



An assessment of corporate entrepreneurship capabilities within the university facilities management and infrastructure development departments in the Western Cape, South Africa

BY

ZIYANDA DYONGO

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Supervisor: Dr Xolani Nghona

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DECLARATION

I, Ziyanda Dyongo, declare that the contents of this thesis represent my own unaided work, and that the thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

Signed

A handwritten signature in black ink, appearing to read 'Z. Dyongo', enclosed within a hand-drawn oval.

Date: 31 October 2023

ABSTRACT

Due to the project-based structure, competitive environment, and substantial risk faced by companies in the construction industry, corporate entrepreneurship (CE) is thought to be crucial for maintaining and boosting corporate performance. Using the Corporate Entrepreneurship Assessment Instrument (CEAI), this study aims to diagnose the entrepreneurial culture in the university Facilities Management and Infrastructure Development (FMID) departments and identify a set of practices, systems, cultures, etc. that hinder and limit potential intrapreneurs (entrepreneurial employees) in the departments. The results should help management determine whether their organizations foster an entrepreneurial culture that encourages innovation and creativity, or whether entrepreneurial employees in these departments are constrained by a lack of management support.

Using a closed-ended questionnaire, a quantitative study was conducted among middle and operational managers and staff of FMID departments at the College in the Western Cape, South Africa. Participants' responses were analysed using factor analysis and descriptive analysis in SPSS, and the results were compared to the five CE capabilities that exist in the existing literature.

Based on the results of this study, that used data from three FMID departments at universities in the Western Cape region of South Africa, it was determined that there is an urgent need to foster an entrepreneurial culture to support employee innovation in these organizations through the CE strategy. The data also show that the FMID sector continues to undervalue CE capabilities.

This study provides a solution for using the CE capabilities as a measurement tool for assessing the internal entrepreneurial culture of university FMID departments using the CE capabilities. Further research is needed to determine how the CE strategy can be implemented and used within these university FMID departments as a tool to assess the proposed innovation portfolio. An implication for university FMID department managers is to carefully analyse their CE strategy decisions, as CE cannot be used across sectors due to differences in the nature of the enterprises.

Key Terms

CEAI, Construction, Corporate Entrepreneurship, Entrepreneurial Employee Activity, Intrapreneurship, Facilities Management, Innovation, Performance, University Facilities Management Infrastructure Development Departments.

DEDICATION

The Biblical scripture in Philippians, Chapter 4, verse 13: **“I can do all things [which He has called me to do] through Him who strengthens and empowers me [to fulfil His purpose—I am self-sufficient in Christ's sufficiency; I am ready for anything and equal to anything through Him who infuses me with inner strength and confident peace.]”** provided me with the necessary strength to complete my thesis.

I dedicate this thesis to myself.

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Praise be to God for His infinite blessings that He has bestowed upon me in my life. He has provided me with more than I could have ever imagined.

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ABBREVIATIONS AND ACRONYMS

CE	Corporate Entrepreneurship
EEA	Entrepreneurial Employee Activity
GEM	Global Entrepreneurship Monitor
PMTE	Property Management Trading Entity
CEAI	Corporate Entrepreneurship Assessment Instrument
FM	Facilities Management
SAICE	South African Institution of Civil Engineering
SA	South Africa
SDT	Self-Determination Theory
CEAI	Corporate Entrepreneurship Assessment Instrument

1. CHAPTER 1: THE PROBLEM AND ITS SETTING

1.1. Introduction

This chapter provides an introduction that highlights the background to the research and the issues involved. This brief background has helped to identify the gaps in previous research that this study aims to fill. The chapter provides an overview of the structure of the thesis and the significance of the study. It then explains the objectives of the study, its purpose, scope, limitations and the research methodology employed to carry out the study.

1.2. Background

1.2.1. Entrepreneurial Employee Activity or Intrapreneurship

Intrapreneurship, also known as entrepreneurial employee activity (EEA), is crucial for business performance and renewal through the successful launch of a new product, service or enterprise (Dikaiakos, Kassinis, Menelaou, Menelaos, & Polyviou, 2017). EEA, refers to employees who think beyond the norm (i.e. their job description) and utilize creative ideas to launch innovative goods and services. To some extent, according to GEM 2016/2017 they establish and manage small subsidiary businesses within already existing organizations (Dikaiakos et al., 2017). Given that it is a specific subset of entrepreneurship, EEA shares several fundamental behavioural traits with entrepreneurship, such as taking the initiative, looking for opportunities and developing new products or other resource combinations. Amo (2010) argues that the concept of intrapreneurship does not mean that employee innovation is always in line with corporate strategy. Employees act in their own interest, that is expressed in the desire to solve a technical problem, to develop an idea and to receive reinforcement and reward for doing so. In such a system, it is the responsibility of managers to develop organizational structures and cultures that support and encourage risk-taking, experimentation and learning.

EEA also falls within the umbrella of innovative employee behaviour, therefore, it is subject to special constraints placed on employee's initiative by corporate hierarchy, bureaucracy and intra-organizational context, as well as certain sources of support that an established company may provide to an intrapreneur (Amo, 2010). Hence, GEM (2017) report that EEA is directly related to the degree to which organizations invest in new ventures and innovation that emanates from the intrapreneurs (Dikaiakos et al., 2016/2017). In short, intrapreneurs are employees who think and behave like entrepreneurs inside organizations (Kafile, 2018; Neessen, Caniëls, Vos & De Jong, 2019). Given the fact that the word 'intra' means 'within' (Andersson & Nymo, 2020; Pinchot & Pellman, 1999), any employee working in a firm whose behaviour is 'innovative', 'proactive', and is

able to take ‘calculated risks’ can and are referred to as intrapreneur (Badoiu, Segarra-Ciprés & Escrig-Tena, 2020; Bouchard & Basso, 2011).

According to the GEM report, the highest EEA rates are reported in North America at 7.9%, followed by Europe at 4.4%, and Asia and Oceania at 3.1% (Dikaiakos et al., 2016/207). The benefits of the EEA are not limited to the organization, but also countries who embrace EEA benefits as shown below:

According to our earlier report, Leveraging Entrepreneurial Ambition and Innovation, Europe lags behind the rest of the world in business startups (companies founded with a unique concept). But the story of European entrepreneurship is much richer than just business startups. One underappreciated aspect of European innovation is the subject of this study: intrapreneurship. Intrapreneurs develop and implement creative ideas within existing companies rather than starting their own business. In other words, there are many entrepreneurs in Europe, they just prefer to develop within larger organizations. Despite the low percentage of business startups, countries such as Denmark, Sweden and the United Kingdom remain as dynamic and innovative as ever (Europe’s Hidden Entrepreneurs Entrepreneurial Employee Activity and Competitiveness, 2017).

On the other hand, several researchers stated that many potential intrapreneurs are hidden because they are constrained by organizational bureaucracy procedures, systems, culture, etc. in many established organizations (Camelo-Ordaz & Fernández-Alles, 2012; Shefiu, 2019). In other words, many organizations prevent employees from becoming involved in entrepreneurial activities and this is particularly the case in organizations operating from Africa, Latin America and Caribbean markets as shown in Table 1.1 below:

Table 1.1: Entrepreneurial Employee Activity (EEA)

Africa, Latin America, and Caribbean markets	South African market
<p>The EEA rates are substantially high in innovation-driven economies in comparison with factor-driven and efficiency-driven economies (5.1% compared to 1.4% and 1.9% respectively). The lowest, almost negligible EEA rates are in the regions of Africa and Latin America and Caribbean, at 0.9% and 1.6% respectively. The highest EEA rates are reported in North America at 7.9%, followed by Europe at 4.4%, and Asia and Oceania at 3.1% (Global Entrepreneurship Monitor, 2017/2018)".</p>	<p>"According to the latest Global Entrepreneurship Monitor (GEM), published by the UCT Graduate School of Business (GSB), South Africa lags behind most of the 52 countries that participated in the Entrepreneurial Employee Activity (EEA) survey. Only 0.32% of South Africa's working adult population is involved in entrepreneurial activities within their organizations. This compares with Sweden, the highest ranked country, with 13.5%; the lowest was Bangladesh with 0.09%. South Africa is also the lowest among its participating BRICS counterparts, with China having an EEA rate of 1.73%, Brazil and Russia each with a rate of 0.84% and 0.44% respectively. (India did not participate in the survey.)".</p>

Source: Adapted from Global Entrepreneurship Monitor, 2017/2018, p.38

(Global Entrepreneur Monitor, 2017/2018)

Several new patterns suggest that innovation-driven economies have significantly higher rates of entrepreneurial activity compared to factor-driven and efficiency-driven economies (5.1% versus 1.4% and 1.9%, respectively). The data in table 1.1 show that the two regions of Africa and Latin

America and the Caribbean have the lowest EEA rates, which are almost insignificant at 0.9% and 1.6%, respectively. According to a recent GEM report (2021/2022), these EEA rates continue to be low in efficiency-driven economies compared to the factor-driven and innovation-driven economies (1.2% compared to 2.4% and 3.4% respectively). In the efficiency-driven economies, South Africa is lagging with reported EEA rates at 1.0%, while the highest EEA rates in the factor-driven and innovation-driven economies are reported in Slovenia at 5.9%, and Qatar at 7.9% respectively (GEM, 2021/2022). Although previous and recent reports show the negative aspects of EEA, the industrial research articles in South Africa have shown that intrapreneurship or EEA is in demand:

1. "We need to unlock the engine of intrapreneurship in SA's organizations"¹
2. "Intrapreneurs to lead innovation"²
3. "Intrapreneurs can be corporate South Africa's solution to unemployment"³

1.2.2. Corporate Entrepreneurship (CE)

The success of corporate entrepreneurship (CE) depends heavily on the internal environment. It serves as a foundation for cultivating an entrepreneurial mindset within an organization. With the growing number of innovations and technological advances, CE has gained a lot of attention both in academia and in business (Moraes, Spers, Mendes & Silva, 2021). Corporate entrepreneurship is a term that outlines a process whereby top management develops entrepreneurial activities to encourage employees to implement innovations that enable an existing organization to compete in the market and maximize business performance by using creativity and innovation to develop and transform the existing organization (Amo, 2010; Javalgi, Hall & Tamer-Cavusgil, 2014). Therefore, CE is now an essential business strategy for companies of all 'sizes and shapes', because it aims to bring an organization and its market together and promote the advancement of innovation and technology. According to Morici (2018), CE has the potential to be a game changer for the growth and financial success of established organizations by improving their ability to identify and capitalize on opportunities ahead of their competitors (Si, Ahlstrom, Wei, & Cullen, 2021). Amo (2010) asserts that CE starts from the top down, i.e. management levels give the initiative a purpose and a context and allocate staff, tasks and resources to the new group responsible for implementing the desired innovation. The level of leadership that promotes innovation within an organization is the main driver of CE. The next sign of strong leadership within an organization is when employees present creative ideas to management for consideration.

Universities have become a focal point for supporting the idea of CE by encouraging entrepreneurial behaviour among their staff. The purpose of promoting CE in universities, according

to scholars, is to improve the atmosphere on campus to support innovative and entrepreneurial practices while modernising university administration (Fischer, Moraes, and Schaeffer, 2019; Kuratko & Morris, 2018; Moraes, Fischer, Campos & Schaeffer, 2020). Creating an entrepreneurial atmosphere within the organization, orchestrated by top management, requires consideration of aspects such as time allocation, incentives, independence, and organizational boundaries. This is an essential prerequisite for fostering entrepreneurship within organizations (CE). (Chebbi, Yahiaoui, Sellami, Pappasolomou & Melanthiou, 2020; Kuratko, Hornsby & Covin, 2014). Therefore, educational institutions believe that it is crucial to adapt structures and approaches to foster a stronger sense of entrepreneurship among stakeholders and staff to support the development of an entrepreneurial culture within a university ecosystem (Babatunde El-Gohary & Edwards, 2021; Canever, Barral & Ribeiro 2017; Fischer et al., 2019; Moraes et al., 2020). According to Miller and Acs (2017), developing an entrepreneurial ecosystem is one of the cornerstones of university strategy. Universities have an advantage over corporations because they have a continuous influx of human resources that includes faculty and stakeholders who are able to drive updates and innovations at a pace that exceeds that of corporations (Etzkowitz, 2020). Recent research shows that many universities are undertaking initiatives to create ecosystems that support the entrepreneurial aspirations of their faculty and students. This initiative aims to foster a more innovative atmosphere within the organization (Galan-Muros & Davey, 2019; Moraes et al., 2021). Kalar and Antoncic (2015) believe that for a university to be entrepreneurial, it must foster an innovative culture and implement policies and practices that encourage entrepreneurship.

While there is extensive discourse on the impact of the business environment on fostering entrepreneurial behavior, articles that address the cultural influences and structural aspects of businesses that are geared toward entrepreneurial action (CE) remain scarce (Schindehutte, Morris & Kuratko, 2018; Schröder, Tiberius, Bouncken & Kraus 2021). Hughes and Mustafa (2017) assert that there is still little research on emerging markets, while Moraes et al. (2020) point out the lack of academic research that specifically examines the influence of the university FM environment on contextual factors that influence entrepreneurial performance in emerging markets. A developing topic and research gap in CE is employee entrepreneurial behaviour and how the business environment influences this activity (Kang, Matusik, Kim & Phillips, 2016; Kuratko & Morris, 2018; Schindehutte et al., 2018). By adapting the CEAI scale to the emerging economy, current research aims to bridge this gap. Nevertheless, it is crucial to understand that the achievement of entrepreneurial goals in CE initiatives depends on an appropriate internal environment. Therefore, this study examines the internal organizational factors that promote entrepreneurial stimulation. Knowing these factors will help researchers understand why certain university FMID departments are more successful than others in promoting entrepreneurial behaviour CE (Pirhadi & Feyzbakhsh, 2021).

1.2.3. Corporate Entrepreneurship and Entrepreneurial Employee Activity

Past research on CE conducted by Kolveried and Amo (2002) shows that for organizations to achieve long term success, EEA is required and EEA is enabled by CE. Although, EEA/intrapreneurship and CE are connected, both concepts are distinct in the following manner: The previous discussion has highlighted that although intrapreneurship focuses on the impact of individual features and attributes in understanding employee innovative behaviour, CE focuses on the impact of the strategy selected by the organization. Contrary to the intrapreneurship/EEA concept, that emphasises the ability of individual employees to generate innovative ideas within an organization using a bottom-up approach, CE is a top-down approach that is driven by the management level to encourage employees to implement innovation (Reuther, Schumann, Borodzicz & Johnston, 2017), See Figure 1.1 below.

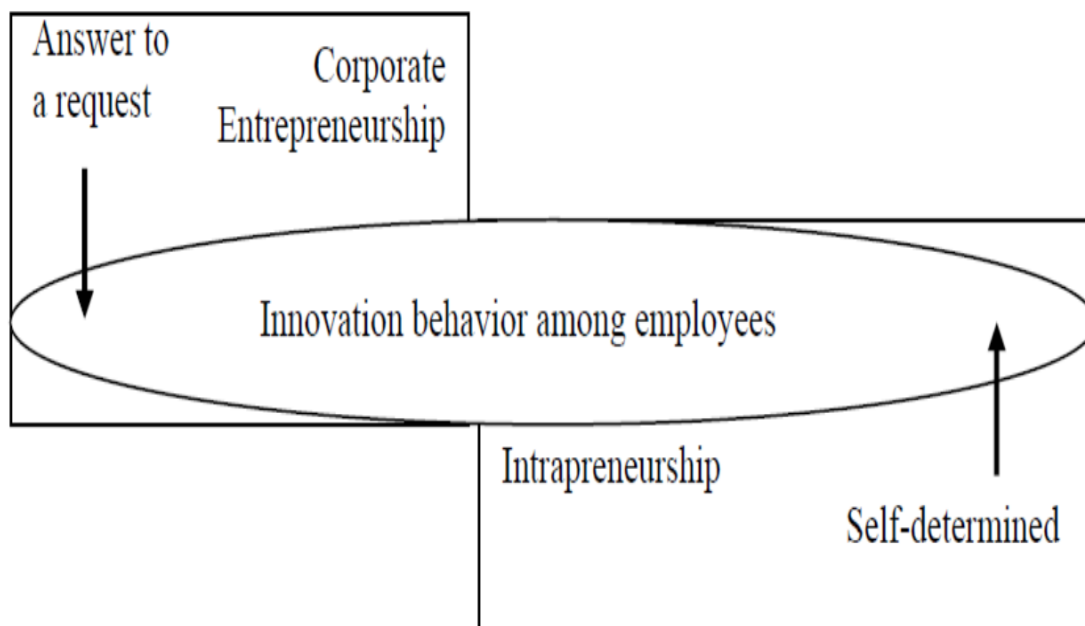


Figure 1.1: The relationship between corporate entrepreneurship and Intrapreneurship

Source: (Amo & Kolvereid, 2005)

1.2.4. The corporate entrepreneurship capabilities

According to Mamabolo and Ravjee (2019), for organizations to create a conducive work environment that stimulates employees' innovations or entrepreneurial behaviour, it must measure or diagnose its internal work climate by adopting five specific dimensions of CE namely: (1) top management support, (2) work discretion/autonomy, (3) rewards/reinforcement, (4) time availability, and (5) organizational boundaries. If a well-established organization is truly committed to creating an

internal atmosphere conducive to EEA and fostering the entrepreneurial ecosystem, it should prioritize the assessment of the five dimensions above associated with an innovative environment.

Table 1.2: Brief explanation of the five capabilities of corporate entrepreneurship

No	Capabilities	Brief Explanation
1.	Top management support	Encouragement and preparedness of managers to assist and facilitate intrapreneurship inside an organization (Adonisi, 2003).
2.	Work discretion/autonomy	The extent to which employees are given autonomy and control over their work (Gibbert, Leibold and Probst, 2002).
3.	Rewards/reinforcement	Rewards and reinforcement create an environment in which employees are inspired to take moderate risks and be proactive in innovative activities (Nel, 2009).
4.	Time availability	Allowing entrepreneurial personnel enough time and resources to nurture their innovative ideas. (Kuratko, Hornsby and Bishop, 2005).
5.	Organizational boundaries	Refers to how well an organizational structure supports the administrative processes used for idea evaluation, selection, and execution (Antoncic & Antoncic, 2011; Hornsby, Kuratko, Holt and Wales, 2013).

Source: (Adonisi, 2003; Antoncic & Antoncic, 2011, Gibbert et al., 2002; Hornsby et al., 2013; Kuratko et al., 2005; Nel, 2009).

1.2.5. Poor innovation adoption in Built Environment industry

Although the built environment sector is recognized as a key driver of the country's economic progress, it has a reputation for being slow to adopt innovative practices (Boadu et al., 2020; Klosova & Kozlovska, 2020; Ofori, 2015). Recent findings from the perspective of the South African construction industry indicate that adoption of innovative technologies is limited and knowledge of their benefits in the construction industry is low (van Wyk, Kajimo-Shakantu & Opawole, 2021). These findings suggest that innovative technologies in the South African construction industry are not yet optimized and thus have implications for change, adaptation, and growth. This situation indicates that the lack of adoption of innovation by both organizations and country negatively affects the performance and sustainability of the construction industry, particularly in the 21st century. The construction industry is very extensive and includes various sub-sectors such as architecture, civil engineering, facilities management (FM), construction management, project management, quantity surveying. The current study focuses on the construction sub-sector namely FM, paying particular attention to the university Facilities Management Infrastructure Development departments (FMID) in the Western Cape.

Atkin and Bildsten (2017) define FM involves the efficient management of existing structures, personnel, systems, and essential services to meet an organization's basic business objectives and requirements. This research is broadly consistent with the International Facilities Management Association (IFMA) definition:

FM is a multidisciplinary profession focused on ensuring the operational effectiveness, comfort, safety, sustainability, and efficiency of the built environment. This includes both the buildings in which we live and work and the surrounding infrastructure. FM achieves these goals through the seamless integration of people, locations, workflows, and technological advances (IFMA, 2022).

Buildings are in fact thought to be one of any university's most significant physical assets. There is no question that university buildings act as resources and facilitators of students' education and foster relationships by creating warm, welcoming, inviting spaces that help students engage with both one another and the staff (Muhammad, Sapri & Sipan, 2014). Consequently, its buildings (e.g., lecture halls, libraries, residence halls) help to facilitate the entire learning process in a university.

Furthermore, IFMA, the world's leading professional FM association, emphasises that the sole mission of FM is to ensure the maximum benefit of the built environment by amalgamating human and physical resources, processes and technology as an integrative practice (IFMA, 2022). FM encompasses operational and strategic aspects that must be integrated to align with an organization's fundamental business objectives and enable a flexible response to external changes by adapting internal operations. According to ISO 41011, FM is an organizational function that harmonizes people, locations, and work processes within the constructed environment to improve the well-being of people and the efficiency of the core business. Therefore, embracing innovation is a crucial aspect to keep pace with the advancement of the FM performance. Innovation comes from people (e.g., employees and tenants) and, according to these definitions, FM is regarded as a discipline that places a strong emphasis on interpersonal skills.

To be successful in the FM field, professionals need to build solid relationships with all the people they work with, including employees, clients and subordinates, in order to maximize stakeholder relationships (Mewomo & Ndlovu, 2022). Furthermore, FM has cemented its position as a major service industry characterized by a diverse and highly competitive market involving FM contractors, internal FM teams, FM suppliers, FM consultants, and recognized professional FM organizations (Atkins and Bildsten, 2017). In the face of growing competitiveness, innovation becomes the key to differentiating players in the market. When it comes to university buildings, innovation is a major factor. Eloff, O'Neil & Kanengoni (2022) assert that university students require a strong foundation and hands-on training in the most up-to-date technology available for them to compete in the global marketplace. Hence the latter authors believe that university buildings must reflect the newest developments in this fiercely competitive industry and that these facilities may be kept up to date by concentrating on how to do things better and consulting the stakeholders to find

out what the trends will be in the next few years. According to Muhammad et al. (2014), innovation adoption is greatly aided by flexibility, a concept that enables the outside and interior spaces to be adapted to emerging technologies that will revolutionize university facilities throughout the course of their long and useful lives.

Therefore, the importance of innovation from human resources and stakeholder relations in FM is crucial. This situation makes it a necessity for facility managers (FM) to build strong relationships with their employees and generate excitement about their work, increase their engagement and reduce the likelihood of them leaving their role (Risan, 2013). A facility manager who has excellent leadership skills promotes positive stakeholder engagement to create a pleasant atmosphere for the occupants and employees of the buildings they manage by listening to their concerns (Mewomo & Ndlovu, 2022). Employees of the FMID departments are in direct contact (through their operational daily work) with the concerns and complaints of the university occupants for example, students and employees of other departments, thus, FMID staff's ability to listen to, promote and embrace the ideas and innovation of others is imperative.

Regrettably, extant empirical studies show that many managers of building facilities usually do not seek feedback from building occupants regarding the environment conditions and safety and security issues, nor do they seek innovative ideas from the employees (Elmualim, Czwakiel, Valle, Ludlow, and Shah 2017). Arguably, this situation will have a negative impact on the management of the facilities' performance. As a result, buildings deteriorate quickly because there is no information available on building performance that designers can use to improve their designs.

In several studies conducted concerning the general challenges in the FM space, Elmualim et al. (2010) noted the lack of top managers' commitment, Sarpin, Yang, and Xia, (2016) noted the lack of organizational factors as a deficiency and barrier to sustainable development of FM practices, Odediran, Gbadegesin & Babalola (2015) noted that low levels of innovation, among other issues, is one of the significant challenges in FM practices. Related to the current study, the general low levels of innovation adoption in the construction industry and in FM sector in particular, point to the lack of the CE capabilities that are necessary to promote and embrace entrepreneurship from employees.

1.3. Problem statement of the study

Researchers believe that the adoption of innovation is strongly favoured by the flexibility of outdoor and interior spaces, allowing their managers and users to adapt to new technologies that will revolutionize university facilities over the course of their long service life. Nevertheless, in relation to the general challenges in the FM sector, as indicated above, the lack of commitment of top managers was highlighted, while the lack of organizational factors was identified as a deficiency and an obstacle to the sustainable development of FM practices. In addition, the low level of innovation is one of the main challenges in FM practices. This situation underscores the general problem in South Africa that there is a limited number of employees who are involved in entrepreneurial activities (e.g.,

intrapreneurs) within their organizations. It was observed in a different study that these organizations have not fully adopted the CE and do not make room for entrepreneurial activities, hence the employees with entrepreneurial mindset are not exploring it due to the lack of entrepreneurial culture that promotes CE (Kuratko, Hornsby, and McKelvie, 2023). For example, a recent study shows that building management leaders generally do not solicit feedback from the buildings' users in relation to their environmental condition and safety and security issues or solicit innovative ideas from their employees (Mewomo & Ndlovu, 2022).

Although some studies have been conducted on the problems of FM practice, there is a lack of research indicating that low adoption of entrepreneurship is a significant problem in FM practice, pointing to the symptoms of the lack of CE skills needed to promote and adopt innovations among employees. To the researcher's knowledge, no South African study has corroborated these claims and, therefore, it is difficult to make recommendations to improve these conditions, because the FM sector is not immune to this challenge. Limited research has been conducted on the corporate entrepreneurship capabilities in FM companies operating in South Africa. Further, Scholars recognize the need for organizations to assess their ability to implement CE in order to formulate an appropriate corporate strategy based on the principles of CE. Therefore, it is essential for this study to address the knowledge gap by conducting an in-depth entrepreneurial diagnostic by assessing the organizational culture around the CE capabilities that influence employee adoption and implementation of innovation, with a focus on university FMID departments. In the researcher's view, identifying the state of CE capabilities of FM employees in university FMID departments is a significant step forward towards developing policy recommendations that will provide remedies for overcoming the current problematic FM performance practices.

1.4. Research Aim

The purpose of this research is to assess culture of CE that promote entrepreneurial behaviour among the employees and to assess the existing intrapreneurial level of the university FMID departments by diagnosing their entrepreneurial culture using the five CE capabilities. In particular, the study will conduct an in-depth corporate diagnosis to identify a set of procedures, systems, cultures, etc., that inhibit and constrain the adoption of innovation from employees of the three university FMID departments.

1.5. Research Objectives

More specifically the study aimed to achieve the following specific research objectives:

- Assessing the CE culture in the FMID departments to promote entrepreneurial culture of the universities around CE.

- To determine the extent to which the top management of Western Cape universities' FMID departments support its employees' entrepreneurial behaviour.
- To assess the extent to which employees of the Western Cape universities' FMID departments are given the freedom to conduct their work with discretion and autonomy.
- To identify whether the employees of the Western Cape universities' FMID departments are supported through rewards and reinforcement systems to improve their innovative work behaviour.
- To evaluate whether the employees of the Western Cape universities' FMID departments are given ample time to develop and implement their innovative ideas and projects.
- To determine the extent to which the organizational boundaries of the Western Cape universities' FMID departments give employees the freedom to move around the various departments to acquire different skills that will enhance innovation.

1.6. Research Hypotheses

The research hypotheses to be tested in this study are:

H1: Top management of the Western Cape universities' FMID departments promote the culture of CE within their organizations by supporting their employee's entrepreneurial behaviour.

H2: Employees of the Western Cape universities' FMID departments are given the freedom to conduct their work with discretion and autonomy.

