that although the two professions have been distinguished through education, qualifications and separate professional bodies, the actual current practice on the ground does not reflect the distinction of the two with interior design being at the losing end as the more obscure profession. Gürel and Potthoff (2006) suggest that the realm of interiors creates a point of tension between working interior designers and architects because design of interior spaces is a substantial portion of architectural profession.

Acknowledging this fact that the design of interiors is a part of architecture, Gürel and Potthoff (2006) then asks the question to what degree does architectural education keep up to date with changing demands in rendering themes that are identified as relevant to the design of interior. Gürel and Potthoff (2006) in their journal titled “Interior Design in Architectural Education” found that many interior design concepts are not sufficiently taken into consideration in the architectural programs and prospectuses. According to König and Bakker (2012) interior design is primarily concerned with the experimental and temporal elements of space, it is concerned with the body in space, viewing it in a pragmatic way where it takes into consideration ergonomics, anthropometrics, space usage and comfort. It approaches design in a deeper philosophical way of comprehension

which includes the way people interact with space, experience space, intuitively are in constant dialogue with space and understand space. Therefore, interior design views and approaches design differently from architects due to the difference in educational training and body of knowledge, they are also more detailed and innovative with design because it is their primary focus and not secondary like architects. This is the basis that might lead to the necessary demand of the utilization of interior design in the initial phases of building projects particularly sustainable building.

It is common practice and historical fact that architects usually undertake design of interiors (Gürel and Potthoff, 2006). It is a historical fact in terms of prior to the established and development of interior design. Dawkins (2014) in his research "Perceptions of Architects Who Choose to Practice Interior Design" enquires what compels the architect to provide services characteristically associated with interior design. These services refer to elements external to traditional architectural planning, building fundamentals and structural detailing. Dawkins (2014) explores the possible factors that might contribute to this practice which include a component of their education, desire to control all designs aspect of a project, contractual obligations to have design under one consultant or economical consideration. Therefore, there are many reasons why architects undertake design of interiors in building projects despite the fact that interior is now established profession with a body of knowledge, regulatory organization and higher learning educations. The reasons vary for different projects, it is not always necessary the prerogative of the architect. One of the most prevalent reasons being that architecture has a long-established history and it is simply common practice that few question.

Dawkins (2014) describes this phenomenon of architects undertaking interior design services as 'unintentional cannibalizing' or 'appropriating' because of how marginalized interior design has become despite the admirable strides and progress the profession has made in the past twenty years. This current conduct leads to mistrust between the two professions or inability to work harmoniously in collaboration according to Dawkins (2014). The mistrust and tension are caused by the fact that interior design loose work and services making it difficult to for the profession to flourish to its full potential, it makes it difficult for healthy competition between a supposed obscure profession and one that has such an autonomy in the building industry.

Dawkins (2014) found that in his study, nine out of the ten design companies that he surveyed in the United States of America (USA) were engineering or architecture companies that provided interior design under the umbrella of architectural services. The findings also revealed that top 10 of the Interior Design companies surveyed preferred marketing themselves as architecture services first and foremost (Dawkins, 2014). This speaks to the lowly perception of interior design and how much more respected architecture is, to the extent that design companies have to market themselves as providing architectural services to not only attain a certain level of respect but also adequate work.

The deemed inferiority of interior design comes largely from its perceived lack of theoretical foundations and the perception of a 'young' or 'emerging' profession especially in comparison to architecture (Somers, 2018). According to Somers (2018) the perception over the past 20 years has fundamentally transformed due to progressions in the educational space and advanced drastically from a professional and vocational profession to an academic one. This drastically evolution was also motivated by an energized initiative by interior designers to distinguish themselves and develop as a profession. According to Snyder (2018) interior design is cooperative, open-minded and holistic profession that depends upon and functions within and with other interrelated professions. Snyder (2018) further explains that interior design philosophy is not simply a reconfiguring of architectural doctrine and an auxiliary profession.

In Dawkins (2014) investigation about the 'perception of architects who practice interior design', the findings were that 49% of the architects who participated considered themselves adequate interior designers while 42% did not see themselves as interior designer nor did they believe they should undertake interior services. The remaining 9% where confused and not certain about differentiating the services. The interesting point is that the 49% of the architects who deemed themselves as satisfactory interior design changed their stance when quizzed about the legal certification, registration, and/or qualifications of licensing as an interior designer. Therefore, it is a point of confusion and contention in the building industry regarding who should be responsible for the role of designing interiors, the professional boundary is still blurry for most impacted parties. It seems there is an unfamiliarity about the professionalization and qualification of interior designers even in the building industry which is why some individuals are under the impression that they are capable

of undertaking designing of interiors until legal certification, registration, and/or qualifications are required and presented.

The Medium that is Interior Architecture

The overwhelming inability to differentiate the services and functions provided by an interior designer to that of the secondary services provided by an architect, as well as the struggle of interior designers to create their own space within the building environment eventually led to establishment and development of a new profession which combines the two professions. In the 1970s the phrase 'interior architecture' emerged as the delineation of a profession that utilises architectural theory, principles and history in the design and formation of interior space (Cole and House, 2007). Cole and House (2007) also state that the development of the phrase and profession interior design can also be explained as an answer to the uncertainties inherent in the title 'interior design'.

According to Cole and House (2007) the rapid advancement of interior architecture was partly due to the idea that by utilizing the thoroughness of architectural rational along with the sensory comprehension of interior design, an amalgamation could be formed that was both intelligent and considerate to human comfort. Wearstler (2020) describes interior architects as designers who are involved in the building or rebuilding of interior environments, often altering the actual structure of the interior. It seems the goal was to merge the two schools of thought to establish a perfect intermingling of functions for the design of interiors, a school that is more technical and developed with the one that is more creative and satisfies the human sensitivities.

Interior architecture is also considered a young and emerging profession, even much younger, developed and obscure than interior design. It has a relatively small body of knowledge and history; it is not offered as a course in most South African institutes of higher learning. In 2009 the Department of Architecture at the University of Pretoria submitted a proposal to SACAP for the formation of the profession "interior architecture" within the architectural profession (University of Pretoria: Department of Architecture, 2009). The proposal was that SACAP functions as the professional registration body for "Interior Architecture" / "Interior Design" and that the South African Institute for the Interior Design Professions (IID) act as a voluntary association institute, and

that its function will be similar to that of the South African Institute of Architects (SAIA). Therefore, the University of Pretoria saw a need to bridge the gap between architecture and interior design not only in practice but also in the education system and opted to introduce interior architecture as its own entity within the faculty of the building environment.

Interior architecture is recognized internationally with a professional body of knowledge and has been professionalized and regulated. It developed to a stage where it has educational requirements, title modification, inclusive examination, code of ethics and legal recognition (University of Pretoria: Department of Architecture, 2009). The profession was not that developed in South Africa in 2009 which led the Department of Architecture at the University of Pretoria to make the proposal to SACAP. The driving reason for this quest and formation of Interior Architecture was that while the professions of interior design and architecture are distinct, they are not considered unique according to the International Union of Architects (UIA) (2015). The International Union of Architects (UIA) (2015) argued that they have similar working methods and the bodies of knowledge intersect therefore they cannot both exist and be regulated as separate entities. The different institutes and professional organization around the world did not think the two professions where sufficiently distinct to be separated hence the emergence of interior architecture.

Interior architecture is defined as an individual, “qualified by education, experience and recognized skills, who: identifies, researches and creatively solves problems pertaining to the function and quality of the interior environment; and performs services relative to interior spaces including programming, design analysis, space planning, aesthetics and inspection of work on site, using specialized knowledge of interior construction, building systems and components, building regulations, equipment, materials and furnishings; and prepares drawings and documents relative to the design of interior space, in order to enhance the quality of life and protect the health, safety and welfare of the public according to the International Federation of Interior Architects/Designers (1985). This definition explaining the function and elements of interior architecture adequately illustrates how it is a perfect combination of interior design and architecture. It aims to find a balance between the creativity, functionality and technicality. Interior architecture basically introduces

technical elements to interior design as well as in depth knowledge of building systems, components and standards.

The establishment of interior architect did not necessarily eliminate the confusion in the building industry between architecture and interior design nor did it improve the perception of interior design. Königk (2016) argues against the term interior architecture as term that describes interior design based on the reasoning that it is an attempt to improve its professional standing by differentiating itself from interior decorating. Königk (2016) postulates that interior design suffers and is marginalized due to its association with the word decoration in its function and ontology, the function of decoration contributes to the profession being perceived as lesser and less technical. Therefore, the name change by interior design to interior architect is an attempt to dissociate from interior decoration and to align with architectural activities.

Königk (2016) does not see the need for interior architecture as it is just a different name for interior design in his paper and he argues that the title modification may lead to artificial distinctions between 'interior design' and 'interior architecture' which will only eradicate decoration from the profession's repertoire, leaving it disadvantaged. If interior design is defined sufficiently and broadly, distinction between interior design and interior architecture will be redundant according to Königk (2016). Thus, the establishment of interior architecture or modification of the name interior design to include architecture is not necessary if interior design is adequately defined, developed and promoted within the building industry. The goal should be to establish interior design sufficiently and promote it accordingly so it can not only compete but have its rightful within the design of interiors in buildings. Is important to note that the International Federation of Interior Architects/Designers (1985) considers interior design and interior architecture to be one in the same. Interior design has and can provide value in the design, conceptualization and creation of interior of buildings based on the literature reviewed thus far if it can be perceived as more than an inferior other of architecture.

2.2.5 Defining Value

The word value is used commonly in everyday language in an attempt to describe things of importance. It can have various meanings depending on the environment, it can mean the monetary worth of something in finance or a fair return or equivalent in goods, services, or money for something exchanged according to Merrium Webster dictionary (2020). The concept of value in engineering is simply the balancing of cost, time and function/quality of the product/project (Rangelova and Traykova, 2014). Value is a functionality of cost and quality; it can be described as worth of something based on requirements and standards that are predetermined. It is highly dependent on customer satisfaction and meeting requirements at a reasonable cost.

Rangelova and Traykova (2014) defines Value Management (VM) as a structured framework that facilitates effective decision making in terms of obtaining the best value. Rangelova and Traykova (2014) continue to state that the major success factor that leads to achieving project objectives effectively is through the provision of beneficial input by multi-disciplinary team members being involved in critical decision-making discussions during the early stage of construction projects.

Therefore, value in the context of this research can be defined as the skillset and knowledge that is possessed by a professional individual attained through educational qualification and experience in the building industry. The value of the interior designer in this research can then be defined as the contribution that a qualified interior designer can bring in the design and implementation of sustainable buildings based on the specialized skills that they attain through institutes of education and relevant training.

The education qualifications, programmes and representative organisations unique to interior design make it a clearly distinct profession that stand on its own. Therefore, the role of an interior designer should be played by an interior designer and not any other professional or individual such as an architect in some instances. The architect often undertakes work that is related to interior design in buildings projects. Dwakins (2014) states that distinctions between the two professions have been

established, but traditional roles in how they are performed continue to undergo constant re-definition where you have the architect being utilised to play both roles. Dwakins (2014) also says that the design industry is replete with examples of architects practicing interior design. This practices further iterates how the value of interior design is perceived in building projects.

The study proposes that interior designers can play a role as a distinct profession from architecture. The role of architecture is an important one in sustainable buildings and cannot be diminished, that is not the intention of the study, the objective is to investigate the value that interior designers can bring as a separate entity. Grierson (2011) states that the architect's role is central to the building design process. Both professions are vital and can play a valuable role in the implementation of sustainable buildings.

The exclusion of interior designers in the early stages of management, design and planning of sustainable buildings might lead to certain gaps literature that has been assessed based on the research problem. Sustainable buildings are deemed sustainable based on green star rating and interior design can contribute to providing elements that have a green star rating.

2.2.6 Sustainable buildings Standards and Benefits

2.2.6.1 Green building standards and certification in South Africa

Sustainability is defined as the pursuit of environmentally friendly design and construction of buildings with the aim of creating buildings that have less of a negative impact on the environment and an indoor environment that promotes quality of human life in the context of the study. Environmental health for human beings is extremely important as it forms part of the South African constitution and is known as the environmental right. The environmental right refers to the right people have to the environment according to the constitution. Section 24 of the Constitution of the Republic of South Africa, Act 108 of 1996 contains the environmental right. Section 24 of the constitution has two clauses which are "that everyone has the right (a) to an environment that is not

harmful to their health or well-being and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures". The second clause is explained further in the constitution as prevention of pollution and ecological dilapidation as well as ensuring ecologically sustainable advancement and utilization of natural resources.

It is very important to note that the definition of environment in section 24 of Constitution of the Republic of South Africa, Act 108 of 1996 includes both natural and man-made surroundings. Gibberd (2009) states that environments include man-made objects and objects that are cultural and hold historical significance. This definition places a duty on the built environment to create buildings that are environmentally acceptable and favourable according to the South African constitution. Section 24 of the Constitution of the Republic of South Africa, Act 108 of 1996 infers that "the built environments should consider the traditional rights, needs and values of indigenous peoples". According to Gibberd (2009) the built environment should make certain that it provides mental, physical and social wellbeing. Therefore, the definitions and requirements of environmental rights in the constitution places duty and responsibility on the building industry to uphold sustainability requirements when designing built environments particularly relating to human rights to well-being and comfort. It also requests that it takes into consideration the cultures and traditions of the natives when designing buildings as well as their way of life.

Another definition of sustainability that speaks to quality of human life is by the United Nations Environment Programme (UNEP) and the International Union for Conservation of Nature (IUCN) (2017) which define it as improving the quality of human life while existing without overloading the capacity and supporting the eco-systems. The aims and goals of sustainability are made clear through the above definition, the first is to ensure human beings experience a good of life that is continuously improving and the second is to ensure the eco-system in not compromised, degraded nor exploited to achieve the first objective.

The Department of Public Works (DPW) (2018) declares that sustainable building and construction is a subdivision of sustainable development. The DPW (2018) defines sustainable development as

meeting the needs and ambitions of persons (particularly the underprivileged) in a way that does not hinder future generations from meeting their own aspirations. The sustainability in construction can be achieved through the design and construction of green buildings. A green building also known as a sustainable building and is defined as "a building structure and construction procedure that is environmentally accountable and resource-efficient throughout the whole life-cycle of the building, from inception and design, through the operation, maintenance and refurbishment of the buildings, and through to deconstruction of the buildings" according to (DPW, 2018). In the context of the study, a green building will be described as building design and construction that aims to reduce the negative imprint on the natural environment and create a healthy physical environment for human beings that has a positive psychological impact. Sustainability can be achieved when the requirements that meet green building standards are met from the design phase to construction, refurbishment until demolition of the building.

Achieving sustainability through meeting the green building standards can be realized at the planning and design phase of a building when key decisions are taken. Hence it is imperative that the design of a building mirrors the necessary sustainability customs, standards and best practices (DPW, 2018). According to DPW (2018), the key to achieving life cycle decisions that ensures construction of a sustainable building is having green building codes of practice, green building rating tools and energy efficiency standards in place to guide the process. The green rating tools and codes of practice should be adhered to by every profession involved in the initials design stages if the project's objective is to design a building that is considered green.

The environmental rating systems that have been developed to assess the sustainability compliance of building include the British Research Establishment Environmental Assessment Methodology (BREEAM) developed in 1990, the Leadership in Energy and Environmental Design (LEED) developed in 1993, the Sustainable Building Tool (SBTool) developed in 2000 and Green Star developed in 2003 (Sebake, 2008). The above-mentioned frameworks were developed to establish a means of determining whether a building has been successful in meeting an expected level of performance in various declared criteria (Sebake, 2008). The various frameworks were developed to assist designers and project management to design according to the required standards and also to

determine the adequacy of a building in satisfying the sustainability needs. Each country has different assessment tools such as the Pearl Rating System for Estidama (Abu Dhabi Urban Planning Council), Green Mark Scheme (Singapore), Green Building Council of Australia Green Star (GBCA, Australia), Germany Sustainable Building Council (DGNB, Germany), Comprehensive Assessment System for Built Environment Efficiency (CASBEE, Japan). Al of these assessment tools and standards are ultimately governed or based on the World Green Building Council (WGBC)

The green rating tools and codes of practice are also provided in the South Africa National Building Standards: SANS 10400-XA. The SANS 10400-XA regulations are mostly imperative for surveyors, building control officers and building managers within municipalities who are responsible for imposing the regulations and guaranteeing adherence in new buildings and building modifications and extensions. According to SANS 10400-XA, building designer must comply with eight elements of the national building regulations. The eight elements stated in SANS 10400-XA include the building orientation, shading of the northern wall, floors, roof assembly, fenestration, walls, hot water supply requirements and services that use or control the use of energy. The SANS 10400-XA are based on taking into consideration energy efficiency with the aim of climate change mitigation. The climate elements that are taken into account include “controlling comfort (heating and cooling) without consuming fuels, utilizing the orientation of the building to control heat gain and heat loss, use the shape of the building (plan and section) to control air flow utilizing materials to control heat or cold, maximize the use of free solar energy for heating and lighting, maximize the use of free ventilation for cooling and the utilization of shade (natural or architectural) to control heat gains”.

South Africa has two other standards which regulate the sustainability of buildings and they include the National Building Regulations which was last updated 2011 and the SANS 0204; Energy Efficiency in Buildings developed in 2011. There is also the Green Building Council South Africa (GBCSA) which established and developed a set of green building rating tools. The GBCSA’s goal is to encourage sustainable development and the transformation of the building industry in the direction of sustainability by promoting green building programs, technologies and design practices (GBCSA, 2015). These GBCSA tools are not compulsory by legislation according to Building and Décor (2017), but were rather formulated to create a standard measurement for green buildings and

award innovation in the building industry. According to Mavhungu (2019) Green Star SA is the green building rating system implemented by GBCSA in South Africa to certify buildings that adhere and adapt to the global green building standards set by the World Green building Council (WGBC).

Building and Décor (2017) list the five objectives of the Green Star SA Rating tools and they include to develop a common language and standard of measurement for green buildings, increase awareness of green building advantages, acknowledge environmental leadership, encourage integrated, whole-building design and minimise the environmental impact of development. The Green star rating cover many aspects that constitute the functioning of new building, the nine categories that are covered include land use & ecology, management, energy, Indoor Environment Quality (IEQ), emissions, water, transport, materials and innovation.

According to the Building and Décor (2017) the above categories are sectioned into credits that address the creativities that the design and construction team have done to improve the environmental performance of a building. Points are awarded to the building based on a calculated score; the score is based on the suitable environmental weighting of the environmental initiatives that were fused in the building. The GBCSA also awards "Design" and "As Built" certifications for new construction or large renovation projects. Building and Décor (2017) states that "Design" certifications are submitted for and awarded upon completion of the design phase of the project. Figure 2.3 below illustrates the structure of the Green Star SA Rating system which indicates the assessment credits in terms of the category scores and innovation points. The factors used in the criteria for assessment are listed in Figure 2.3 along with how they are weighed in terms of the scoring and rating.

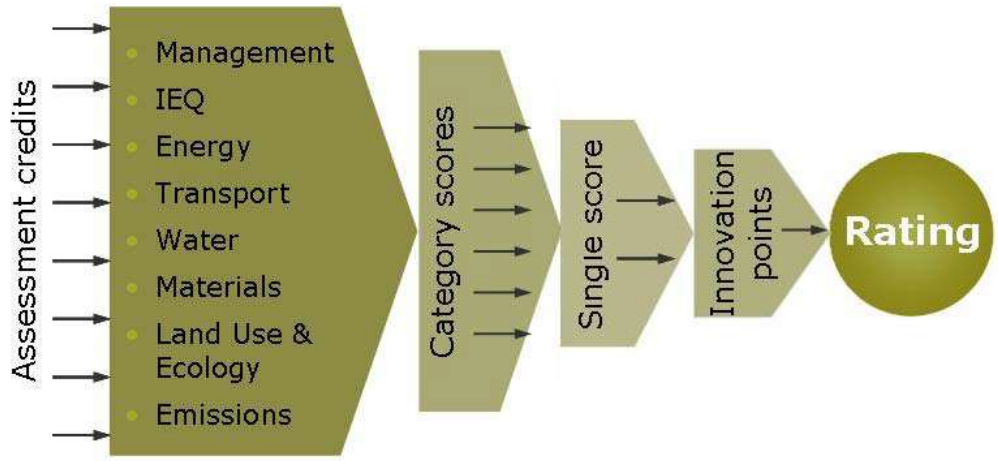

Figure 0.3: Structure of the Green Star SA rating system (GBCSA, 2015)

The Category Score is determined for each category from a mathematical equation based on the percentage of credits, from the equation the category is equal to the number of points achieved divided by the number of points available. The single score on the other hand is determined by taking the sum of all the category scores and adding them to the innovation points (GBCSA, 2015).

The Green Star South African (SA) rating is implemented by awarding certification to 4-Star, 5-Star and 6-Star Green Star SA ratings. Table 2.1 below shows the manner in which Green Star SA certified ratings are utilized and awarded by the GBCSA for all building projects. A green star rating is awarded based on the weighted score which determines the type of recognition the building project is awarded, whether the initiatives can be considered just best practice or above and beyond worthy of being considered world leadership.

Table 0.1: GBCSA Green Star SA Certified Rating system (GBCSA, 2015)

Green Star SA Certified Rating	Weighted Score	Awarded Recognition
1 Green Star	10 -19	Not eligible for formal certification
2 Green Star	20 -29	Not eligible for formal certification

3 Green Star	30 – 44	Not eligible for formal certification
4 Green Star	45 – 59	Best Practice
5 Green Star	60 – 74	South African Excellence
6 Star Green Star	75 – 100	World Leadership

2.2.6.2 Benefits of Green Buildings

The pursuit of green buildings is gradually increasing in South Africa; however, it is still an endeavor that is not completed appreciated or seen as beneficial outside of environmental sustainability with many buildings opting for standard buildings with minor considerations to sustainability. As with any project or business, financial gain and feasibility is a major concern. Mavhungu (2019) on her research, "Determination of The Effect of Green Star Certification on Office Rental in Sandton, South Africa", states that the concern by investors in the building industry is that there are really no additional financial gains in building green buildings. Mavhungu (2019) explored the financial benefits of Green Star rated buildings in terms of rental premium and found that Green Star SA certified offices indeed obtained higher rental premium than the rental of offices which was not Green Star SA certified. The results of Mavhungu's (2019) study showed that Green Star SA rated buildings at all levels of rating had an average rental premium of 20.73% more than the rental premium of buildings without a Green Star SA rating. The study also observed that there was also an increase in rental premium for different Green Star SA rating indicating that a 4 Green Star SA Rated building would command less rental premium than a 6 Green Star SA Rated building Mavhungu's (2019). Therefore, there are financial gains in investing in sustainable buildings initially and obtaining the relevant certifications.

The initial investment of green building is quite expensive compared to conventional buildings. The greatest concern and condemned matter about developing sustainable structures is the initial cost investment (Motunrayo et l, 2018). According to Motunrayo et l (2018) most sustainable buildings cost 2% more than conventional structures, however, they render a return of approximately 10 times more than the initial investment over the life cycle of building. Therefore, it is important to look at the long-term financial effect of investing in such structures because they are far more advantageous.

Initial capital investment should not be a deterrent to investors but they should rather consider the long-term benefits which are not financial but also environmental, economic and social for the improvement of the quality of human life.

Highlighting the economic or financial advantage has gained popularity with Zuo and Zhao (2014) postulated that there is additional financial value that is added to a building that has been retrofitted. Taking into consideration and implementing energy efficiency in a building actual helps the investor reduce the payback period of the initial investment (Zuo and Zhao, 2014). Zuo and Zhao (2014) argue that it is best to have a comprehensive definition of sustainable buildings which includes the triple bottom line approach. Economic and financial benefits of sustainable buildings have become more important and critical in discussing the need for green building. Showing the financial gains over the lifecycle of a green building should be discussed more and made as important as the economic and social benefits to encourage investors in building green structures.

Zuo and Zhao (2014) argue that there has been growing concern and focus on social sustainability of buildings over the last decade. Social sustainability primarily constitutes of the quality of living, occupational health and safety, and future professional expansion prospects (Zuo and Zhao, 2014). In the building industry, Zuo and Zhao (2014) define social sustainability as implementing a healthy and safe environment to all stakeholders including users, operators and construction personnel. All the stakeholders should design for during the initial design phase. Over the years as sustainability has gain some popularity, the design for the human element has come to the forefront as concerns over satisfaction of the end user and the general higher quality of living of human beings. The social aspect also considers the individuals involved in the construction of the building from its inception until the of its life even including impact on the surrounding community.

The many benefits of green buildings comprise of environmental, economic and social benefits that would not be found with conventional buildings. Nationwide Construction (2018) listed eight advantages of green buildings, the first one being improved indoor environment quality which is based upon conditions of the interior of a building and how they impact the occupants. The second

one is the low maintenance and operation cost which emanate from the implementation of unique construction elements that ensure efficient use of resources such as energy and water. The third benefit is energy efficiency which is achieved through the usage of non-renewable sources such as coal, green building can save approximately 30% of energy consumption than conventional structures (Zuo and Zhao, 2014). The fourth one is water efficiency which requires utilising water resources in a way that saves water and green building permits for the usage of alternative sources of water such as rainwater, decreasing water waste and connecting structures that purify water and allow recycling (Nationwide Construction, 2018).

The fifth benefit of green buildings is material efficiency which is achieved through the usage of materials and physical methods in a way that permits for the minimum use of materials without compromising the quality of the result with the intention of also generating minimum waste. The sixth one is reducing strain on local resources and the seventh one is simply to achieve a better environment. The eighth benefit is to obtain better health for the occupants of the building, according to Nationwide Construction (2018) people who inhabit green building simply enjoy greater health due to the usage of environmentally friendly materials. Motunrayo et l (2018) list other advantages of sustainable buildings which include financial rewards in terms of saving in the life cycle cost as well as thermal comfort which also improves the user experience.

Through the definition and characterizations of green buildings from the reviewed literature, it has been illustrated the importance of human comfort and improvement of quality of life of the occupants of a building. Quality of life is a key factor in having a green building, sustainability cannot exist without providing for the human aspect. Therefore, designing for the improved health of the occupants is imperative and that can only be achieved through sustainable interiors which where interior designers can play a valuable role.

2.2.7 Interior Design contributions to sustainable buildings

2.2.7.1 Impact of interior on human psychology

Based on the assessed literature, the consequences of neglecting interior design or not integrating it in the planning stages can include but is not limited to the need to consider human adaptation (Mahmoud, 2017). This means that interior design by virtue of its definition can add value by taking into consideration the comfort and health of human beings in the design. If interior design is not included, then this aspect can be neglected in the design which will lead to a design that cannot be defined as sustainable for human beings. Mahmoud, (2017) states that the Impact of indoor environment on human psychology and physiology is a very important factor to consider because in modern society individuals spend more than 90% of their time indoors and more than 70% of their time indoors at home.

Human psychology is the study of the human mind and behaviour through experiments, observations and questionnaires according to Bednarik (2013). OHS Body of Knowledge (2012) also describes psychology as the scientific study of behaviour and mental processes, and continues to provide a more scientific definition as "the study of the biology of the psyche, including the anatomy, physiology, and pathology of the mind". The mind in itself is defined by Bednarik′ (2013) as an entity that describes a person's conscience experience and intelligent thought. Physiology is on the other defined as the study of normal function within living creatures, it is a sub-division of biology (Alkinany, 2016). Newman (2017) describes physiology as concerned with the inner functions of organisms and how they relate with their surroundings. It examines how organs and systems within the body function, communicate, and combine their efforts to make environments suitable for survival of the human body (Newman, 2017). These definitions are important in order to understand how they influence human behaviour and how in turn human behaviour is influence by its physical environment and surroundings.

According to Ricci (2017) the interaction between interior architectural design and human psychology is substantial, but it is still mostly disregarded and discounted both in the design industry and in general. Ricci (2017) postulates that the affiliation between design and psychology is not only

significant, it is bidirectional. Ricci (2017) explains the bidirectional nature as the fact that on one side, successful design can be defined as having strong psychological and physiological effects on humans, while on the other side what is defined to be successful design is influenced by the human experience, psychology and the function of our neurological system. Therefore, good or effective design of an interior can be measured based on how it is perceived by the user and the kind of impact it has on the user psychologically and physiologically. Good design is also dictated, influenced and impacted by human nature in terms of their psychology, needs, desires and physical needs. One cannot separate design of an interior space from the human psychology.

Colombo, Laddagaa and Antoniettia (2015) states that our existence is influenced and impacted by every place we have visited, occupied and spent some considerable amount of time during our lifetime while Mlicka (2006) defines the interior as a component where a person lives and works and it is thus more connected to human behaviour. Mlicka (2006) argues that it is in the interior where the private identity of an individual is developed especially in a home which is considered a safe and secure surrounding. Colombo, Laddagaa and Antoniettia (2015) defines a home as a concept that represents family, privacy, personal identity, social network, customization, continuity and behaviour. It is a multi-dimensional concept that is supposed to provide relaxation and renewing of both physical and psychological vitalities, it represents a safety net for most individuals (Colombo, Laddagaa and Antoniettia, 2015). Therefore, there are fundamental human psychological concepts that separate a space that is considered a home and a space that is perceived as neutral by its inhabitants. These concepts are what should drive the design of an interior, concepts such safety and security, sense of belonging and an interior that is not only pleasant but can be deemed as a sanctuary for the inhabitants.

Reddy, Chakrabarti and Karmakar (2012) states that the user's interaction with the immediate environment is intuitive and instinctive and that physical and environmental characteristics of interior space evoke psychological emotions in people. Reddy, Chakrabarti and Karmakar (2012) also postulates that culture is also an important factor in designing an interior space as it also has an impact on the psychology of the user, culture has a huge impact on the physical environment and vice versa. Human beings, culture and the physical environment should be studied and understood

as one entity depending and influencing each other with man being the primary constituent for an interior space design, thus emotion plays an important part of design (Reddy, Chakrabarti and Karmakar, 2012). Our physical environments have a momentous impact on our emotions and state of mind, the surroundings naturally and intuitively evoke emotions in their inhabitants. Whether the emotion evoked is positive or negative is highly dependent on the state and design of the physical surroundings. Different cultures perceive different elements and entities differently and might arouse different sensitivities in different individuals hence culture having an important role in the design of buildings.

Environmental psychology is that subdivision of psychology that studies the connection between persons and the sociophysical elements of the built and natural environment, in order to improve the welfare of humans and the relationship between the environment and humans (Yalçin, 2014). Van der Linden (2019) defined it as the scientific study of the transactions and interrelationships between humans and their physical surroundings including built and natural environments and Ackerman (2020) describes environmental psychology as a study of how people interrelate and engage with their surroundings. It is basically concerned with the effect of human beings on the physical environment and the effect of the physical environment on humans (Yalçin, 2014). Therefore, there is a growing branch of knowledge and concern of how human beings are impacted, influenced and affected by their environments particularly their interior surroundings and how this interrelation can improve through design.

According to (Yalçin, 2014), environmental psychology is offered as a module in the interior design course to teach interior design students how to acquire knowledge on how to comprehend and analyse humans responses within their environment through covering fundamentals such human evolution and adaptation to the environment, human behaviour, space, design, cognitive mapping, information processing elements of environmental perception, fundamental processes, legibility, orientation, appraisals, environmental Attitudes, and relevant history. Therefore, interior designers are educated and trained to take into consideration the impact of the interior environment on the human psyche, how the occupant will psychologically respond to their environment depending on whether they are occupying the space as a home, work space, recreationally or just passing by.

Quality of life hinges on the condition of the human psychology which is influenced by its surroundings, a positive human psyche can partly lead to an improved quality of life and an improved quality of life can lead to a positive human psyche. Moudjahid1 and Abdarrazak (2019) define quality of life as the thoughtfulness of the individual's lifestyle in the context of the individual's culture and social environment and their influence regarding the need to attain certain interests and desires which complements their mental state. Moudjahid1 and Abdarrazak (2019) further explain that the concept was used to express a life of peace, which entailed many factors such as health, work, the environment and housing. Moudjahid1 and Abdarrazak (2019) argue that quality of life is the interface between personal values, personal satisfaction with life, health and the conditions of life. There are many factors that contribute to the concept of the quality of life of an individual or society in general, many which can be determined individually. However, in the literature reviewed, the primary factor is a healthy mind state which is influenced by physical health, wellbeing, housing, material possessions, satisfaction of basic needs and the immediate environment.

Stevens, Petermans and Vanrie (2013) state that the physical environment has been revealed to have the potential to improve well-being of persons and it is thus imperative for interior architects to attain knowledge on how interior architectural design attributes to an individuals' well-being. Colombo, Laddagaa and Antoniettia (2015) on their research on the relationship between psychology and design illustrated that participants had both their cognitive and emotional levels evoked based on interaction with specific environments whether the physical environment was a house, shop, office, hospital room or waiting room. The manner in which an interior is designed and conceptualised has an impact on the occupants and has the potential of improving the quality of life in terms of psychological wellbeing. Mahmoud (2017) asserts that it is essential to design the physical space on the basis of human beings' behavioural characteristics since the human behaviour is performed in demarcated interior spaces. The mental and psychological impacts of architectural settings on human beings have been factored in from the prehistoric houses to modern buildings Mahmoud (2017). Thus, the psychological imprints of the surroundings on the affected individual have been taking into consideration when moulding a home since ancient times whether consciously or subconsciously. The impacts cannot of the surrounding cannot be denied since human behaviour is often moulded in

spaces where a substantial amount of time is spent. There are many elements of an interior that can contribute to sustainable design for human consideration, sustainable design is not only vital in a home but also in any building space where people spend a significant amount of time such as the work place, shopping malls, hotels, restaurants and other recreational areas.

2.2.7.2 Physical environments that require sustainable interior design

The number of physical environments that depend on good green design are gradually growing as the demand for sustainable design in the building industry is also gradually growing. Work environments along with health care facilities, shopping malls and retails shops, hospitality industry and residential developments are physical environments where human beings spend significant amount of time and naturally impacted by this space they inhabit for varying reasons.

The work place is a good example of an environment where people spent a significant amount of time and are impacted by the interior surroundings. Ali El-Zeiny (2012) proposed that adequate office design has a positive impact on employees' productivity in his study on the impact of interior design of the workplace on the performance of the employees. Ali El-Zeiny (2012) further argues that workplace interior design is a crucial element in job gratification because it affects the manner in which employees conduct work. According to Ali El-Zeiny (2012) paper, the 200 UK business managers that participated in the study illustrated that an enhanced work environment increased employee productivity by 19 per cent and business manager productivity was increased by 17 per cent. Organizational success may be improved by workplace design which can craft a workplace that supports work quantity, quality and style while increasing turnover and decreasing rates of absenteeism (Ali El-Zeiny, 2012). Ali El-Zeiny (2012) further states that the physical environment of the workplace is one of the top three aspects that employees and job seekers take into consideration when making a decision to accept or leave employment. Therefore, the physical design and ambiance of the workplace which is provided by interior designers plays a vital role in employees perception of the job by employees and can be tied to the performance levels of employees.

According to Decorative Limits (2015), office design is important to both employees and clients. It is critical to generate a space that is functional, comfortable, visually appealing, and pleasant for employees who spend a significant number of hours in a day in the work environment to encourage productivity and efficiency. The design of the work environment is also important for customers because it sets the tone for business and creates an impression about the brand and level of professionalism. Decorative Limits (2015) also express that building an interior space that is conducive for employees, customers and owners has become a necessity and not just a luxury. Interior design impacts on individuals' attitudes, inspiration, productivity, moods and drive Decorative Limits (2015). Thus, interior design has become more important over the years for the physical workplace because it has a psychological impact on not only the employees but also the customers who form an impression of the type of business based on what they see when they walk in an office building, it creates lasting first impressions on the success, brand, professionalism of the business and hence builds customer confidence on the business. Employees spend significant number of hours a day in a physical space that impacts their psychology and physiology hence affect the individual moral and performance. The ability of an interior to impact an individual performance, mood, creativity and evoke an emotion hinge on good design. One-way good design is achieved is through involvement from the early stages of a building project.

According to Uzakbayev, Nurkusheva and Sidorov(2019) the modern way of planning and constructing business parks and office centres entails maintaining a specific standard that includes sustainability, the use of renewable energy sources (RES), energy efficiency and energy saving. Uzakbayev, Nurkusheva and Sidorov(2019) express that contemporary organisation want to craft a pleasing workspace because they want employees to feel at home when they are at work. Alaithan (2019) argues that the work physical environment must aim to achieve the requirements of employees that include psychological, physical, emotional, and spiritual needs. The provision of such needs through design might lead to improved productivity and higher performance according to Alaithan (2019). A quality workspace design can produce an atmosphere that fosters productivity and lessens stress (Kohll, 2019). Kohll (2019) also asserts that personnel need to feel comfortable and tranquil in their physical settings to yield their best work. There is a proven correlation between increased morale and improved performance of workers with the physical work environment. The more

conducive, comfortable and aesthetically pleasing the space, the more motivated employees become and actually look forward to coming to work.

Kohll (2019) also presented interesting statistics in his article regarding the impact of office space on the wellbeing of employees, he states that people in general spend approximately more than a third of their lives in the office and that 87% of employees would like their present company to provide healthier workspace elements from ranging from wellness rooms to ergonomic seating. Kohll (2019) also discovered that 93% of staffs in the tech industry stated that they would remain longer at an establishment that provided healthier physical work environment. Alaithan (2019) postulates that the physical work environment is one of the most vital social entities, comprising of "a central concept for several entities" which include the employee and his/her family, the employing company, the customers of the company, and the society as a whole. Therefore, the physical work environment is of the essence in society as human beings spent a significant amount of their lives inside the office space. It is a space that should be designed with the focus being employee cantered and to ensure a physical space that is tranquil, conducive, comfortable and allows for increased productivity and performance. This design can only be achieved through interior design that is planned and executed accordingly from the inception phase of the project.

Uzakbayev, Nurkusheva and Sidorov(2019) provides an example of this phenomenon in the form of Googleplex which are the Google headquarters located in Mountain View, California. Googleplex was designed with the sole purpose of making employees feel at home and hence creating a work environment that fosters more motivated, productive and innovative personnel. Googleplex contains unique and daring architectural solutions, basketball fields gourmet restaurants with free food, and sunbeds. According to McGrath (2019) Googleplex achieved the highest LEED certification which is Platinum LEED certification due to having more than 9,000 solar panels with a capacity of 1.6 megawatts on the headquarter campus which delivers 30 percent of the electricity needs of the facility. The campus also has locally produced food provided by the on-campus vegetable garden. Googleplex also has sustainable interior design features providing a healthy environment with low

VOC-emitting paints, carpets and sealants. The planning and management of a sustainable building of this magnitude required all profession to be involved in the initial phase of the project in order to achieve all the requirements of sustainability in all facets of the building. Early collaboration is essential for the success of LEED projects according to (Ofori-Boadu, 2016).

Sustainable design for human comfort cannot be discussed without discussing a physical environment where occupant wellbeing and comfort is of outmost importance, the hospital. The design of the interior of hospitals is imperative in terms of taking into consideration human psychology and physiology not only for patients but for all hospital personnel and visitors. The design of space, usage of colour, selection of materials among other interior elements are extremely important and the interior designer can play a major role if included as the right stage of project management.

Nice (2019) states that taking into account healthy building standards for indoor built environments has become paramount in shaping human settlements. Cifter and Cifter (2017) assert that in the design of the modern healthcare industry patient-centred approaches are becoming more imperative. The attention on the architectural and spatial designs of hospitals from a patient centred viewpoint has drastically amplified due to the fact that hospitals are one of the central components of the healthcare system (Cifter and Cifter, 2017). Cifter and Cifter (2017) argue that that design of the physical environment effects actions, behaviours and interactions of all users of hospitals. Physical design of the hospital environment has a direct impact on patient stress, and satisfactory designs may encourage healing because people experience space and vice versa (Cifter and Cifter, 2017). (Cifter and Cifter, 2017) assert further that suitable aesthetic solutions could help patients to cope with their physical ailments. Thus, interior designers can once again play a vital role in providing the right aesthetic in health care environments, assisting in providing comforting and tranquil interior spaces especially when included in the initial phases of the project when key design decisions are developed.

The importance of interior design has been undervalued in the building industry including in the building of hospitals and health care centres. Abu Samah et al(2012) asserts that very few have

investigated the interior design factors which provide support to the clinical process. In the very definition of interior design, the American Society of Interior Design (ASID), describes the crux of interior design as not only functional but to also serves as an enhancement of the quality of life and culture of the occupants. Interior Design Manual (2008) expounds further that the quality proportions of interior design are to entail health protection, safety, productivity and welfare of the space users in its essence. Although interior design in its essence is a profession that entails the consideration of human psychology, physiology, safety and comfort in its design, it is still undervalued especially in a sector which can benefit from a professional who understands the impact of space on the health of the occupants.

Another sector where interior design plays a huge role is the hospitality sector. Dzremedo, Asantewaa and Justina (2019) state that exterior and interior environments of the restaurant have developed into a key marketing tool in the industry. Hotel interior design is of crucial when it comes to creating a positive experience for your guests according to Fredericks (2021). Dzremedo, Asantewaa and Justina (2019) in their study on the impact of interior design on customer satisfaction in the restaurant industry discovered that interior design has an impact on customer satisfaction and that most customers visit a specific restaurant based on a combination of factors such as quality meal service, quality customer service and interior design. However, despite this fact restaurant management that participated in the study did not consider interior design significant to customer satisfaction (Dzremedo, Asantewaa and Justina, 2019*).* Fredericks (2021) agrees that interior design matters and hotel interior design is more than sleek lines and expensive furniture. Therefore, even in an industry where the aesthetics of an interior are deemed important and necessary not only for the occupants but for increased business and profits, interior designers are still undervalued. They are still considered as a last-minute profession that can be inducted in the project after construction rather than be involved in the initial phases of planning.