H3: Employees of the Western Cape universities' FMID departments are supported through rewards and reinforcement systems to improve their innovative work behaviour.

H4: Employees of the Western Cape universities' FMID departments are given ample time to develop and implement their innovative ideas and projects.

H5: The organizational boundaries of the Western Cape universities' FMID departments give employees the freedom to move around the various departments to acquire different skills that will enhance innovation.

To determine the above hypotheses, an assessment was conducted using the Corporate Entrepreneurship Assessment Instrument (CEAI). The CEAI is a comprehensive diagnosis instrument that is employed to identify a set of organizational systems, culture, availability of physical resources etc., inhibiting and constraining intrapreneurship capabilities in university FMID departments. The following five capabilities are the factors of the CEAI: (1) top management support, (2) work discretion/autonomy, (3) rewards/ reinforcement, (4) time availability, and (5) organizational

boundaries. Figure 1.2 below briefly explains the five above-mentioned capabilities of intrapreneurship factors.

1.7. Methodology

Illustration of the survey research process pertaining to this study is depicted in Figure 1.2 as follows:

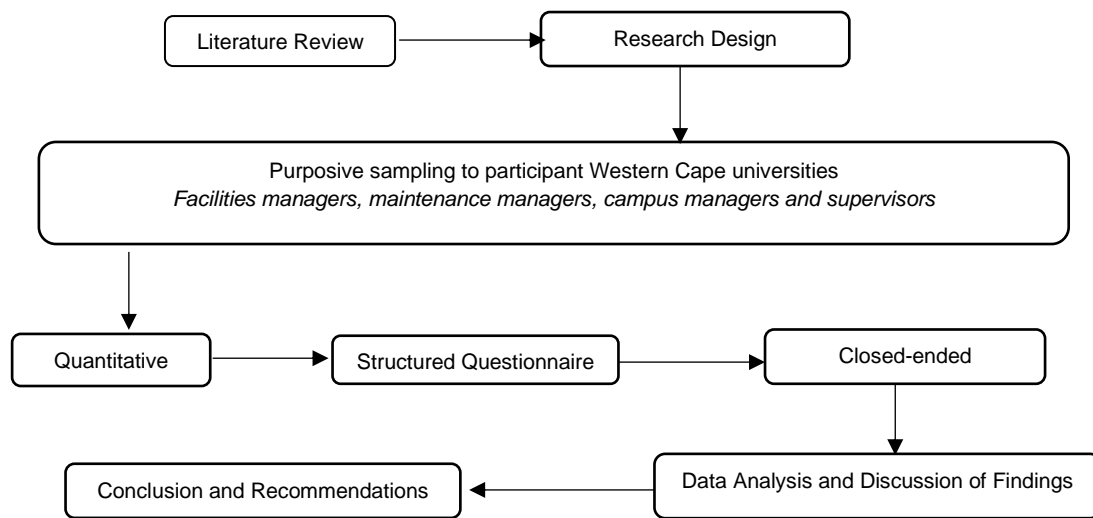


Figure 1.2: Framework of research study

- The study surveyed a representative group of stakeholders/participants from college FMID departments using random sampling. Based on the research methodology, self-administered surveys were created for the five capabilities CE
- The collected data were analysed with appropriate statistical tools, following a quantitative research approach.
- Hypotheses were tested and results were summarized to draw conclusions from the analysed data. In addition, recommendations for improvement and possible future research were formulated.

1.8. Scope and delimitations of the study

The research was conducted in FMID departments of universities in the Western Cape region of South Africa. The Western Cape is the southernmost area of the African continent, bordering the Northern Cape to the north and the Eastern Cape to the east. The province covers a total area of 129,462 square kilometres (approximately 49,986 square miles), which is approximately 10.6% of the country's total land mass (Rooms for Africa, 2002). The region includes a total of 6 districts, with

Cape Town being the capital and largest city. Notable cities in the region include Stellenbosch, Worcester, Paarl, and George.



Figure 1.3: Map of Western Cape, South Africa

Source: (RoomsForAfrica, 2022)

There are four universities in the Western Cape region namely Cape Peninsula University of Technology (CPUT), University of Cape Town (UCT), Stellenbosch University (SU) and University of the Western Cape (UWC). The researcher had limited time to conduct this study and, therefore, it was difficult to examine all South African universities. Therefore, this research focused on three universities in the Western Cape province that will be the basis for this study. This study falls within the scope of the construction industry, a global industry that, as previously stated, encompasses a wide range of construction activities, including design and planning, construction, and maintenance of a building throughout its life cycle. As such, the industry consists of various sectors. Therefore, this study focused on the FM sector within the construction industry, specifically the university FMID departments.

University FMID departments cover a wide range of areas and services aimed at ensuring the operational effectiveness, comfort, safety, and efficiency of the built environment, including buildings, grounds, infrastructure, and real estate. This study examined the current entrepreneurial environment of three university FMID departments in the Western Cape region as well as conducting an in-depth business diagnostic assessment using CEAI to identify a set of practices, systems, cultures, etc. that hinder and constrain middle and operational managers and other potential intrapreneurs trapped in

these organizations. Another section identifies practices that are considered effective in maintaining buildings by universities' FMID departments.

1.9. Limitations

This study deals with middle managers, operational managers and employees of three Western Cape university FMID departments and cannot be generalized to other industries or educational institutions. In addition, this study does not address the perceptions of CE by the top management of the three universities' FMID departments investigated.

- This study is a cross-sectional study. It took approximately 3 years to complete.
- The focus of the study was based on the five CE capabilities.
- The unit of analysis is university FMID departments, focusing on the stakeholders and users of the universities.
- The study was conducted in the Western Cape, South Africa.

In the course of developing the research structures and data collection, the researcher encountered several limitations. These limitations included:

- a) The researcher had only one method of data collection. It would be beneficial if qualitative methods could be considered as a supplement to introduce triangulation of methods and explore the generalizability of the study through follow-up interviews.
- b) The inability to reach key individuals and obtain permission from organizations proved to be a challenge when trying to collect information from university institutions.
- c) As the selected universities were all located in the Western Cape province of South Africa, the researcher did not collect data from institutions outside the borders of the Western Cape.
- d) According to Kuratko et al. (2014), operational staff are not intended for CEAI as their degree of flexibility is usually limited. Instead, positions in technical, management and technology areas should complete the measurement instrument. It was challenging to target all employees in such a category without also focusing on occupations relevant to the researcher's field as well as those in the informal network.

1.10. Research Gap

Although CE can be applied everywhere, each industry must be examined individually to develop an appropriate business strategy, because the CE concept model cannot be applied to all industries. Built environment is one of the industries to which CE is applicable without exception. However, the general trend in CE research has been dominated by studies of manufacturing firms and has focused on developed economies such as the U.S., while only modest attention has been given to

organizations in the built environment, particularly in developing countries, and FMID departments in South African universities are no exception. Little research has been conducted on the CE capabilities of university FMID departments in South Africa. The purpose of this research is to assess culture of CE that promote entrepreneurial behaviour among the employees and to assess the existing intrapreneurial level of the university FMID departments by diagnosing their entrepreneurial culture using the five CE capabilities.

1.11. Significance of the study

Buildings play a crucial role in a university since they house educational facilities and serve as locations for stakeholders to conduct research as well as teaching and learning activities. By using the results of this study, the researcher hopes to examine the current intrapreneurial climate in the three universities' FMID departments. The researcher believes that the findings of this study will assist university FMID departments and maintenance teams to improve their strategies for maintaining their facilities which will in turn provide a suitable academic environment to the users. This study examined the need for CE in the three universities' FMID departments by conducting a comprehensive enterprise diagnostic assessment to uncover a set of procedures, systems, cultures, etc. that hinder and constrain potential intrapreneurs caught in university FMID departments. In essence, this study is a response to the discovery by Hough and Scheepers (2011) that little research has been conducted on the CE capabilities of organizations in South Africa. Furthermore, this study responds to Setiawan and Erdogan's (2018) call for organizations to assess their ability to adopt CE in order to formulate the best business strategy based on CE. As mentioned above, it is anticipated that the findings of this research will assist top and middle managers of university FMID departments to develop a successful CE strategy that fits their organizations' core business and raises their awareness of the need to cultivate and nurture an entrepreneurial environment to enhance organizational performance through innovation.

1.12. Assumptions

- It was expected that the universities selected to participate would cooperate and provide the access to their facilities and staff necessary for this research.
- It was assumed that the research sample would provide pertinent and reliable information to answer the research questions and thus meet the objectives of the study.
- It was expected that participants would show honesty and provide accurate information in their responses to the questionnaires.

1.13. Ethical Considerations

The ethical considerations of this research are in line with those of the Cape Peninsula University of Technology (CPUT) to ensure the following:

- The names of the participating universities and respondents will remain confidential and respected to avoid harm and reputational damage.
- Participants' involvement in the research is voluntary, no study participant will receive remuneration of any kind. The following components will be subject to quality assurance:
 - ❖ Accuracy of calculations,
 - ❖ Completeness and correctness of submitted questionnaires and
 - ❖ Quality and integrity of data collection.

Potential participants be fully informed of the purpose, methods and intended possible uses of the research.

1.14. Outline of remaining chapters

1.14.1. Chapter 1: The Problem and its Setting

This chapter provides the reader with the background of the study, particularly it outlines the origins of CE and its characteristics. The researcher further provides the reader the status of industry on how CE has emerged in the efficiency-driven, factor-driven and innovation-driven economies.

1.14.2. Chapter 2: Literature Review

This chapter presents a review of the existing literature on CE and its capabilities as a basis for making a proven contribution in its implementation by other sectors, including the construction industry. CE is defined in detail and a brief background on CE published literature is discussed. The benefits and few challenges of CE are highlighted.

1.14.3. Chapter 3: Research Methodology

This chapter defines the research methodology and design employed in this research study. A description of the philosophies associated with the chosen research approach is provided. The research methodology, research strategies, questionnaire design, data population sources, sampling method and data collection methods employed are disclosed.

1.14.4. Chapter 4: Data Collection, Findings, and Analysis

This chapter provides a critical analysis of the chosen research methodology. It includes a description of the participants as well as the data analysis practice. The questionnaire survey is

evaluated and the sampling method, data collection technique and reliability of the research instrument are explained.

1.14.5. Chapter 5: Discussion of Findings

A discussion related to the research findings is also in this chapter, the new findings are reconciled and critically discussed in relation to relevant aspects of the reviewed existing literature, methodology and analysis to answer the research question and highlight any additional contribution this study makes.

1.14.6. Conclusions and Recommendations

This chapter discusses the conclusions drawn from the results of the study and provides recommendations for future research.

1.15. Chapter Summary

This chapter set the stage for the entire research project. The initial literature review focused on the historical context of CE recognition, intrapreneurship, and innovation in various industries, with particular emphasis on construction and FM practices. Subsequently, a problem statement was formulated that referred to the low level of innovation leading to significant problems in FM practice. The objective of the study was to assess the existing intrapreneurial level of the three selected university FMID departments by diagnosing their intrapreneurial culture using the Corporate Entrepreneurship Assessment Instrument (CEAI). Specifically, the study conducted an in-depth entrepreneurial diagnosis to identify a set of procedures, systems, cultures, etc. that inhibit and constrain the adoption of innovation from employees of the three university FMID departments. Research data collection was conducted in compliance with globally accepted ethical standards. The research overview provided a synopsis of the structure of each chapter of the study.

2. CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

This chapter reviewed the extant literature on CE and intrapreneurship, focusing on the existence of CE activities and innovations in the construction industry. It provides the reader with an introduction to the FM industry and highlights developments in CE research over the past 30 years. It also defines CE, focusing on the potential benefits, limitations and use of CEAI as a CE measurement tool. However, since terms such as intrapreneurship, intrapreneur and entrepreneurial orientation are used interchangeably, it is important to define each of them. The dynamics of the five CE capabilities will be explored and how other sectors are using them to help their firms innovate were discussed. CE will also be assessed at different management levels. Since the FM sector falls within the construction industry, the researcher assessed the literature reviewed on the current entrepreneurial climate in the Built Environment and identify any research gaps. CE will receive special attention, particularly in the Built Environment.

2.2. Theoretical Framework

A theoretical theme that has dominated the field for many years is that the successful implementation of CE in the construction industry provides an opportunity to attract new projects, spur market growth, meet customer satisfaction, increase profits, enhance productivity and improve cost efficiency (Setiawan et al., 2012). Furthermore, it has been projected that a CE process will promote innovation or renewal of services or products within an existing organization and can be successfully implemented by following the CE capabilities, that consist of the following five elements used to measure this process (Scheepers et al., 2008).

- Management support should be visible to encourage all employees to innovate.
- Employees should have a workspace in which they believe they have the freedom to decide, execute and carry out their work,
- The organization must establish reward and reinforcement systems that recognise entrepreneurial activities and achievements,
- Organizations that want to promote entrepreneurial strategies need to allocate an appropriate workload to employees and, finally,
- Organizational boundaries also affect relationships within departments of the organization.

Scheepers et al. (2008) have laid the foundations via CE. The following sketch relates to the construction industry, specifically how the perceptions of senior, middle and operational managers determine the state of the university's internal environment. Setiawan et al. (2012) argue that university FMID departments need a corporate strategy to sustain their business and be successful

in the long term. As the nature of building construction is project-based, FM ensures the functionality, comfort, safety, sustainability and efficiency of the built environment and as such, FM strategies need to combine the management of the business and the management of existing buildings to achieve a sustainable competitive advantage. CE serves as the required corporate strategy. This term is much more suitable for the analysis of CE in the university FMID departments. Therefore, this study is analysed based on the CE theoretical framework (Hornsby et al., 2002; Setiawan et al., 2012).

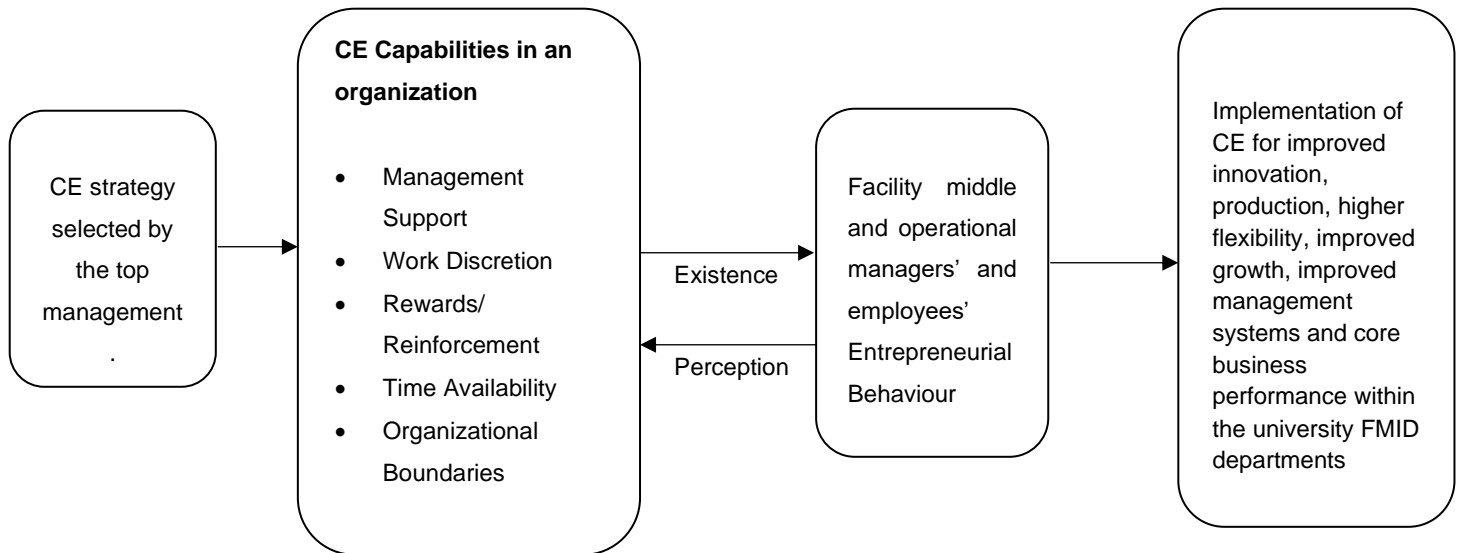


Figure 2.1 Middle and operational managers and employees' perception of the internal environment conducive to CE.

Source: Adapted from Hornsby et al. (2002)

2.3. Prevalence of FM practice

In emerging countries such as South Africa, facilities management (FM) departments have been established in some academic institutions, government organizations and private companies. Most organizations, however, still do not recognise FM as a separate unit because it is still 'buried under' other departments and because problems with FM are often reported through various channels, including infrastructure development, maintenance departments, property management, administrative systems, human resources and administration, finance or general services. Most services do not report fully to the FM department, but some government institutions have recently begun to isolate FM as a stand-alone practice, while public colleges in South Africa are still developing in this area. Similar to Nigerian public universities, the services of FM are provided by various units and departments, including the Departments of Construction and Maintenance, Project Planning and Development, Properties, Protection Services and General Services (Oladokun & Ajayi,

2018). This practice means that the structure of an organization determines the units that perform FM functions. Furthermore, FM is perceived as an internal and opaque sector in South Africa, especially in the corporate sector, that includes the education sector (Property Wheel, 2015).

According to Frost and Sullivan (2012), FM began in the United States in the 1970s, the United Kingdom in the 1980s, and South Africa in the late 1990s. However, this discipline has expanded significantly in South Africa with more than 50 FM service lines. In addition, South Africa pioneered the publication of the world's first draft of the FM standard, that sought to break new ground in best-practice FM (Olivier, 2017, 2017). The latter authors also note that the pioneering work of SA encouraged the International Organization for Standardization's (ISO) committee of 32 countries to create a FM standard that would enable successful FM in organizations. A recent study on the value of managed businesses in South Africa showed that the business of FM grew by about 40 billion rand between 2012 and 2017 (Global Entrepreneurship Monitor, 2017) and this growth is expected to contribute significantly to the national economy and NDP.

2.4. FM within the University's FMID Departments

As mentioned above, universities provide the infrastructure to carry out many tasks, including teaching/learning, research and volunteering. They are the organizations that play a crucial role in driving technological growth and societal developments. Universities play a key role in how well a country can connect to the new global knowledge system, and this practice is possible in areas in which FM is effectively and operationally practised (Odediran et al, 2015).

Atkin and Bildsten (2017) define FM as the process of effectively managing existing buildings, people, systems and support services required to meet the organization's core business goals and requirements. This research best aligns with the International Facilities Management Association (IFMA, 2022) previously quoted definition:

FM is a multidisciplinary field concerned with ensuring the operational efficiency, comfort, safety, sustainability and effectiveness of the built environment, encompassing the buildings in which we live and work and the surrounding infrastructure. This is achieved by harmonizing people, locations, workflows and technological advances.

Indeed, buildings are considered the largest and one of the most important physical assets of any university. There is no question that, as mentioned above, university buildings act as resources and facilitators of students' education and foster relationships by creating warm, welcoming, inviting spaces that help students engage with one another and with the staff (Muhammad et al., 2014). Consequently, its buildings (e.g., lecture halls, libraries and residences) facilitate the entire learning process in a university. Oladokun and Ajayi (2018), thus, conclude that FM is crucial for the long-term sustainability of the extensive infrastructure found in the university setting.

Furthermore, IFMA, the world's leading professional FM association, (as mentioned above) emphasises that the sole mission of FM is to ensure the maximum benefit of the built environment

by integrating human resources, physical resources, processes and technology as a consolidative practice (IFMA, 2022). FM encompasses both operational and strategic aspects that must be integrated to harmonize with an organization's primary business objectives and enable flexible internal adjustments to respond effectively to evolving external influences. ISO 41011 defines FM as an organizational function that unifies people, locations, and work processes within the built environment to improve the quality of people's lives while enhancing core business productivity. In terms of academic/university facilities, FM refers to the application of scientific methods in the overall management of the physical environment to achieve educational goals and objectives (Asiabaka, 2008). Broadly speaking, FM at universities refers to creating an environment conducive to successful teaching/learning and research, that comprise the primary goal of the institution (Kim & Kim, 2020).

According to Shafie, Yusoff & Pawi (2012), the main objectives of any university should be to coordinate the needs of national development, educate students through the provision of sound information and track their academic progress. Academic activities require more facilities than non-academic practices. These amenities include offices, classrooms, lecture halls, laboratories, audio-visual facilities, student residences, recreational facilities, sports centres and art theatres and the regular provision of electricity, water, ventilation and air-conditioning in administrative offices, educational facilities and restrooms, to enable academic staff to perform these important functions effectively. It is obvious that institutions must have extensive infrastructure to support academic staff. The ability of an organization to function effectively depends on its facilities. However, simply owning the required facilities is not enough. It is much more important to maximize their use through effective management. This strategy is essential because processes, technology and people are interdependent and, thus, all need to be managed effectively to achieve business objectives.

As stated previously to succeed in the FM field, professionals need to build solid relationships with all the people they work with, including employees, students and subordinates, in order to maximize stakeholder relationships (Mewomo & Ndlovu, 2022). Therefore, fostering innovation is a critical aspect of keep pace with the advancement of FM performance. Innovation emanates from people (e.g., employees) and according to the above definitions, FM is considered a discipline that places a strong emphasis on interpersonal skills. As competition intensifies, innovation becomes a critical factor in differentiating market players. FM has solidified its position as a major service sector with a diverse and highly competitive market involving FM contractors, internal teams, and suppliers. In the university building sector, innovation is an important factor (Atkins & Bildsten 2017). Eloff et al. (2022) assert that university students need a solid foundation and 'hands-on' training in the most advanced technologies available to compete in the global marketplace. The latter authors, therefore, believe that university buildings need to reflect the latest developments in this highly competitive industry and that facilities can be kept up to date by focusing on how to perform more efficiently and consulting stakeholders to discover future trends. According to Muhammad et al. (2014), flexibility

encourages innovation by allowing outdoor and indoor spaces to adapt to emerging technologies that will revolutionise university facilities over the course of their life span.

Therefore, the importance of human resource innovation and stakeholder relations remains critical in FM. As mentioned above, this requirement makes it essential for facility managers to build strong relationships with their employees in order to motivate them, thereby increasing their engagement and reducing the chances of their leaving the institution (Loosemore, Osborne, and Higgon, 2021). It has already been inferred that a facility manager with excellent leadership skills promotes positive stakeholder engagement by listening to the concerns of the buildings' occupants and employees (Mewomo & Ndlovu, 2022). As FMID staff are in direct contact (through daily operational work) with the concerns and complaints of university users (e.g., students and staff), it is essential to listen to, encourage and address their ideas and innovations.

2.4.1. Factors Challenging Effective FM Practice within the University FMID Departments

The built environment of university campuses is under the control of the FMID departments in higher education institutions, giving them the greatest opportunity to contribute to lowering the potential negative environmental effect of built environments (Elmualim et al., 2017). Although universities play an important role, most South African universities face a significant crisis due to the neglect of building maintenance, as shown in the studies by Al-Youbi, Zahed, Nahas, and Hegazy (2021) and Palis and Misnan (2018). The findings of Simpeh's (2013) study further support these concerns which revealed that South African tertiary institutions' lecture theatres appeared to be underperforming, thus, affecting the students' learning experience.

In a South African study, Mewomo and Ndlovu (2022) investigated a range of factors that influence the effectiveness of FM. Although the study did not focus on educational institutions, it did reveal that administrators of building facilities typically do not ask building occupants for feedback on the environmental conditions and safety and security issues or for their creative ideas. According to Shafie et al. (2012), in a typical university setting, students, staff, visitors and members of the general public can all be regarded as FM stakeholders. Yet, it has been determined that students and staff who are the most frequent consumers of university facilities (Karna and Julin, 2015) are not requested to provide feedback about the improvement of the facilities. Given that they are the people who visit the campus frequently and use the facilities, this assertion may be accurate. So, while evaluating the quality of FM services in the university setting, the perspectives of various groups of building users are crucial and failure to obtain these views can potentially have a detrimental effect on how well the facilities are maintained and, thereby, provide user satisfaction. Moreover, the data provided by users on building performance may assist facility managers to enhance building performance while avoiding deterioration of the building structures (Elmualim et al., 2017).

Lind and Muyingo (2012) argued the absence of defined policy regulations for both infrastructure development and building maintenance is an urgent issue in FM. This gap has been identified in South African universities (Simpeh, 2013) as well as Nigerian public universities (Odediran et al., 2015), as a lack of knowledge about facility management planning is widespread among education administrators and managers who frequently use educational facilities. Mewomo and Ndlovu (2022) further assert that little attention is paid to maintaining newly built structures after they are handed over to the relevant authorities. Thus, most facilities lack a successful maintenance plan (Akinsola, Hussaini, and Oyenuga, 2012). The most urgent concern, according to Mohamed and Hassanain (2010), is how building occupants or maintenance personnel handle the building once the construction process is complete. Facilities that operate poorly in a building run the risk of endangering the health, safety and comfort of its residents (Lai & Yik, 2011).

Additionally, a number of elements, such as the accessibility of facilities, their condition, and efficient management, are essential for achieving educational success (Fadahunsi, Utom, Ochim, Ayedun, and Oloke, 2019). However, Elmualim et al. (2017), contend that there are developmental concerns, such as a lack of commitment from top administrators, inside the university FMID departments while Sarpin et al. (2016) noted that an obstacle to the sustained development of FM practices is the absence of organizational factors.

Odediran et al. (2015) noted that low levels of innovation, among other issues, are prevailing factors influencing significant challenges in FM practices at universities. Related to the current study, the general low levels of innovation adoption in the construction industry and in the FM sector in particular, points to the symptoms of the lack of CE capabilities that are necessary to promote and embrace innovation from employees. The South African Facilities Management Association (SAFMA) emphasises the importance for effective FM practices to nurture innovation in order to improve areas such as services, performance, technology and the environment (Olivier, 2017).

Therefore, effective FM is essential to the competitiveness and success of the majority of firms, as well as providing a means of achieving strategic corporate goals. These risks would become barriers to the FMID department's performance and its contribution to the accomplishment of the university's strategic goals if they are not successfully controlled or minimized.

2.5. The Evolution of CE Research in the last 30 Years (1991 – 2021)

In order to cover research published on CE and in related fields, the researcher searched Scopus extensively for the keywords "corporate entrepreneurship" in titles and abstracts to fully analyse the years from the 1990s onwards (the timeline excludes research published in 2022). Although the introduction of CE began in the 1970s with the purposefulness of start-ups and entrepreneurial growth within existing firms (Hanan, 1976; Hill & Hellriegel, 1972; Peterson & Berger, 1972), Figure 2.1 below shows a distribution of 1 058 publications in CE and related fields from the

early 1990s. Recognition of CE remained low in the 1980s, with fewer than 5 articles per year articulating the value of entrepreneurial behaviour through maximising organizational resources; yet CE began to emerge as a research topic in its own right at this time (Burgelman; 1984; Miller, 1983; Pinchot, 1985).