Hotel development is another sector of the hospitality industry where design of the interior plays a significant role. In the hospitality industry, design is considerably more than an aesthetic profession because design strategies influence the guest experience (Perrot,2019). Perrot (2019) reaffirms that design has a great influence on the manner in which customers appreciate and perceive brands across

physical touchpoints and has an impression on the way consumers experience and appraise their journey. Great design has a much more profound meaning than just making things look good, it is supposed to reflect culture, history, and tell stories (Amose, 2019). Design is one of the most significant fundamentals of hospitality because it requires focus from every aspect of a building, from the architecture, interior design, entertainment, objects, artworks, organization of spaces staging and programming (Perrot,2019). (Perrot,2019) reaffirms that successful design necessitates a holistic approach and integration of innovation at the earliest stages of the process. Therefore, the goal of an excellent hotel is to design satisfactory leisure spaces that not only attract customers but also meet their travel needs to create experiences they will always remember and convert them into loyal customers. This type of innovative design can only be achieved through collaboration between key professions particularly architects and interior designers who work together from the beginning of the process to ensure key design decision are developed early on in the project.

An industry where the services of an interior design also play a vital role is the retails industry in terms of creating an aesthetically pleasing space and an environment that enhances customer experience. Petermans, Janssens and Van Cleempoel (2013) expressed in their journal paper that despite retailers' and designers' recognition of the importance of customer experience in retail, it was found that there is still a lack of conceptualization or interest of the phenomenon of customer experience. Customer experience refers to retailers and designers trying to distinguish themselves from competitors by designing retail environments with the aim of creating memorable customer experiences (Petermans, Janssens and Van Cleempoel, 2013). Different individuals react to different things thus there is a fragmented interpretation of the influence of certain atmospheric indications on customer behaviour according to Petermans, Janssens and Van Cleempoel (2013). However, designers are able to overcome the variances because they think and act holistically (Petermans, Janssens and Van Cleempoel, 2013). According to Petermans, Janssens and Van Cleempoel (2013), the desired customer experienced can be achieved through the collaboration of different professions such as interior designers, psychologist and marketing experts. Interior design was often not taken into consideration as much as they should have because of the perception that they lacked a complete body of knowledge Petermans, Janssens and Van Cleempoel (2013). Therefore, it has been discovered that interior designers or interior architects should and can have a significant influence on the design of the retail space to attract more customers and create memorable experience that can

distinguish the store from competitors. Interior designers were previously undervalued in retail designers due to misconception of the profession.

Prinsloo (2011) conducted a study on the contribution of interior designers to retail design in the South African clothing and footwear retail context. Prinsloo (2011) reiterates that it is in this sphere that interior designers can make a substantial contribution to retailers as the design of retail stores has developed into a means for retail stores to differentiate themselves and as a marketing communication tool. Prinsloo (2011) express that although interior designer goes unacknowledged, retail design is a complex, multi-dimensional activity that encompasses various role players who contribute to the successful development and implementation of a retailer's identity. Interior designers contribute through the application of innovative and technical solutions when designing and implementing a retail store (Prinsloo, 2011). There are diverse role players who contribute in developing and creating efficient and successfully design retail stores, interior designers are the main role players and contributors due to the fact that is a speciality in the training and education of interior design.

2.2.7.3 Interior Design contributions to sustainable buildings

The primary question of the study is to enquire whether interior design can add value in the management and construction of sustainable buildings and whether it should be included in the initial phases of the project management process (PLP). This section of the report will attempt to explain what interior designers do in the initial phases of a project and illustrate how interior can add value in the management and construction of sustainable buildings through literature review. This section will also attempt to highlight the gaps that might be created if interior design is not included in the initial phases of the project management process (PLP) through reviewed literature.

El Hamid at al (2015) explains that the applicable stakeholders need to take into consideration implementing sustainability principles in project management at the early phases of the project, the early incorporation of all the relevant stakeholders allows for significant cost savings over time. El

Hamid at al (2015) reiterates further that the Feasibility Stage (FS) of the project lifecycle process is the most imperative stage before undertaking project design & construction and the effectiveness of its application will directly impact the success of the project. Many literatures and studies have uncovered that numerous challenges that arise during projects including increased costs can commonly be alleviated by the inclusion of green aspects from the initial phases of the project (El Hamid et al, 2015). The lack of coordination between multidisciplinary scope of work within project construction managements in interior, architecture, and other related fields will increase time and cost of the ID Construction projects (Jasmani, 2016). The importance of the early stages of project management lies in the fact that it is where all major decisions regarding the project are taken. Decision relating to concept, design, estimated cost, estimated project duration and project requirements are taken during this important period and amended accordingly as the project continues. Therefore, to achieve and properly implement sustainable solutions, it is important that all sustainable principles are factored in early on in the project and all relevant professions are involved as early as possible.

Brown (2019) defines a project management life cycle process (PLP) as a five-step framework developed to assist project managers to manage and complete projects successfully. The five step processes are called phases with each phase of the cycle having its own set of goals, features and product deliverables that are reviewed at the end of each project management phase. Figure 2.4 below illustrates the PLP process along with its five phases from the start of the project until the end.

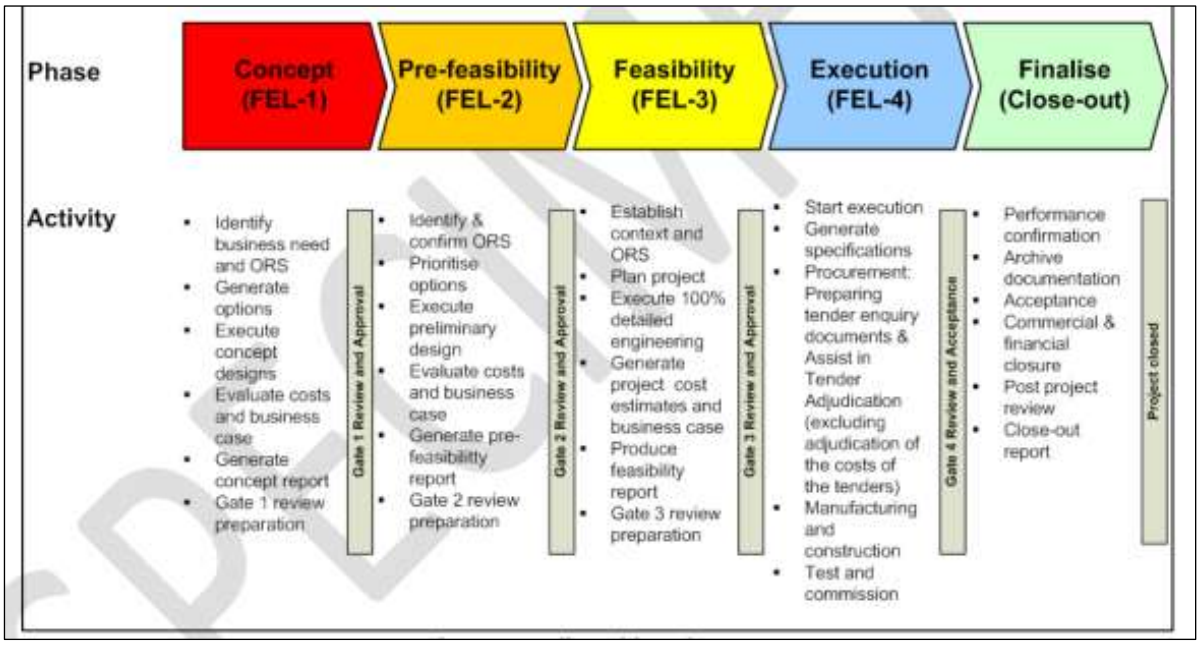

Figure 0.4: The Project Lifecycle Process (PLP) (TNPA, 2019)

The PLP diagram in Figure 2.4 describes the five PLP phases and the activities that are typically undertaken in each phase. The five different phases are labeled FEL which is an acronym for Front-End-Loaded. The initial phases are deemed to be FEL 1 and FEL 2 according to TNPA (2019) which are the concept and prefeasibility phases where the business case, project scope and project feasibility are defined. According to Kulakov (2020), this is the stage where the project stakeholders determine whether a project is viable. The Owners Requirement Specification (ORS) is one of the first documents to be compiled at the Pre Design Stage and clearly defines the expected functional requirements and specifications of the client (Morris, 2021).

The concept designs, high level cost estimates, conceptualizing of different design options and execution of preliminary designs are undertaken in the FEL 1 and 2. FEL 3 and 4 are where the project concepts are executed in the form of final engineering designs, more accurate cost estimates and construction. The final phase refers to close out of the project where project review and final documentation are conducted. Another important aspect that is included in Figure 2.4 is the gate review process at the end of each phase. Gate reviews are a method that is utilized to guide a project from conception to completion and requires a review of each project phase before progressing to the next phase (Daly, 2020).

Brown (2019) describes the initial phase as the first project management life cycle phases where the project officially begins, it provides a synopsis of the project and the projects approaches required to achieve the desired goal. It is the stage of the project where the feasibility and business value of the project are established. El Hamid et al (2015) defines the initial phase as the Feasibility Stage (FS) which is the most important phase before undertaking a project because the efficiency of its implementation will directly impact the success of a project. This phase of the project also includes defining and evaluating the client's requirements and compiling them into a structural brief and identification of all key stakeholders. Figure 2.5 below illustrates the first phase which is the initial phase and what deliverables are expected at this stage of the project. The diagram in Figure 2.5 illustrates the activities that are typically are undertaken in the initial phase, the activities include identifying the project scope, the project stakeholders and identifying the project deliverable (Brown, 2019).



Figure 0.5: The initial phase of the PLP process (Brown, 2019)

Interior design projects follow the same project management lifecycle process framework where they have five major phases (Silva, 2016). The five phases are Scope Definition, Programming, Schematic Design, Design Development and Construction Administration according to Silva, 2016 with Scope Definition being phase 1 and phase 5 referring to Construction administration. The five phases are also collaborated by StudioCroft (2020). The scope definition is the initial phase where the interior designer works with the client to define the scope and understand the requirements along

with surveying the existing site. The design strategy is formulated in line with the regulatory standards in phase 1 and phase 2 along with budget and schedule estimation, team and work allocation, and identifying the best contractors (Silva, 2016).

Schematic Design and Design Development define phase 3 and 4 respectively StudioCroft (2020). These phases constitutes of developing different design solutions while constantly communicating with the client to ensure that his requirements and specifications are fulfilled (Silva, 2016). According to StudioCroft, 2020 Schematic Design involves initial space planning diagrams for scale and relationships, layout, functionality, circulation paths and adjacencies. Phase 3 and 4 also include consideration of general interior finish recommendations for budgetary estimations, sign-off of selected design solution and more accurate budget estimation. Design Development refers to refining Solutions and developing detailed designs.

The Final stage is construction administration which is the construction management phase where the construction and execution of the design is undertaken. StudioCroft (2020) states that the construction administration phase constitutes of procuring contractors to execute the works, securing the required permits and procuring building materials, finishes, plumbing and lighting fixtures, hardware, appliances, window treatments and furniture.

El Hamid et al (2015) also discusses the importance of integrated design in sustainable building projects reiterating that project stakeholders who are a part of the design charter have to make decisions early on related to important factors of the project such as orientation, location, interior spaces, heating, water needs, ventilating, and air-conditioning (HVAC). Early participation from all stakeholders and professionals who are involved in any aspect of management and design is of the outmost importance to ensure the right design and management decisions are taken to avoid increased cost and other design challenges further on in the project. Certain facets of design require early participation from all the relevant professions especially relating to green buildings and achieving the required elements for Green Star rating. Jasmani (2016) is in agreement with the statement that all stakeholders should be integrated early for efficient project management. ‘The practice of Interior

Design (ID), Architecture, Mechanical & Electrical and Facilities component drawings such as conceptual design and construction drawings need to be integrated and coordinated between the consultants and the contractor drawings and that all related drawings are required to be resolved and agreed upon, so as not to cause obstacles at the actual construction site' (Jasmani 2016, p. 46). Early integration and coordination of all drawings would improve the business performance in terms of time and cost of the project according to Jasmani (2016).

Interior design contributes to the GBCSA Green Star SA Rating System which measures the sustainability compliance of buildings. The contribution of the field of interior design is imperative to such an extent that it has its own technical manual known as The Green Star SA – Interiors v1 rating tool which has been adapted from the Australian Green Star Interiors Tool, under license from the Green Building Council of Australia (GBCSA, 2015). The GBCSA Green Star SA Rating System for interior design measures the sustainability elements that were introduced strictly form the perspective of interior design. Similarly, to the Green Star SA Rating System for the entirety of the building, interior design aspects are also measured based on the nine separate environmental impact categories. The nine impact categories include management, materials, indoor environment quality, innovation, water, transport, land use, emissions and energy (GBCSA, 2015). GBCSA (2015) describes part of the process by explaining that each category is subdivided into credits, each of which speaks to an initiative that enhances or has the potential to advance a design, project or building's environmental performance.

According to the GBCSA (2015) Interior Design Technical Manual volume all Green Star SA rating tools grant points to the category dedicated to management to project endeavors that have a Green Star SA Accredited Professional as a member of their team. The management category is awarded to promote the adoption of environmental initiatives from the earliest project phases of the PLP process throughout design, construction and operation of a building (GBCSA, 2015). GBCSA (2015) expresses that it is a compulsory obligation for submissions to be brought forward by a Green Star SA Accredited Professional for the Interior design tool. A separate Interiors AP accreditation will exist, distinct from that of the Design / As Built tools according to the Green Star SA accreditation

system. This stringent requirement demonstrates the importance of having the right team and professionals involved from the initial phases of the project in order to achieve the desired design. It is also demonstrating the value of the interior designers in sustainable projects.

Grube (2019) explores the old age question of "what value does an interior design project manager add to a renovation or new construction project" if there is already an architect who has structural responsibility in his journal article. Grube (2019) affirms that interior designers always get unfavourable treatment when undertaking work as project managers because of a deficiency of knowledge by industry professionals who do not see any value in what a certified and practicing professional interior designer can offer in a new or renovation project. Grube (2019) propose that there is indeed tense competitiveness rather than collaboration between architects and interior designs in the building space. However, interior design simply wants a space where they can perform their function which is to provide health, welfare and safety in the most attractive, aesthetics pleasing and functional manner for the public to not only occupy but also appreciate and be proud of living in a certain space. Interior design is essentially a profession that can enhance the status of a commercial building, improve value to the client's real estate and contribute to saving the client time and money Grube (2019). Therefore, the misconception that an interior designer is not required in new project or building refurbishment projects when an architect is prevalent and it is due to lack of knowledge of the function of the interior designer and the inability to distinguish from the architect. There are many advantages to having an interior designer in a project team especially from the initial phase of the project.

According to Mahmoud (2017) the psychological frame of mind of an individual is affected by the design of an interior designer through various elements. Every individual perceives, receives and responds in a different manner due to the physical and psychological differences in humans along with the differences in individual experience (Mahmoud, 2017). The factors that contribute to the varying responses and perceptions include physical status, age, culture, education level, socioeconomic class, gender and ambitions (Mahmoud, 2017). Mahmoud (2017) explains further

that the intersection between interior architecture and the psychological condition is immersed with both the interior architecture method of design and humanitarian features.

Interior designers are responsible for the design of indoor air quality which includes the design of airflow in a room and thermal comfort to ensure the temperature conditions of a room are satisfactory for occupants through the selection the suitable materials. They also design the acoustics in the room, ergonomics, minimize the occurrence of mold, ensure the optimum use of natural light and allow the right amount light (GBCSA, 2015). Interior designers are also tasked with compile occupant user guides and learning resources for the end user to understand water and energy efficiency and usage of a building. They also need certify that certain elements are operating efficiently such as the air conditioning system in the building. The interior designer is also tasked with ensuring environmental management is undertaken.

Reese (2017) explains that a competent interior design can prepare construction documents for permitting by council and bidding for projects as well as supervising the construction and installation of the work. According to Reese (2017) they have the expertise to perform as principal agents for projects of suitable size and handle local building codes and building departments, and licensed contractors. Therefor interior designers are sufficiently competent and capable of managing and overseeing interior construction projects and designing withing fundamental principles guided by building design codes similar to architects. They are also qualified, in contrast to interior decorators, to prepare construction documents and drawings for the interior rather than structural components like architects.

The Interior Design Academy (2019) list the seven elements of interior design which contribute to creating a space in a sustainable or conventional building, the seven elements are space, line, form, texture, light, colour and pattern. The Interior Design Academy (2019) explains that the science is in attaining the harmony by getting these elements to work together which will also bring an increased functionality. Space is the foundation of an interior and is a fundamental concept in interior design

(The Interior Design Academy, 2019). Space refers to physical boundaries of a room and demarcated by length, width and height. Therefore, designing for these elements requires technicality and following design principles. It is not a feat that can be achieved by just anyone. There is a methodology, approach and science to designing a space with these elements in mind. It is not just about how they look.

Excluding Interior designers in the early stages can lead to disconnect in the integrated design process (Widjaja, 2016). One of the ways that interior design can add value in the design and management of sustainable buildings is through the process of selecting materials that are green and sustainable. Hence, it is vital that structural engineers work closely to ensure that the most suitable materials are selected and are included in the design in the conceptual phases. Neglecting interior design in the early stages also does not allow for a holistic integrated design process. There is also lost opportunity to implement sound sustainable design for the life cycle of buildings (Widjaja, 2016). The purpose of sustainable design is to accommodate future consideration and consider the purposes of the building after construction and during its lifetime. The interior designer is perfect for the role as he can design for the functionality and sustainability of the building during its life span in terms of movable objects such as furniture and partitions as well as non-movable objects such as walls, space and natural light.

Client dissatisfaction and requirements is another consequence to take into account according to Widjaja, (2016.) In order to fully meet the client's needs for a design project, a holistic approach should be taken to account for all the required design consideration. The end-user experience and client satisfaction are major factor in the education and training of interior designers.

2.3 Conclusion of literature review

The frameworks that have been developed for the implementation of sustainable buildings include interior design in the early stages of implementation or during construction rather than after construction because the early phases are the most crucial in terms of decision making. However, the literature review studied and reviewed thus far in the research shows that although interior design is a recognized professional, it is still undervalued in terms of the contribution it can make in the implementation of sustainable buildings particularly in the inception phase of a project.

2.4 Key Findings of the Literature Review

The key findings from the literature review can be summarized as follows:

- Building industry contributes significantly to the contamination of the environment, both during construction and its operation. The negative impacts are due to the selection of materials, utilisation of natural resources and the enormous nature of its footprint.
- The implementation of sustainable buildings is seen as one of the viable options to mitigate some of the impacts that the building industry has on the environment.
- Sustainability in the assessed literature can be defined broadly as providing solutions that address the present problems but also meet the needs of future generation. It is also concerned with the responsible use of resources and providing a healthy environment for human beings.
- The implementation of sustainable buildings requires a holistic approach that incorporates all the relevant stakeholders from the initial stages. This holistic process is referred to as the integrated design process.
- The Integrated Design process is defined as a collaborative process that focuses on the design, construction, operation and occupancy of a building over its complete life cycle in order to achieve high performance. The stakeholders that are usually considered as part of the integrated design process include architect, a contractor, and engineers.
- The importance of involvement in the early stages of project management cannot be understated because it is the phase where the initial design concepts are conceived based on the client’s requirements.

- Interior design work or services are undertaken in the initial phases but they are often undertaken by the architect.
- The definition of Interior Design can be summarised as the art and science of enhancing the interior of a building to attain a healthier and more aesthetically pleasing environment for the individuals using the space.
- Interior Design is a recognised profession within the Built Environment; however, it is still greatly undervalued in design process of sustainable buildings.
- Interior design can contribute greatly in the implementation of sustainable buildings and excluding it in the initial stages of project implementation can lead to gaps such as but not limited to the need to consider human adaptation, environmental acceptable material selection, design for space and efficient use of energy.
- The exclusion of Interior Design in the initial stages can affect the end user and design team in terms of approaching a project holistically.
- There is a great difference between an interior designer and an interior decorator based on function, skills and education. Interior decoration is simply a small portion of interior design.
- There is a great difference between the architect and interior designer, although they share similarly functions, they are not to be considered interchangeable. One cannot replace the other in building projects.
- Impact of the physical environment on the human psyche cannot be taken lightly as it forms part of environmental health under the South African Institute.
- There are many sustainability frameworks for the implementation of green buildings that have been developed by different countries around the world
- The applicable framework in South Africa, is the GBCSA Rating System which rates the sustainability of a new building and awards certification based on the rating.

3. Research Methodology and Design

This chapter describes the research methods that were used in the study. It defines the type of research philosophy, theory, paradigms and methods that were used to structure the research investigation and plan the research methodology. The study utilised interpretive epistemology in its methodology and semi structured interviews were used to collect the research data.

3.1 Research philosophy and theory

The design philosophy and paradigm for the study is qualitative research utilising interpretivism which is a branch of research paradigm stemming from epistemology. Epistemology is one of three of theories of knowledge that are currently used in research, there are other two branches of knowledge are known as ontology and axiology. Epistemology can be defined as the theory of knowledge and the distinction between justified belief and opinion (Steup and Neta, 2020). Steup and Neta, (2020) further explains it as the philosophical study of the origin, nature and confines of human knowledge. The term is derived from the Greek word epistēmē which means "knowledge" and the word logos which refers to "reason" or 'study or science", (Britannica, 2020). Hasa, 2016 states that its primary objective is understanding the different methods of gaining knowledge and asks questions such as "what do you know?" and "how do you know?". It is basically concerned with defining the parameters of what is known and how the knowledge was postulated and came to be accepted as "true" or "known" as well as how it is effectively communicated so that it is well understood.

Ontology is the study of the nature of existence, it is concerned with being and the structure of reality. According to Al-Saadi (2014) ontology is the nature of the world and what we know of it, the author goes further into defining it as an idea concerned with the existence of, and connection between, different elements of society such as social structures, social actors and cultural norms. Its primary concern is what is true and real and the nature of reality, it implores you to ask questions such as "what is existence?" and "what is the nature of existence?" (Hasa, 2016). Therefore, it is a concept that desires to understand the existence of what already is, what can be seen with the naked eye and

is deemed as tangible. Ontology also wants to comprehend how the tangible elements in existence connect and relate to one other.

According to Viega (2016) axiology is the study of theory and values, understating the nature of reality through the value of aesthetics and ethics. The writer further states that the fundamentals of axiology inform ethical decisions in qualitative research in each stage of the investigation. Another term for axiology is methodology and is concerned with how the researcher conducts the investigation to discover what is believed to be known (Aliyu et al, 2015). Aliyu et al (2015) postulates that the researcher's discernment is highly objective and is not filtered through his own comprehension which is altered as more understanding is accumulated over time. The etymology of the word is a combination of the two Greek words, 'axios' which means 'value' and 'logos' which can be interpreted as logic or theory (Tufail,2012). The method of finding information is dependent on the above-mentioned theories of knowledge which are epistemology and ontology. The methodological interrogation cannot be reduced to a question of methods because the methods must be fitted to a predetermined methodology (Aliyu at al, 2015).

Axiology can simply be explained as consideration of ethical issues when developing a research proposal, it takes into account the philosophical approach to making decisions of value or the right decisions (Kivunja and Kuyini, 2017). It introduces ethics and codes of conduct when conducting research and presenting the information. According to Kivunja and Kuyini, 2017 it contemplates what value can the researcher attribute to the various aspects of the research, the participants, the data and the audience to which the results are intended. It requires questions such as 'what is the ethical behaviour?' or best practise. Hence axiology is simply the methodology and the framework the researcher utilises to gain knowledge and ethically investigate the aim and objectives of the study. The greatest 'concern' of axiology is providing the researcher with a framework that allows objectivity and ethical practise in the quest to find valuable information through the different stages of the investigation. The diagram in Figure 3.1 below illustrates two of the knowledge philosophies that are utilised in research along with their research paradigms along with their respective research paradigms.

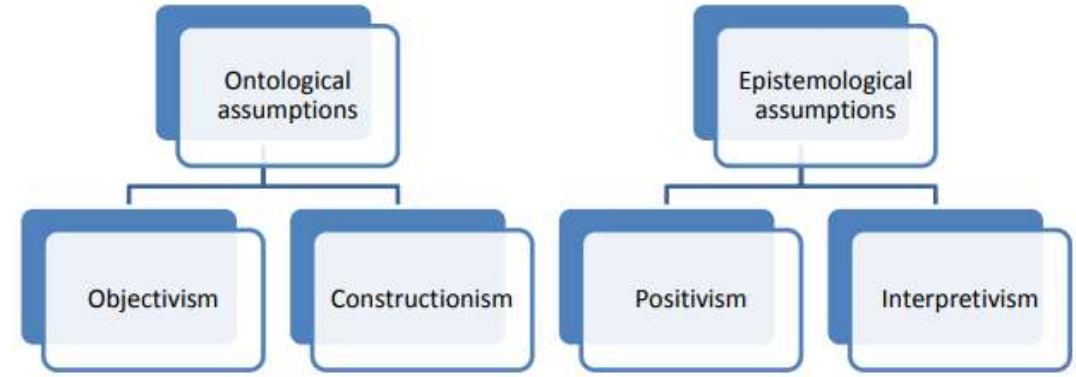

Figure 0.1: Two theories of knowledge and their research paradigms (Al-Saadi, 2014,5).

3.2 Research Paradigms

The research paradigm for the study is interpretivism which falls under epistemology and the study will hence continue to discuss important elements of epistemology and interpretivism in an attempt to explain why this particular theory of knowledge and paradigm was selected for this research. A research paradigm is a theoretical framework or belief system, it is philosophical way of thinking (Kivunja and kuyini, 2017). Kivunja and kuyini, (2017) explains the concept further by stating that it constitutes the abstract beliefs and principles that shape how a researcher sees the world, and how the researcher interprets and acts within that world. According to Rehman and Aharthi, (2016) it is a way of understanding the reality of the world and how it should be studied. Therefore, an educational research paradigm reflects the perspectives, believes and worldview of the researcher and how he structures and patterns the information collected into a framework that reflects one or more of the research philosophies which are ontology and epistemology.

The epistemological paradigms or views of the world presented in Figure 2 are positivism and interpretivism. Positivism can simply be explained as objectivity emanating from knowledge attained from tangible and hard facts. The positivism framework defines a perspective to research that is founded upon what is known as the scientific method of investigation (Kivunja and kuyini, 2017). The paper by Kivunja and kuyini, (2017) postulates that the basis for understanding human behaviour

can only be obtained through scientific observation and experimentation, it is considered to be the only valid means of extending knowledge. Positivism believes in a singular truth that can be proven through carefully calibrated experimentation and scientific data, hence the answer to the research question is singular and is not open to interpretation nor does it have many sides. Aliyu et al (2015, pp 4) state that "an objective, true reality exists which is governed by unchangeable natural cause-effect laws*"* when relating to nature of reality. However, when relating to human beings, the aforementioned paper states that human beings are rational but shaped by external factors where actions are based on methodical behaviour postulating that under certain circumstances, human will probably engage in certain behaviour. Therefore, the truth can only be accepted through validated evidence that has been found through accepted predetermined methods. It does not allow room for results that cannot be replicated through the utilisation of the same method. It also holds the position that human beings can be predictable and studied.

Positivism relating to the researcher, assumes that the researcher remains completely objective and that they should distance themselves from the research findings (Al-Saadi, 2014). Aliyu et al (2014, pp 3) also states that "all knowledge about the world originates in our experiences and is derived through our senses and, as such, only phenomena (and hence knowledge) which can be confirmed by the senses can genuinely be regarded as knowledge'. The fundamental principle is knowledge acquired through evidence and principles that are tangible to human senses, hence the researcher cannot be subjective or have an open-mined worldview when conducting the research.

In positivist methodology, a hypotheses is proposed in the form of a question about the underlying connection between phenomena. Then the researcher has to prove the proposition utilising empirical evidence which is gathered, analysed and articulated in the form of a theory that explains the relationship between the different variables in the research question. According to Rehman & Alharthi (2016) the purpose is to measure, control, predict, construct laws and ascribe. Rehman & Alharthi (2016) further explain that if it can be proven that A caused B, then a theory will be formulated for wider applicability which will illustrate the causal relation between A and B. The positivist approach utilises deductive reasoning to analyse data. First. Deductive reasoning is one of two of the roles of theory or types of reasoning 3, it is reasoning which begins with a proposition or

general statement then the proposition is either proved or disproved depending on the outcomes of statistical analysis. Only hard facts and predetermined principles must be utilised in the process of finding and defining the knowledge to confirm a hypothesis that was made initially prior. Figure 3.2 below illustrates the two most commonly used theory of research which are deductive reasoning and inductive reasoning.

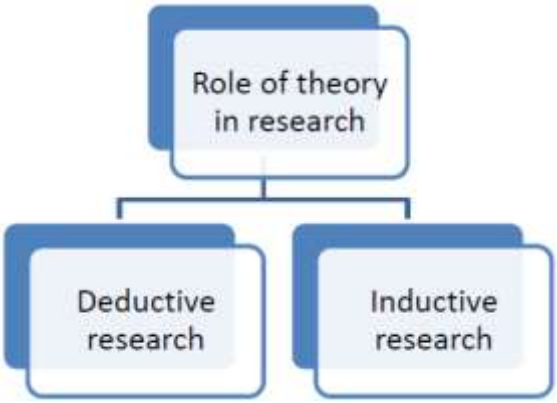

Figure 0.1: Two branches of role of theory in research (Al-Saadi, 2014,5).

Interpretivism on the opposite end allows room for more than one version of truth, it does not subscribe to the notion of a singular truth because it believes that the world is complex and dynamic. Rehman & Alharthi (2016) in their explanation state that interpretivism rejects the notion that a single, verifiable reality exists independent of our senses, it rejects the fundamentals to adopt any unvarying and permanent standards by which truth can be universally known and accepted. Therefore, it is a concept that does not believe that knowledge can be determined or truth can be defined from one lens or perspective. It leaves room for the complex, myriad and evolving nature of not only the world but of human beings.

Human beings and their interactions with their surrounding influenced the formulation of the interpretivism paradigm and rejection of the positivist worldview which does not allow for consideration of the complex nature of the world. Allyu (2015) in his definition of interpretivism states that the world is complex and dynamic and is constructed, interpreted and experienced by humans in their interactions with one another and with wider society. Allyu (2015) further explains that reality is subjective because human beings experience their reality in different ways. Subjective

reality in influenced by the idea that people have different feelings, emotions and ways of thought. Interpretivism acknowledges that humans are social beings who not only create their own world but create their own meaning (Allyu, 2015).

Interpretive epistemology is thus subjective. Rehman and Alharthi (2016, pp 55) state that "external reality cannot be directly accessible to observers without being contaminated by their worldviews, concepts, backgrounds". This statement means that observers of phenomena will always utilize their perspective of world, believes, feelings and surroundings to come to conclusions and hence knowledge. This observation can be extended to researchers, implying that is almost impossible for them to remain completely detached and objective in their research as the positivist paradigm suggest. Rehman and Alharthi (2016) explain further that the main aim of interpretive research is not to discover universal, context and value free knowledge but to try to appreciate the interpretations of individuals about the social phenomena they interact with. Therefore, the believes in multiple or myriad socially constructed realities, it can then be deduced that these varied realities are perceived and understood from different angles by different people.

James and Busher (2009) state that qualitative research recognises the importance of value and context, setting and the participants' frames of reference. James and Busher (2009) explain further that the way in which the researcher and participant interact and communicate the subject matter is an important and influential component of the research procedure and its results. Studies that are conducted by means of qualitative methods recognize the existence of the interchange of multiple views and perspectives. The most important lesson draw from the qualitative research is that "knowledge cannot be understood without understanding the meaning that individuals attribute to that knowledge – their thoughts, feelings beliefs and actions" (James and Busher, 2009, pp 7). Appendix A illustrates the most common theories of knowledge in a table form indicating and describing the most appropriate research paradigms and methodologies.

Inductive reasoning is utilised in interpretivism and inductive approach is used in qualitative research. According to Abu-Alhaija (2019) researchers use the data collected during the study to

develop specific patterns, themes and groups which leads to a fully detailed explanation of a theory or phenomenon. Therefore, theoretical assumptions and general contextual statement are developed using inductive reasoning strategies on the collected information. Abu-Alhaija (2019) also emphasise that researchers have a significant role in the construction of knowledge in qualitative studies. The researcher drives the direction of the study through the delineation of limits, scope and selection of the methods used to collect the data. In this study, the interviews are asked questions that are predetermined by the researcher based on the aim, objective and limitations of the study. In a similar manner the research participants play a significant role in the construction of knowledge and creation of truth because they influence the outcome and conclusion. Hence, qualitative research method was deemed suitable for the study of The Value of Interior Design in the Management and Construction of Sustainable Buildings.

3.3 Research Methodology

The study will primarily follow a qualitative research methodology of collecting and evaluating information. Qualitative Research is collecting and examining non-numerical or scientific data (Suffon, 2015). It is primarily exploratory research which is used to gain an understanding of underlying reasons, perspectives, and experiences of relevant individuals for a particular subject matter. According to Bhandari (2020) it can provide insight into the problem or assist in developing ideas or hypotheses for potential quantitative research. Bhandari (2020) further expounds on the definition of qualitative research by saying that it is used to comprehend how human beings perceive and experience the world around them. It is a form of social science investigation that tries to interpret meaning from the data collected to assist in the comprehension of social life through the study of targeted populations (Mohajan, 2018).

Mohajan (2018) defines qualitative research as the observation and interpretation of human beings and their perception of diverse activities, and creates an impression of the participant's perception in a natural setting. Mohajan (2018) reiterates that it wants to explain 'how' and 'why' a certain social phenomenon functions or occurs in that manner in a particular context. Therefore, it is a methodology that takes into consideration the different experiences, influences and emotions of the research

participants and the impact these elements have on explaining certain phenomenon based on a particular context. Then a conclusion can be drawn based purely on the population sample.

According to Bhandari (2020) some of the most common qualitative research methods include observation, focus groups, surveys and interviews. Focus groups is a group interview involving a small number of people from a similar demographic that have shared experiences. Surveys entails a list of questions compiled with the aim of extracting specific data. Hence the study was using one-on-one interview as research methodology to collect the primary data. The research philosophy, theory paradigm and methodology of this study is shown in Figure 3.3 below which is known as a research onion:

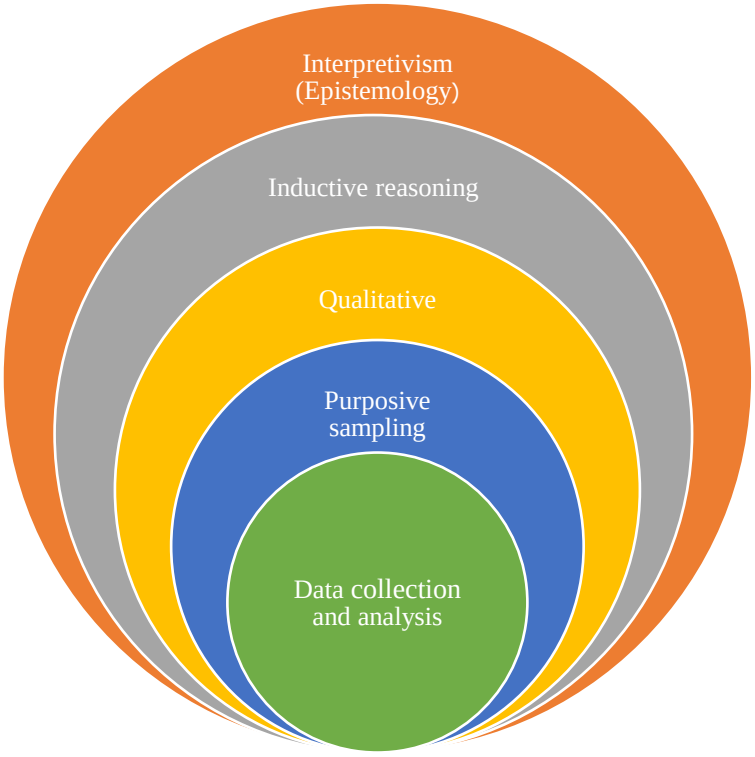

Figure 0.1: Diagram of the research onion showing illustrating the reach approach

3.4 Research methods

3.4.1 Semi- Structured Interviews

The method utilized in the study to collect research data was conducting individual semi-structured sit-down interviews with different professionals in the building industry. An '*interview*' according to Quad (2016) is characteristically a face-to-face discussion between a researcher and a participant constituting a transfer of information from the participant to the interviewer while McGrath, Palmgren and Liljedahl (2018) define interviews as a data-collection instrument which can be utilised to infiltrate a number of research questions. Fauvelle (2020) states that qualitative interviews are used with the aim to collect in-depth views and to identify new matters and perspectives that may have been overlooked in the literature review. Qualitative research interviews are also desirable when the researcher strives to understand the interviewee's subjective viewpoint of a phenomenon rather than producing a generalized understanding of large groups of people (McGrath, Palmgren and Liljedahl, 2018). Quad (2016) supports the statement by stating that interviews are utilised to comprehend the meanings of central themes in the environment of their population sample in qualitative research

In-depth interviews are a qualitative research technique that includes undertaking intensive individual interviews with a small number of participants to explore their perspectives on a specific idea, program, or condition (Boyce and Neal, 2006). There are three types of qualitative interview methods according to Fauvelle (2020). There three type of interview methods include structured interviews, semi-structured interviews and unstructured interviews. Unstructured interviews are characterised by the complete absence of an interview schedule or structure of any kind, the objective is to make a high-level generalisation of a given subject (Fauvelle ,2020). The researcher may have thought of a few questions or relevant concepts but without any documents or questions prepared prior to the interview (Fauvelle ,2020).

Structured interviews are much more rigid and formulative than semi-structured interviews according to (Fauvelle ,2020). The one unique feature that sets structured interviews apart is that that they can be conducted by different interviewers at different times and settings while ensuring that

the responses are all organised and stated in the same form (Fauvelle ,2020). Fauvelle (2020) further states that the interviews are directed by a predefined and rigid set of questions to which the interviewer must not deviate or improvise with the objective of collecting a maximum number of standardised responses obtained from closed questions.

The study utilised semi-structured interviews to collect data. Semi-structured interviews are more structured than unstructured interviews but more flexible than structured interviews (Fauvelle ,2020). These types of interviews are governed by an interview schedule that is prepared prior the interview and serves as a framework for the interview session according to (Fauvelle ,2020). Fauvelle (2020) also expresses that semi-structured interviews 'combine rigour in the concept and topics addressed and flexibility in the exchange'. Galletta (2013) explains that semi-structured interviews can be understood only if the focus is on the analysis of the way in which it seems in the personal experience of varying members of the population sample and by following the impact that the phenomenon has upon different individuals rather than focus on abstract study of the formal organization.

Semi-structured interviews are appreciated for allowing a range of research goals, characteristically reflecting variation in the use of questions and complementary resources to draw the participant more fully into the matter under study Galletta (2013). This type of interview technique integrates both open-ended and more theoretically driven questions, provoking data grounded in the experience of the participant and by existing concepts in the specific field within which one is undertaking research according to Galletta (2013).

According to Quad (2016), some of the advantages of collecting data via interviews are that firstly interviews offer more valuable information when the participants cannot be directly observed, secondly the researcher has improved control over the kinds of data that is produced since they formulate and control the questions. Thirdly the questions can encourage impartial, unbiased and honest answers from the participant if articulated efficiently.

One of the main disadvantages with sit-down interviews as stated by Quad (2016) is the fact that some interviewees might give biased information. The study tried to mitigate this shortcoming by firstly ensuring that the views of the researcher are not imposed on the participant, secondly by presenting accepted facts relating to the themes in the question and thirdly making the interviewee understand that the interview is confidential and they can remain anonymous if they prefer, allowing them to be more truthful and candid in their answers.

According to (Boyce and Neal, 2006) semi structured interviews are valuable when you want detailed information about an individual's opinions and behaviours or want to explore new issues. (Boyce and Neal, 2006) further explains that interviews are often utilised to provide context to other data such as outcome data, providing a more comprehensive picture of what occurred and why (Boyce and Neal, 2006).

Semi-structured interviews are ideal to collect data for this research because of the nature of the main research question which aims to understand the value of interior designers in the management and construction of sustainable buildings. The participation of the interior designer might be very project specific and hence its value deemed differently by different professional who participate in different building projects. Therefore, it is important to obtain the different perspective of the participants on the value of interior designers in the building industry.

Semi-structured interviews as a research method was selected to obtain more in-depth responses from the participants through predefined but open-ended questions that allow the interviewer to inquire follow on questions based on the responses. This leads to more concepts, information or questions that the researcher might have overlooked. It is also important to note that answers that are generated semi-structured interviews are generally more comprehensive and in depth as opposed to answers obtained from questionnaires and surveys (Boyce and Neal, 2006). Interviews also allow for the researcher to gain an understanding of the individual, their experiences and to understand their position in the subject matter (Boyce and Neal, 2006). Another benefit to interviews proposed by Boyce and Neal (2006) is that they provide a more comfortable and less rigid atmosphere in which

to collect data from individuals as participants may feel more relaxed having a conversation with a researcher rather about the subject rather than merely completing a survey.

The interviews were centred around pre-formulated questions that will assist in answering the research question. The questions were formulated in relation to the three research objectives which will assist in answering the research question. The questions are presented in Table 10, Appendix C.

3.4.2 Interview Procedure and Data collection Protocol

Preparedness by the researcher before the interview session was vital to ensure sufficient knowledge of subject matter, careful use of industry jargon, careful wording of questions, allowing participants to answer thoroughly, avoiding discussing matters outside research topic and effective utilisation of time agreed upon. The interviews were semi-structured with the framework of the questions and subject manner established prior the interview. The sessions allowed for follow on questions, professional probing by the researcher and additional commentary and recommendations from the participants.

The research objectives will all be investigated utilising the same method which is a semi-structured one-on-one interview. The research philosophy and methodology are shown in Table 3.1 below for the objectives of the study: The table indicates the research philosophy, techniques and the data capturing used for each research objective.

Table 0.1: Tabulation of main objectives of the study and data capturing methods

Research objective	Research Philosophy	Research Techniques	Data Capturing
• To investigate and determine the main function of the interior designer in the initial phases of a sustainable building project.	Interpretivist approach (epistemology) Qualitative research and Inductive analysis of data	• Semi-structured one-on-one interviews	• Recording of interviews
• To investigate the gaps that are created in the absence of the interior designer in the initial phase of sustainable building projects.	Interpretivist approach (epistemology) Qualitative research and Inductive analysis of data	• Semi-structured one-on-one interviews	• Recording of interviews
• To investigate and determine if other professions can efficiently undertake functions of interior designer in the initial phases of the project.	Interpretivist approach (epistemology) Qualitative research and Inductive analysis of data	• Semi-structured one-on-one interviews	• Recording of interviews

The interview procedure and data collection were conducted in the following manner:

- Communicating with the interviewee to determine convenient date and time for the sit-down interview. The initial plan for the study was to conduct sit-down semi- structured interviews physically at an agreed upon meeting point, however, that was no longer feasible due to the Covid-19 pandemic and an alternative method had to be found. The alternative method was to conduct the interviews online via zoom, skype or telephonically which ever was more convenient for the participant. The outcome was not affected because the main objective of conducting semi - structured interviews with the participant was achieved.