However, the following timeline focuses on the early 1990s, when scholarly interest in CE focused on enabling organizations to build innovation-enhancing capabilities. Researchers discovered a link between CE and a company's competitive advantage in the marketplace, that triggered a wave of CE research in the 2000s (Hornsby et al. 2009; Kuratko et al. 2001). The number of published research articles featuring the word "corporate entrepreneurship" increased by 6.7%, 24.1% and 69.2% respectively over the past three decades, according to the Chronology. Moreover, 76 of the 701 articles with the phrase "CE" in the abstract were published in 2021, while 49 of the 542 articles with the phrase "CE" in the title were published in the same year. Overall, 86.8% of these relevant research papers were published in the last 16 years. This phenomenal increase in CE research shows that, despite its delayed start, the CE strategy is gradually gaining traction in the corporate sector (Kuratko, et al, 2015).

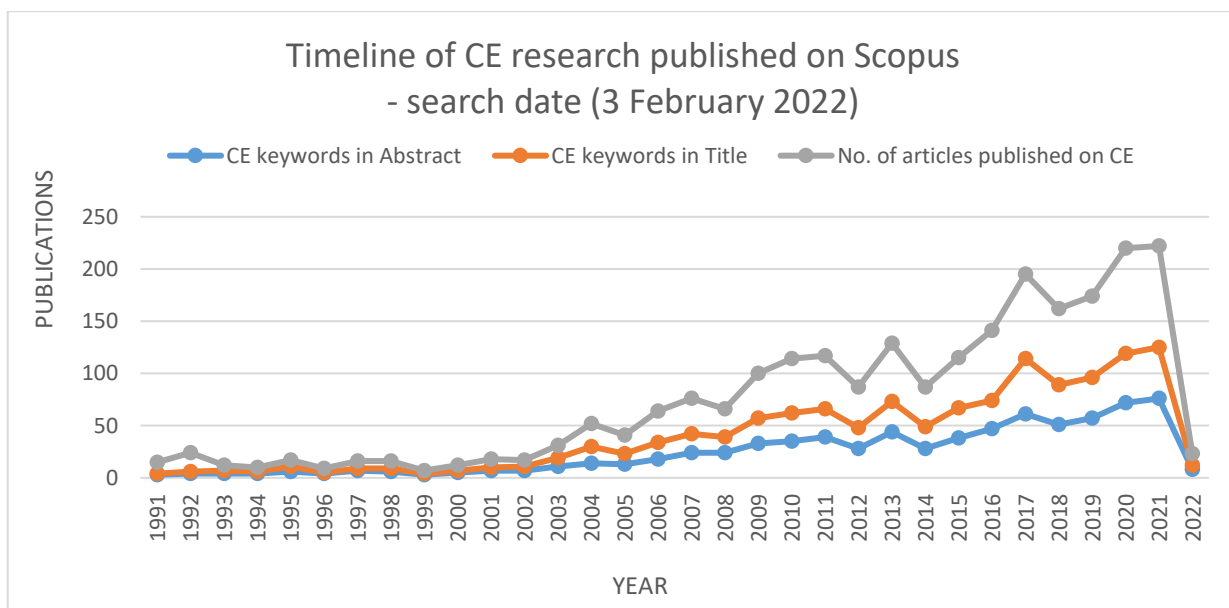


Figure 2.2: Timeline of research publications obtained on “Scopus” containing the phrase “corporate entrepreneurship” in both the abstract and title.

2.6. Defining Corporate Entrepreneurship and Intrapreneurship

Researchers have noted an apparent difficulty in defining CE as a consensus concept. This problem stems from the fact that definitions of CE are as many as there are researchers. While several overlapping definitions of CE have emerged over time, this research study focused on definitions from the 2000s, and examined the origin of several of these terms. Researchers sometimes refer to CE as intrapreneurship (Burgers & Covin, 2016; Dess & Lumpkin, 2005) because

both involve entrepreneurial actions to expand and rejuvenate mature organizations, such as innovation, venturing and strategic renewal (Ling et al., 2008; Sinha & Srivastava, 2015).

2.6.1. Corporate Entrepreneurship

CE is defined as a thorough process whereby the management level develops entrepreneurial activities to encourage employees to implement innovation that enables an existing organization to compete in the market and also maximise the organization's business performance by implementing creativity and innovation to develop and transform the existing organization (Amo, 2010; Javalgi et al. 2014; Sharma & Chrisman, 1999).

These entrepreneurial activities require creativity, foresight, initiative, proactivity and risk-taking (Schmelter et al. 2010). Creating novel ideas, enhancing current products, and creating new production processes are all examples of innovation. It focuses on actions or concepts that might point to shifting trends in the past (Javalgi et al., 2014). According to Kuratko and Audretsch (2013) and Ramos-González, Rubio-Andrés & Sastre-Castillo (2017), new business venturing is the process of starting a new company by changing the goods and services offered by an existing company or by opening up a brand-new market.

Javalgi et al. (2014) further add that CE strategies are used by established mid-sized and large organizations to enhance their development and growth. Morici (2018) asserts that CE strategy can be used as an overarching framework for deciding how to integrate new products, services and processes into existing businesses. Hosseini, Dadfar & Brege. (2018) highlight the fact that it is imperative that the established organization conduct an ultimate assessment of its CE strategy as an exploration of the fundamental entrepreneurial activities of innovation, corporate venturing and strategic renewal inside their organizations.

CE contributes to increasing organizational efficiency and strengthens its competitive position (Zur & Walega, 2015). The effectiveness of CE depends on its use as a tactic for dedicated engagement in ongoing entrepreneurial initiatives that lead to competitive advantage (Kuratko, Morris & Covin, 2021). Several factors lead to the initiation of CE strategic approaches by organizations. For instance, to increase innovative capacity (Chen, Tang, Jin, Xie, and Li, 2014; Wang, Nevo, Benitez-Amado, and Kou, 2015; Goodale, Kuratko, Hornsby, and Covin, 2011) to increase the firm's knowledge-based capital (Simsek & Heavey, 2011), or to take advantage of additional entrepreneurial opportunities (Elenurm, 2012). A number of internal and external elements are crucial to launch CE operations (Kuratko, Hornsby and Covin, 2014). The engagement of the employees involved, the particular organizational environment, organizational readiness (Hornsby et al., 2013), organizational culture (Nasution, Mavondo, Matanda and Ndubisi, 2011), and the backing of top management are all factors that impact the effectiveness of CE implementation (Goodale et al., 2011; Ren & Guo, 2011). Additionally, CE is a dynamic process that managers may use to effectively

encourage effective employee behaviour through more potent incentive mechanisms (Kuratko, Morris & Covin, 2021).

2.6.2. Intrapreneurship

Intrapreneurship on the other hand, describes the extent to which proactive individual employees 'jump in with both feet' when opportunities arise, leading to the creation of new ventures within existing organizations (Pinchot, 1985). Intrapreneurship, commonly referred to as entrepreneurial employee activity (EEA), is possessed by employees who think beyond the norm (i.e., their job description) and utilize creative ideas to introduce innovative products and services and, to some extent, establish and run small subsidiary businesses inside existing organizations (GEM, 2017; Kolveried & Amo, 2002). Intrapreneurship is essential for business performance and renewal through the successful introduction of a new product, service or the creation of a new business (Dikaiakos et al., 2017).

Given that it is a specific subset of entrepreneurship, intrapreneurship shares several essential behavioural traits with this broad idea, including taking the initiative, generating ideas, looking for opportunities, forging partnerships inside the organization, persuading top management, securing the required resources, coordinating and planning activities, or developing a new product or integrating existing resources. Showing initiative, actively seeking information, thinking creatively, expressing ideas, supporting those ideas, accepting responsibility, solving difficulties, and, to some extent, being willing to take risks are among the crucial behavioral traits of intrapreneurship (Crant, 2000; Parker & Collins, 2010). In summary, intrapreneurship is entrepreneurship practised within existing organizations (Douglas & Fitzsimmons, 2013).

2.6.3. Distinction between Intrapreneurship and CE

Although in the above sections, the researchers mentioned addressed the definition of CE and intrapreneurship from the perspective of innovative behaviour, that is at the core of these two concepts, some of them have failed to describe the origins of initiating innovation, hence Amo (2010) believes that the concepts of intrapreneurship and CE are distinct, despite their superficial similarities. More specifically, the intrapreneurship concept focuses on the ability of an individual entrepreneurial-employee to create entrepreneurial activities within an existing organization, thereby using a bottom-up approach, while CE is a top-down approach that is driven at management level to encourage employees to implement innovation (Borodzicz & Johnston, 2017). However, the fine dividing line between these two concepts can make it difficult for researchers to agree on a single definition, because both deal with the renewal of the organizational context through employee innovation activities, even though the origin of the innovative idea can come from the top level (management) for CE or from the bottom level (individual employees) for intrapreneurship (Reuther, Schumann,

Borodzicz, and Johnston, 2017). Although these terms appear different, they are closely related because they both focus on innovation within an organization (Borodzicz & Johnston, 2017). Consequently, it is crucial to make a distinction between these two entrepreneurship concepts by categorizing the position and level of employment of a person who proactively initiates innovative behaviour. It is essential for the reader to understand these two concepts, because they are used synonymously in this study.

In addition to these two aspects of entrepreneurship mentioned above, the use of terms such as intrapreneur or entrepreneurial employee is useful for this study. Various researchers agree that the term intrapreneur or entrepreneurial employee refers to individuals who, while employed by an organization, engage in behaviours similar to those of an entrepreneur, such as developing innovative ideas and following through on these ideas in order to create a profitable finished product through assertive risk-taking (Kollmann, Stöckmann, Kensbock and, 2017; Selig, Stettina, and Baltes, 2016; Smith, Rees & Murray, 2016). Intrapreneurs, according to the aforementioned researchers, are a critical force in moving organizations forward in the ever-changing business world because their entrepreneurial behaviour overcomes barriers and quickly identifies and exploits opportunities, allowing organizations to achieve long-term success by implementing these innovative ideas in established organizations.

In this study, the terms "intrapreneur" and "entrepreneurial employee" are used synonymously.

2.6.4. Current Domains of Corporate Entrepreneurship

There are currently several components that can be used to build a comprehensive theoretical understanding of the CE domains. CE can take the form of either corporate venturing or strategic renewal in organizations (Kuratko & Audretsch, 2013; Morris, Kuratko & Covin, 2011). Existing organizations that implement the CE strategic approaches acquire knowledge to develop future revenue streams through corporate venturing (Gard, Katzy, Andersen, Baltes, and Gasser, 2018) and strategic renewal within organizations (Kuratko & Hoskinson, 2019).

Corporate Venturing

One of the two dimensions of CE is corporate venturing (CV), that is the process by which organizations launch a new business in addition to their existing organization through internal, external or cooperative corporate venturing (Kuratko & Audretsch, 2013). 'Internal CV' refers to new organizations developed under the umbrella of the existing organization. 'External CV' is the term used to describe new start-up organizations that are developed by parties outside the corporation and then invested in or bought by the corporation, and 'Cooperative CV' refers to the collaboration of

two or more organizations operating outside their structures in the formation of a joint venture (Gard et al., 2018).

Strategic Renewal

In contrast, strategic renewal, the second aspect of CE, refers to a wide range of major entrepreneurial activities or innovations that are embraced in the firm's quest for competitive advantage. They typically do not lead to new ventures for the company. With SR, innovation can be found by implementing a process of re-evaluating existing systems and processes, to maximise the exploitation of entrepreneurial opportunities, to gain a higher competitive advantage through major strategic or structural changes within existing organizations (Selig, Gasser & Baltes, 2019).

In order to assess and measure CE, researchers suggest incorporating these two distinct phenomena as two dimensions of CE (Kuratko & Hoskinson, 2019). Essentially, the total domain of CE is formed by the combination of corporate venturing and SR. On the foundation of these components, a CE strategy can be created (Rodrguez, 2021).

2.7. Understanding a Corporate Entrepreneurship Strategy

Regarding CE, strategy includes two essential components. According to Morris et al. (2011), An organization engages in entrepreneurial action if it bases its orientation toward forging and exploiting competitive advantage. This strategy puts a focus on entrepreneurship in how management determines the overall course of the business and responds to shifting external circumstances (Kuratko et al, 2015). Additionally, an organization engages in entrepreneurial action if it bases its orientation toward forging and exploiting competitive advantage. This strategy puts a focus on entrepreneurship in how management determines the overall course of the business and responds to shifting external circumstances. The direction of entrepreneurship and how it can be fostered within the organization are now being decided by management (Kuratko, Hornsby & Covin, 2014). These two approaches, when compared, deal with problems that the organization faces both internally and externally. However, incorporating entrepreneurial thinking into the organization's core strategy focuses primarily on external aspects, such as identifying untapped market needs and developing effective long-term innovation approaches (Kuratko & Morris, 2018). Entrepreneurial strategy formulation, on the other hand, is specifically concerned with internal aspects, including the creation of an innovation-friendly environment within the company that enables employees to learn and adopt innovative practices (Kuratko & Morris, 2018). It is evident that a CE strategy must include both of these components (Morris et al., 2011).

For CE to be successful, employees inside the organization need to be encouraged and enabled to think and behave entrepreneurially. The entrepreneurial activity associated with CE will not emerge or be used consistently throughout the organization without awareness, encouragement,

and nurturing (Morris, et al., 2011). Additionally, study of options is made possible by employees being aware of the behaviour that CE requires of individuals. The opportunity costs of entrepreneurial conduct are typically compared and assessed by organizational members with those of either not engaging in it or engaging in alternative behaviours. Consequently, it is crucial to connect CE activities to strategy and procedures (Kuratko & Morris, 2015).

2.7.1. The Importance and Advantages of Corporate Entrepreneurship

According to Kuratko et al. (2015), the ability of an organization to 'stay afloat' with its core business largely depends on its ability to develop innovative ideas. For these innovative organizations to properly exploit opportunities to innovate, the application of an entrepreneurial strategy approach is required (Kuratko et al., 2015). Thus, CE is an effective entrepreneurial strategic response to the unproductivity of today's organizations due to a lack of innovation and is adopted by various existing organizations with the aim of strengthening their core businesses (Morici, 2018).

There are several significant reasons for existing organizations to implement the CE strategic approaches. For example, to promote the enactment of innovation activities (Urban & Wood, 2017; Yunis et al., 2018), maximize the organization's financial gain (Leal-Rodríguez, Albort-Morant, and Martelo-Landroguez, 2017; Tantawy, Elaasi & Elshawadfy, 2020; Yunis et al., 2018), transition to international markets (Hosseini et al., 2018; Martin-Rojas, Fernández-Pérez, and García-Sánchez, 2017), improve the organization's effectiveness and strengthen its competitive position (Bouncken et al., 2018), exploit more entrepreneurial opportunities (Kuratko et al., 2015). The section below further explores these significant reasons for existing organizations to implement CE strategic approaches.

2.7.1.1. CE and Innovation

Innovation, according to Stevenson and Gumpert (1985), is the "heart of entrepreneurship", essential to all types of entrepreneurship because it is the one resource common to all CE activities. The ability to introduce new products and services, processes, technologies, systems and procedures into existing businesses is known as innovation (Yunis et al., 2018). Although innovation requires change, not all change is considered innovative. Rubin and Abramson (2018) address the latter point, explaining that "when new ideas emerge, the process of assessing their value begins, because a creative concept consists of solutions that add value by solving a problem". As a result, creativity becomes a prerequisite for innovation, and explicit organizational goals serve as benchmarks to measure compliance with these goals (Rubin & Abramson, 2018).

Urban and Wood (2017) claim that business success is achieved when entrepreneurship and innovation are combined. As a result, other authors have addressed the development of a business model for innovation management through CE, with the organization itself as the starting point, as well as the entrepreneurial strategy applied, the environmental climate and the classification of

human resources (Escobar-Sierra, Lara-Valencia, and Valencia-DeLara, 2017). Furthermore, it is believed that organizations, as facilitators of higher organizational performance, should foster a work environment that encourages innovative work behaviour (Calisto & Sarkar, 2017; Shanker, Bhanugopan, Van der Heijden, and Farrell 2017). The need to foster innovative work behaviour stems from the fact that intrapreneurs are more likely to face challenges in developing new ideas when the environment is not conducive to employee engagement and fostering innovation through CE activities (Ahmed et al., 2018). As a result, existing organizations are increasingly forced to innovate faster in order to maintain their long-term financial viability (Selig & Baltes, 2019).

Although the concepts for formulating the essence of innovation may differ, innovation is the key element for CE.

2.7.1.2. CE and Financial Performance

Yunis et al (2016) conducted a research study to determine the relationship between the use of creative ICT ideas and organizational performance through CE activities. They found that the performance of organizations in the present and in the future is largely influenced by new creative ideas within these organizations. Although their study focused on new innovations in the ICT industry, they were able to establish a link between CE as a facilitator of innovation and organizational performance by suggesting that in situation in which entrepreneurial culture is fostered by supporting CE activities, such as proactivity, innovation and risk-taking, creative ideas are more likely to flourish. Furthermore, in an empirical study, Leal-Rodríguez et al. (2017) tested the moderating effect of family organizations by relating entrepreneurial culture, innovation and firm performance. Their results showed that it is necessary to develop an entrepreneurial culture to support business performance through entrepreneurship and innovation. Tantawy et al. (2020) investigated how CE efforts and corporate financial performance are related in the event of unforeseen sudden environmental disasters. This latter study focused on corporate venturing, innovation and risk-taking as CE activities and concluded that improving a company's financial performance is highly dependent on conducting CE activities, because financial performance is at risk of declining during unexpected environmental events.

However, organizations that are bold enough to take risks through innovation are more likely to be financially successful (Tantawy et al., 2020). Other researchers have empirically demonstrated that the relationship between CE and financial performance is largely influenced by innovation, the 'push' into new businesses and markets (Ahmad et al., 2021), while others have concluded that employee engagement facilitates the positive relationship between the acceleration of CE activities and organizational performance (Ahmed & Sobuz, 2020; Vanacker et al., 2021).

Although all the aforementioned authors used different CE activities in their research, the results are conclusive that the CE strategy leads to high financial performance, especially in developing markets. However, the finding of these previous writers cannot be generalized, hence

this study seeks to assess the The purpose of this research is to assess culture of CE that promote entrepreneurial behaviour among the employees and to assess the existing intrapreneurial level of the university FMID departments by diagnosing their entrepreneurial culture using the five CE capabilities

2.7.1.3. CE and International Markets

CE is known to prepare organizations to cross the international border and enter new markets. For example, Hosseini et al. (2018) investigated the impact of entrepreneurial orientation (EO) and corporate social responsibility (CSR) on the international performance of SMEs. The results of this study showed a good relationship between CE and international performance in entering international markets, but a negative relationship between EO and international performance. Dar and Mishra, (2019) offer an entrepreneurial issue known as 'international intrapreneurship'. This practice occurs when an existing business undergoes internationalisation by adding value through the implementation of international tactics. According to Giang and Dung (2021), international performance is mainly determined by two types of international intrapreneurship activities: strategic renewal and new business ventures for SMEs. Furthermore, Baena-Luna et al. (2022) found that strategy CE has an impact on internationalization outcomes and that these outcomes are maintained by the company.

2.7.1.4. CE and Competitive Advantage

Yunis et al. (2016) agree that the combination of ICT and innovation as strategic resources contributes to long-term competitive advantage through the entrepreneurial behaviour of stakeholders. Organizations operate in a rapidly changing world that requires continuous technological improvement to remain competitive. Not surprisingly, Rojas et al. (2017) believe that existing organizations should increase their technological competence by using various CE techniques to achieve better organizational performance. While other researchers encourage individual organizations to prepare for a long-term competitive advantage, Bouncken et al. (2018) encourages organizations to consider co-competition by collaborating in sharing knowledge and resources to foster innovation, develop new products and enter new markets.

2.7.2. Few Challenges of CE

Having discussed how CE can affect an organization's overall growth and ability to innovate in light of the dimensions of CE, this section now considers some of the most damaging ways in which CE can be challenged.

Although CE fortunately offers a wide range of entrepreneurial perspectives that are critical to the company's growth, there are still obstacles to overcome. Previous research shows that there is emerging evidence that the success of entrepreneurial activities requires the cooperation of key decision makers and that middle managers can sometimes sabotage the success of intrapreneurial activities (Alpkan, Bulut, Gunday, Ulusoy, and Kilic 2010; Reuther, et al., 2018).

The extent to which the external environment and organizational culture are supportive has an impact on how CE affects business success, especially when the environment is competitive and dynamic (Otache & Mahmood, 2015). According to extant research, several organizations lack a supportive internal organizational environment that encourages the process of implementing innovative ideas (Antoncic & Hisrich, 2004), motivation for inventing new ideas (Reuther et al., 2018) and/or the ability to identify intrapreneurs among their employees (Marshall, Dibrell, & Eddleston, 2019). Sometimes organizations fail to implement sound procedures and systems and/or have unclear job descriptions for implementing innovative ideas (Abdissa et al., 2021). Finally, organizational performance, especially an organization's inability to evaluate and implement CE initiatives, is a harbinger of potential business failure, because it prevents companies from competing both locally and internationally (Abdissa, Ayalew, Illés, and Dunay, 2021).

The aim of this study was to show the importance of organizations assessing their entrepreneurial climate to determine whether it promotes or hinders entrepreneurial activities. The following section of the study, therefore, assesses the model that has been developed to help organizations measure their entrepreneurial environment.

2.8. Drivers of Corporate Entrepreneurship: the Five Capabilities Enabling Internal Climate for Corporate Entrepreneurship

In order for existing organizations to fully benefit from the considerable advantages that CE offers, researchers believe that some level of environmental assessment must be conducted to measure how the internal organizational environment promotes and fosters entrepreneurial activities (Kuratko et al., 2014). Based on the five capabilities described in the reviewed literature (Hornsby et al., 2002; Kuratko et al., 2014; Scheepers et al., 2008), the Corporate Entrepreneurship Assessment Instrument (CEAI) was developed as a tool to analyse managers' perceptions of these five characteristics of existing organizations to support an entrepreneurial environment. The CEAI has been tested and used in a variety of sectors in a number of countries, including Serbia (Kontić & Vidicki, 2017), Italy (Agapie, Paiusan, Vizitiu, Nastase, and Hadad, 2018), South Africa (Steyn & de Bruin, 2018) and France (Chebbi, Yahiaoui, Sellami, Pappasolomou, & Melanthiou, 2020). The CEAI tool consists of five capabilities namely: (1) top management support, (2) work discretion/autonomy, (3) rewards/reinforcement, (4) time availability, and (5) organizational boundaries.

Thus, the following section will investigate in depth extant literature's comments on these five capabilities.

2.8.1. Top Management Support

The first capability that promotes the activities of CE is top management support. According to Madhok and Marques (2014), this capability expresses the willingness of the top and middle managers to promote CE activities within existing organizations. In the context of this study, management support refers to the design of a favourable work environment that promotes employee productivity and innovation (Onuma, 2015). One of the most significant sources of creativity, innovation and entrepreneurship has long been acknowledged to be the top management. Most experts agree that top management is the catalyst for initiating and advancing organizational learning (Al-Omouh, 2020). The top management of an organization is made up of leaders who make decisions, take a strong interest in and support entrepreneurial initiatives within an already existing business (Hornsby et al. 2013). Schachtebeck and Nieuwenhuizen (2015) further assert that top management can provide support in a number of ways, such as encouraging creative ideas, recognizing and rewarding entrepreneurial employees who express new ideas and, possibly, providing the necessary resources to carry out CE activities. The following sections examine a number of ways that top management can administer support for CE activities.

2.8.1.1. Management supportive of its personnel

According to Batson and Yoder (2012), managerial support can take the form of coaching for fellow employees, that fosters a sense of empowerment and enables employees to raise their intrinsic motivation levels. Guo (2014) further states that strong interpersonal relationships and efficient human resource management strategies can greatly enhance CE and innovation. Schachtebeck and Nieuwenhuizen (2015) have studied the role of top management in new creative initiatives and argue that top management support for new products, service, and business development teams is particularly crucial for innovation. Hence top management supervision and support are important for innovation effectiveness (Schachtebeck & Nieuwenhuizen, 2015).

2.8.1.2. Financial rewards

According to Kuranchie-Mensah et.al (2016) total motivation employee motivation towards CE activities and initiatives largely depends on the risk, effort and financial return. Entrepreneurial organizations pursue innovation knowing that taking chances would most likely result in success because such risk-taking is encouraged inside these organizations without the entrepreneurial employee suffering wage reductions and disciplinary measures in the case of failure (Mason & Brown, 2014). Instead, management must offer a substantial financial incentive, such as promotion, salary increment, a part in the new business or a profit-sharing arrangement (Liu & Liu, 2022).

2.8.1.3. Support from Management for Learning and Training

Fostering CE in organizations requires top management support in the form of training for employees with an entrepreneurial spirit to foster innovation (Monsen, Patzelt & Saxton, 2010). Top management support plays a critical role in helping these entrepreneurial employees develop the necessary skills, access technology, and facilitate their learning process (Martin-Rojas et.al., 2017). This management commitment is fundamental to the promotion of CE, as it allows the company and its employees to consolidate knowledge and make information easily available (Abubakar et al., 2019). Moreover, these scholars emphasize that effective top management support improves communication among employees, which leads to better idea generation and innovation. Therefore, leaders need to ensure that knowledge is effectively managed and accessed to support their employees' entrepreneurial initiatives.

2.8.1.4. Trust Instilled by Management

According to Tedla, (2016) trust is essential in building a culture of managerial support for CE, in addition to training and education. Management must allow employees the flexibility to experiment and invent at their own speed because the lack of trust will demotivate staff, preventing them from pursuing innovative risks (Morgan, 2014). According to the latter author, the top managers often have the major share of the decision-making power in smaller SMEs. This scenario suggests that employees in smaller SMEs typically have lower levels of empowerment and less discretionary decision-making ability.

2.8.1.5. Management Style and Actions

A constant objective emphasis and strict employee control, according to Lee, di Domenico, and Saunders (2014), might cause resistance since organizations will then seek to "value what is quantifiable, rather than measure what is worthwhile." Accordingly, it may be concluded that stringent control over employee behaviour is detrimental to the pursuit of CE since it compels employees to execute only the tasks that are being measured rather than generating new ideas and conducting experiments.

When management consistently provides active support, entrepreneurial action (CE) tends to become more focused and emphasized (Schachtebeck & Nieuwenhuizen, 2015). According to De Villiers-Scheepers (2012), fostering innovation in the workplace through management support is critical to instill in employees the belief that innovation is a requirement for all members of the organization. According to a study conducted by Salehi and Yousefi (2011) within the banking industry, entrepreneurial activity can increase with managerial support.

Hornsby et al. (2002) conducted a comprehensive assessment of management support and found that it does indeed promote and strengthen CE capacity success. As a result, management support is said to motivate entrepreneurial employees to find creative solutions to challenges and proactively pursue opportunities (Scheepers et al., 2008). It is believed that fostering the entrepreneurial climate for CE requires not only management support for the initiatives, but also ensuring that there are no barriers to CE continuing to thrive (Urban & Wood, 2017). However, Tribbitt and Yang (2017) claim in their study that increasing the number of external stakeholders on the board can help CE initiatives thrive. Their findings also show that when the top management and board members approval is secured, CE initiatives will flourish because this practice gives operational management and employees more time and freedom to pursue long-term projects. Boone et al. (2019) added a nationality context, arguing that when top management teams include leaders from different nationalities, they are better prepared to share entrepreneurial knowledge from their countries and, therefore, their organizations can better respond to global markets when addressing inequality issues. In addition, Tantawy et al. (2020) contend that organizations that consider top management support as a strategic approach are more likely to promote entrepreneurial behaviour among their employees, thereby improving their financial performance. The latter authors also point out that the survival of organizations facing unforeseen disasters depends on the methods in place to promote CE activities.