- Send the interviewee an email with a brief summary of the research prior the interview date so they can understand the basis and context for the study, the summer is attached in Appendix C. This also allows the participant time for preparation or anticipation of the kind of questions that would arise.

- Send the interviewee a participation consent form along with the brief summary requesting their consent to conduct the interview. The form is a binding document that requires signature for both parties to ensure professional and ethical conduct. The participation consent form addresses issues such as the participants' rights to remain anonymous should they desire, their right to request the recordings of the interview and right to change their mind to do the interview even after they have agreed. The consent form is attached as Appendix B.

- The interview questions will be prepared prior the interview and will be the same for the individuals being interviewed to obtained consistency in data and results of the data collected

- The interviews were recorded as agreed upon with the participant on the research consent form. The interviews were recorded utilising cell phones for interviews were conducted telephonically and automatic zoom recordings for zoom interviews. The recordings are stored safely on a personal laptop and on external hard drive as back-up. They are available should they be requested by the faculty or the individual participants.

- Notes were taken on a notebook during the interview for additional notes or to note important points that were raised or suggested.

- After the interview has been conducted, the responses of the individuals being interviewed were reviewed and written on an exam pad and the interviews were saved on .recordings. The recording assisted in accurately analysing the data provided during the interviews and ensuring that the participants were not misquoted.
- The interviews for the study commenced on the 02nd June 2020 and ended on the 14th December 2020.
- The planned interview length was 60 minutes, although other ran over an hour while some were less depending on the level of engagement of the interviewee and the comprehensiveness of the answers as well as unplanned follow-on questions.

3.4.3 Reliability and Validity

Research reliability is the degree to which research methods produce constant and consistent results (Middleton, 2019). One way in which reliability will be ensured in the study is the standardisation of preformulated interview questions for the sample population to ensure consistency. All the professionals that were interviewed were asked similar questions, the only modifications in questions would be dictated by the type of profession. There would be minor variances between questions asked to the interviewee depending on whether they are an architect, structural engineer, quantity surveyor, project manager or interior designer.

The reliability of the data collected is also ensured by the process of purposive sampling to ensure consistency of the experience of the population through the requirement of specific qualifications, education and work experience. The responses of the individuals being interviewed is recorded with the consent of the interviewee to ensure the information is captured accurately. The interview questions are prepared prior the interview and was the same for the individuals being interviewed to obtained consistency in data and results of the data collected. The participants were not sent the interview questions prior the interview but rather a brief summary of the study which is attached on Appendix C.

Ensuring validity in qualitative research is not easy due to the dependency on the human element and maybe not be deemed as concrete as in quantitative research where scientific methods are utilised. However, a few strategies were implemented to try to ensure validity, the first strategy was through the selection of the population sample. The population sample consisted of a variety of professions withing the engineering and built environment that are usually involved in the management and construction of buildings. Therefore, the study did not just take into consideration interior designers but also considered architects, structural engineers, quantity surveyor and project managers. This was done to attain the different perspectives of the different individuals rather than the perspective of the interior designer which might lead to a biased outcome with a very limited perspective.

The validity was ensured secondly by formulating questions that are related to not only the research question and the objectives of the study. This was done to ensure that the research question and objectives are investigated and taken into consideration in terms of how they impact the main question. To ensure validity, accepted terms with theoretical definitions where used since they have scientifically defined functions in the building industry and are applied in practise based of bodies of knowledge, education institutions and universally agreed upon theories and terms. The terms in question being architecture, sustainability, design and project management. These are scientifically, universally and theoretically accepted concepts and functions that remain consistent regardless of the individual, therefore they are independent of the individual and introduce a level of technical consistency from the responses of the participants despite varying experiences, observations and belief.

The third strategy was to ensure minimisation of personal bias by the researcher by not phrasing questions that lead the interviewee to taking a particular stance. The questions allow the interviewee to answer based on their experience, level of education and work environment where they can also elaborate on certain practices and concepts. According to the paradigm of interpretivism, it is almost impossible to achieve neutrality in research (Kivunja and Kuyini, 2017). However, biased tendencies were minimised through subjective questioning.

The 4th strategy to ensure validity was to obtain the sample that is sufficient enough to make a conclusion in qualitative research. The sample size utilised in the study is not large enough to be used in a statistical survey, however, a conclusion can be drawn via inductive reasoning based on the number and type of individuals selected. There are 21 participants that were interviewed and were selected through a process of purposive sampling. The participants were selected on their educational qualification in the built environment as well as their experience in years in the building industry.

3.4.4 Interview Research Questions

The research data was collected and generated through qualitative research methods with the aim of answering the primary research question and the main objectives of the study. The data was collected through semi-structured one-on-one interviews of professionals who were identified through purposive sampling. The questions posed to the different professionals were based on trying to understand the role and value of interior design or interior designers in the management and construction of sustainable buildings. The questions focused on to the role that interior designers play, the skills they bring in the design and management of a new or refurbishing building project, whether the function of interior design is clearly understood in the building industry and if the function of an interior can be easily fulfilled by another professional.

It is important to note that the questions presented in the interview are a guide for the semi-structured interview. The intention was to create dialogue and discussions based on the questions in the interview schedule. The participant was more that welcomed to add and explain in depth their reasoning and answers or pose further questions and introduce new ideas. The questions that formed part of the interviews are shown in Appendix D as part of the interview schedule.

Table 3.2 below shows the preformulated questions from the interview schedule structured in terms of the three research objectives that assist in answering the research questions. The interview questions also differ slightly depending on whether the interviewee is an interior designer, structural engineer, architect, project manager or quantity surveyor. The main questions to guide conversations

with the different professionals in order to reach the main objective of discovering the value of interior design in the building industry are attached Appendix D but also shown below in Table 3.2. Table 3.2 indicates the questions that were asked the participants and used to guide the semi structured interview for each research objective.

Table 0.2: Type of interview questions relating to the research objectives

Research Objectives	**Type of Interview questions**
To investigate and determine the main function of the interior designer in the initial phases of a sustainable building project.	• What was the function of the interior designer in the project? • What unique skills did they bring? • What unique knowledge did they possess on sustainable buildings? • To what extent where they involved in the project? • What are the functions of an architect? • What are the functions of an interior decorator? • What is the difference between interior design and architecture? • Do architects usually undertake interior design functions and work? • Do architects want to collaborate with interior designers? • What is the difference between interior design and interior decorators? • How often do they collaborate with architects in design projects?
To investigate what gaps are created in the absence of the interior designer in the initial phase of sustainable building projects.	• Has the professional interacted or communicated with an interior design in a project? • Where they part of the project team? • Has the professional been part of an integrated design team? • Has the professional worked on sustainable buildings project team where the interior design was part of the project team?

	• What was the extent of involvement of the interior designer? • Do interior designers feel misunderstood in the building industry? • How often do interior designers get mistaken for interior decorators? • How often does interior designer function get confused with functions of an architect? • Do interior designers feel misunderstood in the building industry? • How often does interior designer function get confused with functions of an architect? • What is the biggest misconception about interior designers? • How often do they interact with professionals involved in a building project? • How much say do clients have in deciding project team and number of consultants? • Does project cost and budget play a role in number and type of consultants?
To investigate and determine if other professions can efficiently undertake functions of interior designer in the initial phases of the project.	• Was an interior designer or interior designer consultant involved in any particular project you were a part of? • At what stage where interior designers involved in the project? • What gap was created when interior designers were not included in the building project? • What impact did interior designers have when they were integrated in the initial stages of PLP process? • Do sustainable buildings require a different or unique skill set? • Are architects deemed as sufficient in sustainable building projects?

	• Is there a need for an interior designer in a building project? • Do you think interior designer should be involved in the initial phases of the project? • What unique knowledge did the interior designers possess on sustainable buildings? • What impact did the interior designer have when they were integrated in the initial stages of PLP process? • Have the professionals ever experienced inconvenience through the lack of inclusion of interior designers in a project? • Are sustainable buildings becoming more in demand? • How often do project managers take into consideration Green Star Rating Certification? • Do architects believe they undertake interior design work sufficiently to replace interior designers? • How often do interior designers get overlooked in new building projects? • How often do interior designers get overlooked in renovation building projects? • How often do interior designers get bypassed for architects in building projects? • Is sustainability important in interior design? • Is consideration for human psychology and comfort a primary focus for interior design? • What skill set can interior designers introduce that architects cannot offer? • How can interior designers obtain more recognition in the building industry? • Is there a need for an interior designer in a building project? • What was the extent of involvement?

	• Would project managers include interior designers in the initial phases of a project if they had a sustainable building project? • Do project managers prefer to work with architects over interior designers? • How do quantity surveyors' price for interior design items and finishes? • When do quantity surveyors price for interior design items and finishes? • Have quantity surveyors encountered challenges relating to cost due to late consideration of interior items and finishes? • Do quantity surveyors prefer working with architects or interior designers when considering interior items in building projects? • How do project management teams for standard buildings differ from ones formulated for sustainable buildings? • Does the size and type of the project have an impact on the need of an interior designer? • Does the budget of the project have an impact on the need of an interior designer? • Does the knowledge of the client on project professions have an impact on whether an interior designer consultant is appointed? • Did you know interior designers were required to have higher education qualification (three-year degree) to practise as such?

3.5 Population and Sampling

The selection of the population in the study was based on persons that have an educational qualification in the engineering and built environment, the sample was selected based on purposive sampling. Michalos (2014) defines purposive sampling as the deliberate and premeditated selection of participants based on their capability to expound on a particular concept or phenomenon. Purposive sampling was preferred because it enables the researcher to select the participants based on the theme or phenomena that is being researched. The first requirement for the persons to be deemed as qualified was to be educationally qualified based on the built industry standards. The built industry standards include an accredited qualification in their respective field from recognised higher education institution. The selected participants had to have a bachelor's degree in their respective fields from an accredited university in South Africa or equivalent qualification from anywhere else in the world. The participants had to have an accredited educational qualification in civil engineering (structural engineering), quantity surveying, architecture or interior design.

The second criterion was for the participants to be registered with a professional body along with the educational qualification. The civil and structural engineers should be registered with the Engineering Council of South Africa (ECSA), quantity surveyors with the Association of South African Quantity Surveyors (ASAQS), architects with the South African Council for the Architectural Profession (SACAP) and the African Institute of the Interior Design Professions (IID) for interior designers. The importance of registering with a professional body is that the professional certificate received proves that the individual is deemed and declared competent with sufficient expertise to execute projects and competent to compete against international standards. In the engineering sector, registration with ECSA offers the individual authority to sign off on engineering projects where substantial risk to the health and safety of the community is at stake.

The third criterion is sufficient experience gained through working in the industry for more than 10 000 hours particularly within the project management, design and construction of buildings. The

10 000 hour rule is a theory that states that it takes 10 000 hours for one to achieve any true expertise in any skill (Gladwell, 2010). The individual can be from either a consulting or construction background and from either public or private sector. Registration with a professional body guarantees that a certain level of expertise has been reached, however, this requirements measures the experience gained by the number of years after graduating from a higher learning institute. This measures ensures quality of information and expertise in the subject matter provided by the individual.

The study interviewed 21 participants who met the criteria required by the purposive sampling. The 21 was deemed sufficient to make a conclusion in qualitative research. The sample size utilised in the study is not large enough to be used in a statistical survey, however, a conclusion can be drawn via inductive reasoning based on the number and quality of individuals selected. Dworkin (2012) suggested a minimum sample size based on his research on sample size policy for qualitative studies, the conclusion was an adequate sample size for in-depth interviews is between 5 – 50 participants. Vasileiou, Barnett, Thorpe and Young (2018) in their study of characterisation and justification of sample size sufficiency came to a conclusion that 20 to 30 participants are more than adequate in qualitative research.

According to Vasileiou, Barnett, Thorpe and Young (2018) it was difficult to find an agreement in their investigation because sample size is not as important in qualitative studies compared to quantitative research. There are many factors that influence the sample size however the most important factor in qualitative investigations is the ability to support the depth of information-rich' data according to Vasileiou, Barnett, Thorpe and Young (2018). Both Dworkin (2012) and Vasileiou, Barnett, Thorpe and Young (2018) argue that there is no direct solution to enquiry of 'how many', however, they both suggest that qualitative sample sizes are large enough to permit the discovery of a 'new and richly textured understanding' of the phenomenon under study, but small enough so that the 'deep, case-oriented analyses of qualitative data is not excluded. Therefore, the quest is to find quality information that speaks to research question from participants that can be deemed as sufficiently knowledgeable to provide rich information.

The most important consideration should be the quality of information obtained rather than focusing on the number of participants. The qualification of the participants is controlled by the process of purposive sampling which is key in providing richly-textured data, pertinent to the phenomenon under research. Another key component is for the researcher to know the point where data saturation is reached which is also a good indicator that sample size is adequate (Saunders, Sim, Kingstone, Baker, Waterfilled, Bartman, Burroughs and Jinks, 2018). Saturation according to Saunders, Sim, Kingstone, Baker, Waterfilled, Bartman, Burroughs and Jinks (2018) is when additional data is no longer being found whereby the researcher can develop properties of the category. In ground theory, saturation indicates that there are no new codes being discovered according to (Hennink, Kaiser and Marconi, 2016)

Therefore, the study concluded that the sample size was sufficient after interviewing 21 participants because the information provided was no longer new. The answers being provided by the different professionals was more or less the same. All the architects were describing the same practises and providing the same data, the structural engineers also started to give predictable answers. The interior designers also came to a point where they were providing the same information and painting the same picture regarding their value and involvement in the building industry.

3.5.1 Communication with research participants

The individuals interviewed in the research were reached using various means. Different professional bodies were contacted initially via emailing their reception or helpdesk requesting for names of professionals who would be able to assist. The email described the purpose of the research along with the brief summary and the research participation consent form attached, interested parties then responded back through through email and then communicated about the date and time of the interview. The following organisation were contacted initially SAICE, ECSA, IID, SACAP and Green Building Council of South Africa (GBCSA).

The second method was to contact colleagues and fellow masters 'students from the University of Witswaterand who met the requirements set out in the research telephonically or personally and sending them emails with the brief summary and the research participation consent form once they agree.

3.5.2 Interview Research Participants

The table below lists the details of the interview and the professional description of the participants that took part in the study, all the individuals agreed for their current occupation to be included in the report.

Table 0.3: List and professional details of research participants

Name and Surname	**Profession**	**Qualification**	**Institute of Qualification**	**Experience (years)**	**Registration with professional body**	**Date and Time of interview**
Participant 1	Interior Designer	Bachelor in Interior Design (BA)	Greenside Design Centre	20 years	IID	02 June 2020 10:00 – 11:00 am
Participant 2	Interior Designer	Bachelor of Interior Design (BA)	Vega School	12 years	IID	08 June 2020 10:30 – 11:30 am
Participant 3	Civil Engineer	Bachelor of Sciences in Civil Engineering (BSc)	University Of Witswaterand	14 years	Not registered with ECSA	22 June 2020 14:00 -15:00 pm
Participant 4	Quantity Surveyor	Bachelor of Sciences in Quantity	University of Zimbabwe	14 years	ASAQS	15 August 2020

		Surveying (BSc)				17:00 – 18:00 pm
Participant 5	Construction Management	Bachelor of Sciences in Civil Engineering (BSc)	University Of Witswaterand	15 years	SACPCMP	15 July 2020 11:00 – 12:00 am
Participant 6	Quantity Surveyor	Bachelor of Sciences in Quantity Surveying (BSC)	University of Ghana	9 years	ASAQS	22 July 2020 14:00 – 15:00 pm
Participant 7	Civil Engineer	Bachelor of Engineering (BEng)	University of Johannesburg	10 years	ECSA	07 August 2020 16:00 -17:00 pm
Participant 8	Quantity Surveyor	Bachelor of Sciences in Quantity Surveying [BSc (Cs)]	University Of Witswaterand	13 years	ASAQS	21 August 2020 15:00 – 14:00 pm
Participant 9	Architect	Bachelor of Sciences in Architecture (BscArch)	University of Pretoria	7 years	SACAP	27 August 2020 16:00 -17:00 pm
Participant 10	Architect	Bachelor of Sciences in Architecture (BscArch)	University of Pretoria	10 years	SACAP	21 August 2020 19:00 -20:00 pm
Participant 11	Architect	Bachelor of Sciences in	University of Pretoria	10 years	SACAP	16 September 2020

		Architecture (BScArch)				12:00 – 13:00 am
Participant 12	Structural Engineer	Bachelor of Sciences in Civil Engineering (BSc)	University of Stellenbosch	8 years	ECSA	17 September 2020 11:00 – 12:00 am
Participant 13	Architect	Bachelor of Architectural Studies (BAS)	University of Witswaterand	5 years	Not registered with SACAP	06 October 2020 11:00 -12:00 am
Participant 14	Civil Engineer	Bachelor of Engineering (BEng)	University of Johannesburg	9 years	ECSA	14 October 2020 14:00 – 15:00 pm
Participant 15	Structural Engineer	Bachelor of Sciences in Civil Engineering (BSc)	University of KwaZulu Natal	12 years	ECSA	16 October 2020 12:00 – 13:00 pm
Participant 16	Civil Engineer	Bachelor of Sciences in Civil Engineering (BSc)	University of Witswaterand	7 years	ECSA	22 October 20202 12:00 – 13:00 pm
Participant 17	Structural Engineer	Bachelor of Sciences in Civil Engineering (BSc)	University of Witswaterand	10 years	ECSA	03 November 2020 18:00 -19:00 pm

Participant 18	Civil Engineer	Bachelor of Sciences in Civil Engineering (BSc)	University of Cape Town	5 years	Not registered with ECSA	19 November 2020 19:30 - 20:30 pm
Participant 19	Interior Design	Bachelor in Interior Design (BA)	University of Johannesburg	22 years	IID	09 December 2020
Participant 20	Structural Engineer	Bachelor of Sciences in Civil Engineering (BSc)	University of Cape Town	10 years	ECSA	12 December 2020 14:00 – 15:00 pm
Participant 21	Architect	Bachelor of Architectural Studies under-graduate degree (BAS)	University of Cape Town	14 years	SACAP	14 December 2020 19:30 -20:30 pm

3.6 Ethical Risks and Mitigation Strategy

The study might impose minimal ethical concerns such as unintentional misrepresentation of information and difficulty in remaining objective in analysing information and in the formulation of a conclusion by the researcher. Another important factor is maintaining confidentiality of participants when required when conducting interviews. The participants signed the Research Participant Consent Form shown in Appendix B to as an agreement to participate in the research along with the terms and conditions of the study.

The above-mentioned possible risks were be mitigated by:

- Utilising voice recorder to record the interview with the consent of the interviewee.

- Typing the recorded answers on the paper and requesting the interviewees to review the written down answer to ensure their answers were captured accurately.
- Requesting interviewees to sign interview agreement forms indicating that the agreed to conduct the interview in a professional and ethical manner providing accurate information based on their experience.
- Requesting interviewees to sign confidentiality forms and allowing interviewees to remain anonymous at their request.
- Obtaining consent of the interviewees to professional details in the report.

The study was conducted using qualitative research with the an interpretive epistemology as the theory and research paradigm. The chapter detailed the methods used as well as reasons why they were deemed suitable for this research. The research methodology in the form of semi structured interviews is explained giving reasons as to why it was selected. The participants of the interviews were selected using purposive sampling and the ethical risks and mitigation strategy followed during the data collection is defined.

4. Data Analysis

The research methodology utilised in the study was qualitative in nature therefore the findings will be described based on the answers provided by the participants. Although the participants are in the same field, their answers and outlook might vary due to different experiences. The element of different interpretation of reality by different individuals based on their experience and understanding is the reason this particular research is utilising interpretivism as a research paradigm.The information collected during the research was based on input from different professionals in the industry which introduces a human element in the investigation leading to different interpretations, understanding and justified opinions on the subject matter. The professionals provided their inputs based on their education and experience in the project and construction industry. The inputs of the professionals were guided by standardised research questions that have been prepared prior but ultimately standardised questions does not guarantee similar answers, the answers were influenced by the education, experience, feelings and current working environment of the individual. The

answers reflect the different experiences of the different individuals and the social phenomena they interact with. The data collected was evaluated and interpreted in order to come to a valid conclusion regarding the value of interior design in sustainable buildings. The conclusion is thus not a universal theorem or general solution but rather a justified belief based on the inductive reasoning of the data collected from the individuals interviewed in the study.

The concepts and themes that are investigated and discussed in the study are concepts that exist scientifically and theoretically and are accepted as factual based on their body of knowledge and education. These concepts are accepted as singular or universal truths that have proven and theorised based empirical evidence. However, the method in which the information is collected introduced a human element that might not be absolute and singular in terms of the value of including the interior designer in the initial stages of project management. The qualitative method provides an interactive and participative collection of data and understanding through the method of interview different professional who, although are in the same faculty, have different experiences and interactions with the subject matter.

The statistical and diagnostic evaluations of the data was done to discover and explore the points where the different individuals have similar ideas and answers and where they differ and deviate from each other. The analysis also discusses the contributing factors and themes that were discovered during the unstructured interviews. Many of the individuals interviewed answered the questions asked by the interviewer and also gave in depth explanations of their reasoning, beliefs and stance on the research question.

5. Research Findings

The chapter presents the findings of the study from the data collected through the semi structured interviews and the literatures reviewed. The findings are presented in three different sections which correlate to the research objectives.

The study presented some of the answers by the interviews from the qualitative research in a statistics manner to assist in understanding the general consensus regarding the value of interior design in the value and management of sustainable buildings when included in the initial phase of the project. According to Long (2017) visualising qualitative data is beneficial for providing clarity during analysis and assists to communicate information plainly and competently to others. Long, 2017 further explains that presenting data visually is helpful for identifying connections and patterns which would be difficult to discern without the visualisation. Verdinelli and Scagnoli (2013) also state that visual representation of data in a graphic format is a method of depicting information succinctly and efficiently.

5.1 To investigate and determine the main function of the interior designer in the initial phases of a sustainable building project.

The findings from the semi structured interviews based on some of the questions that were asked the different participants. The findings are presented percentages illustrating the stance or believe of some of the participants. The questions were preformulated to investigate and determine the function of the interior designer based on the understanding and experience of the different participants from different professions.

One of the most important findings from the semi structured interviews is that the participants generally did not understand the fundamental function of an interior designer and the purpose they serve in a project. Out of all the participants interviewed, only 57% of them understood the functions of an interior designer. All the participants understood what an architect is and does while only 40% new the functions of an interior decorator. The lack of knowledge of the interior designer within the building industry can also be seen in the fact that only 47% of the participant knew the difference between interior designers and interior decorators while 60% of participants understood difference between interior designers and architects. The findings also show that some do not consider interior design to be a technical profession in the same vein as architects, engineers or quantity surveyors. About 50% of the participants did not consider interior designers as professionals and about 60% did not even know they were required to study and attain a higher qualification from a higher institution.

The lack of knowledge of the function of the interior designers could then be broken down between the different disciplines based on the semi structured interviews. All the architects and quantity surveyors knew the function of interior designers and understood their function in the building industry and in the initial phases of a sustainable building project. The structural engineers had limited knowledge interior designer, only 30% of them understood their function and contributions in the initial stages of a project. The lack of knowledge or understanding of interior decorators was even more limited with only 39% of the participant understanding the field. This leads to the confusion between interior designers and interior decorators in the building industry. Only 20% of the structural engineers and 30% of quantity surveyors knew that there is difference between interior designers and interior decorators which explains why most of the participants who are structural engineers did not understand the value of interior designers when included in the initial phases of a project. Architects who participated in study also struggled to draw a line between functions that should be performed by architects to those performed by interior designers in the initial phases of the project, only 42% could clearly define where the work performed by architects should start and an end in an idealistic design situation especially considering sustainable design.

The interior design who participated in the study feel undervalued and misunderstood in the building industry. The findings show that 80% of them felt misunderstood and 75% of them have been mistaken for interior decorator before leading to them loosing consulting jobs or not being appointed at the opportune time of the project which is the initial phase according to the interior designers interviewed. All the interior designers felt the development of the field was too slow in south Africa and 75% of them had been replaced by architects in building projects.

In an attempt to understand the value of interior design in the sustainable building industry, it was important to understand its functions but also the perception that other professional with the industry have. Based on their experience in building projects, 67% of the participants believe interior designers should be included in the initial phase of a project. This perception is important to investigate because it was found through literature that is one of the contributing factors that leads to the underutilisation and under-valuing of interior designers in the building industry particularly in the inclusion of interior designers in the initial phases of the project.

It was found during the literature review that interior designers follow a similar project lifecycle process when executing projects that is largely followed in the implementation of building projects. The process demands that conceptualisation and preliminary designs are undertaken in the initial phase to ensure that requirements of the customer are satisfied (Jasmini, 2016). The literature review found that Interior design projects follow the same project management lifecycle process framework where they have five major phases (Silva, 2016). The five phases are Scope Definition, Programming, Schematic Design, Design Development and Construction Administration according to Silva, 2016 with Scope Definition being phase 1 and phase 5 referring to Construction administration.

5.2 To investigate the gaps that are created in the absence of the interior designer in the initial phase of sustainable building projects.

The findings from the semi structured interview based on some of the questions that were asked the different participants. The questions were preformulated to investigate the gaps that are created in the absence of the interior designer in the initial phase of sustainable building projects.

To understand if there might be gaps created when interior designers are not included in the initial phase of a sustainable building project, the participants where asked questions to see if they have experienced any gaps in the absence of interior designers. Other questions that were asked the participants were in terms of their interaction with interior designers in the initial phases of a sustainable building project or standard building project. Only about 25% of the participants had interacted with an interior designer a project before while 15 % had interacted with one while working together in a project team as part of an integrated team and only 10% had interacted with one in the initial phase of the project. The architects involved in the study had participated the most with interior designers followed by quantity surveyors with 60% and 30% respectively. Structural engineers who participated in the study rarely interacted with interior designers especially in the initial stages of a building project, only 10% of the structural engineers had worked with interior designers before in sustainable building projects.

The architects and the interior designers recognise and acknowledge that there are gaps created when interior design is not included in the initial phases of a building project. About 65% of the participants experienced gaps when working in projects where interior designers or interior design consultant was absent at the initial phases of a project. The quantity surveyors interviewed stated that it can increase cost of a project especially if the interior designer comes in after construction adds finishes or struggles to work with the interior of the structure, leading to minor amendments that increase cost and time. The architects interviewed stated that there are gaps created, 70% of them state that they cannot undertake interior work as efficiently as interior designers. The gaps that were found during the literature review were similar to the ones found during the semi structured interviews.

The second objective of the study was to understand the gaps that might arise when interior designers are not included in the initial phases of a project based on literature and semi structured interviews. The gaps that were found during the literature review were similar to the ones found during the semi structured interviews. The most prevalent and first gap that was found through literature and from the participants was the lack of consideration for the impact that the interior of a space has on the human psychology (Akadiri, Chinyio and Olomolaiye, 2012. Designing for human psychology is one of the objectives of sustainable buildings as shown in Figure 2.1. Participants who believe consideration for human psychology and comfort plays an important role in sustainability was 80%. The second gap that was found was meeting the requirements and specifications of the client when it comes to designing the interior space especially in buildings or environments where the interior space is very important such as hospitals, restaurants, hotels, work environments and apartment buildings (Ali El-Zeiny (2012). The third gap is the increase of cost and time when the interior specifications where not taken into consideration timeously and accurately.

5.3 To investigate and determine if other professions can efficiently undertake functions of interior designer in the initial phases of the project.

The findings discovered form the questions that were preformulated to investigate the value of interior design in the building and construction industry according to the interviewed individuals by determining if other professions can efficiently undertake functions of interior designer in the initial phases of the project.

Interior design is a function or activity that is undertaken in the initial phase of building projects, however, it is not undertaken by interior designers in most cases from the findings which leads to the underappreciation of interior designers. Participants who believe interior designers get bypassed for architects in building projects. Despite this common practice, 80% of the participants believe sustainable buildings require unique skills that can be provided by interior designers. The activities pertaining to the design of interior is commonly undertaken by architects, however, only 30% of the participants believe architects can adequately fulfil functions of interior designers in sustainable or conventional building projects. The other 70% of the participants believe interior designer have unique skills that architects do not have relating to designing interiors.

The findings from both literature and the semi structured interviews indicate that the need for an interior designer in the initial phase of a project is highly dependent on factors such as size, type and budget of the project. All the participants believe that the budget of the project has an impact on the need for an interior designer. Size and budget of the project influence the need for an interior design consultant in most building projects, architects are utilized where the client has limited budget or where the interior is not deemed as important.

6. Discussion

The data found during the semi structured interviews of different participants from various professions within the built environment is qualitative in nature therefore it does not provide an exact scientific answer. However, it allows a qualitative conclusion to be drawn by identifying connections, trends and similar patterns form the data collected in the semi structured interviews. The answers provided by an individual participants can be deemed as anecdotal in nature and not sufficient in drawing a formal conclusion. However, when the responses of more individuals are analysed and evaluated, a theory or answer to the research questions can be formulated.

This section will discuss the findings from the semi structured interviews and literature reviewed. The findings are discussed based on the three main objectives of the study which are evaluated to answer the research questions. According to the findings of the study, there is definitely value in interior design in the project management and construction of new building projects when introduced in the inception phase of the project. However, it is undervalued and underappreciated in the building industry. The research found that there are five main factors that contribute to the under-appreciation and failure to recognise value in the profession. The five main factors are lack of knowledge of interior design and its functions, confusing interior designers with interior decorators, cost considerations, limiting the number of consultants a client or project manager interfaces with and the dominance of architecture as a profession based on the literature reviewed and the semi structured interiviews.

6.1To investigate and determine the main function of the interior designer in the initial phases of a sustainable building project.

The first contributing factor is the lack of knowledge and understanding of interior design and its functions by many professionals within the building industry. Despite the strides interior design has made in the past twenty years to establish and develop as a fully-fledged profession complete with a body of knowledge and governing body is South Africa, it is still perceived as an obscure and artsy profession only concerned with aesthetics that lacks technical knowledge and functional ability. The

first objective of the study was to understand what interior design is as a profession and what interior designers actually do. Interior designers can be considered a professionals under the three characteristics defined by Sullivan (2007) as they requires a formal education, can regulate their own standards of practice and commit to providing service to the public via the professional body, the South African Institute of the Interior Design Professions (IID). The literature review went into in depth detail of defining interior design based on the literature reviewed for the study. In literature the review it was discovered that interior design is the art and science of enhancing the interior of a building to attain a healthier and more aesthetically pleasing environment for the individuals using the space. The interior of a building can be deemed as one of the most important elements of a structure because the main objective of a structure is to create interior space (Königk, 2011). The purpose and function of the building dictates how the interior space is to be designed. Therefore, the design of an interior in a building or structure is a very important element to take into consideration.

It was also found that interior design is not merely an artsy profession but requires a degree of technicality and technical expertise. Interior design not only conceptualise the aesthetics of the interior but they also design and plan the space, volume, ventilation and natural light of the space. The findings from literature illustrate that interior designers are expected and trained to take into account the function of an interior space, draw the initial floor plans utilizing computer aided design and are skilled to be involved in a building project until the last detail of decorating the interior with finishes and furnishings (Hamstech, 2017 .

Defining interior design as profession was very important in understanding its value and how it is perceived in the building industry. The literature that was utilized highlighted that interior design is a profession that is still misunderstood in the building industry which contributes to its underappreciation. Simply stated, many within the industry in itself do not know what interior design is, its functions and place in the management and construction of new building projects. This lack of knowledge and perception has made it very challenging for the interior design profession to be included in the earlier phases of the management and design of buildings.

The findings from the semi structured interviews show that only 57% of all the participants understood what interior design was and what its main functions consist of. The remaining 43% did not know the exact definition, core function and place of interior design in the building industry. The common misconception is that it is merely a career concerned with the look of a room through furniture, texture and colour without practicality and functionality. The 57% that understood interior design and its functions mainly consisted of 100% of the architects and quantity surveyors while only 30% of the structural engineers knew or understood interior design. Architects and quantity surveyors are more likely to work and interact with interior designers whether in the conceptual phase or at any phase in the project prior to completion of the building structure hence all of them knew and understood the core function of the profession as oppose to structural engineers.

Although all the participants have heard of an interior designer before, many conceded their knowledge of the profession is so limited that they had previously mistaken an interior designer with an interior decorator. Only 47% of the participants knew and understood the difference between interior designers and interior decorators after they provided with the theoretical definitions. The participants stated that they not only mistook interior designers with an interior decorator but have observed that interior designers are only considered or appointed for decorative work when required and not for technical interior work. Only 40% of the participants understood the function of an interior decorators and were not aware of the technical, functional and educational differences between interior designers and interior decorators.

The knowledge and understanding of interior decorators were very low among the other professions excluding interior designers. All the interior designer had an intricate and comprehensive understanding of the function and role of interior decorators due to the fact that interior decoration is an integral part of interior design. Of the architects interviewed, 29% of the understood the role of interior decorators and 24% of quantity surveyors had knowledge of interior decoration in terms of function and role. Structural engineers had the least knowledge of interior decorators out of all the participants interviewed, only 4% had any knowledge of interior decoration as a profession. This is understandable considering that interior decorators are only involved in building projects after construction and once the building project has been completed and even commissioned in most cases.

On the other hand, structural engineers are involved at the initial phases of the project lifecycle process therefore interaction between the two in a project is basically extremely rare.

The second factor contributing to the underappreciation of interior design is the misconception that it only deals with the soft finishes like placement of furniture. The research data revealed that only 47% of the participants knew that there was a difference between interior decorator and interior designer. The long-held misconception that interior design is mainly about aesthetics of a space and the selection of furniture was found to be a perception held by a good number of the participants (Somers, I, 2018). The participants admittedly expressed their ignorance in the distinction between the two professions and that they always assumed that interior designers and decorators had exactly the same function which was soft finishes relating to selections of furniture, colour of walls and maintaining trends.

Interior decoration forms only a fraction of what constitutes interior design as an entity. Interior design like any design profession is governed by design principles and fundamentals that require creativity paired with logic and functionality. Therefore, it includes the soft finishes of interior decoration along with technical functional design that is acquired through the relevant education and training (Hamstech, 2017). An important function to mention is that interior designer can in fact submit design plans of two-storey buildings and draughting of plans to council. The study found that the confusion between interior designer and decorator has contributed greatly to the profession to not be considered technical, functional and valuable enough to be included in the initial phase of a new building project. The lack of distinction has led to the current practise of many building projects only introducing the interior designer after construction when the building is standing and often times after the hand-over stage of the project (Hamstech, 2017).

In contrast and understandably, 85% of the participants who participated in the study knew and understood the function of architecture as a profession. They were clearly able to define its role and functions within the buildings industry not only from an academic point of view but also from their experience through observation, interaction and experience with frequently working with architects

building projects. Architecture is a much more valued and established profession in the building industry that is deemed as imperative in the design and construction of new buildings, both conventional and sustainable. Although there is a very clear distinction between architecture and interior design, some of the participants could not clearly define to what extent an architect could or should execute the interior design of a building. Of the quantity surveyors interviewed, 33% of them could differentiate between functions of an architect and functions that should be ideally executed by an interior designer. Only 25% of the structural engineers thought that certain function relating to design of the interior should be undertaken by an interior designer. The other 75% of structural engineers and 66% of quantity surveyors did not think their functions that were exclusive to interior design, architects could not execute when required.

The architects interviewed are knowledgeable and aware of the differences between architects and interior designers however what is unclear is the clear distinction of certain functions and the fine line where architecture stops or should stop and interior design begins. Only 42% of the architects interviewed could clearly define where architecture ends and where interior design begins, although all the participants acknowledge that they undertake design and planning of interior work in most building projects.

Therefore, the objective of investigating and determining the functions of interior design was achieved through the literature review. The study was able to clearly define interior design as a profession. The research was also able to ascertain if interior design and its functions could be defined by the different professionals within building industry based on their experience, observations and education. The findings from professionals interviewed show that there is lack of knowledge of interior design as a profession which contributes to its underappreciation in building projects both in conventional and sustainable building. This lack of knowledge leads to interior designers being mistaken for interior decorators which leads to further underappreciation and under -utilization. The 47% of the 21 participants who did not know or acknowledge the difference reaffirmed that it was part of the reason, interior designers are not included or even considered in the initial phases of the project. The other 53% had knowledge of the distinction between the two professions and noted the

educational qualification and technical knowledge required to be an interior designer while there are no concrete and recognized educational requirements for interior decorators.

6.2 To investigate the gaps that are created in the absence of the interior designer in the initial phase of sustainable building projects.

Lack of knowledge of interior design being a contributing factor makes it important to explore how it is perceived within the building industry. Just like it was important to clearly define interior design and determine if other professionals within the building industry could also define its functions, not based on academics but on their experience and observations as well. It was equally important to understand how interior design is perceived amongst professionals in the building faculty because the misconceptions lead to its marginalization and underutilization.

The misconception and lack of knowledge is mostly due to minimum interaction with other professions in building projects. Interior designers being appointed after construction leads to decreased interaction with other professions and contributes greatly to their obscurity and decreased value. The literature was able to explore the perceptions that exist and the semi structured interviews had preformulated questions that explore these misconceptions and perceptions. The findings revealed that only 25% of the participants had interacted with interior designers in a building construction projects. While only 15% of the interviewed individuals were in the same design project team as interior designers in previous building projects. An even lower number had actually interacted with interior designers in the initial phases of the PLP process. All 21 of the participants noted how rare it was to work with interior designers in the initial, feasibility and design phases of the project.

Of the architects interviewed, 60% of them had interacted and worked closely with an interior designer and 33% of the quantity surveyors had worked with one. While only 7% of the structural engineers had interfaced with an interior designer before therefore explaining the lack of knowledge and underappreciation, they have in contrast to quantity surveyors who have knowledge and hence

an appreciation and affirming the value of including interior designers in the inception phase or earlier in a sustainability building project.

The structural engineers interviewed highlighted that they rarely interact with interior designers, 93% of the engineers stated they rarely work with interior designers in the conceptual phase or at any point in the project. This is mainly because structural engineers are one of the core professions in building projects. One of the findings of the interviews and from the literature reviewed is that the core professions that are included in the conceptual phase of a conventional building project are the architect, structural engineer, civil engineer, electrical engineer, mechanical engineer along with the project manager. All these professions or consultants are heavily involved in the first three phases of the project which are inception, preliminary design and final design. Other specialized consultant is also included from the inception phase if it is required by the project such as landscape architects, façade engineers and interior designers. Structural engineers are normally not heavily involved in the final hand over phase or after construction which is where the interior design is more likely to be appointed. Structural engineers work intimately with architectures who design the building and its layout while the structural engineers will determine the structural soundness of the concept presented by the architect. All the structural engineers interviewed stated that the architect often specifies the interior finishes and develops the accommodation schedule which can be deemed as interior design service.

The quantity surveyors who participated in the study in contrast to the structural engineers not only understand the interior designer but also recognized their value especially when incorporated in the inception phases. Of the quantity surveyors' interviews, 30 % have been in a project team with interior designers and 30 % worked with them in the initial phase of the project. This correlates to quantity surveyors being more knowledgeable of interior design as a profession compared to other professionals. The connection that can be drawn is that the more interaction in a project between a particular profession and interior design, the more aware and knowledgeable of its functions and more appreciative of the value they add to a building project.

All the interior design professionals who were interviewed in the study expressed their frustration with how their perceived and underappreciated due to lack of knowledge and misconceptions about the field. Out of the interior designers interviewed, only 14% had been part of project design team and a mere 10% were part of the project in the initial phases of the project. About 75% of the interior designer who participated in the study stated that they are often mistaken and used interchangeably with interior decorators. About 70% expressed how they are also often replaced by architects in projects they could easily execute and that it is common practise for architects to undertake work for designing the interior in most building project including sustainable buildings. This practise is partly due to interior design being seen an obscure and underdeveloped profession.

There has been great development and improvement since the inception of the African Institute of the Interior Design Professions (IID) which is a professional body for Interior Designers in South Africa. The IID has successfully accomplished professionalising the profession with the aim of attaining legal regulations that will not only protect the professional interest of the interior designer but also regulate the place of interior design in the building industry

It is not only individuals within the industry that have the misconception but also in most cases clients do not know the function or difference between an interior designer and decorator. Clients often rely on consultants for guidance and advice in the type of professions required to best manage and achieve the desired goal of the project. These consultants constitute of individuals who often lack the comprehensive knowledge of interior design and its function and hence do not see its value. Of all the participants interviewed, 62% know that interior design was a fully developed profession that required higher education equivalent to bachelor’s degree qualification or higher in order to qualify as an interior designer. The other 38% were not aware that interior design was a professional profession that required higher educational learning.

6.3 To investigate and determine if other professions can efficiently undertake functions of interior designer in the initial phases of the project.

The third and perhaps the most important objective to assist in answering the research objective to investigate and determine the value of interior design in the building and construction industry. There is definitely value in interior design based on the literature review and the research findings. The issue is whether is carries value within the building industry particularly to implementation of sustainable building particularly when added in the initial phases of the PLP process.

The participants interviewed in the research agree there is definitely value in interior design in the building industry, 76% of the 21 participants deem interior design to be valuable in the management and construction of sustainable buildings as well as conventional buildings. However, their value is dependent on, influenced by or diminished by the five factors that were revealed in the literature review and during the semi structured interviews that contribute to the underutilisation or underappreciation of interior design. The first two factors were discussed in section 6,1 and 6,2. This section will discuss the remaining three factors along with how much value interior design actually has in the industry especially if appointed in the initial phase of a project.

As stated in section 6.2, only 10% of the participants actually worked with interior designers in the initial phases of the PLP process. The 35% of the participants who had worked with interior designers in the initial phase of the project stated that they never experienced or observed gaps that arose in the project due to the absence of an interior designer in the design or construction phases of the PLP process. They do not feel that any major challenges arose that could not be dealt with by an architect or any competent person that could specify the finishes of the interior based on their experience. They do however, clarify that the need for interior design in the initial phases could be project specific in terms of size, type and need of building project.