A corporate culture that empowers and enables firms to grow intrapreneurs who demonstrate effective thinking and reasoning is likely to emerge when the top management has an entrepreneurial mindset (Duening, Shepherd & Czaplewski, 2014). This approach is fundamentally different from traditional management thinking in that it focuses on achieving a desired outcome rather than simply pursuing a predetermined goal using specific methods. It's crucial for managers to recognize this difference in thinking styles, as it has a significant impact on decision-making and implementation processes. To foster intrapreneurship within the organization, managers need to accept this diversity of thinking styles (Schachtebeck & Nieuwenhuizen, 2015). Batson and Yoder (2012) also emphasize that managerial support of CE can be improved by providing resources, fostering strong interpersonal relationships with subordinates, setting clear goals and expectations, and providing feedback on employee performance.

Schachtebeck and Nieuwenhuizen (2015) recommend that top management of the organization develop and implement a strategic approach to drive innovation in products, services, and processes, involving all employees. The reason for this is that the decision to introduce new products, services, or ventures is made by top management. As a result, top managers are recognized as critical entrepreneurial resources within the organization that influence the sequencing and timing of innovation initiatives.

2.8.2. Autonomy/Work Discretion

Autonomy/work discretion refers to the extent to which operational-level managers and entrepreneurial employees are given the freedom to work independently, make decisions, set their own goals, negotiate and communicate freely and make mistakes in order to pursue business opportunities (Hughes & Mustafa, 2017). Calisto and Sarkar (2017), on the other hand, consider autonomy to be a strategic behaviour that should be emulated by managers at the operational level to improve the level of creativity within their organizations. When entrepreneurial employees are involved in developing new ideas that aim to improve existing products while entering new markets and promote these ideas to construct strategic systems to be accepted in the organization, the described autonomous strategic behaviour is present (Calisto & Sarkar, 2017). These operational level employees are referred to by the latter scholars as "intrapreneurs" or entrepreneurial employees, because their entrepreneurial behaviour goes beyond their job description while they continue to perform their expected tasks. When supervisors and their subordinates are given authority and responsibility by managers (Kraus, Breier, Jones, and Hughes, 2019; Kuratko et al., 2014), this delegated authority and duty is an example of how autonomy is tied to the freedom to make decisions.

According to a study conducted by Van Wyk and Adonisi (2012) in South Africa in relation to the CEAI dimensions, the expectation that entrepreneurial employees will complete their jobs and obey their managers' instructions is perceived as authoritarianism, a practice that, unfortunately, is negatively associated with CE. It is important to remember that autonomy styles vary by industry, management style, company size, culture and ownership (Setiawan & Erdogan, 2018). For example, in construction management research, autonomy refers to self-control and employee empowerment because for organizations to achieve project satisfaction, they need to guide self-control in every action and empower employee behaviour to increase construction productivity (Setiawan & Erdogan, 2018).

Other scholars have linked the autonomy of intrapreneurs to the role of well-being in entrepreneurial activities. According to the self-determination theory, for example, optimal functioning and well-being of intrapreneurs can only be achieved when autonomy, competence and relatedness are fulfilled (Deci, Olafsen, and Ryan, 2017). In other words, the way managers motivate their employees affects both their performance and their well-being (Deci et al., 2017). When the latter authors compared the concepts of autonomous (intrinsic) motivation and controlled motivation, they found that employees who choose to be entrepreneurs tend to show willingness and self-drive, while controlled (extrinsic) motivation tends to produce short-term results because it usually focuses on the quantity rather than the quality of performance. Shir, Nikolaev, and Wincent (2019), on the other hand, have developed a model to argue for the importance of self-organization through autonomy that extends the self-determination theory. The latter authors argue that psychological autonomy mediates the relationship between entrepreneurial activities and intrapreneurial well-being.

In summary, Malarvizhi, Janet, Thamaraiaselvi, and Ragavi (2019) further add that entrepreneurial employees who take responsibility for their role, are engaged and accountable, hence. they are more likely to produce innovative ideas that drive change and overall progress for the organization.

2.8.3. Rewards/Reinforcement

The appropriate use of CE rewards is a third organizational capability that fosters intrapreneurial behaviour. This capability helps organizations not only value innovation but also make it an important business practice by putting in place a reward and reinforcement structure that motivates entrepreneurial employees to continue being creative. The willingness of organizations to implement systems that reward employees for entrepreneurial actions is referred to as reward/reinforcement (Hughes & Mustafa, 2017). In other words, the success of CE is most influenced by employee rewards, because it is commonly believed that a reward system promotes innovation.

According to a study by Urban and Wood (2017), organizations should develop a culture that rewards long-term employee performance and incentivises innovation. Furthermore, the latter authors claim that creative organizations are those that have reward mechanisms that recognise individual employee's performance, increase challenges and accountability, and encourage the promotion of innovative ideas throughout the organization. According to Hornsby et al. (2009), a reward system is considered effective when it focuses on individual employee's accountability and uses results as the basis for measuring incentives to reward entrepreneurial efforts. Furthermore, according to Urban (2017), organizational culture is highly influenced by the reward system in place, because this culture promotes a sense of ownership, that in turn fosters a bond between the entrepreneurial individual and the organization as they share similar goals.

The idea emerges from extant studies that the top management of these innovative organizations is responsible for creating a climate that encourages CE to thrive by including rewards as a core component of CE activities (Urban, 2017; Urban & Woods, 2017). Kenyan SMEs, for example, have been found to lack organizational processes that protect and encourage entrepreneurial behaviour, leading to stagnant innovation in firms (Hughes & Mustafa, 2017)

Salamzadeh, Tajpour and Hosseini (2020) agree that the right use of incentives promotes the basic core functions of innovation, such as recruiting innovative employees for innovative organizations, encouraging and supporting innovative thinkers and providing a reason for entrepreneurial employees to remain with their organizations. The latter authors further state that when building a reward system, innovative organizations should aim for a compensation structure that balances internal and external equity. While internal equity promotes collaboration and

knowledge transfer, external equity favours employee recruitment and employment (Salamzadeh et al., 2020).

Another element that has a demonstrably large impact on people's propensity to act innovatively is their perception of reward, that promotes risk-taking and creativity (Kreiser et al., 2019; Kuratko et al., 2014). This construct deals with how much it is believed that an organization's compensation system is dependent on an employee's entrepreneurial activity and success.

Tantawy et al (2020) assert that improving financial performance is necessary for organizations to fully achieve their goals and those of their stakeholders. Their research highlights the need for organizations to develop a framework that encourages and recognises entrepreneurial employees in existing organizations for their innovative ideas.

In summary, Kim and Kim (2020) note that rewards/reinforcements can be structured in a variety of ways, with monetary rewards, such as profit sharing, bonuses, stock plans and salary increases, and non-monetary options such as flexible work schedules, greater autonomy, empowerment and more time-off. However, incremental rewards, autonomy and flexible working hours have a greater impact on CE and innovation (Kim and Kim, 2020).

2.8.4. Time Availability

The fourth organizational capability to cultivate for CE is resource availability, with an emphasis on the availability of time. This practice is because the availability of time and resources is critical for entrepreneurial employees and managers to pursue their entrepreneurial aspirations (Schulz, Urbig, and Procher, 2016). When entrepreneurial employees have sufficient time to incubate their creative ideas, their chances of success improve. According to the CE strategy, it is crucial for the success of entrepreneurial activities that entrepreneurial employees have sufficient time during their working hours to foster innovation, but the reality is not always ideal. Hughes and Mustafa (2017) found that Kenyan SMEs have little time to develop innovative ideas due to external market changes and the fierce competition their businesses face. While they desire time for creativity, the reality forces them to focus on essential organizational tasks. Another issue these researchers raise is that some employees lack the necessary skills to contribute to the company. The result of this skills gap is that the more competent employees spend their time filling these gaps by adding more tasks to their daily work schedule and, as a result, these potential entrepreneurial employees are denied the opportunity to innovate (Hughes & Mustafa, 2017).

While Urban (2017) argues that the availability of time and resources is a key factor for the success of entrepreneurial activities, Hughes and Mustafa (2017) found that it is difficult for SMEs in emerging economies to invest additional time in entrepreneurial activities and innovation. According to Kuratko et al. (2014), organizations are responsible for allocating an appropriate workload to entrepreneurial employees and giving them access to the various resources they need to solve problems, such as the freedom to collaborate with other employees. An innovative company develops

an entrepreneurial environment by allowing entrepreneurial people to conduct creative, entrepreneurial experiments during their working hours (Kasa, 2014).

In the case of Egypt, Tantawy et al. (2020) found that effective resource allocation is necessary for organizations to support the development of new resources in order to gain a competitive advantage over their competitors. In terms of the availability of time and resources, the researchers believe that management should try to promote positive perceptions of the availability of these resources so that people are inspired to take advantage of entrepreneurial opportunities (Urban, 2017).

2.8.5. Organizational Boundaries

The presence of a supportive organizational structure and undefined boundaries is the final capability that facilitates CE. Supportive structures allow an organization to formulate a tool to guide the testing of creative ideas (Hornsby et al., 2002). According to Hornsby et al. (2009), the organizational boundary refers to how effectively the business department is balanced in relation to its key functions. Creating an enabling environment for entrepreneurial employees to make decisions (Burgess, 2013) and tolerate potential failure is supported by organizational boundaries (Sakhdari and Burgers, 2017; Urban & Wood 2017). Undefined boundaries improve the flow of information between external structures and organizational departments and allow greater flexibility in promoting entrepreneurial activities (Miller, Fern & Cardinal, 2007).

Hughes and Mustafa (2017), in their imperative study, agree that when top management is committed to good connections within their organizations, boundaries are reduced, and innovative ideas are more likely to emerge. Moreover, these healthy relationships are believed to play a role in the emergence of CE in SMEs, according to the latter authors. Hughes and Mustafa (2017) in the same study agree that another way to shape organizational boundaries is for top managers to act as intrapreneurs and participate in CE activities because this practice would improve relationships between all levels of management and entrepreneurial employees in terms of communication, access to resources and time for entrepreneurial activities.

In summary, a study by Tantawy et al. (2020) found that CE activities enhance a company's financial performance. However, since innovation has some strategic consequences for organizational structure, reducing organizational boundaries may need to be considered as a strategic way to improve the financial performance of the company by promoting CE activities.

2.9. The essential roles of managers

In the reviewed literature, a widespread assumption portrays that managers, as an equal group across all levels, play an essential role in the intrapreneurial process (Kuratko, 2012). Organizational strategy research, on the other hand, has recognized that managers at the top, middle and

operational levels perform different organizational roles (Floyd & Lane, 2000), and this perception becomes especially relevant when considering CE. The roles played by these managers provide more clarity in organizational complexity due to the differences that exist at their management levels (Wu, Ma and Wang, 2018).

2.9.1. Top Management

When evaluating the role of top managers in the process of CE, Al-Omouh (2021) argue that their primary responsibility is to create the strategic and structural framework for corporate strategy-driven entrepreneurial behaviour. The firm's top management are specifically responsible for integrating selected new businesses into the portfolio of the organization and developing strategy, based on their evaluations of the organizations' potential as desirable, value-creating components of the organization. Top managers are essential in the selection process in CE. The organization's top managers are also in charge of setting up structures such that new business ventures can arise more easily and eventually be incorporated into the organization's overall plan. Top management must also recognize their responsibility as directors (Urban & Wood, 2017). Top managers, therefore, are essential for developing a strategic vision for entrepreneurship and promoting the establishment of an entrepreneurially conducive workplace culture. Top managers also play a critical part in the processes that define both the corporate venturing and strategic entrepreneurship types of CE because they are the driving force behind many entrepreneurial endeavours.

In addition to their functional capabilities, top managers may also possess important characteristics such as knowledge, experience, and cognitive diversity. These traits can impact their ability to innovate, take risks, and influence the sequencing and timing of their organizations' new entrepreneurial efforts.

2.9.2. Middle Management

The role of middle management, according to Kuratko (2012), is one that certifies, purifies and guides entrepreneurial initiatives. According to Wu et al. (2018), the middle management's function is critical in mediating an organization's entrepreneurial activities. According to Kuratko, Ireland, Covin and Hornsby (2005), middle managers' location in the organizational hierarchy facilitates their work as a change agent and an advocate for innovation. According to these authors, middle managers find, acquire and allocate the resources necessary to undertake entrepreneurial projects in addition to supporting, enhancing and guiding these activities. They are considered as a hub through which most organizational knowledge flows. Middle managers have broader access to the resources and relationships needed to promote entrepreneurial activities, that is one of the roles they play in developing and renewing strategies in existing organizations (Wu et al., 2018). According to the same authors, these managers should play a dual role by supporting the efforts of entrepreneurial

employees while being able to contribute their own innovative ideas. In other words, the ability of middle managers to act entrepreneurially is key to the success of the activities of CE (Wu et al., 2018).

According to Wu et al. (2018) middle managers need to know the basic competencies of the organization, especially those related to managing and promoting entrepreneurial initiatives, in order to communicate effectively with operational managers. They should also know the strategic goals of the company when interacting with top management. Middle manager's decisions and actions impact how the CE strategy of the company is operationalized through contacts with top and operational managers, (Wu et al., 2018).

2.9.3. Operational Management

Operational managers play roles in testing, modifying and complying (Floyd & Lane, 2000). Starting business ventures is one way the experimental role is exhibited. An operational manager might play the job of adjusting by reacting to known and unforeseen entrepreneurial problems, for instance. The ultimate manifestation of the adaptation function is the alignment of the rules and procedures of operational managers with the strategic initiatives of higher levels of the organization.

Burgelman's (1984) study emphasized the importance of operational managers in a "bottom-up" process CE. However, another study by Hornsby et al. in 2009 took a contrary view to this "bottom-up" perspective, arguing that top managers have a greater ability to leverage organizational conditions, which leads them to implement a greater number of entrepreneurial ideas compared to operational managers.

In summary, the combined efforts of top, middle, and operational managers play a critical role in cultivating entrepreneurial behaviors, which in turn build the capabilities needed for future competitive success (Wu et al., 2018). Organizations seeking to create an entrepreneur-friendly environment should therefore recognize the interrelated roles of top, middle, and operational managers in CE. Rodríguez-Pena (2021) believe that the CE model is balanced only when all three levels of management (top, middle and operational) are fully involved, because although operational managers and intrapreneurial employees work at their own discretion to initiate innovative ideas; an organization can only become an entrepreneurial entity if entrepreneurial employees are encouraged to develop innovative ideas and if managers give high priority to creating an entrepreneurial culture. Therefore, managers must include the development of higher levels of innovation on their strategic agenda. Moreover, middle management evaluates, weighs and selects from the pending ideas those that are consistent with existing strategic systems; and top management appropriately bears responsibility for these initiatives once they are successfully selected (Wu et al., 2018). Hence, focusing on individual actors in implementing the CE approach shows that CE cannot be

institutionalized because it depends entirely on the nature and the level of the people in the organization (Wu et al., 2018).

2.10. Corporate Entrepreneurship in the Built Environment

In the last few decades, a considerable amount of literature has been written about CE in businesses in various industries, such as wholesale and retail (Naldi et al., 2015), arts (Rusak, 2016), logistics (Chienwattanasook, Wattanapongphasuk, Prianto, and Jermisittiparsert, 2019), ICT (Malarvizhi et al., 2019), manufacturing (Tantawy et al., 2020), finance (Ahmed, Umrani, Zaman, Rajput, and Aziz, 2020), tourism (Kwinje, Mwando-Gukushu, and Zengeni, 2020), communication (Ebrahimi, Azizi & Pourmehdi, 2020), mining (Ebrahimi et al., 2020; Kumar & Pathak, 2021). However, there is little evidence of CE literature published in the built environment (Abd-Hamid, Azizan, & Sorooshian, 2015; Setiawan and Erdogan, 2018; Hough & Scheepers, 2011; Setiawan et al., 2012; Olivier, 2017). Tantawy et al. (2020) on the other hand, believe that CE cannot be generalised and that each sector should be given its own attention because is different from the others. The next section, therefore, will provide an overview of the construction industry and highlight its contribution to the country's economy.

As previously indicated in this research report, the importance of the built environment to developing countries is well known, highlighting its contribution to the national economy (Boadu at.al., 2020; Ofori, 2015; Yang, Wakefield, Lyu, Jayasuriya, Han, Yi, Yang, Amarasinghe, and Chen 2020). For example, the construction industry is one of the major contributors to GDP in South Africa. It generated about 108 billion rand (about \$7.2 billion) in 2015 and has grown steadily since then (Statista). The manufacture of building components offers growth opportunities not only for the built environment, but also for other businesses through the construction of housing and infrastructure. Manufacturing, transportation, mining, real estate and business services are all examples of industries that can increase the production of goods and services for other industries. As a result, jobs are created not only in the built environment, but also in other industries that benefit from construction production (Ofori, 2015). According to the CIDB Construction Employment Monitor, the construction sector accounts for 8% of total formal employment (Stats, SA). Despite its importance to the national economy, the construction sector faces a number of challenges that threaten its performance and long-term viability. Therefore, entrepreneurship strategies should be implemented in this sector to mitigate and overcome these challenges.

As mentioned previously, although the built environment is an important component of the country's economic development, it has been highlighted by various researchers for its slow adoption of innovations (Boadu et al., 2020; Klosova & Kozlovska, 2020; Ofori, 2015; Yang et al., 2020). Recent evidence from the South African construction sector indicates that there is limited adoption of innovative technologies and little awareness of their benefits (van Wyk, Kajimo-Shakantu &

Opawole, 2021), suggesting that these technologies are not yet being fully utilized, with significant implications for change, adaptation, and growth.

In addition, these scholars point to several significant barriers to widespread adoption of new technologies in the built environment. These barriers include high cost, limited expertise, time pressure, lack of motivation, the unique nature of construction processes, and team dynamics.

Similar to the built environment, entrepreneurship also plays a critical role in the national economy as evidenced by previous studies (Oyewobia, Windapo & Rotimi, 2017). Entrepreneurship is recognized for its contribution to job creation and social adjustment, making it a driving force for economic recovery (Aparicio, 2017; Gurol & Atsan, 2006). Entrepreneurship is seen as critical to sustaining and improving contractor performance because the construction industry is project-based, has a highly competitive market and is subject to high business risk. (Setiawan, Erdogan & Ogunlana (2012). According to Zain and Hassan (2007), manufacturing companies dominate entrepreneurship research, with a focus on developed economies such as the United States (Zahra, Jennings and Kuratko, 1999), while construction companies receive only sporadic attention, especially in developing countries, and the South African facilities management sector is no exception. Despite the fact that entrepreneurial skills within construction companies are critical to their success, Setiawan et al. (2012) concede that they have been little researched. In addition, the researchers also mention that construction companies need to assess their ability to implement CE in order to develop a complete CE strategy (Setiawan & Erdogan, 2018) and foster innovation (Selig and Baltes, 2019). According to Kuratko et al. (2015), only companies that are able to innovate faster are more likely to achieve sustainable performance that gives them a competitive advantage in the marketplace because they are able to foster entrepreneurship within their organization. As such, globalization and competition have been found to be the key drivers of innovation (van Wyk, Kajimo-Shakantu, and Opawole, 2021). Shoar and Chileshe (2021) found that innovation and entrepreneurial activity bring about rapid changes in construction methods, leading to rapid market expansion.

Furthermore, Setiawan and Erdogan (2018) conducted another study to find out whether CE can help contractors with their business challenges. According to their findings, labour discretion, competitive advantage, innovation, risk taking and proactivity were identified as key factors that help construction companies evaluate their internal environment before deciding on a CE strategy that will improve their competitive advantage in the market (Setiawan & Erdogan, 2018). Okangi (2019) believes that construction companies should also develop standards and processes that would influence CE management.

The construction industry is very extensive and includes various sub-sectors such as architecture, civil engineering, facilities management (FM), construction management, project management, quantity surveying and so on. The current study focused on the university Facilities Management Infrastructure Development departments (FMID) at three universities in the Western Cape, South Africa.

Based on the above, it can be concluded that the findings of extant research highlight the gap that CE seems to have received little attention in the built environment. Thus, the aim of this research study was to build on the existing theory in the reviewed literature by examining the internal environment of the South African construction sector, and in particular, the study focused on the university Facilities Management Infrastructure Development departments (FMID) in three universities in the Western Cape. Previous research examined the internal environment using other CE models, such as the Corporate Entrepreneurship Capability (CECM) model (Setiawan & Erdogan, 2018). Therefore, this study discusses the internal environment of construction companies using the CEAI instrument as a CE measurement tool.

2.11. Chapter Summary

Extant literature shows that organizations in all industries use entrepreneurial strategies to keep them enhance their businesses. In particular, CE has proven to be an effective strategy that can be implemented by any organization regardless of size, type of business, location or industry. The importance of CE is related to the fact that it thrives on innovation. It has been highlighted previously in this report that organizations that nurture and support innovation are very likely to gain a competitive advantage when entering international markets. Innovation can be initiated by individual employees or groups of employees, but CE adds that innovation can also be initiated by management and implemented by employees with a top-down approach. Although facing adversaries is inevitable in any business, evidence from the reviewed literature has shown that innovative organizations are able to perform exceptionally well even in difficult times. Innovative organizations, therefore, constantly assess their internal environment to ensure that the business systems, processes and management styles in place do not hinder the innovation process but support CE and promote the company's five capabilities delineated above in section 2.6 of this chapter.

3. CHAPTER 3: RESEARCH METHODOLOGY

3.1. Introduction

This chapter outlines the research approach that was used to conduct this research study. The research methodology is then discussed in detail to explain the data collection and the results of the analysis that are presented at the end of the project.

Following this discussion, an examination of various research methods is presented as a basis for identifying the specific research methods used in this study. The following section explains the data collection and analysis methods used for this research project and the rationale for their selection.

3.2. Research Methodology

Research involves the process of gathering, analyzing, and interpreting information (Leedy & Ormrod, 2010). Consequently, the research approach chosen is a critical aspect of any research project as it provides the overarching framework for collecting and structuring the data needed for the study (Bell, 2005). Collis and Hussey (2003) point out that research technique is often about the rationale for data collection.

According to Leedy and Ormrod (2010), data and methodology are closely related. Therefore, the research methodology and the type of data to be collected should be closely aligned to effectively address a research problem.

3.3. Research Design

The most widely used research strategies are quantitative, qualitative, or a mixture of these approaches (Struwig & Stead, 2001). However, the choice of the most appropriate design depends on the research problem, goals, and objectives. In the following section, we'll examine three different types of research designs.

3.3.1. Qualitative Research

Hennink, Hutter, and Bailey (2011) note that qualitative research is comprehensive and includes a variety of methods. According to Leedy and Ormrod (2010), qualitative research focuses on examining characteristics or aspects that are difficult to quantify mathematically. This approach aims to gain a deeper understanding of context by describing and analyzing complicated and detailed processes in their real-world settings (Leedy & Ormrod, 2010). Nieuwenhuis (2007) emphasizes that in qualitative research methods, the richness and depth of the information offered takes precedence over the sheer amount of information presented.

The interpretive, constructivist, or post-positivist perspective within qualitative research is commonly referred to as the qualitative research approach (Leedy & Ormrod, 2010). A variety of research methods are used in qualitative research, including case studies, ethnographies, phenomenological studies, basic theory studies, and content analysis (Leedy & Ormrod, 2010). Furthermore, Nieuwenhuis (2007) introduces conceptual studies, historical research, and action research in addition to the grounded theory study, ethnography, and case study methods mentioned by Leedy and Ormrod (2010). In the context of qualitative research, which is usually exploratory, observations are often used to develop theories, and such studies usually lead to several tentative conclusions or hypotheses based on the phenomena observed or studied (Leedy & Ormrod, 2005).

3.3.2. Quantitative Research

The conventional, experimental, or positivist approach to research uses quantitative data obtained methodically and without bias from only one part of the world to generalise findings (Leedy & Ormrod, 2010; Maree & Pieterse, 2007). Gomm (2008) asserts that a quantitative research strategy involves counting items, statistically analysing data, and reporting results in numerical formats. According to Maree and Pieterse (2007), the most important characteristics of a quantitative research approach are numerical data, objectivity, and generalizability.

The main goal of quantitative research is to explore cause and effect or relationships between variables by testing hypotheses (Struwig & Stead, 2001). Quantitative studies usually begin with a hypothesis to be investigated and conclude with a test of that hypothesis that leads to either its confirmation or rejection (Leedy & Ormrod, 2005). According to Struwig & Stead (2001), various approaches can be used in quantitative research, including exploratory, experimental, descriptive (e.g., case studies and statistical methods), and quasi-experimental studies.

3.3.3. Mixed-methods Research

According to Denscombe (2007), a mixed-methods research approach is one that incorporates many methodologies (such as the fusion of qualitative and quantitative methods) into a single research endeavor. The integration of several research methods within or across paradigms (for example, qualitative and quantitative) is one aspect of the mixed-methods approach, as demonstrated by Hennink et al. (2011) through their example of mixed qualitative methods. The research topic, research question, study aims, and researcher competencies should all be taken into account when choosing a mixed methods technique (Hennink et al., 2011; Leedy & Ormrod, 2010). Although a mixed-methodologies strategy can improve research investigations, it depends on the successful integration of methods, which necessitates a major time, skill, and resource commitment (Leedy & Ormrod, 2010).

The blending of qualitative and quantitative research methodologies into a single project is what Denscombe (2007) refers to as the mixed-methods research methodology. This method lays a heavy emphasis on practical answers to research problems and clearly stresses the relationship between these methods, frequently using triangulation to look at things from several angles.

3.4. Research Approach

In addition to examining exploratory, experimental, quasi-experimental, and descriptive research (including case studies and statistical methods), this review included common approaches from qualitative, quantitative, and mixed methods research. These included case studies, ethnography, phenomenological studies, grounded theory studies, content analysis, conceptual studies, historical research, and action research (Denscombe, 2007; Hennink et al., 2010; Leedy & Ormrod, 2010; Nieuwenhuis, 2007).

3.5. Chosen Research Methodology for the Study

3.5.1. Research Philosophy for this Study

The researcher considered the pragmatic philosophical perspective, that is a combination of the ontology of relativism and subjective epistemology and focused on the research questions. The researcher used a deductive approach and drew on the current theories of CE, adopted by Kuratko et al. (2014) to measure the extent of CE and its five capabilities in the three university FMID departments. This study deals with middle managers, operational managers and employees of three Western Cape university FMID departments and cannot be generalized to other industries or educational institutions. In addition, this study does not address the perceptions of CE by the top management of the three universities' FMID departments investigated. Thus, the philosophy of the study is Epistemic relativism due to the position that knowledge is valid only relatively to a specific context, society, culture or individual.