Participants who did experience gaps or challenges due to the absence of an interior design amounted to 65%. The participants expressed that experiences that in form or another, big or small. The

challenges were increased cost, redesign of certain element leading to increased cot and duration as well as customer dissatisfaction. Therefore, the majority of the individuals interviewed experienced at some point the project to the interior designer not being included in the initial phases or design phase of the project. The structural engineers were the least likely to have challenges relating to design of the interior, only 10% stated that they had challenges relating to interior designers not being included early enough in a building project. The gaps occurred due to rework of the interior space which required permanent partition walls which lead to changes in engineering calculations. The majority of the architects also expressed that they did observe or experience gaps, 62% to be exact. The other 38% did see gaps but they were expected to undertake all the activities relating to interior design. Therefore, the design of interior is definitely planned and designed for in the initial phases a building project particularly a sustainable building venture, however, it is not necessarily undertaken by interior designer. It is in most cases done by the architects themselves.

Of all the quantity surveyors interviewed, 80% of them definitely stated that they experienced gaps due the absence of interior designers in the initial phases of a building project. One of the other participants who is a quantity surveyor working as a property development manager cannot imagine a building project without an interior designer involved from the inception phase of the project until the hand-out phase. He states that an interior designer along with an architect is pivotal to the success of a property development project team and should be included at every phase of the project. As a project development manager, when initiating a building project, the core team initiated in the inception phase is the architect, quantity surveyor and interior designer to optimise design and the budget. Perhaps the type and purpose of a building project has a great influence on whether interior design is a necessary entity, there are buildings where the interior, feel and aesthetic are of outmost importance and buildings where the aesthetics mean nothing such as equipment warehouses or low-end residential property development projects. An interior designer would not be deemed as valuable or required in a warehouse design but will definitely be important for a hotel developments, office building particularly for large corporations, office parks, museums, restaurants, high-end residential properties, hospitals and sustainable buildings especially ones that want a green star rating. Therefore, the necessity for an interior designer is greatly dependant on the type and purpose of building.

The one quantity surveyor who works for a consultant company stated that it is very important to have interior designers in the inception phases of the project for accurate cost estimation. The participant explained while an architect is often tasked with specifying the interior finishes in the preliminary design stages, the specifications are often not as detailed as interior specification developed by interior designers. This leads to an increase in cost later in the project due to the interior finishes. One of many examples provided is that an architect can specify a space for a reception table at the reception foyer of a company or hotel but will not specify the type, colour, material and size of that particular table which greatly influences the cost. Therefore, quantity surveyors particularly in consulting environments prefer working directly with interior designers for the accuracy of preliminary cost estimation for interior finishes.

The three driving forces of successful projects are cost, time and quality. The third factor contributes to the exclusion of interior designers was found to be cost and budget considerations of projects which was mentioned by all 21 of the participants as a contributing factor to the exclusion of interior designers in most building projects. The main aim and goal of projects is to complete projects at a certain budget and to minimise cost without compromising quality where possible. A portion the participants who did not agree that interior designers should be included in the initial phases of the project amounted to 30% and cited cost as the main reason. While they recognise the value of the profession, they do not believe their contributions warrant the additional cost. Procuring an interior designer is seen as an additional consultant leading to increased budget for consultants by the client or project manager. Hence the services of interior designer are often undertaken by architects and it is erroneously deemed as paying for the same services twice if an interior design is appointed in addition to an architect. Therefore, unless the interior designer is requested by the client or recommended by the architect, interior designer is often excluding to avoid paying an additional consultant or professional fees. The building industry like any other industry is profit driven and concerned with turnaround time, these two aspects are often given priority over the end-user experience. Thus, the participants who cite cost as the main reason, declare that they absolutely see the value of including an interior designer in the inception phase. However, cost saving is the ultimate priority thus if interior finishes can be designed and completed in the absence of an interior designer, then the project will be executed without one.

The fourth factor that contributes to the exclusion of interior designers is the attempt or preference to limit the number of consultants the project has to interface with. Both the client and project manager would rather work with limited number of consultants to mitigate increased cost due to professional fees and to facilitate easier management of the project. This is a factor that was mentioned by all 21 participants including the interior designers. The procurement of a consultant who can undertake most of the design services if not all is ideal for a client or project manager. An architect or architectural consultant is deemed sufficient in most projects because they are expected to undertake both the architectural services and the interior design services which eliminates one more consultant to manage and interface with. Most large architectural firms have an interior designer or interior designers within their structure. However, it is very difficult for an interior designer or interior design consultant to be appointed separately unless the project requires it. Large hospitality projects, high end residential property development projects and projects that want to achieve a comprehensively sustainable building would appoint an interior designer at the inception phase of the project however most project will rely on the architect to execute both exterior and interior design services.

The main misconception is that interior designers perform the same functions that can be undertaken by an architect. This is the fifth and perhaps the biggest reason as to why interior designers are undervalued, underappreciated and underutilised in the building industry. The architect often undertakes and executes the function of the interior designer in most building projects due to this misconception and has become common practise. This misconception is prevalent and due to the lack of knowledge of interior designer as a profession as discussed. Although 60% of the 21 participants stated that they knew and understood the difference between an architect and interior designer, 30% believe that architects can adequately fulfil the services and functions of interior designer while 70% stated that architects cannot perform the services of interior designer as efficiently, effectively as interior designers.

Interior design is a part of architecture similar to how interior decoration is a part of interior designer. Through the literature reviewed and research interviews, it was found that architects do indeed undertake interior as module in school as part of their architectural training and higher education. Similarly, civil engineers undertake a module in quantity surveying as part of their higher education module, however, that does not mean civil engineers are more qualified than actual qualified quantity surveyors nor should they replace actual qualified quantity surveyors in building projects. Therefore, the question that arises is why do architects have the preferential role in undertaking design and specification of interior services in building projects?

According to the findings, the answer is multi-faceted. The first reason being that architecture is a well-established, developed and understood profession that has had dominance in the building industry. All the participants including interior designers stated that architecture is simply seen as superior than interior design in the building space even in the design of interior spaces. Historically, the dominance of architecture as a profession in the building industry was so strong that they were often appointed as principal agents in most building projects. They have had competition in this regard over the past two decades according to literature with civil and structural engineers becoming more prominent in the roles of project manager or principal agent. Architects are generally expected to know and understand every detail about a building including the interior. Therefore, interior design as a profession is in its infancy compared to the long-standing history of architecture.

Architecture is far much more advanced and established in terms of its education, body of knowledge and having professional body and organisations. This makes it very difficult for interior design to compete. Interior design is not necessarily a new profession and is fully developed in first world countries which understand the importance of the interior and sustainability. However, compared to architecture it is perceived as relatively new and more obscure. The IID as a professional body is only a decade old and it was established out of necessity to solidify interior design as a profession. The IID is the only professional body in South Africa that represents interior architects, interior designers and interior decorators. Prior to the formation of the IID, interior design was regulated and controlled by the professional body for architecture which is the SACAP. Interior has made great strides in South Africa to be seen and heard as a profession allowing them to have slightly better

opportunities in the building space but it is still marginalised due to the dominance of architecture. According to participants in the study, the dominance of architecture has created the perception that they can sufficiently design interior work without the presence or help of an interior designer.

The second reason as previously mentioned is that the architect can do an ok enough job in designing and specifying interior finishes. One of the participants who is a civil engineer that now runs a small development company stated that all their interior services are performed by an architect within their organisation. The architect performs the architectural work and the interior work including designing the showrooms. The reason for this according to the participant, is that their business model at the moment does not see a need for a qualified interior designer because they develop low to middle income residential properties that do not require aesthetically pleasing, elaborate or sustainable interior. They simply design residential properties with basic housing elements that the architect within the organisation can easily specify. However, when the business expands to higher income housing, they will definitely attain the services of a qualified interior designer. Therefore, the participants see value in having an interior designer at the inception phase of building projects but only for certain project and developments.

Another participants who currently works at Eskom explained that there are no interior designers at Eskom and they rarely interact with interior designer due to the perception that an architect can full the basic design of an interior. All the interior services are undertaken by the architect at most government institutions because the interior is consistent and standard for all regions and departments. The architect utilises long standing standard interior compliant documents to specify interior finishes. Therefore, there is no real creativity or innovation required just specifications. In a building project, the architect develops an accommodation schedule during the preliminary design phase. The accommodation schedule specifies the room size, reference, type, furniture and fixtures requirements and the environmental conditions. All the participants agreed this is definitely work that should be undertaken by an interior designer. However, in most cases the project does not see a need for a separate consultant to be appointed when one consultant or individual is perceived to be able to do both sufficiently. A great advantage that architects possess which was discussed by the participants when it comes to interior services, is their ability or legal right to certify conformance

standards when it comes to certain interior finishes. The certifications are required legally by the project to ensure quality and durability of the selected materials.

In contrast, one of the quantity surveyors interviewed who was appointed to overhaul a building and hence brand for a long-standing insurance organisation was made lead in the refurbishment project. The project wanted innovative ideas to create a different look and feel that speaks to the brand in addition to the existing long standing standard interior compliant documents. An interior designer was appointed to complete the interior finishes and redesign the space with the entire building including a different design for each department. An interior designer was utilised rather than architect in this project because innovation was required rather than specifying already existing design specification like in the case for Eskom. Other great examples were given by the participants such as the design and construction of a lodge which consist of 200 rooms. The prior design had used an architect for their interior design requirements, where they appoint an architectural consultant to implement interior finishes based on formerly developed compliance standard. However, they appointed an interior design consultant to design and manage the project for the new lodge because they needed new innovative and sustainable ideas that would represent the culture of the area. An architect might not be able to execute such a project due to the innovation and functionality required whereas interior designed are educated and skilled to implement such projects according to the findings.

With all that has been discussed thus far, how does interior design stand out and become more valuable? The answer seems to lie it its ability to distinguish its self from the minor knowledge architects have of designing the building interior and in their trained ability to consider human adaptation and psychology. While architects might study a module for one or two semesters in interior design, interior designers actually spend three years to obtain a degree with the whole syllabus focusing only on interior design. Therefore, education and training are the first perfect step to prove value in an industry. Interior designers are required to complete the specific SAQA approved bachelor's degree in South Africa with interior design at the core of the curriculum. An individual who studies a subject for three or more years to obtain a qualification in the subject is different and more qualified than an individual who studies that same subject in one semester in the quest for

qualification in another subject. Architects do not see interior design with the same lens as interior designers. Just like structural engineers do not see design of a structure the same way as architects, the fundamentals and principals are different. The body of knowledge, approach, methodology and philosophy of designing an interior is completely different for the two professions in question.

Most of the professionals within the building industry who participated in the study agree and concede that there is quite a difference especially in execution. All of the 21 participants concluded that architects do not execute the design of interior services better or as well as interior designers. Of the 21 participants, 70% believe that interior designer has unique skill that architects do not possess. There is a difference in approach, methodology, design and hence the final product. All the architects admitted that interior design is definitely not their core focus or priority in building project, it is simply an additional activity that they have to execute to complete the project. Some architects clearly stated that undertaking interior design services only takes away from the time, energy and concentration from their core architectural functions so they would prefer if an interior designer was appointed. Other architects explained that they only agree to conduct interior services for increased income and can claim for additional fees for the additional work in some projects.

The key in distinguishing architecture conducting interior services and interior design conducting their own services is highlighting the additional design elements and considerations they can produce especially in sustainable buildings. Interior designers are trained in designing with the end user in mind, to create an environment that improves the quality of life of the human being psychologically and physiologically. Designing for human comfort is part of sustainable design hence interior designers should be an integral part of designing sustainable building and conventional buildings that have the end-user in mind. Architecture does not take into consideration human comfort or the impact the space has on the individual by virtue of its definition and education. All the architects who participated in the study agreed that they do not factor in human comfort or impact on human psychology when specifying interior finishes. Ergonomics is the only element relating to human consideration in a space or building that is taken into account by architects based on the literature reviewed and research finding.

Interior designers are educated and trained to design with the end user in mind, to take into consideration the impact of the space on the occupant is of outmost importance. When designing an interior, it is not merely about specifying the standard elements like door frames and window sizes but also the careful planning of the space, selection of materials, colour and texture and how to balance all these elements harmoniously. Interior is not merely about aesthetics but also about functionality and technical consideration. One of the findings of the study is that interior designers are actually permitted to submit drawing plans for two story buildings therefore they are not merely an aesthetic profession like interior decorators. This is not to downplay the importance of aesthetics because architects are also concerned with aesthetics but of the exterior of the building, they are tasked with designing innovative exterior of buildings just like interior designers are tasked with designing innovative interiors. Design is guided by fundamental principles and means different things to different people. Structural engineers are concerned with structural soundness and functionality of the structure while architects are concerned with the conceptual design of the building, functionality and aesthetics of the exterior of the building. Interior designers are concerned with the aesthetics and functionality of the space in relation to the user.

Interior design as a profession is more than aesthetics as discovered through the study, it also involves functionality and technical considerations. It plays a big role in terms of sustainability especial since the definition of sustainability in its essence involves preserving the environment and improving the quality of life of people. Therefore, a building cannot be considered Green if it does not factor in creating an interior space that is conducive, functional and motivating to the human psyche which greatly affected by the environment. Environmental health for human beings is extremely important as it forms part of the South African constitution and is known as the environmental right in section 24 of the Constitution of the Republic of South Africa, Act 108 of 1996. Interior designers are the one specialist profession that takes this factor into consideration.

The interior designer contributes to interior environmental health by designing for the human psychology. The space should be planned and designed to improve mental health through the use of space planning, colour, texture and form. The GBCSA SA Rating Interior Design Manual states the importance of interior design for green building certification. If a building project is aiming for a

sustainability and a GBCSA SA Rating they should ensure that all aspects are covered and that requires inclusion of all professions form the conceptual phase. All green buildings frameworks from different countries reviewed in the literature clearly state that all professions should be involved in the conceptual phase where key design decisions are made. The GBCSA SA Rating Interior Design Manual also explains that if a project wants to achieve a star rating in interior it should have an interior designer or interior design consult lead the management of the project. A good example is the new Discovery Building in Sandton, South Africa, the building obtained a 5-star GBCSA SA Rating due to covering all elements of sustainability, it obtained a new building rating as well as interior building rating and that required involvement of Interior design from inception phase and in every phase until the end of the building project.

What has been established in the study is that the involvement of interior designer is highly dependent on the type and purpose of the building. While they might render as unnecessary in certain building projects such as the design of a warehouse or factory that houses machinery and equipment, they are exceptionally important for buildings where aesthetics is of extreme importance such as the hospitality industry, high income residential property developments, health care facilities and most recently in the design and planning of office space buildings or work environments. An interior designer can design and plan a work space to ensure that it fosters productivity, comfort, safety and security for the employees and general occupants. They can design a work environment that motivates the workers and makes them enjoy being in space through intelligent office space planning, careful selection of colour, texture and careful placement of windows and light. Light is key design feature in any space, in a work environment it is important to allow sufficient natural light but utilise means to prevent sun rays affecting workers eyes that are always concentrating on computer screens. All the participants reaffirmed how important a healthy working physical environment is and that it required a specialist professional to create and achieve. The specialist professional being an interior designer.

The involvement of the interior designer or interior design consultant is also highly dependent on the size and scale of the building project. The bigger the project, the more the services of an actual qualified interior designer are required. Smaller projects that do not have aesthetics or sustainability

as a primary concern cannot justify the appointment of both an architect and an interior designer in terms of cost. Small construction projects that have landscape requirements even utilise the architect to execute the landscape architecture. Whereas a larger construction will definitely appoint a landscape architect for the landscape design in the initial phase of the PLP process. They therefore rely on the architect to execute the architectural work and specify interior finishes as well. The findings of the research reveal that large construction projects can afford to appoint a variety of consultants for different needs and services. They also cannot afford not to have specialist services where required due to the amount of money invested in the project and require precise execution of every design detail in the project.

The interior designers interviewed all remarked that their services were taken for granted until they were actually involved in a building project where they interacted with most of the professions. Of the other professions, 70% stated that interior designers definitely get bypassed for architects from their respective experiences. The literature also revealed the lack of appreciation of interior design in the planning and design of health care facilities until recently. The design of these facilities solely relied on existing standards that often specified and implemented by an architect. Health care facilities are buildings that should take into consideration the impact of the physical environment as top priority and interior design can definitely craft spaces that can contribute in motivating and uplifting not only the patient but also the doctors, nurses, visitors and everyday stuff. All the participants once again reaffirmed that this required a specialist professional to create and achieve. The specialist professional being an interior designer.

The importance of the interior design profession in the hospitality building industry cannot be overstated based on the finding of the study. In the hospitality building industry, aesthetics is of primary concern, from restaurants to high end hotel developments. The interior needs to be aesthetically pleasing, attractive, functional and speak to the brand that the client wants to convey. Interior design especially when included at the right phase of the project can improve the marketability and profitability of a development projects. Buildings that are attractive both on the outside and on the inside will have higher market value according to some of the literature reviewed.

Another important review revealed building with high GBCSA SA Rating can demand and request higher rental prices.

Another important aspect that was discussed by one of the interior designers who works for the GBCSA was that interior designers often manages\ and design refurbishment building projects. An interior designer is allowed to lead these projects because there is little competition with architects. They remarked that architects consider refurbishment of buildings as beneath their profession in some cases. Hence interior designers are one of if not the only profession that can be involved in the building project from its design, construction, occupancy and until the end of its lifecycle. With sustainability at the forefront, interior design is tasked to introduce green elements into the existing buildings and to ensure building function optimally for remaining life of building. All the points discussed above show that there is value in interior design and that it more than a profession only concerned with the aesthetics of a room, it also requires functionality and technical ability.

The study found that most of the participants agree that interior designers should be incorporated in the initial phase of a new building project particularly a sustainable building project. Of all the individuals interviewed, 90% deem consideration for human psychology and comfort a vital aspect in sustainability. Of all the participants, 67% believe that they should be incorporated in the early phases of the project with 70% also affirming it is not best practise to include them after construction which is the current common practise based on the findings. The remaining 30% who did not think they should be included in the initial phases of the project management process, however, explained that they should be engaged and included before construction is complete. Holistic design should be implemented in the initial stages of the project where key design decisions are made. Interior should be included in the initial stages if they are to effectively and efficiently implement their design working closely with architects and the rest of the design team and be present when key design decision is taken.

The 3 interior designers interviewed stated that they were incorporated at the initial stages of most of the projects they worked on. They often worked closely with architects which is how it should be

in an ideal situation. They stated that they always encountered design challenges when engaged after construction. The one interior designer gave an example of when she worked in a project in Uganda where they were building a new building for a bank. She was not consulted by the project team and only engaged her after construction. The project was not aware that she had already engaged and worked with the client in designing the interior space including space planning, fixture placement and colour to reflect the brand of the bank. Once she finally saw the building after construction there was a structural column that was placed in a location that would change the entire design agreed upon with client. The client opted in removing the column which increased the cost considerably and delayed the project time and required rework and redesign of that one particular column. In most cases, the challenges are not this extreme, however, it proves the importance of collaboration early on in the project. It is very important for synergy to exist between the interior designer, architect and structural engineer to avoid misalignment of design which leads to increased cost, extended project duration and rework of the design.

The findings from the qualitative research in the form of one-one are interviews aligned with most of the findings from the literature review. The under appreciation of the interior designer which is discussed in the literature review was expressed greatly in the findings from the interviews. The dominance of architecture as a profession and hence alternative for interior designers was discussed in the literature review and was confirmed by many of the professionals who participated in the in the study.

The literature that has been reviewed for the study revealed that interior designer has value especially when included in the early stages of the project. The different frameworks that have been developed for the implementation of green buildings in different countries included the GBCSA Star Rating in South Africa speak to the importance of having an integrated design solution where all the design professions are integrated early on and work collaboratively rather than separately. Interior designers are mentioned and stated by all the frameworks as one of the professionals that should be included in the early stages for effective and comprehensive design.

7. Conclusion

In most building projects, the role of the interior designer is often neglected until after construction which might lead to lack of certain design considerations relating to human adaptation and failure to take into account sound sustainable design solutions for the whole life cycle of the building. Hence causing dissatisfaction to the client and end-user as well as leading to misalignment of the project team. The research question is that interior designers can definitely add value in the management and construction of sustainable projects if they are introduced at the opportune time which is the initial stages of project, more specifically the preliminary design phase where all the key design decisions are taken. In the context of the study, sustainability will be defined as the pursuit of environmentally friendly design and management of construction of buildings with the aim of creating buildings that have less of a negative impact on the environment and an indoor environment that promotes quality of human life.

The demarcation of the scope primarily on the current practise in buildings that are considered sustainable or have elements that qualify for green star rating. Standard or conventional buildings will also be discussed but the aim of the study is to focus on the value of interior designers in sustainable buildings.

There is value in interior designers in the project management and construction of new sustainable and conventional building projects especially when introduced in the inception phase of the project, however, it is undervalued and underappreciated in the building industry due to many factors. The contributing factors range from being under appreciated and competing with a more well-established professions like architecture to cost cutting methods which is a common industry practise. Their value is also mostly dependant on the type and size of building project.