3.5.2. Research Design for this Study

Quantitative research is a systematic method that analyses data that can be easily converted into numbers without losing meaning and is typically deductive (Maree & Pietersen, 2007; Struwig & Stead, 2001). In order to achieve the aims of this study, a quantitative research design was chosen. Furthermore, this design was chosen to obtain different but complementary data on the same topic by testing the applicability of the existing theories of CE in the various departments of the three university FMID departments. The main goal of quantitative research is to validate hypotheses (Struwig & Stead, 2001). In other words, this type of research generally begins with the formulation of a hypothesis to be tested and concludes with the confirmation or refutation of the hypothesis based

on the results of the tests conducted (Leedy & Ormrod, 2005). In addition, quantitative research also aims to assess the relationships between variables. Furthermore, objectivity, the use of numerical data and generalizability are important aspects of quantitative research (Leedy & Ormrod, 2010; Maree & Pieterse, 2007). There are two important reasons why quantitative research was used in this study.

First, CE has been tested and implemented in other sectors, although the construction industry has received little attention in this regard. In this study, a deductive approach was used to develop formal propositions that are examined in the three university FMID departments based on a previously established theory.

Secondly, the three university FMID departments include various sub-sectors, such as projects, maintenance, cleaning, gardening and protection services, thus, the study includes a relatively large and statistically managed population.

3.5.3. Research Approach and Choice for this Study

The design of this research study was informed by findings from an initial exploratory investigation. Since the overall research objective was to assess the need for CE in the three university FMID departments, the exploratory study aimed to determine whether the extent to which the internal entrepreneurial environment is related to the CE culture of these university FMID departments was worthy of research. The preliminary findings indicated that an in-depth diagnosis revealed a set of procedures, systems and culture that inhibit and constrain potential intrapreneurs trapped in these FMID departments of the three chosen universities, and that additional research on this phenomenon is needed.

3.5.4. Research Strategy for this Study

The researcher used a structured questionnaire in a survey as a scientifically proven strategy to make an in-depth diagnosis of the sector FM in the context of CE and its five capabilities. The questionnaire was created using the CEAI tool formulated by scholars in the field of CE (Kuratko et al., 2014). The questionnaire was divided into 5 sections of CE capabilities, namely: management support, discretion at work, rewards and reinforcement, time availability and organizational boundaries. Each of these skills was assessed with a series of questions, comprising a total of 45 closed questions and Likert scale responses.

To assess the suitability of the preliminary questionnaire for the final survey, a pilot study was conducted. The following chapter outlines the detailed explanation of the pilot study. A final version of the questionnaires was produced (see Appendix A), however, before publishing the final version of the online survey, the researcher made aesthetic changes and adjustments to allow respondents

to continue with the survey at the point at which they had previously left off, rather than starting from the beginning once again.

Participants had limited response options, as they could choose only one answer from the given options. All questions had to be clear and easy to understand, as respondents were expected to complete the questionnaire independently without help from the researcher.

3.5.5. Population

The study focused on individuals employed in the three university FMID departments, including operational and middle managers and staff who served as the data source and measurement level. The responses collected from these individuals were aggregated for statistical analysis at both the departmental and organizational levels, thus forming the level of analysis. According to Wiid and Diggins (2013, cited in Du Plooy-Cilliers et al., 2016), a population is defined as the total group from which data are needed. In this study, the target population consisted of operational and middle managers and employees. The study examined their perceptions of the internal environment within FMID departments at the university.

3.5.6. Sampling Method for this Study

Once the accessible population is identified, the next phase is to create a list of individuals who will directly participate in the research (Du Plooy-Cilliers, et al., 2014). In quantitative research, it is common to use a representative sample from the population to generalize the results. Consistent with this approach, the workforce of FMID departments at three universities formed the population of the study.

The researcher selected a sample from three universities in the Western Cape, mainly from the FMID departments of these chosen universities. The survey focused on the university FMID departments of three universities in the Western Cape because these departments comprise a wide range of business services (sub-departments) and infrastructure development that are suited to the aim of the study. Therefore, the extensive population of these three universities was divided into sample groups in order to gain essential knowledge and insights in accordance with the research objectives. All three universities selected for the study showed willingness to have their employees participate in the survey. Thus, the sampling methods chosen were the most appropriate and feasible given the unique circumstances of this study.

The target sample size from these three universities was determined after the number of employees in the university FMID department of each university was made known to the researcher. The aim of this study was to achieve a minimum sample of 349 respondents. The sample size is in line with the requirements set for a Master's study. The research respondents were selected based on their availability in their respective campuses and their interest in participating in the survey, that

was targeted at middle and operational managers and staff of these sub-divisions. A total of 246 responses were obtained through in-person and online surveys from the three selected institutions. Saunders & Lewis (2012) note that among the advantages of conducting surveys is the ability to ask more in-depth questions and obtain higher response rates from respondents. Therefore, the face-to-face survey strategy was primarily chosen for this study to allow for more in-depth engagement with complex questions and, thus, achieved a high response rate of 70%; 71% and 71% respectively in the three selected universities.

3.5.7. Data Collection Techniques for this Study

As indicated previously, In the South African province of Western Cape, there are a total of four universities and three institutions (whose names are kept anonymous throughout this study for confidentiality purposes, were randomly selected for the surveys. The survey consisted of closed-ended questionnaires adopted from Kuratko et al. (2014) that are made up of five CE capabilities. The researcher visited the FMID departments of each university and held a brief meeting with a facilities manager regarding the nature of the proposed research study. Upon receiving consent to conduct the study within the department, an outline of the structural organogram was discussed to orient the researcher. The structural organogram assisted the researcher to gain knowledge of the actual number of employees within each university FMID department and the operations thereof. Furthermore, the knowledge of departmental operations provided information regarding the size of the population and their weekly work schedules so that the researcher could coordinate site visits with the participants' availability.

Upon receiving a formal consent to conduct the study, the researcher visited each university campus and arranged for briefing sessions with the managers of each discipline (facilities managers, maintenance managers, campus protection managers, cleaning managers, gardening managers, supervisors etc.) within the FMID department. When the researcher was permitted to meet with the employees, a briefing session regarding the survey was conducted in groups by the researcher while attending to the participants' queries and overseeing the process. In cases in which employees could not attend these briefing sessions, the research study brief was recorded and sent via WhatsApp voice notes to supervisors who circulated these to the respective employees. The purpose of these briefing sessions was to explain the research objectives and intended outcome to the participants.

Participants were made aware at all occasions that their completion of survey was voluntary and they had a right to withdraw at any given time should they choose to do so. The respondents were assured that their identify would be kept anonymous throughout the study, hence the names of the respondents remain anonymous in this study report.

To collect quantitative data, both online and printed versions of the survey were provided for completion. The link to the Google online survey was distributed to the emails of non-operational staff whose availability was not sufficiently flexible for the researcher to arrange a face-to-face meeting

due to Covid-19 constraints and their busy work schedules. These participants included facilities managers, campus managers and maintenance managers. Data was collected only from middle and operational managers and staff in the Facilities Management, Maintenance, Projects, Cleaning, Horticulture and Campus Protection departments. In terms of access to the university premises, there were strict access restrictions related to Covid-19 at University_2, subsequently, an online questionnaire was used, while respondents at Universities 1 and 3 were mostly accessible for face-to-face surveys, with only a minority responding to email surveys.

Data was collected over a three-month period between May and July 2022 through questionnaire surveys. The official data collection ended in July 2022. Each dimension of the CEAI tool was made available through the online survey that guided participants in the completion of the questionnaire. Responses to the CEAI were recorded using a 5-point Likert scale. The Likert scale scores ranged from "strongly disagree" to "strongly agree" (see Table 3.1 below). The depth of the CEAI ranged from 1 to 5. The CEAI included five skills adopted from Kuratko et al. (2014). The structure of the questionnaire is presented in Table 3.1. below:

Table 3.1: Questionnaire design

No.	Section Title	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1	The promotion of, and readiness on the part of, top managers to help enable and support intrapreneurship inside an organization	1	2	3	4	5
2	The extent to which employees have autonomy and are empowered in their work	1	2	3	4	5
3	Rewards and reinforcement encourage employees to take innovative, proactive, and modest risks by motivating them to do so.	1	2	3	4	5
4	Time availability seems to be the strongest indicator of resource availability.	1	2	3	4	5
5	The amount to which an organizational structure offers the helpful administrative tools for evaluating, choosing, and implementing ideas	1	2	3	4	5

3.5.8. Data Analysis

3.5.8.1. Approach

246 participants completed either the online or print version of the CEAI questionnaire over three months between May and July 2022. The 45-question version of the CE scale was completed. The questions that comprise the CE were categorised as ordinal data. The CE scale required responses ranging from "strongly disagree" to "strongly agree", with values between 1 and 5. Each question on this scale was coded according to how researchers had used it in the past. The Likert scale responses that were recorded are shown in the tables below.

Table 3.2 Corporate Entrepreneurship - Likert Scale

1	Strongly Disagree
2	Disagree
3	Not Sure
4	Agree
5	Strongly Agree

The software IBM SPSS version 27 was used to conduct various statistical analyses. The variables were subjected to factor analysis to identify groups of related factors categorically or quantitatively. The reliability of the scale was tested using the Cronbach's alpha (α) coefficient. Through this method, additional dimensions were developed that characterised CE constructs while several questions were omitted. Finally, nonparametric correlation analysis for each dimension of the new CE were carried out.

Data collection and interpretation are both part of data analysis. The nature and format of the data determine the analysis of the data. Since the data was collected using a quantitative approach, the analysis is carried out accordingly.

3.5.8.2. Quantitative analysis

According to Walliman (2005), quantitative analysis examines the characteristics of the data using the syntax of statistical operations. Statistics is used to analyse quantitative data. Statistical analysis is categorised as descriptive or inferential.

3.5.8.2.1. Descriptive Statistics

Descriptive statistics is considered the most basic approach to analysing data because it gives a comprehensive overview of the results (Naoum, 2003) and provides a clear, comprehensive form for managing a large amount of data. Descriptive statistics uses dispersion (standard deviation) to measure central tendency (mode, median and mean).

3.5.8.2.2. Inferential Statistics

Using samples of observations, we performed nonparametric correlation analysis using the statistical software IBM SPSS v27 to evaluate possible correlations among the independent variables. The Pearson correlation coefficients for both components are shown in the inferential statistics can predict results that would likely be found in a population. This makes it easier to extrapolate the results of the sample to the whole population.

To analyse the collected data, IBM SPSS Statistical software was chosen to collect the raw data from the closed questions, which was used to perform the descriptive and inferential statistical analysis of the data mentioned above, after which calculations were made and the results interpreted.

3.5.9. Validity and Reliability of the Research Instrument

3.5.9.1. Validity

The accuracy or trustworthiness of the research results is called research validity (Maxwell, 1996). According to Leedy and Ormrod (2010), an instrument's validity is determined by how well it reflects the desired measurement. According to Denscombe (2007), techniques including triangulation, respondent validation, and grounded data can improve validity. The validity and of quantitative data were ensured by testing and refining data collection instruments. The research utilized different techniques for testing their instruments and checking for errors, biases, ambiguities, or redundancies before collecting data.

3.5.9.2. Reliability

When the object being measured is constant and has not changed, a measurement instrument is considered reliable if it consistently produces predictable and accurate results (Leedy & Ormrod 2010). According to Kumar (2010), reliability is high when measurement instruments are reliable and consistent. Reliability aims to reduce bias and error in a research project's results. SPSS is used to assess reliability by analysing the correlation of item scores for questions that are expected to yield consistent responses. For this study, the reliability was examined using Cronbach's alpha. Hair, Ringle, and Sarstedt (2013) assert that a construct is considered reliable if the alpha (α) is above 0.7. If the coefficient is above 0.80, this indicates that the scale has "good internal consistency", and values above 0.9 are considered excellent internal consistency (Rigtering & Weitzel, 2013). The Cronbach's alpha coefficient, which ranges from 0 to 1, indicates reliability, with values closer to 1 indicating higher reliability. In general, a Cronbach's alpha coefficient greater than 0.7 is considered ideal to confirm reliability.

3.6. Chapter Summary

This chapter provided an overview of the research methods used for this study. To achieve the objectives of this study, a quantitative research approach was used. A structured survey with closed-ended questionnaire were used as the research strategy. The data for the study was collected through the use of questionnaires. The methods of data analysis and how the objectives of the study were achieved were also mentioned. The context in which the internal environment took place in

relation to the CE culture of these university FMID departments of the three selected Western Cape Universities is explored in the following chapter (Chapter Four).

4. CHAPTER 4: DATA COLLECTION, FINDINGS AND ANALYSIS

4.1. Introduction

In this chapter, the analysis of the data obtained from the questionnaire is deepened. There are sections that discuss the pilot study, participant profiles, reliability tests and analysis of questionnaire responses. The procedures used by the researcher are fully described, together with the types of analysis used and the rationale for the choices made for each analysis.

4.2. Profile of Participants

Of the 4 universities within the Western Cape province, three (75%) duly completed and returned the questionnaire. Participants in the FMID departments of these three universities included middle managers (19%), operational managers (70%) and employees (11%) of all three institutions, as shown in Figure 4.1 below.

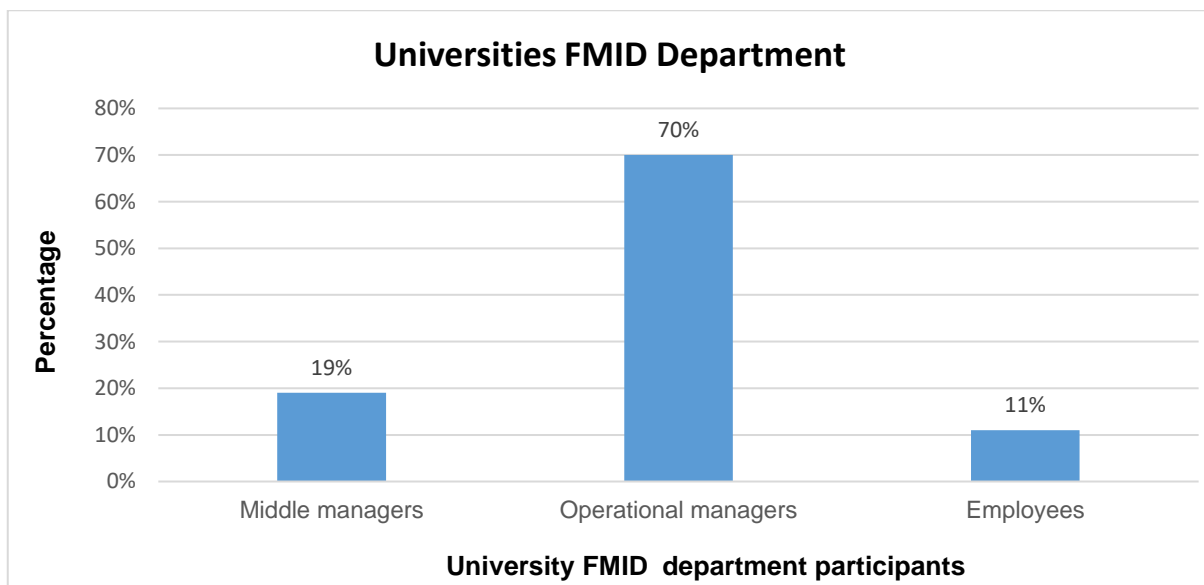


Figure 4.1: Universities' FMID department's involvement

The roles that respondents held in their organizations are shown in Figure 4.2 below. These roles included facilities manager, maintenance manager, garden manager, cleaning manager, construction manager, project manager, architect, surveyor, campus protection services manager (CPS), CPS, maintenance manager, cleaning manager, garden manager, foreman and employee.

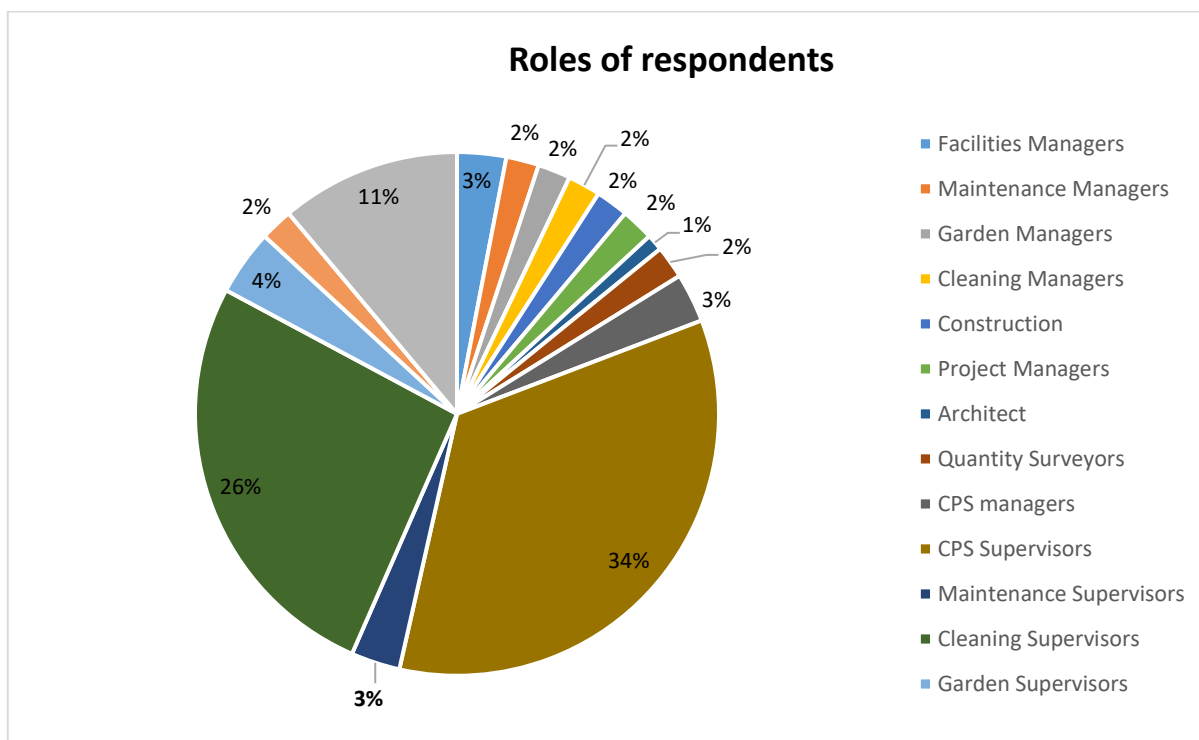


Figure 4.2: Roles of respondents

4.2.1. Response rate of respondents

Table 4.1 below shows that the target responses varied depending on the number of employees in each department at the university FMID departments. The target response for University_1 was 187, and the responses received were 131, for a 70% response rate. The targeted response for University_2 was 100, and the responses received were 71, for a response rate of 71%. The targeted response for University_3 was 62, the responses received were 44, for a response rate of 71%.

Table 4.1: Response Rate of Respondents

Universities FMID departments	Targeted Responses	Obtained Responses	Response Rate
University_1	187	131	70%
University_2	100	71	71%
University_3	62	44	71%

4.3. Descriptive Statistics of Original Data Obtained Using CEAI

Respondents were asked to rate how much they agreed with certain statements using a Likert scale, where "strongly disagree" = 1, "disagree" = 2, "neutral" = 3, "agree" = 4 and "strongly agree" = 5. Below are some descriptive statistics showing how 246 respondents, either in person or online,

answered the original questions. There were no incomplete responses, so none of the responses were removed from the dataset.

4.3.1. Awareness of the Management Support

Top management support is seen as beneficial at CE. However, it was crucial to assess the possibility of university FMID departments receiving support from top management. With 16 questions, none of which had negative wording, the majority of respondents answered (87%) indicated that top management is not receptive to their ideas and suggestions as shown in Table 4.3 below. Most respondents (85.4%) indicated that 'project makers' must follow approval procedures before making decisions, and a slightly smaller proportion of respondents (84%) noted the lack of rewards and compensation for innovative projects. A significant number of respondents (83.7%) said that their organizations do not take into account improved working methods developed by employees. A similar percentage of respondents (82.9%) stated that there is neither money nor strict requirements for getting promising ideas 'off the ground' or to start new business ideas. The same number of respondents (82.1%) said that employees lack encouragement to take calculated risks and also lack support to pursue small and experimental projects.

Many respondents (79.3%) reported that the development of new innovative ideas does not result in promotions. A number of respondents (78.5%) claimed that employees with innovative ideas were not given free time, while a relatively smaller percentage of respondents (78%) said that they did not face experienced managers who used creative processes. A number of respondents (76.1%) indicated that in their organization, people who take risks and show willingness to engage in new projects do not receive recognition. A slightly smaller number of respondents (72.8%) said that the development of their own ideas is not encouraged, even though these could have a positive impact for the company. A significant number of respondents (70.7%) stated that management does not support those employees who develop innovative ideas on their own. Fewer respondents (66.3%) said they are not encouraged to talk to employees in other company departments about ideas for new projects. Fewer respondents (54.1%) indicated that there is a strong desire among employees in these organizations to develop new ideas.

Table 4.2: Management Support Participant Scoring

	Section 1: Management Support	No	Strongly Disagree (%)	Disagree (%)	Not Sure (%)	Agree (%)	Strongly Agree (%)
MS_1	My organization is quick to use improved work methods that are developed by workers.	246	37,8	45,9	10,2	6,1	0,0
MS_2	In my organization, developing one's own ideas is encouraged for the improvement of the corporation.	246	30,1	42,7	16,3	8,9	2,0
MS_3	Upper management is receptive to my ideas and suggestions.	246	40,7	46,3	4,9	8,1	0,0
MS_4	A promotion usually follows from the development of new and innovative ideas.	246	33,7	45,5	13,4	7,3	0,0
MS_5	Those employees who come up with innovative ideas on their own often receive management encouragement for their activities	246	33,7	37,0	20,3	8,9	0,0
MS_6	The "doers on projects" are allowed to make decisions without going through elaborate justification and approval procedures.	246	43,1	42,3	9,8	4,1	0,8
MS_7	Senior managers in my organization encourage innovators to bend rules and rigid procedures to keep promising ideas on track.	246	38,2	44,7	6,1	9,8	1,2
MS_8	I know of a manager that has experience with the innovation process.	246	39,8	38,2	5,3	13,8	2,8
MS_9	In my organization money is often available to get new project ideas off the ground.	246	45,5	37,4	9,3	6,5	1,2
MS_10	Individuals with successful innovative projects receive additional rewards and compensation.	246	39,8	44,3	10,2	5,7	0,0
MS_11	People are often encouraged to take calculated risks with ideas around here	246	39,4	42,7	10,6	6,1	1,2
MS_12	Individual risk takers are often recognized for their willingness to champion new projects, whether eventually successful or not.	246	40,2	36,6	9,8	6,5	6,9
MS_13	My organization supports many small and experimental projects, realizing that some will undoubtedly fail.	246	35,4	46,7	9,8	8,1	0,0
MS_14	An employee with a good idea is often given free time to develop that idea	246	35,4	43,1	7,7	12,6	1,2
MS_15	There is considerable desire among people in my organization for generating new ideas without regard for crossing departmental or functional boundaries.	246	5,3	21,5	18,7	26,8	27,6
MS_16	We are encouraged to talk to employees in other departments of this organization about ideas for new projects.	246	37,8	28,5	6,5	17,9	9,3

Table 4.4 below also shows the mean and standard deviations of top management. The mean (M) is quite decisive for the five-point Likert scale, that is also called the interval scale (Pimentel 2010). The mean (M) from 1 to 1.80 means: do not agree at all. From 1.81 to 2.60 means disagree. From 2.61 to 3.40 it means neutral; from 3.41 to 4.20 it means agree; from 4.21 to 5 it means strongly agree.

Table 4.3 Management Support Mean Scoring

Section 1: Management Support		N	Mini mum	Maxi mum	Mean (M)	Std. Deviation (SD)
MS_1	My organization is quick to use improved work methods that are developed by workers.	246	1	4	1.85	.838
MS_2	In my organization, developing one's own ideas is encouraged for the improvement of the corporation.	246	0	4	2.00	.952
MS_3	Upper management is receptive to my ideas and suggestions.	246	1	4	1.80	.863
MS_4	A promotion usually follows from the development of new and innovative ideas.	246	1	4	1.94	.874
MS_5	Those employees who come up with innovative ideas on their own often receive management encouragement for their activities.	246	1	4	2.04	.949
MS_6	The "doers on projects" are allowed to make decisions without going through elaborate justification and approval procedures.	246	1	5	1.77	.846
MS_7	Senior managers in my organization encourage innovators to bend rules and rigid procedures to keep promising ideas on track.	246	1	5	1.91	.969
MS_8	I know of a manager that has experience with the innovation process.	246	1	5	2.02	1.125
MS_9	In my organization money is often available to get new project ideas off the ground.	246	1	5	1.80	.940
MS_10	Individuals with successful innovative projects receive additional rewards and compensation.	246	1	4	1.82	.835
MS_11	People are often encouraged to take calculated risks with ideas around here.	246	1	5	1.87	.917
MS_12	Individual risk takers are often recognized for their willingness to champion new projects, whether eventually successful or not.	246	1	5	2.03	1.178
MS_13	My organization supports many small and experimental projects, realizing that some will undoubtedly fail.	246	1	4	1.91	.878
MS_14	An employee with a good idea is often given free time to develop that idea.	246	1	5	2.01	1.024
MS_15	There is considerable desire among people in my organization for generating new ideas without regard for crossing departmental or functional boundaries.	246	1	5	3.50	1.248
MS_16	We are encouraged to talk to employees in other departments of this organization about ideas for new projects.	246	1	5	2.33	1.379
Valid N (listwise)		246				

According to Table 4.4 above, the mean scores for top management capability ranged from "strongly disagree" to "agree", with mean scores of 1.77 and 3.52. The descriptive statistics $M = 3.50$, $SD = 1.25$ indicate that the majority of the respondents believe that employees in their organization have a strong interest in developing new ideas. Descriptive statistic $M = 2.33$, $SD = 1.38$ indicates that the majority of participants are not encouraged to discuss new project ideas with staff from different departments within their organization. Descriptive statistic $M = 2.04$, $SD = 0.95$ indicates that the majority of respondents do not think that employees who come up with innovative ideas on their own are often supported by management for their activities. Descriptive statistics $M = 2.03$, $SD = 1.18$ indicates that the majority of respondents disagree that individual risk takers receive recognition for their willingness to engage in new projects. Descriptive statistics $M = 2.02$, $SD = 1.13$ indicates that most of the respondents do not know any manager who has experience in the innovation process. Descriptive statistic $M = 2.01$, $SD = 1.02$ indicates that the majority of respondents do not agree that an employee with a good idea often has free time to develop that idea. Descriptive statistics $M = 2.00$, $SD = 0.95$ indicates that respondents do not agree that their organization encourages them to develop their own ideas to improve the organization. Descriptive statistics $M = 1.94$, $SD = 0.87$ indicate that respondents do not agree with getting promotion for

developing new and innovative ideas. Descriptive statistics $M = 1.91$, $SD = 0.97$ indicate that participants disagree that management encourages innovators to bend rules and inflexible procedures to get promising ideas off the ground. Descriptive statistics $M = 1.91$, $SD = 0.88$ indicate that respondents disagree that they receive support for many small and experimental projects in their organization. Descriptive statistics $M = 1.87$, $SD = 0.92$ indicate that most respondents disagree that people in their organization are not encouraged to take calculated risks with their ideas

Descriptive statistics $M = 1.85$, $SD = 0.84$ indicate that the majority of participants do not believe that their organization is implementing improved work practices developed by their employees in a timely manner. Descriptive statistics $M = 1.82$, $SD = 0.84$ indicate that the majority of participants do not agree that people who carry out successful innovative projects receive additional rewards and compensation. Descriptive statistics $M = 1.80$, $SD = 0.94$ indicate that most respondents disagree that money is often available to get new project ideas 'off the ground' in their organization. Descriptive statistics $M = 1.80$, $SD = 0.86$ indicate that most respondents disagree that top management is open to their ideas and suggestions. Descriptive statistics $M = 1.77$, $SD = 0.85$ indicate that most participants disagree that the "people who implement the projects" have the freedom to make decisions without going through complex justification and approval processes.

The standard deviations for top management vary between 1.0 and 1.38, but there are also values that are slightly less than 1 (0.83 to 0.97). These values, ranging from 0.83 to 1.38, indicate that the responses were normally distributed and consistent in terms of the level of entrepreneurship within the university FMID departments.

4.3.2. Awareness of the Work Discretion

The extent to which operational level managers and entrepreneurial employees are given the freedom to work independently, make decisions, set their own goals, negotiate freely, communicate freely and be allowed to make mistakes in order to pursue business opportunities promotes discretion at work CE. Consisting of 10 questions (of which 1 is negatively worded) most respondents (81.3%) said that they have to consult with someone else about their decisions, as shown in Table 4.5 below. The majority of respondents (76%) said that they have no autonomy in their work and are never left alone to complete their own work. A significant number of respondents (73.2%) said that in their company they have the opportunity to be creative and try out their own methods of completing their work, while slightly fewer respondents (71.1%) said that in their organizations they have the opportunity to do something where they can use their skills. Many respondents (68.3%) said that they cannot decide what they do at work. A number of respondents (67.5%) said that they have to follow the same work methods or steps every day when undertaking important tasks, while slightly fewer respondents (66.3%) said that their company gives them the freedom to use their own judgement. More respondents (61%) said that harsh criticism and punishment resulted from mistakes at work.

The scoring for the negatively worded questions (WD_18) was reversed before the statistical analysis.

Table 4.4: Work Discretion Participant Scoring

	Section 2: Work Discretion	No	Strongly Disagree (%)	Disagree (%)	Not Sure (%)	Agree (%)	Strongly Agree (%)
WD_17	I feel that I am my own boss and do not have to double check all my decisions with someone else.	246	36,6	44,7	2,0	13,8	2,8
WD_18	Harsh criticism and punishment result from mistakes made on the job.	246	28,0	32,9	18,7	9,3	11,0
WD_19	This organization provides me the chance to be creative and try my own methods of doing the job.	246	42,3	30,9	5,3	15,4	6,1
WD_20	This organization provides me the freedom to use my own judgment.	246	34,1	32,1	8,5	22,0	3,3
WD_21	This organization provides me the chance to do something that makes use of my abilities.	246	29,3	41,9	8,1	15,0	5,7
WD_22	I have the freedom to decide what I do on my job.	246	22,8	42,7	2,8	27,2	4,5
WD_23	It is basically my own responsibility to decide how my job gets done	246	25,2	41,5	3,3	24,0	6,1
WD_24	I almost always get to decide what I do on my job.	246	24,0	44,3	4,1	22,8	4,9
WD_25	I have much autonomy on my job and am left on my own to do my own work.	246	34,6	41,5	6,5	10,2	7,3
WD_26	I seldom have to follow the same work methods or steps for doing my major tasks from day to day.	246	12,2	13,8	6,5	46,3	21,1

Table 4.6 below also shows the mean and standard deviations of top management. The mean (M) is quite decisive for the five-point Likert scale, that is also called the interval scale (Pimentel 2010). The mean (M) from 1 to 1.80 means: do not agree at all. From 1.81 to 2.60 means disagree. From 2.61 to 3.40 it means neutral; from 3.41 to 4.20 it means agree; from 4.21 to 5 it means strongly agree.

Table 4.5 Work Discretion Mean Scoring

	Section 2: Work Discretion	N	Mini mum	Maxi mum	Mean (M)	Std. Deviation (SD)
WD_17	I feel that I am my own boss and do not have to double check all my decisions with someone else.	246	1	5	2.02	1.095
WD_18	Harsh criticism and punishment result from mistakes made on the job.	246	1	5	2.42	1.287
WD_19	This organization provides me the chance to be creative and try my own methods of doing the job.	246	1	5	2.12	1.278
WD_20	This organization provides me the freedom to use my own judgment.	246	1	5	2.28	1.235
WD_21	This organization provides me the chance to do something that makes use of my abilities.	246	1	5	2.26	1.194
WD_22	I have the freedom to decide what I do on my job.	246	1	5	2.48	1.235
WD_23	It is basically my own responsibility to decide how my job gets done	246	1	5	2.44	1.266
WD_24	I almost always get to decide what I do on my job.	246	1	5	2.40	1.214
WD_25	I have much autonomy on my job and am left on my own to do my own work.	246	1	5	2.14	1.209
WD_26	I seldom have to follow the same work methods or steps for doing my major tasks from day to day.	246	1	5	3.50	1.299
Valid N (listwise)		246				

Table 4.6 above shows the descriptive statistics $M = 3.50$, $SD = 1.30$, indicating that the majority of the respondents agree to follow the same work methods or steps for completing important tasks from day to day. Descriptive statistics $M = 2.48$, $SD = 1.24$ indicates that most respondents were neutral on whether they have the freedom to decide what they do or do not do at their workplace. Descriptive statistic $M = 2.44$, $SD = 1.27$ indicates that the majority of respondents reported neutrally on whether or not harsh criticism and punishment resulted from mistakes at work. Descriptive statistic $M = 2.42$, $SD = 1.29$ means that the majority of respondents neutrally report whether or not they have the responsibility to decide how their work is done. Descriptive statistics $M = 2.40$, $SD = 1.21$ indicates that most respondents do not agree that they can always decide what they do in their work. Descriptive statistics $M = 2.28$, $SD = 1.24$ indicates that most respondents do not agree that they are given the freedom to use their own judgement. Descriptive statistics $M = 2.26$, $SD = 1.19$ indicates that respondents do not agree with being given the opportunity to do something in which they can use their skills. Descriptive statistics $M = 2.14$, $SD = 1.21$ indicates that respondents disagree that they have a lot of autonomy in their job and are left to their own devices in their work. Descriptive statistics $M = 2.12$, $SD = 1.28$ indicates that respondents do not agree that they are given the opportunity to be creative and try out their own methods of completing their work. The descriptive statistics $M = 2.02$, $SD = 1.10$ indicates that the respondents do not agree with the feeling of being their own boss

The standard deviations for work discretion range from 1.0 to 1.30, indicating that the responses are normally distributed and consistent across respondents in terms of the level of entrepreneurship within the university FMID departments.

4.3.3. Awareness of Rewards and Reinforcement

The success of CE is most strongly influenced by the remuneration of employees, as it is generally assumed that a remuneration system promotes innovation. Consisting of 6 questions (of which 0 is negatively worded) most respondents (80.9%) indicated that the rewards they receive do not depend on their innovation at work, while slightly fewer respondents (76.4%) admitted that their work is very challenging (see Table 4.7 below). Most respondents (67.1%) said that their supervisor does not remove obstacles and roadblocks to help them complete their work. Slightly fewer respondents (66.7%) said that their supervisor does not extend their tasks if they perform well in their work. Fewer respondents (45.9%) said that they receive special recognition from their supervisor when they perform particularly well at work. Fewer respondents (39.8%) said that their supervisor would not tell their boss if the employee's work was excellent.

Table 4.6: Rewards and Reinforcement Participant Scoring

		No	Strongly Disagree (%)	Disagree (%)	Not Sure (%)	Agree (%)	Strongly Agree (%)
	Section 3: Rewards and Reinforcement						
RR_27	My manager helps me get my work done by removing obstacles and roadblocks.	246	30,5	36,6	8,1	17,9	6,9
RR_28	The rewards I receive are dependent upon my innovation on the job.	246	41,9	39,0	13,0	4,1	2,0
RR_29	My supervisor will increase my job responsibilities if I am performing well in my job	246	30,5	36,2	21,1	5,7	6,5
RR_30	My supervisor will give me special recognition if my work performance is especially good	246	23,2	22,8	29,7	10,6	13,8
RR_31	My manager would tell his/her boss if my work was outstanding.	246	21,5	18,3	29,3	16,3	14,6
RR_32	There is a lot of challenge in my job	246	8,9	12,2	2,4	30,1	46,3

Table 4.8 below also shows the mean and standard deviations of top management. The mean (M) is quite decisive for the five-point Likert scale, that is also called the interval scale (Pimentel 2010). The mean (M) from 1 to 1.80 means: do not agree at all. From 1.81 to 2.60 means disagree. From 2.61 to 3.40 it means neutral; from 3.41 to 4.20 it means agree; from 4.21 to 5 it means strongly agree.

Table 4.7 Rewards and Reinforcement Mean Scoring

		N	Mini mum	Maxi mum	Mean (M)	Std. Deviation (SD)
	Section 3: Rewards and Reinforcement					
RR_27	My manager helps me get my work done by removing obstacles and roadblocks.	246	1	5	2.34	1.270
RR_28	The rewards I receive are dependent upon my innovation on the job.	246	1	5	1.85	.936
RR_29	My supervisor will increase my job responsibilities if I am performing well in my job	246	1	5	2.22	1.135
RR_30	My supervisor will give me special recognition if my work performance is especially good	246	1	5	2.69	1.313
RR_31	My manager would tell his/her boss if my work was outstanding.	246	1	5	2.84	1.332
RR_32	There is a lot of challenge in my job	246	1	5	3.93	1.335
Valid N (listwise)		246				

Table 4.8 above shows the descriptive statistics $M = 3.93$, $SD = 1.34$ indicating that majority of the respondents agree that their job is very challenging. Descriptive statistics $M = 2.84$, $SD = 1.33$ indicating that the majority of respondents answered neutrally to the question whether their supervisor would tell their boss whether the employee's job was excellently performed or not. Descriptive statistics $M = 2.69$, $SD = 1.31$ indicates that the majority of respondents were neutral on whether their supervisor would give them special recognition if their work performance was outstanding. Descriptive statistics $M = 2.34$, $SD = 1.27$ means that the majority of respondents disagree that their supervisor helps them remove obstacles and blocks to completing their work. Descriptive statistic $M = 2.22$, $SD = 1.14$ means that the majority of respondents disagree with their

supervisor giving them more responsibility if they are good at their work. The descriptive statistics $M = 1.85$, $SD = 0.94$ shows that majority of the respondents disagree that the rewards they receive depend on their innovation with regards to their job.

The standard deviations for rewards and reinforcement vary between 1.0 and 1.3, but there is one value that is slightly below 1 (0.94). These values, ranging from 0.94 to 1.3, indicate that the responses are normally distributed and consistent across all respondents in terms of the level of entrepreneurship within the university FMID departments.

4.3.4. Awareness of Time Availability

The availability of time and resources is critical for entrepreneurial employees and managers to pursue their entrepreneurial aspirations (Schulz et al., 2016). Consisting of 6 questions (of which 3 are negatively worded), Table 4.9 shows that most respondents (66.7%) indicated that they have just the right amount of time and workload to do everything well, while slightly fewer respondents (63.05%) indicated that their workload during the previous three months had prevented them from spending time developing new ideas. A number of respondents (56.5%) said that their work is structured in such a way that they have little time to think about wider organizational issues. More respondents (56.1%) said that they always seem to have enough time to complete all their scheduled tasks. Slightly fewer respondents (54.1%) said that they often lack the time to find long-term solutions to problems together with their colleagues. Fewer respondents (52.8%) said that they feel they are always under time pressure in their work. The scoring for the negatively worded questions (TA_33, TA_36, TA_37) was reversed before the statistical analysis.

Table 4.8: Time Availability Participant Scoring

		No	Strongly Disagree (%)	Disagree (%)	Not Sure (%)	Agree (%)	Strongly Agree (%)
	Section 4: Time Availability						
TA_33	During the past three months, my workload kept me from spending time on developing new ideas.	246	25,6	37,4	4,1	23,6	9,3
TA_34	I always seem to have plenty of time to get everything done.	246	22,4	17,1	4,5	45,1	11,0
TA_35	I have just the right amount of time and workload to do everything well.	246	12,2	17,1	4,1	50,8	15,9
TA_36	My job is structured so that I have very little time to think about wider organizational problems.	246	11,0	28,5	4,1	38,6	17,9
TA_37	I feel that I am always working with time constraints on my job.	246	19,1	22,4	5,7	28,5	24,4
TA_38	My co-workers and I always find time for long-term problem solving.	246	18,3	35,8	9,8	24,4	11,8

Table 4.10 below also shows the mean and standard deviations of top management. The mean (M) is quite decisive for the five-point Likert scale, that is also called the interval scale (Pimentel 2010). The mean (M) from 1 to 1.80 means: do not agree at all. From 1.81 to 2.60 means disagree.

From 2.61 to 3.40 it means neutral; from 3.41 to 4.20 it means agree; from 4.21 to 5 it means strongly agree.

Table 4.9 Time Availability Mean Scoring

Section 4: Time Availability		N	Mini mum	Maxi mum	Mean (M)	Std. Deviation (SD)
TA_33	During the past three months, my workload kept me from spending time on developing new ideas.	246	1	5	2.54	1.342
TA_34	I always seem to have plenty of time to get everything done.	246	1	5	3.05	1.400
TA_35	I have just the right amount of time and workload to do everything well.	246	1	5	3.41	1.280
TA_36	My job is structured so that I have very little time to think about wider organizational problems.	246	1	5	3.24	1.332
TA_37	I feel that I am always working with time constraints on my job.	246	1	5	3.17	1.493
TA_38	My co-workers and I always find time for long-term problem solving.	246	1	5	2.76	1.324
Valid N (listwise)		246				

Table 4.10 above shows the descriptive statistics $M = 3.41$, $SD = 1.28$, indicating that the majority of respondents believe that they have just the right amount of time and workload to complete their tasks well. Descriptive statistics $M = 3.24$, $SD = 1.33$ suggest that the majority of respondents are neutral about whether or not their work is structured in such a way that they have very little time to think about wider organizational issues. Descriptive statistics $M = 3.17$, $SD = 1.49$ indicates that the majority of respondents were neutral about whether or not they are always under time pressure in their work. Descriptive statistics $M = 3.05$, $SD = 1.40$ indicates that the majority of respondents were neutral on whether or not they always seem to have enough time to complete their tasks. Descriptive statistics $M = 2.76$, $SD = 1.32$ indicates that the majority of respondents took a neutral stance with regard to their constant availability for long-term problem solving in collaboration with colleagues. Descriptive statistics $M = 2.54$, $SD = 1.34$ means that the majority of respondents do not think that their workload has prevented them from finding time to develop new ideas in the last three months. The standard deviations for time availability ranged from 1.27 to 1.49, indicating that the responses were normally distributed and consistent across respondents in terms of the level of entrepreneurship within the university FMID departments.

4.3.5. Awareness of Organizational Boundaries

The presence of a supportive organizational structure and undefined boundaries is the final capability that facilitates CE. Consisting of 7 questions (of which 6 are negatively worded), Table 4.11 below shows that most respondents (73.6%) indicated that they have no doubt about what is expected of them in their job, while slightly fewer respondents (72.8%) indicated that they have always followed standard operating procedures or practices to complete important tasks in the last three months. More respondents (66.7%) indicated that they know exactly what work performance is

expected of them in terms of quantity, quality and timeframe, while slightly fewer respondents (64.6%) indicated that their job description clearly states the performance standards against which their work is evaluated. A number of respondents (62.2%) stated that there are many written rules and procedures for performing their main tasks. Fewer respondents (58.15) indicated that their immediate supervisor had not spoken frequently to them about their work performance during the past year. Finally, (41.9%) of respondents indicated that their work is very unsafe, while (41.5%) indicated that their work is not very unsafe. The scoring for the negatively worded questions (OB_39, OB_40, OB_41, OB_42, OB_44, and OB_45) was reversed before the statistical analysis.

Table 4.10: Organizational Boundaries Participant Scoring

Section 5: Organizational Boundaries		No	Strongly Disagree (%)	Disagree (%)	Not Sure (%)	Agree (%)	Strongly Agree (%)
OB_39	In the past three months, I have always followed standard operating procedures or practices to do my major tasks.	246	10,2	12,6	4,5	48,8	24,0
OB_40	There are many written rules and procedures that exist for doing my major tasks.	246	7,3	24,8	5,7	40,7	21,5
OB_41	On my job I have no doubt of what is expected of me.	246	2,0	12,2	12,2	48,4	25,2
OB_42	There is little uncertainty in my job.	246	10,6	31,3	16,7	37,0	4,5
OB_43	During the past year, my immediate supervisor discussed my work performance with me frequently.	246	25,6	32,5	4,1	24,0	13,8
OB_44	My job description clearly specifies the standards of performance on which my job is evaluated.	246	11,0	15,0	9,3	43,9	20,7
OB_45	I clearly know what level of work performance is expected from me in terms of amount, quality, and timelines of output.	246	7,3	12,2	13,8	41,1	25,6

Table 4.12 below also shows the mean and standard deviations of top management. The mean (M) is quite decisive for the five-point Likert scale, that is also called the interval scale (Pimentel 2010). The mean (M) from 1 to 1.80 means: do not agree at all. From 1.81 to 2.60 means disagree. From 2.61 to 3.40 it means neutral; from 3.41 to 4.20 it means agree; from 4.21 to 5 it means strongly agree.

Table 4.11 Organizational Boundaries Mean Scoring

Section 5: Organizational Boundaries		N	Min	Max	Mean (M)	Std. Deviation (SD)
OB_39	In the past three months, I have always followed standard operating procedures or practices to do my major tasks.	246	1	5	3.64	1.256
OB_40	There are many written rules and procedures that exist for doing my major tasks.	246	1	5	3.44	1.272
OB_41	On my job I have no doubt of what is expected of me.	246	1	5	3.83	1.009
OB_42	There is little uncertainty in my job.	246	1	5	2.93	1.134
OB_43	During the past year, my immediate supervisor discussed my work performance with me frequently.	246	1	5	2.68	1.431
OB_44	My job description clearly specifies the standards of performance on which my job is evaluated.	246	1	5	3.48	1.277
OB_45	I clearly know what level of work performance is expected from me in terms of amount, quality, and timelines of output.	246	1	5	3.65	1.195
Valid N (listwise)		246				

Table 4.12 above shows the descriptive statistics $M = 3.83$, $SD = 1.01$, indicating that the majority of respondents agree that they have no doubts about what is expected of them with regards to their work. Descriptive statistic $M = 3.65$, $SD = 1.20$ indicates that the majority of respondents agree that they clearly know what level of work performance is expected of them in terms of quantity, quality and deadlines. Descriptive statistics $M = 3.64$, $SD = 1.26$ means that the majority of respondents agree with the statement that they have always followed standard work instructions or practices in the last three months when completing their main tasks. Descriptive statistics $M = 3.48$, $SD = 1.28$ shows that the most participants agree that their job description explicitly states the performance criteria against which their work will be evaluated. Descriptive statistics $M = 3.44$, $SD = 1.27$ means that the majority of respondents agree that there are many written rules and procedures that exist for the performance of their main duties. Descriptive statistics $M = 2.93$, $SD = 1.13$ means that the majority of respondents reported being neutral and having little uncertainty about their job. Descriptive statistics $M = 2.68$, $SD = 1.43$ indicates that respondents were neutral about whether or not their immediate supervisor frequently talked to them about their job performance in the past year.

The standard deviations of the organizational boundaries ranged from 1.00 to 1.43, indicating that the responses were normally distributed and consistent across respondents in terms of the level of entrepreneurship within the university FMID departments.

4.6. Factor Analysis

First, a principal component analysis (PCA) was conducted to examine variables (45 CE questions) into one or few components that explain the relationship or correlation among the variables (note that all procedures reported here use SPSS). Basically, PCA aims to identify a reduced set of variables that can explain the correlations, resulting in a more concise solution that clarifies these variables and their interrelationships. The researcher conducted a descriptive statistics analysis to determine the mean, median and standard deviation. Furthermore, the latter analysis determined the correlation matrix, coefficients, significance levels, determinants and KMO and Bartlett's test for sphericity. The factor loading threshold was set to at least 0.40. In addition, the communalities of the scale, indicating the amount of variance explained by each dimension, were examined to ensure a satisfactory level of explanation. The results show that all communalities are above 0.40, which is considered satisfactory.

A crucial step was to evaluate the overall significance of the correlation matrix by applying Bartlett's test for sphericity, which indicates the statistical probability of significant correlations between specific components within the correlation matrix. The results were significant, $\chi^2(n = 246) = 18241.235$ ($p < 0.000$), indicating that there is at least one significant correlation between two of the items somewhere in the data suitable for component analysis. The Kaiser-Meyer-Olkin measure (KMO), which measures the suitability of the data sample for factor analysis, yielded a value of 0.956.

Data with KMO values above 0.800 are generally considered well suited for this analysis because they indicate that component analysis is useful for these variables (Cerny & Kaiser, 1977; Kaiser, 1970). The correlation matrix determinant 2.294E-34 was much larger than 0.0001 and can be considered good.

Nevertheless, in this first PCA, the researcher only conducted a descriptive and an extractive component analysis. The results showed that all items loaded significantly in all dimensions, because their component loadings were greater than 0.40. In addition, the analysis revealed a two-dimensional solution for the scale that explained a significant 94.108% of the variation in the data. These two newly identified components have eigenvalues greater than 1. Eigenvalues denote the total variance explained by a particular principal component, and values greater than zero indicate a valuable factor (Hoffman & Kunze, 1971). For further analysis, the researcher retained the two new components.

For the 2nd stage of the analysis, the researcher repeated the EFA for the 45 items, using oblique rotation to produce the table of component matrix to determine whether the two retained new components are orthogonal or oblique. The minimum criterion for the factor loading was set at 0.40. The component matrix showed that the component_1 of the two new component correlations were good, as they were not close to zero (0). However, component_2 did not exceed 0.50, that means that the components are not skewed and the researcher, therefore, assumed that the factors are orthogonal. Therefore, further analysis was required.

In the final stage, the researcher repeated the PCA for the 45 items and used Promax with Kaiser Normalization to create the rotated component matrix table to confirm that the two retained new factor components were indeed orthogonal. The rotated factor matrix provided the best-defined factor structure. The eigenvalues above 1 confirm the conclusion that these 45 items can be reduced to two components consisting of 26 items. The component matrix after rotation for this final solution is shown in Table 4.13 below.

Overall, these analyses indicated that the two distinct components were moderately internally consistent. The two components identified includes **Component_1** with items MS_01; MS_04; MS_06; MS_07; MS_08; MS_09; MS_10; MS_11; MS_12; MS_13; MS_14; WD_17; WD_19; WD_25; RR_28; RR_29. **Component_2** includes items MS_03; MS_15; WD_26; TA_35; OB_39; OB_40; OB_41; OB_44; OB_45. All two components' loadings are presented in Table 4.13 below.

Table 4.12 Matrix of components after rotation, percentages of explained variance of the two dimensions of the Likert scale. (Rotated Component Matrix^a)

	Components		Communalities
	1	2	
MS_9	1.009		.956
MS_12	.997		.816
RR_28	.981		.945

MS_11	.980		.919
MS_7	.975		.957
MS_6	.966		.959
MS_8	.957		.939
WD_17	.955		.953
MS_10	.945		.968
MS_1	.923		.966
WD_25	.917		.953
WD_19	.896		.951
MS_13	.887		.917
MS_14	.884		.951
MS_4	.808		.914
RR_29	.776		.955
RR_32		1.080	.967
OB_39		.992	.950
MS_3		-.962	.906
OB_41		.938	.930
OB_45		.923	.934
WD_26		.909	.958
OB_44		.862	.936
TA_35		.836	.936
MS_15		.742	.968
OB_40	.302	.720	.963
% of the explained variance	85.298	8.810	
% of total variance explained		94.108	
Precision measurement of Kaiser-Meyer-Olkin sampling (KMO)		0.956	
Bartlett sphericity test:			
Chi-square approximate		18241.235	
df		325	
Significance of Bartlett (P value)		.000	
Extraction Method: Principal Component Analysis.			
Rotation Method: Promax with Kaiser Normalization.			
a. Rotation converged in 3 iterations.			

4.6.1. Reliability Test Analysis

Reliability assesses the internal consistency of constructs within the study. As stated by Hair, Ringle, and Sarstedt (2013), a construct is considered reliable if the alpha (α) is above 0.7. If the coefficient is above 0.80, this indicates that the scale has "good internal consistency", and values above 0.9 are considered excellent internal consistency (Rigtering & Weitzel, 2013). The internal consistency for each of the items in Table 4.13 above was examined using Cronbach's alpha. The Cronbach's alpha for the two components was greater than 0.7, thus, the two components were retained. The Cronbach's alpha results are summarized in Table 4.14 below.

Table 4.13 Cronbach's alpha coefficient results

Component	Cronbach's Alpha	Items removed to increase alpha > 0.7	Cronbach Alpha post items removal	No. of items	Factor Removed/ Retained
1	0.995	-	-	16	Retained
2	0.951	-	-	10	Retained

From Table 4.14 above, overall alphas for each factor have strong internal consistency and, therefore, were retained: $\alpha = 0.995$ for Component 1 (16 items), $\alpha = 0.951$ for Component 2 (13 items).

4.6.2. Correlation and Regression Analysis

We performed nonparametric correlation analysis using the statistical software IBM SPSS to evaluate possible correlations among the independent variables. All correlations showed statistically significant relationships. The Pearson correlation coefficients for both components are shown in the following Table 4.15

Table 4.14 Pearson's Correlation Coefficient

		Factor1	Factor2
Spearman's rho	Factor1	Correlation Coefficient	1.000
		Sig. (2-tailed)	.
		N	246
Factor2		Correlation Coefficient	.969**
		Sig. (2-tailed)	<.001
		N	246

** . Correlation is significant at the 0.01 level (2-tailed).

4.6.3. Descriptive Statistics of Two New Factors

The researcher identified some descriptive statistics showing how 246 respondents, both in person or online, answered the original questions. Following the factor analysis, the researcher conducted another descriptive analysis of the three new factors. Table 4.16 below shows the median, mean and standard deviations of the items grouped under the three new factors.

Table 4.15 Descriptive Statistics of the New Components

N	Minimum	Maximum	Mean (M)	Std. Deviation (SD)
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Factor2	246	1	5	3.42	1.009
Factor1	246	1	5	1.96	.976
Valid N (listwise)	246				

According to Table 4.15 above, the descriptive statistics $M = 3.42$, $SD = 1.01$ indicate that the majority of respondents were neutral about whether or not they receive recognition for good performance, a balance of time and workload, flexible rules and procedures for autonomy at work. The descriptive statistic $M = 1.96$, $SD = 0.976$ refers to respondents who disagree that they receive support from management for innovation in the form of encouragement, transfer to other departments, criticism, punishment, freedom to make decisions, use of their own skills, autonomy in completing their work, removal of obstacles relating to completing their work, workload, and constant evaluation of work performance.