The study was successful in answering the research question and achieving the three objectives of the research report which assisted in answering the main question. The first objective to investigate the functions of the interior designer in the initial phases of the project was achieved through the

literature review and qualitative research findings. The perception of interior design as a profession and interior designers as professionals has contributed greatly to their underappreciation and how they are valued in the industry. It is a profession that is very misunderstood and often times confused with interior decoration or perceived as inferior architects lacking definite demarcation of its functions and hence space or role in the industry. The study was able to define interior design as a profession, define its functions and core elements as well as describe the role of interior designers as different from architects and interior decorators. The educational requirements, body of knowledge and professional organisations are also clearly defined in the study to showcase the professional nature and development of interior design as a profession. The function of interior designers in the initial phases of a building project was found and it is understanding the scope of work and conceptualisation different design solutions.

The second objective was to investigate the gaps that are created in the absence of the interior designer in the initial phase of sustainable building projects. The objective was achieved through the literature review and findings from semi structured interviews. The gaps are mostly found when considering sustainable buildings when designing for huma adaptation. Interior designers consider design for human adaptation and how the interior impacts the people inhibiting the space psychologically more than architects or any other profession does. Interior designer are also key in building projects that aim for specialised aesthetics or environments that impact the user such as hospitals, hotels, offices and restaurants. The gap occurs when the interior designer is not included in the initial phases or if the activities are undertaken by an architect.

The third objective was evaluated which was to determine if any other profession could efficiently undertake interior design work. The conclusion is that interior design work is being undertaken in the initial phases of building projects. However, the work is being undertaken by an architect rather than an interior designer in most cases according to the research findings. Reviewing the relevant literature that defines and describes interior design and architecture, it is reasonable and factual to conclude that the two professions are clearly distinct but share similar functions when it comes to designing the interior space. Despite the similarities they might share, the two professions definitely can never be deemed interchangeable because each possess a skill the other does not have. Interior

designers are educated and trained to take into consideration the impact of the physical environment on human psychology when designing interior space and finishes. Therefore, interior design has a place in new building project to execute interior design services working in synergy with the architect and the rest of the project team for a comprehensive design of a sustainable building. The role of interior designers is played by architects in smaller building projects but in bigger developments and buildings in pursuit of sustainability and green star ratings, the role of the interior design should be played by a professional interior designer.

The frameworks that have been developed for the implementation of sustainable buildings include interior design in the early stages of implementation or during construction rather than after construction because the early phases are the most crucial in terms of decision making. The inclusion of interior design is also mandatory for GBCSA Sustainability Rating in South Africa and other frameworks developed in other developed countries. Interior design might not be deemed as valuable in some building projects but it is valuable in many building projects, the profession's necessity is highly dependent on the type, size and purpose of the building. However, any building that aims to create a sustainable, functional, comfortable and aesthetically pleasing interior environment for the occupant should have an interior designer at the inception phase of the project for the efficient and effective execution and implementation of the design.

The study was able to ascertain the importance or value of interior design as a profession and the interior designer in the design and management of sustainable buildings through qualitative research. The qualitative research through the literature review and semi structured interview was able to demonstrate that the lack of knowledge of interior design as a profession leads to its underappreciation and leads to its exclusion in the design phase of the project. The study was able to explore and discuss the value of interior design and how it is perceived by different professionals in the building industry through defining its functions, educational requirements and current position in the building industry. The study was able to not only determine how interior design is perceived but also the contributing factors leading to its marginalisation in the industry.

There are two fundamental differences in this research that sets it apart from other studies which were reviewed during the research study. The first being that it investigates the subject matter from the perspective of different professionals in the building industry regarding the value of interior design. It explores the matter not just from the view point of interior designers which could be deemed as biased but from the view point of professionals who are considered core professions in the design, management and construction of buildings both conventional and sustainable.

The second difference is that the research explores the different factors that contribute to the underappreciation of interior design as a profession in one research report. The literature that was reviewed touched on the five contributing factors discussed in this study separately or maybe two themes in one paper or study but not one literature source contained all the factors in one research. This particularly study therefore found factors that were a common theme in most of the literature sources used and from the 21 participants that were interviewed in the semi structured interviews and put them together to explain and draw connections as to the reasons why interior design is undervalued.

8. Recommendations

There are two recommendations that can be deduced from the findings and literature review. The first recommendation is that interior designers need to work harder in ensuring the development of the profession in the industry through the different organisations and professional bodies. Similar to how structural engineers are legally required to sign off structural design drawings, a structural design drawing without the signature from an ECSA registered engineer? for structures that are above one -story building cannot be approved and implemented according to ECSA and National Building Regulations and Building Standards (NBRBS) Act 103 of 1977. The legal requirement will allow them to effectively separate themselves and their functions from interior decorators and also assist in drawing a line with the work of architects.

The second recommendation is for interior designers to work closely with architects or architectural consulting firms as sub consultants in order to obtain more interior work that is normally given to architects. Working with architects or for architectural firms might enforce a relationship where architects recommend an interior designer for interior design work to the project or to the client. This will enable architects to focus on architectural work and interior designers to undertake interior design functions in the initial stages of the project. This will lead to interior designers to obtain more exposure in the building industry and carve out a space for them in the project management team especially the design team in the initial phases of the project.

There is insufficient research that has been done on this particular topic especially in developing countries. Therefore, more research studies need to be conducted on this subject matter particular on how interior design can distinguish themselves from the interior functions performed by architects. There are also few studies on how the indoor physical environment impacts the user, however, more work needs to be conducted on the contributions interior designers can bring in creating sustainable environments hence increasing their value in this space.

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Appendices

Appendix A

The research paradigm – methodology, epistemology and ontology – explained in simple language Adapted from Patel, S. (2015, 15 July).

PARADIGM	ONTOLOGY *What is reality?*	EPISTEMOLOGY *(how do I know reality?)*	THEORETICAL PERSPECTIVE ('CONCEPTUAL FRAMEWORK') *(which approach do I use to know something?)*	METHODOLOGY *(How do I go about finding out?)*	Method *(what techniques should I use to find out?)*
Positivism	There is only one single truth	Reality can be measured and there are reliable and valid tools to do this	– Positivism – Post-positivism	– Experimental research – Survey design	Usually ***quantitative***, may include – Sampling – Measurement & scaling – Statistical analysis – Focus group interviews
Constructivism/ Interpretivism	There is no single reality or truth. Reality is created by individuals in groups	Therefore, reality needs to be interpreted, in order to uncover the underlying meaning of events, activities and behaviours	– Interpretivism – Phenomenology – Symbolic interactionism – Hermeneutics – Critical inquiry – Feminism	– Ethnography – Grounded theory – Phenomenological research – Heuristic inquiry – Action research – Discourse analysis – Feminist standpoint, etc	Usually ***qualitative***, may include – Interviews – Observation (researcher as participant / non-participant) – Case Study – Life History – Narrative – Theme Identification
Pragmatism	Reality is constantly renegotiated, debated, re-interpreted in light of its usefulness in new situations	The best method is one that solves the problem. Finding out is the means, with change the underlying goal	– Deweyan pragmatism – Research through design	– Mixed methods – Design-based research – Action research	Combination of any of the above, as well as data mining, usability testing, physical prototypes
Subjectivism	Reality is we perceive to be real	All knowledge is purely a matter of perspective	– Postmodernism – Structuralism – Post-structuralism	– Discourse theory – Archaeology – Anthropology – Genealogy – Deconstruction	– Auto-ethnography – Semiotics – Literary analysis – Pastiche – Intertextuality, etc
Critical Realism	Realities (plural) are socially constructed, under constant internal influence	Reality and knowledge are both socially constructed by power relations within society	– Marxism – Queer Theory – Feminism – *Kaupapa Māori*	– Critical discourse analysis, – Critical ethnography – Action research – Ideology critique	– Ideological review – Civil actions – Open-ended interviews/ questionnaires/observations, – Journals

Appendix B

Research Participant Consent Form

Consent to take part in research

- I…… voluntarily agree to participate in this research study.

- I understand that even if I agree to participate now, I still have the right to withdraw my participation at any time or decline to answer any question without any consequences of any kind.

- I understand that I can withdraw permission to use data from my interview within four weeks after the interview, in which case the records will be permanently deleted.

- I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.

- I understand that participation in the research will include:

    - Participant availing themselves for a sit-down interview.
    - The interview will take 30 minutes minimum and 1 hour maximum.
    - A professional interview that will take place in a safe, professional and convenient place for both
    - The interviewee is required to give honest and transparent answers based on their professional experience and academic knowledge.
    - The interview will be recorded using a tape recorder or cell phone.
    - The interviewee will be given opportunity to withdraw any statements they have made

- I understand that I will not benefit directly from participating in this research.

- I agree to my interview being audio-recorded.

- I understand that all information I provide for this study will be treated confidentially.

- I understand that in any report on the results of this research my identity will remain anonymous if desired. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.

- I understand that direct quotations and paraphrased extracts from my interview may be quoted in the Masters final research report titled The Value of Interior Design in the Management and Construction of Sustainable Buildings.

- I understand that if I inform the researcher that I or someone else is at risk of harm they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my consent.

- I understand that signed consent forms and original audio recordings will be retained in Laptop file but also on an external hard-drive and google drive for security and back up. The researcher is the only individual who will have access and it will be protected by a password. The data and recording will be stored and destroyed and five years from the time the student exam board confirms the results of their dissertation.

- I understand that a transcript of my interview in which all identifying information has been removed will be retained for two years from the date of submission of the final exam.

- I understand that under freedom of information legalisation I am entitled to access the information I have provided at any time while it is in storage as specified above.

- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

- I understand that I have the right to remain anonymous if I want to.

Signature of research participant

---------- ----------

Name: ---------- ----------

Profession: ---------- ----------

Qualification: ---------- ----------

Date: ---------- ----------

I believe the participant is giving informed consent to participate in this study

---------- ----------

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Date: 24 January 2022

Appendix C

Research Summary sent to the research participants prior the interview.

The study seeks to evaluate the value of interior design in the planning, design, management and construction of sustainable buildings, to investigate if interior design and the interior designer should be integrated in the early stages of the project management process.

Sustainable design of buildings is seen as a viable option in undertaking construction of buildings in an environmentally acceptable manner. There is a gradual movement in most industries to go green and implement sustainability in their design solutions. The colour green is generally associated with nature and is deemed to symbolise growth, harmony and fertility, hence the term 'green' refers to the pursuit of all that is environmentally friendly. The building industry is one of the industries that is gradually moving in the direction of design and constructing buildings that are sustainable and environmentally friendly.

The complex nature of sustainable buildings warrants an integration of various professions and management in the early stages of planning in order to effectively achieve sustainability throughout the life cycle of the building including its planning, design, construction, occupancy and operation. The role of interior design is often neglected until after construction which might lead to a gap in the comprehensive design of sustainable buildings.

Based on the literature that has been reviewed, the consequences of neglecting interior design or not integrating it in the planning stages can include but is not limited to the need to consider human adaptation. Other gaps include failure to take into consideration sound sustainable design for the whole life cycle of the building, selection of materials, and introduction of effective use of space and might lead to customer or end-user dissatisfaction.

The consideration for human adaptation is often not taken into account by engineers, managers, architects and other professionals in the industry, however it plays a significant role for the interior designer. It plays a significant role because designing interior environments can be defined as "determining the relationship of people to spaces based on psychological and psychical parameters, to improve the quality of life" (Mahmoud, 2017). This definition speaks to how human beings are affected by their environment psychologically and physically. A physical space can have an impact on a person's health, mood, comfortability and production levels.

It is rare that an interior designer is included in the initial stages of project management for building construction projects. The input of the interior designer is generally not taken into consideration in the project management and construction industry hence they are rarely integrated in the early stages of management (Lyre, 2018).

The counter argument is that there are other professions that can achieve the factors mentioned above and hence fill the gap of the interior designer, particularly a core profession such as architecture. Then the question becomes, is the interior designer required if an architect is involved and deemed more 'technical'?

The qualification and professionalization of interior design will also be explored in attempt to explain how it might bring value in the implementation of sustainable buildings. The lack of integration of interior design in the early stages might be a problem to the client, design team and sustainability principles which promote integration of all stakeholders

Appendix D

INTERVIEW SCHEDULE

A. Introduction

The interviewee and the researcher introduce themselves formally to each other. The researcher briefly explains the purpose of the interview and the study. The two parties discuss the Research Participant Consent Form and which elements that were agreed upon in the form, the form is signed prior the interview via email communication.

The researcher then explains the nature of the semi structured interview in terms of type questions, length of interview, the purpose of the information collected and how it will be utilised in the research. It is important to note that the questions presented below are a guide for the semi-structured interview. The intention is created dialogue and discussions based on the questions below. The participant is more that welcomed to add and explain in depth his/her reasoning and answers.

B. Qualification and experience

This segment of the interview will comprise of questions relating to the participants academic background and working experience in the built environment. Examples of the type of questions are given below

1. What did you study?
2. What type of qualification do you have?
3. Which academic institution did obtain your qualification?
4. Where are you currently employed?
5. How long have you been working?
6. What kind of work experience have you obtained thus far?

7. Are you currently registered with a professional body?

C. Research question and problem statement

The questions in this segment will try to understand how the participant perceives the research question and problem statement from brief and explanation given by the researcher. Examples of the type of questions are given below:

1. What do you think of the research question?
2. Is a valid question from their experience?
3. Do they agree with problem statement?
4. Is the validity to the study based on their experience?
5. Have you come across a similar topic before?

D. Specific research questions

This segment will then probe questions that will assist in answering the research question from the perspective of the individual being interviewed. In terms of how they view interior design in the project management and construction of buildings.

1. Have you worked in the building industry?
2. What function or role did you play in the project?
3. Was there Project Lifecycle process or similar project management tool implemented in the project?
4. Who was involved, in terms of professions, in the planning stages of the project?
5. Was the interior designer included in the planning stages?

6. What is the main function of the Interior designer?

7. Have you worked closely with other professional (architects, engineers and project manager) during or after construction?

8. What is your perception of interior designer?

9. Was it a sustainable building or standard building?

10. Is sustainability considered important in the building construction industry from your experience?

11. Is the Interior design profession considered significant in the project and construction management of buildings?

12. What is the current practice in project management of building projects in terms of team selection in the early stages?

13. How can value be defined and measured?

14. How does the implementation of a sustainable building project differ from the implementation of a standard building projects from your perspective as interior designer?

15. Did you experience any negative impacts of not including an Interior Designer in the early stages of the management of sustainable building?

16. Can the role of the interior design be fulfilled by other disciples?

17. At what stage is the project team usually selected?

18. Which professions are usually incorporated in the project team?

19. At what stage is interior design incorporated in a building project?

20. How can Integrated Design be achieved?

21. What sustainable solutions can the interior designer provide?

22. Does the exclusion of interior design in the early stages have any bearing on the success of the project?

23. Does the architect perform different functions than the interior designer in the implementation of sustainable buildings?

24. Is the role of the architect sufficient in the early stages to exclude the interior designer?

Table 0.1: Type of interview questions for each profession/profession.

Type of Professional/Profession	**Type of Interview questions**
Structural Engineer/Civil Engineer	• Has the professional interacted or communicated with an interior design in a project? • Where they part of the project team? • At what stage where they involved? • What unique skills did they bring? • What unique knowledge did they possess on sustainable buildings? • What gap was created when they were not included? • What impact did they have when they were integrated in the initial stages of PLP process? • How do project management teams for standard buildings differ from ones formulated for sustainable buildings? • Have the professionals ever experienced inconvenience through the lack of inclusion of interior designers in a project? • Do sustainable buildings require a different or unique skill set? • Has the professional been part of an integrated design team? • Are architects deemed as sufficient in sustainable building projects? • Is there a need for an interior designer in a building project?

	• Has the professional worked on sustainable buildings project team where the interior design was part of the project team? • What was the extent of involvement? • Do they think interior designer should be involved in the initial phases? • Do you know the difference between interior designers and interior decorators? • Do you know the difference between interior designers and architects?
Architect	• Has the professional interacted or communicated with an interior design in a project? • Where they part of the project team? • At what stage where they involved? • What unique skills did they bring? • What unique knowledge did they possess on sustainable buildings? • What gap was created when they were not included? • What impact did they have when they were integrated in the initial stages of PLP process? • How do project management teams for standard buildings differ from ones formulated for sustainable buildings? • Have the professionals ever experienced inconvenience through the lack of inclusion of interior designers in a project? • Do sustainable buildings require a different or unique skill set?

	• Has the professional been part of an integrated design team? • Are sustainable buildings becoming more in demand? • How often do project managers take into consideration Green Star Rating Certification? • Do architects usually undertake interior design functions and work? • Do architects believe they equipped to undertake interior design work? • Do architects believe they undertake interior design work sufficiently? • Do architects believe they undertake interior design work at the same quality or even better than interior designers? • Do architects want to collaborate with interior designers? • Do architects think interior design can introduce functions and work that architects are not equipped to? • Do you think interior designers are undervalued in the building industry? • Do you think the current common practise of including interior designer after construction is best practise? • To what extent do Architect consider huma psychology and wellbeing when designing a building space?
Interior Designer	• Do interior designers feel undervalued in the building industry?

	• Do interior designers feel misunderstood in the building industry? • How often do interior designers get mistaken for interior decorators? • How often does interior designer function get confused with functions of an architect? • How often do interior designers get overlooked in new building projects? • How often do interior designers get overlooked in renovation building projects? • How often do interior designers get bypassed for architects in building projects? • What is the difference between interior design and architecture? • What is the difference between interior design and interior decorators? • What is the biggest misconception about interior designers? • Is sustainability important in interior design? • Is consideration for human psychology and comfort a primary focus for interior design? • What skill can interior designers introduce that architects cannot offer? • How many building projects have they participated in? • At what stage of the project did they join the project? • Have interior designers encountered challenges due to late inclusion in a project? • How can they obtain more recognition in the building industry?

	• How often do they collaborate with architects in design projects? • How often do they interact with professionals involved in a building project?
Quantity Surveyor	• Has the professional interacted or communicated with an interior design in a project? • Where they part of the project team? • At what stage where they involved? • What unique skills did they bring? • What unique knowledge did they possess on sustainable buildings? • What gap was created when they were not included? • What impact did they have when they were integrated in the initial stages of PLP process? • How do project management teams for standard buildings differ from ones formulated for sustainable buildings? • Have the professionals ever experienced inconvenience through the lack of inclusion of interior designers in a project? • Do sustainable buildings require a different or unique skill set? • Has the professional been part of an integrated design team? • Are architects deemed as sufficient in sustainable building projects? • Is there a need for an interior designer in a building project? • Has the professional worked on sustainable buildings project team where the interior design was part of the project team?

	• What was the extent of involvement? • Do they think interior designer should be involved in the initial phases? • How do they price for interior design items and finishes? • When do they price for interior design items and finishes? • Have quantity surveyor encountered challenges relating to cost due to late inclusion of interior design? • Have quantity surveyor encountered challenges relating to cost due to late consideration of interior items and finishes? • Do quantity surveyors prefer working architects or interior designers when considering interior items? • Do you know the difference between interior designers and interior decorators? • Do you know the difference between interior designers and architects?
Project Manager	• Has the professional interacted or communicated with an interior design in a project? • Where they part of the project team? • At what stage where they involved? • What unique skills did they bring? • Are sustainable buildings becoming more in demand? • How often do project managers take into consideration Green Star Rating Certification? • What unique knowledge did they possess on sustainable buildings? • What gap was created when they were not included?

	• What impact did they have when they were integrated in the initial stages of PLP process? • How do project management teams for standard buildings differ from ones formulated for sustainable buildings? • Have the professionals ever experienced inconvenience through the lack of inclusion of interior designers in a project? • Do sustainable buildings require a different or unique skill set? • Has the professional been part of an integrated design team? • Are architects deemed as sufficient in sustainable building projects? • Is there a need for an interior designer in a building project? • Has the professional worked on sustainable buildings project team where the interior design was part of the project team? • What was the extent of involvement? • Do they think interior designer should be involved in the initial phases? • Would project managers include interior designers in the initial phases of a project if they had a sustainable building project? • How much say do clients have in deciding project team and number of consultants? • Do project managers prefer to work with architects over interior designers? • Does project cost and budget play a role in number and type of consultants?

	• Do you think interior designers are undervalued in the building industry? • Do you think the current common practise of including interior designer after construction is best practise? • Do you know the difference between interior designers and interior decorators? • Do you know the difference between interior designers and architects?

Appendix E

Ethics Clearance Certificate

SCHOOL OF CONSTRUCTION ECONOMICS AND MANAGEMENT RESEARCH ETHICS COMMITTEE

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER CEM/20/1/NN2**
PROJECT TITLE	The Value of Interior Design in the Management and Construction of Sustainable Buildings
INVESTIGATOR	Ngandane, Nokuzola (0502407n)
SCHOOL/DEPARTMENT	**SCHOOL OF CONSTRUCTION ECONOMICS AND MANAGEMENT**
DATE CONSIDERED	01/03/2020
DECISION OF THE COMMITTEE	Approved conditionally with respect to the declaration
EXPIRY DATE	31st March 2021
DATE 1/1/2020	**CHAIRPERSON** _____ Dr. Kola Ijasan

Supervisor: Miss Josephine Llale

DECLARATION OF INVESTIGATOR (S)

To be completed in duplicate and **ONE COPY** returned to the Secretary Mrs. M. Sithole at the CEM reception desk.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**



_____ ___**16**___/____**03**___/____**2020**___

Signature **Date**