4.7. Chapter Summary

This chapter provided an overview of the research analytical method used for this study. To achieve the objectives of this study, statistical software IBM SPSS v27 was used to analyse the raw data where we performed nonparametric correlation analysis using the to evaluate possible correlations among the independent variables. The researcher also identified some descriptive statistics while confirming the reliability and validity of the study. The following chapter discusses the findings of the data analysed in this chapter.

5. CHAPTER 5: DISCUSSION OF FINDINGS

5.1. Introduction

This chapter contains the discussion of the data analysed. The focus is on whether the results support or refute the scholars' claims. In this chapter the researcher discussed the study results in the context of the research objectives. The researcher assessed the method of analysis used and its suitability for this study report. The objective of the study was to analyse the influence of management support, autonomy and rewards, and available time and perception of organizational boundaries on the innovative behaviour of middle and operational managers and staff in the FMID departments of the three selected universities.

5.2. Review of Analysis Techniques

Principal Component Analysis (PCA) was conducted to decompose the variables (45 CE questions) into one or a few components that explain the relationship or correlation between the variables. In other words, PCA aims to identify a smaller number of variables that can explain the correlations in order to obtain a more concise solution that explains these variables and their relationships. The PCA technique was used to validate similar responses by reducing the dimensions of each variable.

There are actually a number of different ways to calculate variables for component analysis. Therefore, when conducting a quantitative study, careful consideration must be given to which component analysis approach will be adopted. When addressing a research problem, component analysis and the measurement of Cronbach's alpha can be used to either confirm hypotheses previously made by researchers or to uncover data patterns and correlations.

For the discussion of the results analysed in the previous chapter, the researcher will use the mean values of the CE skills as a basis for discussion. The mean (M) is quite crucial for the five-point Likert scale, also known as the interval scale (Pimentel 2010). The mean (M) from 1 to 1.80 means: strongly disagree. From 1.81 to 2.60 means: disagree. From 2.61 to 3.40 it means neutral; from 3.41 to 4.20 it means agree; from 4.21 to 5 it means strongly agree.

5.2.1. Prevalence of Management Support

This research study found that more than 87% of the respondents indicated that the top management is not receptive to their ideas and suggestions. The mean score was 2.08, indicating that, on average, respondents from these three university FMID departments do not agree with being supported by management. These results are consistent with the findings of Moraes et al. (2021)

which indicated that employees do not receive support from management for new ideas and encouragement to innovate, although top management support has a significant impact on innovation.

The remaining items that comprise management supportability after conducting factor analysis focus on the role of top management, its openness to new ideas and its willingness to encourage innovation. From these items, there is also an explicit proclamation of the urgency and necessity of management support in terms of formulating and promoting creative ideas developed by the employees of these three university FMID departments. In other words, top management has more power to create an environment conducive to innovation by encouraging employees to develop an entrepreneurial mindset that allows them to take risks, as outlined by Rodríguez et al. (2017) and Moraes et al. (2021).

However, the argument of Glaser et al. (2016) that top management is not receptive to ideas coming from below (bottom-up approach) was proven correct in this study. The responses to the survey conducted for this study revealed that top management does not support the bottom-up approach because they only dictate how the work should be completed and provide no evidence of appreciating the ideas of their subordinates. This lack of openness on the part of top management can potentially affect entrepreneurial activities at all levels of management, as operational managers also indicated that they are confronted with the core of day-to-day operations in their work and that this confrontation stimulates more innovative ideas to improve operations. An environment in which top management supports entrepreneurial activities could encourage operational innovation by enabling the introduction of tools that can improve and maximise the facility's operations. For example, universities could implement streamlined electronic check-in processes for staff, students and employees, while automatically notifying visitor supervisors at check-in points to regulate security protocols as they enter each university building. This idea is in line with the security challenges these institutions face daily due to inadequate security measures, e.g., theft of university equipment.

Moreover, inadequate functional lighting in dark places on campus (e.g., outdoor stairwells) can be criticised and staff may suggest solutions, such as the use of rechargeable, energy-efficient lights, e.g., solar lights LED, as opposed to conventional lights due to problems with constant load shedding in SA. With proper attention and encouragement, staff could provide more innovative ideas to alleviate the lighting problems. Nevertheless, insufficient illumination is directly related to the main goal of the teaching and learning process, which is to enable learners to achieve the desired behavioural changes through critical thinking. As Odediran et al. (2015) point out, this process takes place in an environment that is conducive to teaching and learning. Therefore, improving building aesthetics and conditions is a specific goal of FM in an academic environment that aims to establish a system that supports teaching and learning, improves teaching effectiveness, and increases staff and student productivity. Therefore, this study is consistent with the assertion that a pleasant teaching and learning environment is important for both students and staff (Karna & Julin 2015).

Moreover, the current advances brought about by globalisation and intense competition pose a problem for sustainable economic development in all countries. As a result, economic development today requires creativity and innovation, expanding competitiveness for advanced sectors, increasing efficiency and controlling investment risks. In this context, innovative universities play a crucial role in the development of new ideas and technologies and in their diffusion to industry and society. These innovative universities leverage stakeholder engagement by ensuring that they receive feedback from facility users on the maintenance, management, safety and security of university facilities, as well as on potential innovative ideas that can strengthen the entrepreneurial spirit among students and staff. Particularly in developing countries such as South Africa, 29 years after the demise of apartheid, it is evident that apartheid provided a higher education offering that met the needs of the industry of the time and produced a workforce that was trapped in a 'comfort zone', working for a 'boss' and did not foster entrepreneurship. This view is evidenced by the fact that sectors in South Africa are still unable to move from a colonialist approach to a bottom-up approach to implementing CE in organizations (Chakravarty, 2022), and university FMID departments are no exception. Although the South African government has devised programmes to promote entrepreneurship in universities, suggesting that development policies are geared towards entrepreneurship to support the country's economic growth (Preisendorfer, Bitz, & Bezuidenhout, 2012; Chakravarty, 2022), according to the findings of this study, there is still a lack of linkage between the use of CE and its implementation in South African university FMID departments with regards to addressing the challenges of the global marketplace.

The results of this study have shown that the top management of these three selected university FMID departments make their decisions only on the basis of theory, so there is no connection with the actual reality of operations. In other words, creativity and innovation coming from the bottom are hindered at the middle management level, making it almost impossible for intrapreneurs to flourish in these university FMID departments. This situation could be due to the differences in cultures, environment, entrepreneurial knowledge, people and systems that ultimately influence the management of any university. However, academic institutions are facing increasing competition to provide better facilities that meet a range of learning needs, while being cost effective. In order for a university to maintain its competitiveness and adapt to rapid change, it is essential to promote growth that improves the overall quality of life in and around the educational facilities. This can be achieved through a comprehensive analysis of the facilities used primarily by students and employees. This practice requires university FMID departments to understand the specific role that managers at different levels play in promoting entrepreneurial behaviour and innovation. In turn, these FMID departments can strengthen the competitive advantage of academic operations by providing comfortable buildings in which users can live and work, facilities that are maintained to improve aesthetics to encourage more students to enrol, and safety and security.

To maximise the benefits for universities, the question is how to combine innovation, building management and maintenance. The answer to this question is not simple, because a number of variables, including top management support, can influence whether a particular innovation is introduced in an institution. Top management support remains critical to optimising emerging entrepreneurial activities, even though the entrepreneurial employee seeking innovation on behalf of the employer is the primary agent of innovation through intrapreneurship.

The findings of this study are consistent with existing evidence that CE and innovative behaviour depend on university FMID departments considering management support as a crucial aspect of their development (Moraes et al., 2021). These results indicate that, on average, middle and operational managers in the three participating universities' FMID departments do not receive support from top management in fostering an entrepreneurial culture in organizations in the sector.

5.2.2. Prevalence of Work Discretion

More than 81.3% of the respondents said that they have to consult with someone else regarding their decisions because they have no autonomy in their work and are never left alone to complete their own work. The mean score was 2.29, indicating that staff in FMID departments at the three participating universities do not agree that they have autonomy in their work performance that allows them to generate new ideas and make innovations. There is a consensus in the reviewed literature that staff discretion should be taken in account when achieving strategic goals require innovation on the part of organizations (Daire & Gilson, 2014).

Operational managers and staff in the three participating universities' FMID departments claim that their primary responsibilities require them to follow the same daily procedures with minimal to no discretion. This view was prevalent among operational managers, who also stated that they only perform the tasks assigned to them by higher management and do not have the freedom to decide how they perform their jobs. For example, the cleaning procedures and systems learnt at previous job could applied to improve the state of the current workplace. However, such knowledge can only be explored when a room of endorsing creative ideas has been created. However, this may not be the case for middle managers as they perform their tasks independently. This fact is especially true for the facility manager, who works via satellite to cover several sites and can decide at his own discretion which meetings can be held online without necessarily having to travel to all sites. The creation of the cleaning schedule and the performance and transfer of maintenance tasks should be left to the discretion of the university's FMID staff to a certain extent. Therefore, it can be said that autonomy – and not financial gain – is the main driver for innovation in university FMID departments.

The heads of the Campus Cleaning and Protective Services departments have also reported that staff performance leaves much to be desired, that has a direct impact on the condition of the facilities. It may be that since the nationwide #FeesMustFall student movement in 2015, there has been a significant change in the way public universities in South Africa operate. The #FeesMustFall

movement, that began in 2015 and continued in 2016, started with demands for free tuition fees, but quickly expanded to include strong demands for academic improvements and the insourcing of FMID staff at universities, particularly Campus Protection Services officers and cleaners. In the wake of this outsourcing, the state of campus cleanliness has deteriorated significantly. For example, the cleaners work output and quality is lower than when the cleaners were outsourced, resulting in a less conducive environment for users of the facilities. The outsourcing of campus protection staff has led to a significant number of thefts at these universities. An important aspect that emerges from these findings is that the way managers motivate their staff at work has implications for the optimal functioning and well-being of intrapreneurs. In other words, autonomy, competence and connectedness are all positively correlated with employee performance and well-being. Therefore, facility managers should optimise opportunities to motivate employees, whether they are intrapreneurs or outsourcers. In order for employees to develop new ideas with innovation and creativity, it's important that they work in an environment that supports and encourages their growth.

These findings suggest that tolerance for failure and criticism of mistakes at work is minimal because employees are not given the freedom to make their own decisions or judgements. This situation was particularly the case with operational managers who noted that mistakes at work are too costly and, thus, management minimises the possibility of failure. For example, the procedures in the gardens have to be followed according to the specifications of the campus, one cannot decide to use one's own methods in planting techniques. However, one of the most important qualities that entrepreneurial organizations need is the ability to tolerate failure. Mistakes can manifest themselves at the individual, organizational, and societal levels, underscoring the importance of learning from these experiences to improve overall organizational performance.

Similarly, universities that cultivate an entrepreneurial environment are more likely to be successful in implementing corporate entrepreneurship (CE). Lekmat and Chelliah (2014) note that an entrepreneurial mindset involves a certain amount of risk-taking. Employees who have some discretionary power have the flexibility to explore new ideas and opportunities. Allowing this level of freedom in university FMID departments should not be seen as an extravagance, but as a prerequisite for fostering creativity from the initial idea to its implementation. According to an analysis of CE at universities by Bercovitz and Feldman (2008), many staff members can display innovative and entrepreneurial behaviour because of their experience, intuition and decisiveness, even though universities often do not cultivate an entrepreneurial culture. Even though it is obvious that there is little evidence of an entrepreneurial culture in the three participating universities' FMID departments, various aspects of the internal culture, such as autonomy, encouragement by superiors and rewards, can promote entrepreneurial behaviour among employees in these university FMID departments.

5.2.3. Prevalence of Rewards and Reinforcement

The findings of this study indicated that more than 80.9% of respondents said that they do not receive rewards for their innovation at work. The mean score was 2.40, indicating that staff in FMID departments of the three universities are not comfortable with receiving rewards and reinforcement for developing new ideas and innovations. However, if the achievement of strategic goals requires innovation on the part of organizations, consideration should be given to reward systems for employees.

According to the findings of this study, FMID departments at the three participating universities face the challenge of creating an entrepreneurial atmosphere in the absence of a tradition of recognition and positive reinforcement. These departments primarily operate within the boundaries set by top management, which hinders the creation of an innovative environment that fosters entrepreneurial thinking among all employees, regardless of their position. Intrapreneurial behaviour is directly influenced by an organization's entrepreneurial climate, that is underpinned by management support. An entrepreneurial environment can positively motivate employees to engage in entrepreneurial activities, especially when supported by various incentives such as financial rewards, resources, knowledge and recognition. For example, the survey highlighted that employees of the FMID department in one university used to give prizes in recognition of the good work completed by the cleaners in the university buildings, receiving such rewards is likely to boost their morale and general enthusiasm for their work. These comments show how the change of management at the selected universities has affected ongoing entrepreneurial activities. If there is no proper handover when there is a change of management, there may be a disruption in such practices. In addition, it is possible that a lack of innovative knowledge among newly appointed managers has derailed the development of an entrepreneurial culture in the participating universities' FMID departments. Nevertheless, universities facing challenges such as financial constraints, time constraints, or management changes must develop strategies to overcome or mitigate these obstacles without compromising ongoing innovative activities. Discouraging intrapreneurial efforts should be avoided at all costs. Since these strategies for dealing with barriers are closely linked to management support, these actions should have a positive impact on the reward system.

Consequently, an effective reward system is crucial for further promoting corporate entrepreneurship (CE) and fostering the innovative behaviour of intrapreneurs in the FMID departments of these three universities. An appropriate reward system could be in the form of promotion, recognition, reward and/or affirmation to encourage entrepreneurial behaviour. Facility managers should pay attention to motivators. A "thank you" and a "keep up the good work" can go a long way in making each employee feel valued in their workplace, and these small motivators can become big drivers of innovation if appropriately encouraged.

The lack of rewards or recognition makes it unlikely that an entrepreneurial FMID department can thrive within a university, as its growth depends on the motivation of entrepreneurial staff for institutional support. In this study, the personnel of the FMID departments of three participating universities were questioned to determine whether management supports their employees through

reward and reinforcement systems as an incentive for encouraging/improving their innovative work behaviour. The results showed that there is a negative correlation between rewards and task proliferation in these three university FMID departments. An example given by the Head of the Campus Protective Services Department at one university was that universities have different ranks for staff members within the Protective Services Department, depending on their salary. However, when a staff member of a higher rank is unable to work, a staff member from a lower rank is usually appointed to take over his/her duties without a salary increase or any other form of compensation, even though the volume of work has increased. Facility managers should recognise the importance of rewards in promoting constructive ideas related to the maintenance and management of university buildings. These ideas, in turn, play a critical role in promoting innovation.

However, the lack of rewards and recognition for entrepreneurial behaviour in the participating universities' FMID departments could potentially discourage the intrapreneur from contributing innovative ideas. The perception of rewards that encourage risk-taking and innovation is another factor that has been shown to have a strong influence on an individual's propensity to engage in innovative behaviour. However, the study findings indicate that some managers are reluctant to 'praise' their team because they feel that their own 'reputation' would suffer. Another reason for such behaviour could be that management does not encourage innovative ideas and creativity amongst employees to avoid the risks and possible failures associated entrepreneurial practices. Such strategies could lead to these universities' FMID departments not compensating their staff for innovative projects that are not implemented and/or do not lead to success.

The findings of this study support those of previous researchers who claim that the success of CE is strongly influenced by employee rewards, because it is generally believed that a reward system promotes innovation (Hughes & Mustafa 2017), and this reward system serves as an incentive to motivate entrepreneurial employees to continue to develop ideas and innovate.

The findings of this study also reinforce the fact that university FMID departments should establish a culture that promotes long-term employee performance and incentivises creativity and innovative ideas, recognises individual performance and increases challenges and accountability throughout all sections of the FMID department. According to Hornsby et al. (2009), an incentive programme is successful when it emphasises individual accountability and uses results as a benchmark for measuring incentives to recognise organizational efforts.

5.2.4. Prevalence of Time Availability

The analysis of data relating to CE capabilities suggested that most respondents (66.7%) said that Only a slight majority of respondents (63.05%) indicated that their workload in the last three months prevented them from devoting time to developing new ideas. The mean score of 3.04 shows

that study participants are neutral about the impact of lack of time on their creativity. It's worth noting that the results of the current study differ from those previously reported by Schulz et al. (2016).

This current study found that the characteristics of time availability differed between leadership roles and employment levels and even between university FMID departments, so this discrepancy in the neutrality of the results may be caused by different the characteristics and roles of the respondents. Some participating middle managers reported having little time relative to their workload, a fact that prevents them from pursuing their entrepreneurial aspirations. For example, some FMID departments are understaffed leading to a single manager overseeing more than 3 sites that are about 61 km apart simultaneously. This practice means that a single facility manager is physically located at one campus while supervising other campuses remotely. As a result, this has a potential of creating an extremely heavy workload and little time to complete anything other than the essential aspects of their job. The disadvantage of this situation is that reported maintenance issues may not be timeously resolved because the facility manager's vast work area. Another problem is that when the facility manager is on leave, up to 3 campuses are left without a facility manager for the duration of the leave period.

While some participating middle managers reported that they have sufficient time in relation to their workload, middle managers at University_2, reported that they are not encouraged to pursue innovative and entrepreneurial endeavours even though they have enough time to do so. Participating operational managers, however, reported that they rarely have sufficient time to complete their daily tasks due to labour shortages that result in their being overloaded with tasks outside their job description. From the above responses, it can be concluded that the issue of time availability in these university FMID departments depends on the profiles and roles of the staff, as well as the universities they work for. Therefore, the study results should be considered neutral.

The fact that time availability is reported as neutral highlights the divide within university FMID departments. In other words, these university FMID most departments do not allocate enough time to their employees for innovative and entrepreneurial activities, so they fail to foster an entrepreneurial culture. Conversely, some employees are content with a minimal workload based on available time. Mamabolo and Ravjee (2019) advocate that organizations put mechanisms in place to give employees the time they need to cultivate their entrepreneurial skills. This approach serves as a motivating factor that encourages employees to actively seek new approaches and opportunities to foster innovation within the organization.

In addition to the time factor that encourages innovation, there are other resources, such as finance, that need to be considered. FM Practices are generally hampered by lack of funds for maintenance and FM (Akinsola et al., 2012) and the results of this study show that insufficient funds are a barrier to university FMID departments developing an entrepreneurial culture amongst employees. This lack of funding was almost always the first (and most important) obstacle cited by respondents. The findings of this study indicated that one of the many challenges in university FMID

departments is that the government funds most of the university maintenance and other related work. Consequently, the chances of requests for funding maintenance related issues being approved timeously are minimal because there are strict procedures to follow when releasing government funds. As a result, 'troubleshooting' in university facilities takes longer than it should, causing staff to be hindered in their work and the users of the facilities to be inconvenienced – for example, the internet connection or the water heating pump in the students' residences failing to operate – often leading to protests by dissatisfied students.

For some universities, lack of financial support in these participating universities may also derail the innovation from the employees. For garden managers, there has to be some discretion allowed in pursuit of ways that the institution could use the land to produce vegetables and fruit (as opposed to planting flowers and purely decorative trees) that could either be sold and benefit the institution (entrepreneurship) or donated to needy students in residences. The idea is that in this way the facility could create job opportunities for students seeking agricultural science credentials to work in these fields to fulfil their experiential learning requirements. However, such ideas are not incubated on the grounds that funding for such a venture may not be available.

In addition, understaffing is one of the critical issues facing the campuses, resulting in inadequate protective services in remote areas on campus such as unguarded open boundary gates and non-functioning gates. This understaffing has a direct impact on the safety of university employees, including staff and students. In addition, understaffing could lead to essential facilities being closed after hours due to insufficient cleaning services. Although this institution may be saving money by not employing adequate cleaning services during weekends, this reduction in the knowledge centre operating hours directly impacts students who largely rely on the use of public computer laboratories for their academic work. The immediate consequence of this practise was that the accessibility of university facilities no longer met modern educational requirements and consequently did not contribute to effective and practical learning.

This study found that the critical challenges for the three universities' FMID departments are the lack of funding and time to promote innovations that would improve facility maintenance and management. Therefore, it is imperative for these three university FMID departments to outsource technical staff to improve conditions at these universities. In addition, these university FMID departments should focus on creating an entrepreneurial culture that is open to innovative ideas and ensures sufficient time, information and resources for their development, together with support for their implementation.

5.2.5. Prevalence of Organizational Boundaries

Most respondents (73.6%) said they had no doubts about what was expected of them in terms of their job description, while slightly fewer respondents (72.8%) said they had always followed standard operating procedures or practices during the last three months when completing important tasks. The

mean score was 3.19, meaning that respondents were neutral on whether or not the lack of organizational boundaries hindered their creativity.

The results of this study on the perceptions of CE by the FMID departments of the three selected universities are interesting because the organizational boundaries in these universities were shown to limit the entrepreneurial engagement of individuals in their employ. The sample used in this study included a variety of university personnel with different backgrounds, jobs, experience, and visions, that could be the cause of this constraint. For example, traditional universities have a strong academic focus and technical universities have an equally strong professional focus. Research in several countries has shown CE thrives in a decentralised organization. Employees in decentralised organizations are given additional creative opportunities. This practice gives employees a sense of freedom and leads to a high level of entrepreneurial experience. However, according to the findings of this study, the systems and processes of South African public universities remain centralised, and the realisation of various elements of entrepreneurial universities (e.g., governance, transfer and use of infrastructure) is still a long way off.

The processes and practices in a university are designed to achieve key objectives, such as attracting the most talented students and retaining the most competent staff. Consequently, the processes and systems that govern these facilities should be consistent with this goal. Maintaining and managing higher education facilities will boost student enrolment and give a school a competitive advantage in the marketplace. Organizational boundaries, therefore, can be both internal (such as systems, leadership, policies and university culture) and external (such as the Higher Education Council, the Ministry of Higher Education and Training, and political, economic, socio-cultural, technological, environmental, legal and institutional constraints).

However, the findings of this study identified the low level of innovation, inadequate funding, bureaucracy, inadequate maintenance plans and ineffectual policy implementation as the critical challenges facing the FMID departments in the three participating universities.

5.2.5.1. Low level of innovation

Undoubtedly, it is difficult to change the organizational structure of a university, and for financial reasons a university does not necessarily have to create a new entrepreneurial activity. Therefore, before an innovative initiative can be fully implemented, each university should assess the circumstances surrounding such an initiative. To remain competitive in the marketplace, universities must demonstrate a degree of adaptability in fulfilling their missions, including the operation of facilities related to their core business. However, the results of the study have shown that the participating universities (and possible many similar higher education institutions) are still reluctant to innovate and to consider essential entrepreneurial activities as part of their daily operations, as described by the respondents. One of the problems of introducing proposed

innovations is that the investment required (both in terms of time and money) is sometimes perceived as a barrier, while the benefits in terms of environmental and economic performance are often disregarded.

The findings of this study, that support previous studies dealing with the same topic, (Kuratko et al., 2014), show that organizational boundaries have a significant impact on how knowledge is shared and how innovation occurs. For example, the internal boundaries of the FMID departments of the three participating organizations appear to be designed to foster ineffective communication between university departments and external institutions, leaving no space to support entrepreneurial activities. In other words, institutions that value entrepreneurship are more likely to support organizational boundaries that make it easier to create an environment in which employees can make entrepreneurial decisions. The findings of this study revealed that despite the portrayal of middle management in the reviewed literature as champions of CE and innovation, the facility managers of the FMID departments of the three participating universities did not act as the key advocates and influencers of intrapreneurship. In particular, respondents focused on the fact that the internal environment of these university FMID departments currently does not embrace, implement, communicate, promote and support the entrepreneurial actions of staff and does not affirm, recognise and encourage entrepreneurial behaviour.

However, this study shows that one of the difficulties faced by managers of these participating university FMID departments concerns the creation of the formal organizational structures required to fully support university intrapreneurs and the entrepreneurial process, and to meet their real needs from the development of innovative ideas to the execution of entrepreneurial activity. Therefore, a governance structure that promotes intrapreneurship, support for entrepreneurial activities, a system of awards and the necessary resources should be included in the formation of FMID departments in universities. The neutrality of the findings, thus, suggests that certain universities continue to maintain restrictive policies and structures that hinder the pursuit of innovation, while others may strive to adopt an entrepreneurial mindset.

5.2.5.2. Insufficient funding

According to the subjective data of the study, something as small as a door handle may occasionally be defective in the FMID departments of the three participating universities. If a replacement part is not available in the maintenance department, authorisation may be given to release money to purchase one. Unexpectedly, however, no money is released because it is not available at the time of the request. As a result, the condition of the defective equipment deteriorates further, and customers are obliged to use a venue that is not properly maintained. Sometimes the request process for these maintenance claims takes a long time, creating a backlog of work to be completed and eventually forcing FMID departments to prioritise on the servicing of outstanding repairs. This situation can further harm the institutions. For example, some universities outsource staff for technical

tasks, such as maintaining the washing machines and dryers in the students' residences. However, this practice can lead to a longer turnaround time for repairing these broken machines, because recording a call for service is time-consuming, leaving students without functioning equipment for a lengthy period.

5.2.5.3. Bureaucracy

According to the findings of this study, national governments play an important role in promoting university intrapreneurship and its contribution to the knowledge society by creating an acceptable legal environment in which they can operate. The effective functioning of university FMID departments is often hampered by how critical decisions are made through the government system. Application documents are sent from one unit to the next seeking administrative approval for a proposed maintenance activity, thus, the ability of university FMID departments to respond quickly to such requests tends to be inhibited. By the time final approval is given for maintenance work to be conducted, the degree of degradation of the damaged equipment has increased because the response time to a such a request is often extensive. There is no financial incentive for a university to try to increase its government funding by creating entrepreneurial activities if it is prohibited from making use of any of the external revenue it generates. For example, before the Covid_19 pandemic, some campuses used to hire out university's facilities to the public to raise money for the FMID department. However, three years later, this remunerative practice has not been resumed because the official lifting of the Covid_19 restrictions has not yet occurred.

5.2.5.4. Ineffectively maintenance plan and policy implementation

The findings of this study have shown that the three participating universities do not have an adequate maintenance plan for their buildings due to the lack of maintenance manuals, corrective maintenance procedures and such like. This problem is further exacerbated by the lack of internal policy instruments such as guidelines, plans and programmes that provide a legal basis for promoting innovative activities.

Preventive maintenance is essential, because expensive replacements or urgent repairs will always be required as a building or facility ages. Insufficient focus on preventive maintenance will not stop the deterioration of facilities and, undoubtedly, will have a negative financial impact on the building, its occupants and its owner. The issue of the use, population and treatment of the building by the end-users of the facilities is another crucial aspect that affects the success of FM in a given structure. The three-participating university FMID departments are fundamentally affected by a lack of expertise in management processes, a complacent or passive attitude towards the deterioration of buildings, a lack of trained experts, inadequately qualified personnel and insufficient funding. In addition, these departments have poorly established reporting and accountability protocols, making

it difficult for FMID staff to monitor their internal successes or shortcomings, which hinders their ability to strengthen strategies and learn from the experiences of their peers.

Consequently, organizational boundaries should be adaptable so that institutions can easily adopt the changes made by university departments and comply with the rules of external governing bodies such as the Council of Higher Education (CHE). This study found that organizational boundaries have a significant impact on how knowledge is shared and how innovation emerges in the three-participating university FMID departments. By implication, university FMID departments in general should provide adaptable organizational methods and processes to support the internal flow of information because the fundamental business of academic institutions is constantly changing.

5.2.6. Summary of University FMID Internal CE Climate at the Three Participating Universities.

From the standpoint of CE, a number of academics have found that for an entrepreneurial environment to develop, top management support is as necessary as the availability of time, autonomy, rewards and organizational boundaries. However, the findings of this study as provided by the respondents show that CE at the three participating universities lacks the above skills. As the results of the study show, there is a deficit in the understanding of entrepreneurship, management support for innovation, an adequate rewards system for entrepreneurship, autonomy, organizational factors and authority issues. Environmental policies/laws and an effective entrepreneurial strategy are needed to ensure that the output of the participating FMID departments is monitored, and the financial success of their university is guaranteed. However, the findings of this study suggest that a critical factor affecting FM is the general lack of adequate funding for university FMID departments. Lack of preventive maintenance, limited funding for entrepreneurship and building management, and a lack of FM regulatory requirements are the main issues affecting FM in university buildings. According to Mewomo & Ndlovu (2022) key elements for the success of university FMID departments include the need for long-term FM commitment, transparency, trust and good client-team interaction.

5.3. Corporate Entrepreneurship Assessment Instrument

The Corporate Entrepreneurship Assessment Instrument (CEAI) scores of the FMID departments of the three universities from which the data for this quantitative study were drawn are shown in Figure 5.1 below. The data used for each of the five CEAI skills came from the original survey data and were analysed using SPSS. Each variable was given a minimum score of 1 (strongly disagree) and a maximum score of 5 (strongly agree), and the mean scores for each dimension were calculated using the original forty-five items.

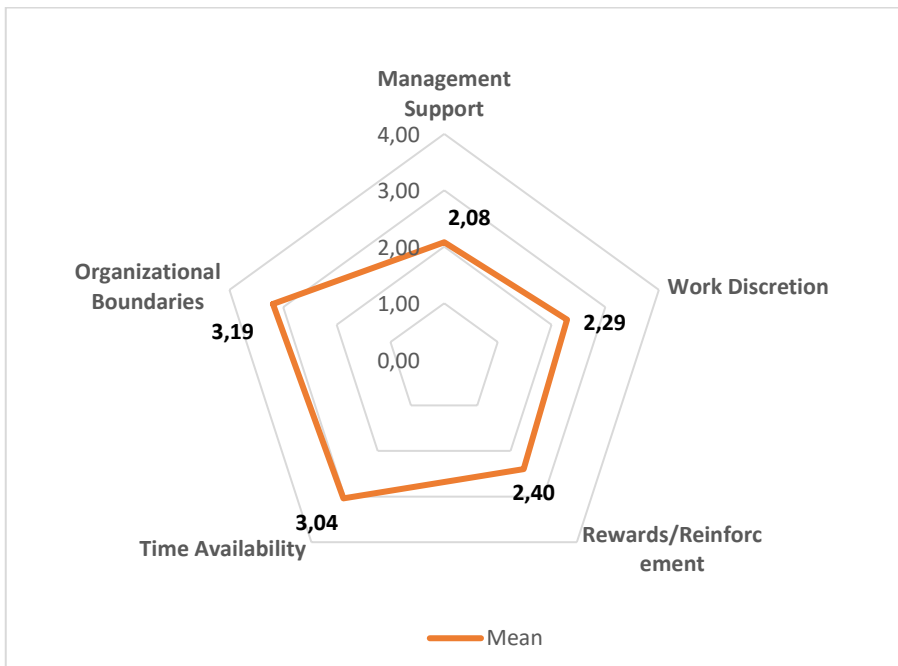


Figure 5.1 CEAI score

Figure 5.2 above shows how middle and operational managers and staff of the three participating universities assess the level of entrepreneurial thinking, and the results warrant appropriate assessment and corrective action.

5.4. Chapter Summary

In this section, the analysis of the results of the research instrument was performed. The CEAI scale, adapted from Kuratko et al. (2014), included five dimensions: Management Support (MS), Work Discretion (WD), Reward and Reinforcement (RR), Availability of Time (TA), and Organizational Boundaries (OB). The closed-ended questions were analyzed using descriptive statistics and factor analysis. Reliability and validity tests were performed for the scaled questions by calculating the Cronbach's alpha coefficient. The value of the reliability coefficient of 0.9 confirms that the answers to the scaled questions are reliable. The results of both the research instrument and the five CE skills were discussed and related to the reviewed literature. It was found that the middle and operational managers in the FMID departments of the three participating universities do not receive support from the top management for promoting entrepreneurial culture in the organizations of this sector. Middle and operational managers in FMID departments at these universities stated that their primary duties require them to follow the same procedures on a daily basis with minimal to no discretion regarding the completion of their work. It was also found that it is impossible for these university FMID departments to compensate employees for innovative projects because no rewards system is in place and, thus, entrepreneurial employees are not driven to succeed. In this study, the majority of

respondents indicated neutrally with regard to whether or not lack of time and organizational limitations hindered their creativity.

6. CHAPTER 6: CONCLUSION AND RECOMMENDATION

6.1. Introduction

This chapter focuses on testing the research hypotheses, followed by formulating conclusions, identifying limitations, and making recommendations. A total of five hypotheses are evaluated in comparison to the results of the study. The primary findings of this exploratory study, the research instrument, and the analysis of CE capabilities in the FMID departments of the three participating universities are summarized in the conclusions and aligned with the objectives of the study. The recommendations section highlights the practical application of the study to real-world problems and suggests avenues for further research efforts.

6.2. Prevalence of CE Capabilities at University FMID Departments

The findings of this study show that CE skills are still not fully valued in the FMID departments of the three participating universities, leading to the conclusion that there is an urgent need for creating an entrepreneurial culture to support the willingness of managers and employees to pursue innovation through the CE strategy in these FMID departments. The research results also show that CE capabilities are still not appreciated fully in the FMID departments of the three participating universities. The Corporate Entrepreneurial Assessment Instrument (CEAI) developed by Kuratko et al. (2014) is scalable to the South African sample of the current study. The CEAI scale was constructed using the CE capabilities, that include management support, work discretion, rewards/reinforcements, availability of time and organizational boundaries. These capabilities were assessed using descriptive analysis, factor analysis and Cronbach's alpha reliability and validity tests. The following concluding paragraphs explain each CE capability and highlight the main findings of this research study.

6.3. Prevalence of Management Support in University FMID Departments

A comparative analysis of three university FMID departments confirmed that top management at these institutions does not support innovative ideas and entrepreneurial activities emanating from middle managers and operational staff. In the survey, some middle managers expressed that top management does not support the bottom-up approach because it only dictates how the work should be completed and allows no room for appreciating the ideas of lower-level employees. In other words, creativity and innovation emanating from these employees are hindered at the middle management level, making it almost impossible for intrapreneurs to flourish in the FMID departments of the three participating universities. Analysis of the questionnaire responses revealed that fostering and sustaining an entrepreneurial culture is largely dependent upon the ability of top management to optimise emerging entrepreneurial activities within these FMID departments. Factors influencing the

lack of top management support include differences in cultures, environments, types of higher education institutions, entrepreneurial knowledge, people, and systems that ultimately influence the leadership of each institution. In summary, the FMID departments of the three participating universities lack support from top management in fostering an entrepreneurial culture.

6.4. Prevalence of Work Discretion in University FMID Departments

A comparative analysis of three university FMID departments confirmed that middle and operational managers and staff have no autonomy in their work. The responses received from operational managers and staff at these three university FMID departments indicated that their primary responsibilities compel them to follow the same daily procedures with minimal or no discretion. This view was also prevalent among operational managers, who stated that they only perform the tasks assigned to them by higher management and do not have the freedom to make decisions about their work. These findings suggest that there is minimal tolerance for failure and criticism of mistakes at work because staff do not have the freedom to make their own decisions or judgements. However, this practice was not the case with middle managers at University_1 who were classified as acting autonomously in the execution of their tasks. This finding is especially true for the facility manager, who works via satellite to cover several sites and can use his own discretion regarding which meetings can be held online without his necessarily having to travel to all sites. After analysing CE in the three participating universities' FMID departments, it is evident that an entrepreneurial culture is not present. Various aspects of the internal culture, such as autonomy, encouragement from supervisors and rewards are not used to promote entrepreneurial behaviour among staff in these departments. In summary, a lack of personal discretion was prevalent at work in the FMID departments of the three participating universities.

6.5. Prevalence of Rewards or Reinforcement in University FMID Departments

A comparative analysis of the three university FMID departments confirmed that middle and operational managers and staff are not supported by reward and reinforcement systems to improve their innovative work behaviour. According to the survey results, these universities' FMID It's difficult for departments to create an entrepreneurial atmosphere because there is no tradition of recognition and positive reinforcement. In addition, these FMID departments are often constrained by top management decisions that don't create an environment conducive to innovation and don't encourage entrepreneurial thinking among all employees, regardless of their position. As mentioned previously, the survey highlighted that in the past the FMID department gave prizes in recognition of the good work of the cleaners of the university buildings, but this initiative was stopped abruptly and without explanation being provided to the staff. This result shows how the change of management in these three participating universities affects their ongoing corporate activities. Thus, if there is no

appropriate handover policy enacted when there is a change in management, there is likely to be a disruption in ongoing entrepreneurial activities.

The lack of rewards and recognition for entrepreneurial behaviour in the FMID departments of the three participating universities could potentially discourage intrapreneurs' generation of innovative ideas. In summary, the study results show that there is a negative correlation between rewards and task multiplication in these universities' FMID departments, so a lack of rewards and reinforcement for entrepreneurial activities was prevalent.

6.6. Prevalence of Time Availability in University FMID Departments

A comparative analysis of the three university FMID departments confirmed that middle and operational managers and staff do not have sufficient time to develop and implement their innovative ideas and projects. This research study found that the characteristics of time availability differed between leadership roles and employment levels and even between the three universities' FMID departments, so the discrepancy in the neutrality of the results may be caused by the different characteristics and roles of the respondents. Some middle managers reported having little time in relation to their workload, a situation that prevents them from pursuing their entrepreneurial aspirations. Some middle managers reported having sufficient time relative to their workload, although University_2 middle managers reported that they were not encouraged to pursue innovative and entrepreneurial aspirations despite having the time available to do so. For operational managers, it was reported that they rarely have enough time to complete their daily tasks due to labour shortages, leaving them overloaded with tasks outside their job description. It can be concluded, therefore, that the issue of time availability in these three universities' FMID departments depends on the profiles and roles of the staff, as well as the institutions for which they work. Therefore, the study results should be considered neutral.

6.7. Prevalence of Organizational Boundaries in University FMID Departments

A comparative analysis of three university FMID departments confirmed that middle and operational managers and staff do not have enough time to develop and implement their innovative ideas and projects. The study found that the organizational boundaries of these universities hinder their entrepreneurial activities. The reason could be that the sample used in this study contains a variety of university types with different backgrounds and sizes. However, the study identified low levels of innovation, inadequate funding, bureaucracy, inadequate maintenance plans and ineffectual policy implementation as the critical challenges faced by FMID departments in the three participating universities. The findings of this study revealed that some universities are still reluctant to adopt innovations and integrate the necessary entrepreneurial activities as part of their operations, as indicated by the respondents' comments. In some cases, the request process for these demands

takes a long time, resulting in a backlog of work needing to be completed that, in turn, can further damage institutions and ultimately challenge FMID departments' ability to prioritise required maintenance. The way important decisions are made through the government system is one of the obstacles to the effective management of university FMID departments. The current practice at the three participating institutions tends to hinder the rapid response by the universities' FMID departments because files are sent from one unit to another seeking management approval or consent for a proposed maintenance action. The results of the study show that most of the three participating universities do not have an adequate maintenance plan for their buildings due to the lack of a maintenance manual and/or corrective maintenance procedures. This situation highlights the impact of the lack of internal policy tools such as guidelines, plans, and programs. In summary, organizational boundaries within the FMID departments of these three universities prevent staff from acquiring various skills that would otherwise foster innovation.

6.8. Hypotheses testing

- **H1:** Top management of the Western Cape universities' FMID departments promote the culture of CE within their organizations by supporting their employee's entrepreneurial behaviour.

The study found that more than 87% of respondents employed by the FMID departments of the three participating universities indicated that top management was not receptive to their ideas and suggestions. It was found that fostering and sustaining an entrepreneurial culture is highly dependent on management support within an organization. Therefore, the hypothesis that top management in FMID departments of the three-participating universities at Western Cape support their staff to behave in an entrepreneurial manner is rejected.

- **H2:** Staff in FMID departments at Western Cape universities have the freedom to carry out their work as they see fit and on their own responsibility.

According to the study findings, more than 81.3% of the respondents from the three participating universities' FMID departments stated that they have to consult another person with regard to all their decisions because they have no autonomy in their work and are never left alone to complete their scheduled tasks. Therefore, the hypothesis that staff in FMID departments of the three-participating universities at Western Cape have the freedom to do their work as they see fit and autonomously is rejected.

- **H3:** Employees of FMID departments at Western Cape universities are supported by reward and reinforcement systems to improve their innovative work behaviour.

The study findings found that more than 80.9% of the respondents from the FMID departments of the three participating universities reported that they do not receive rewards for their innovative behaviour at work. Therefore, the hypothesis that employees of FMID departments of the three-participating

universities at Western Cape are supported by reward and reinforcement systems to improve their innovative work behaviour is rejected.

- **H4:** Staff in FMID departments at Western Cape universities are given sufficient time to develop and implement their innovative ideas and projects.

The CE skills analysis conducted on the research findings revealed that most respondents (66.7%) from the FMID departments of the three participating universities indicated that most of the respondents believe that they have an optimal ratio of time and workload to cope well with the tasks assigned to them. However, a slightly smaller proportion (63.05%) reported that their workload in the three months prior to the study prevented them from spending time developing new ideas. (It should be noted that whether or not employees have time for such activities does not always prevent the development of new ideas). Therefore, the hypothesis that staff in FMID departments of the three-participating universities at Western Cape have sufficient time to develop and implement their innovative ideas and projects is rejected.

- **H5:** The organizational boundaries of FMID departments at Western Cape Universities give staff the freedom to move within the departments to gain different skills that would enhance innovation.

Most respondents (73.6%) from the FMID departments of the three participating universities indicated that they are aware of what is expected of them in fulfilling their job description, while slightly fewer respondents (72.8%) indicated that they have always followed standard operating procedures or practices when completing important tasks during the three months prior to participating in the research survey. In conclusion, the neutral results of this study show not all the FMID departments at the three participating universities maintain rigid procedures and systems that prevent the pursuit of innovation. Therefore, the hypothesis that the organizational boundaries of FMID departments of the three-participating universities at Western Cape give their staff the freedom to move around the departments to gain different skills that would promote innovation cannot be rejected.

6.9. Limitations of this Research

This research project encountered difficulties in recruiting participants for the online survey, which had a minimal response rate even after one month. Therefore, an in-person survey was conducted. However, due to access restrictions, it was difficult to reach key respondents and obtain permission from participating universities. In addition, some respondents refused to complete the questionnaire because they had no interest in the topic of the study and that could potentially lead to minimal participation of the respondents. The response rate to the questionnaires sent by email was low. The three selected universities were all located in the Western Cape province of South Africa, and it was not possible for the researcher to collect data from institutions outside the boundaries of the Western

Cape province – therefore, only three higher education institutions formed the population of the study. Although this may not constitute a true representation of all the universities in the Western Cape and South Africa at large.

The researcher used only one method of data analysis. It would be beneficial if qualitative methods could be considered as a supplement in similar research projects in the future to facilitate the introduction of triangulation of methods and to explore the generalizability of the study through follow-up surveys.

According to Kuratko et al. (2014), operational staff are not suitable for CEAI because their degree of flexibility is usually limited. Instead, positions in technical, management and technology areas should complete this type of measurement tool. It was a challenge to address all employees in such a category without also focusing on occupations relevant to the researcher's field, as well as those in the informal network.

6.10. Recommendations

This study has presented the results of an assessment of the CE capabilities in the FMID departments of three universities in the Western Cape, South Africa. Based on these findings and conclusions drawn, the following recommendations are proposed:

- Based on the entrepreneurial culture diagnosis that has been conducted in three university FMID departments situated in the Western Cape, institutions should incorporate the CE strategy into the core business of South African Higher Education establishments in order to create a culture that fosters long-term employee performance and creativity.
- The implementation of CE as an innovation-enhancing strategy within universities should be supported by top management, encouraged by middle management, embraced by operational management and driven by entrepreneurial staff to continuously strengthen the core business of existing higher education organizations.
- An entrepreneurial organization should have a mindset that allows staff to act at their own discretion and have the flexibility to explore new ideas and opportunities. The level of autonomy that the organization gives to its employees to complete their work should enable the institution to accept failure, knowing that failure can occur at individual, organizational and societal levels. Therefore, organizations should have a certain level of tolerance for failure in innovation in order to improve their business.
- According to Hornsby et al. (2009), an incentive programme is successful when it emphasises individual accountability and uses results as a benchmark for measuring

incentives to recognise entrepreneurial efforts. Therefore, it is critical that management of the three participating universities' FMID departments should encourage entrepreneurial activities that enable employees to adopt the entrepreneurial culture. In addition, management should establish effective reward systems designed to recognise, motivate and reward the entrepreneurial employees' contribution to innovation.

- University FMID departments should work to implement procedures that give their staff the time they need to learn how to be entrepreneurial, while inspiring them to innovate and develop their creative ideas within the organization.
- As organizational boundaries have a significant impact on how information is shared and how innovation takes place, it is recommended that university institutions should have improved communication between organizational departments and external agencies to allow for more flexibility in promoting entrepreneurial activities.
- Although the nature of these technical and traditional university institutions is education-oriented, management should rethink its approach and move towards this goal of entrepreneurial orientation. The accessibility of management support shapes the entrepreneurial environment of an organization towards innovation and creativity. Top management should be aware of the implications of their lack of support in terms of innovation, while employees are equally responsible for generating innovative ideas to ensure the success of an entrepreneurial strategy in organizations.

University FMID departments should adopt an innovation portfolio to help management assess and determine the extent to which operational innovation is a priority in their institutions. Further research is needed to improve the understanding and application of the CE strategy as a means of evaluating the proposed innovation portfolio within the FMID departments not only of the three participating institutions, but also those of other universities.

6.11. Recommendations for Future Research

To determine the stability of the five skills examined in this study CE, further confirmatory research should be conducted. To determine if there is a significant difference in the attitudes of the different types of managers (i.e., middle and lower management groups), these groups should be analysed as separate samples. Case studies of the skills CE would be extremely helpful to this discipline in understanding their presence and the systems and processes used by different universities to apply these five CE capabilities. The scope of the study was limited to only three universities in the Western

Cape, this may not constitute a true representation of all the universities in the Western Cape and South Africa at large. Therefore, a comparison study with other universities in South Africa using different analytical methods is highly recommended.

7. REFERENCES

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APPENDIX A: Questionnaire

Corporate Entrepreneurship Assessment Instrument (CEAI)

There are five organizational dimensions that are measurable to assess whether the organizational culture is in support (or not) of the employees who are entrepreneurial (e.g. coming-up with innovative ideas, products, services, system, etc.) inside organizations.

The five dimensions:

- (1) Top management support,
- (2) Work discretion/autonomy,
- (3) Rewards/reinforcement,
- (4) Time availability, and
- (5) Organizational boundaries.

To assess your organizational culture, **the survey begins** with **anonymous** data collection from middle-level managers and ordinary employees using CEIA instrument. **The survey ends** with a report that tells us about the real-status of intrapreneurial-fitness of your firm. The report helps us to identify gaps and engage your firm on how to develop a tailor-made practice-driven solution.

Please help us to assess your organization by participating in completing the survey by **Ticking ONE** of the following:

Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1	2	3	4	5

Number	Section 1: Management Support	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
MS_01	My organization is quick to use improved work methods that are developed by workers.	1	2	3	4	5
MS_02	In my organization, developing one's own ideas is encouraged for the improvement of the corporation.	1	2	3	4	5
MS_03	Upper management is receptive to my ideas and suggestions.	1	2	3	4	5
MS_04	A promotion usually follows from the development of new and innovative ideas.	1	2	3	4	5
MS_05	Those employees who come up with innovative ideas on their own often receive management encouragement for their activities	1	2	3	4	5
MS_06	The "doers on projects" are allowed to make decisions without going through elaborate justification and approval procedures.	1	2	3	4	5
MS_07	Senior managers in my organization encourage innovators to bend rules and rigid procedures to keep promising ideas on track.	1	2	3	4	5
MS_08	I know of a manager that has experience with the innovation process.	1	2	3	4	5
MS_09	In my organization money is often available to get new project ideas off the ground.	1	2	3	4	5
MS_10	Individuals with successful innovative projects receive additional rewards and compensation.	1	2	3	4	5
MS_11	People are often encouraged to take calculated risks with ideas around here	1	2	3	4	5
MS_12	Individual risk takers are often recognized for their willingness to champion new projects, whether eventually successful or not.	1	2	3	4	5
MS_13	My organization supports many small and experimental projects, realizing that some will undoubtedly fail	1	2	3	4	5
MS_14	An employee with a good idea is often given free time to develop that idea	1	2	3	4	5
MS_15	There is considerable desire among people in my organization for generating new ideas without regard for crossing departmental or functional boundaries.	1	2	3	4	5
MS_16	We are encouraged to talk to employees in other departments of this organization about ideas for new projects.	1	2	3	4	5
Number	Section 2: Work Discretion	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree

WD_17	I feel that I am my own boss and do not have to double check all my decisions with someone else.	1	2	3	4	5
WD_18	Harsh criticism and punishment result from mistakes made on the job.	1	2	3	4	5
WD_19	This organization provides me the chance to be creative and try my own methods of doing the job.	1	2	3	4	5
WD_20	This organization provides me the freedom to use my own judgment.	1	2	3	4	5
WD_21	This organization provides me the chance to do something that makes use of my abilities.	1	2	3	4	5
WD_22	I have the freedom to decide what I do on my job.	1	2	3	4	5
WD_23	It is basically my own responsibility to decide how my job gets done	1	2	3	4	5
WD_24	I almost always get to decide what I do on my job.	1	2	3	4	5
WD_25	I have much autonomy on my job and am left on my own to do my own work.	1	2	3	4	5
WD_26	I seldom have to follow the same work methods or steps for doing my major tasks from day to day.	1	2	3	4	5

Number	Section 3: Rewards/Reinforcements	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
RR_27	My manager helps me get my work done by removing obstacles and roadblocks.	1	2	3	4	5
RR_28	The rewards I receive are dependent upon my innovation on the job.	1	2	3	4	5
RR_29	My supervisor will increase my job responsibilities if I am performing well in my job	1	2	3	4	5
RR_30	My supervisor will give me special recognition if my work performance is especially good	1	2	3	4	5
RR_31	My manager would tell his/her boss if my work was outstanding.	1	2	3	4	5
RR_32	There is a lot of challenge in my job	1	2	3	4	5

Number	Section 4: Time Availability	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
TA_33	During the past three months, my workload kept me from spending time on developing new ideas.	1	2	3	4	5
TA_34	I always seem to have plenty of time to get everything done.	1	2	3	4	5
TA_35	I have just the right amount of time and workload to do everything well.	1	2	3	4	5

TA_36	My job is structured so that I have very little time to think about wider organizational problems.	1	2	3	4	5
TA_37	I feel that I am always working with time constraints on my job.	1	2	3	4	5
TA_38	My co-workers and I always find time for long-term problem solving.	1	2	3	4	5
Number	Section 5: Organizational Boundaries	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
OB_39	In the past three months, I have always followed standard operating procedures or practices to do my major tasks.	1	2	3	4	5
OB_40	There are many written rules and procedures that exist for doing my major tasks.	1	2	3	4	5
OB_41	On my job I have no doubt of what is expected of me.	1	2	3	4	5
OB_42	There is little uncertainty in my job.	1	2	3	4	5
OB_43	During the past year, my immediate supervisor discussed my work performance with me frequently.	1	2	3	4	5
OB_44	My job description clearly specifies the standards of performance on which my job is evaluated.	1	2	3	4	5
OB_45	I clearly know what level of work performance is expected from me in terms of amount, quality, and timelines of output.	1	2	3	4	5

Appendix B: Scoring Scales

Scale 1: Management Support for Entrepreneurship

Statement

MS_1	1	2	3	4	5	
MS_2	1	2	3	4	5	
MS_3	1	2	3	4	5	
MS_4	1	2	3	4	5	
MS_5	1	2	3	4	5	
MS_6	1	2	3	4	5	
MS_7	1	2	3	4	5	
MS_8	1	2	3	4	5	
MS_9	1	2	3	4	5	
MS_10	1	2	3	4	5	
MS_11	1	2	3	4	5	
MS_12	1	2	3	4	5	
MS_13	1	2	3	4	5	
MS_14	1	2	3	4	5	Total
MS_15	1	2	3	4	5	Score
MS_16	1	2	3	4	5	(Scale 1)

Sub-Totals + + + + =

Scale Score = Total Score divided by (16)

Scale 2: Work Discretion

Statement

WD_17	1	2	3	4	5	
WD_18*	5=1	4=2	3	2=4	1=5	
WD_19	1	2	3	4	5	
WD_20	1	2	3	4	5	
WD_21	1	2	3	4	5	
WD_22	1	2	3	4	5	
WD_23	1	2	3	4	5	
WD_24	1	2	3	4	5	Total
WD_25	1	2	3	4	5	Score
WD_26	1	2	3	4	5	(Scale 2)

Sub-Totals + + + + =

Scale Score = Total Score divided by (10)

*Item WD_18 revised scores.

Scale 3: Rewards/Reinforcement

Statement

RR_27	1	2	3	4	5	
RR_28	1	2	3	4	5	
RR_29	1	2	3	4	5	
RR_30	1	2	3	4	5	Total
RR_31	1	2	3	4	5	Score
RR_32	1	2	3	4	5	(Scale 3)

Sub-Totals + + + + =

Scale Score = Total Score divided by (6)

Scale 4: Time Availability

Statement

TA_33*	5=1	4=2	3	2=4	1=5	
TA_34	1	2	3	4	5	
TA_35	1	2	3	4	5	
TA_36*	5=1	4=2	3	2=4	1=5	Total
TA_37*	5=1	4=2	3	2=4	1=5	Score
TA_38	1	2	3	4	5	(Scale 4)

Sub-Totals + + + + =

Scale Score = Total Score divided by (6)

*Items TA_33, TA_36, TA_37 are revised scores.

Scale 5: Organizational Boundaries

Statement

OB_39*	5=1	4=2	3	2=4	1=5	
OB_40*	5=1	4=2	3	2=4	1=5	
OB_41*	5=1	4=2	3	2=4	1=5	
OB_42*	5=1	4=2	3	2=4	1=5	
OB_43	1	2	3	4	5	Total
OB_44*	5=1	4=2	3	2=4	1=5	Score
OB_45*	5=1	4=2	3	2=4	1=5	(Scale 5)

Sub-Totals + + + + =

Scale Score = Total Score divided by (7)

*Items OB_39, OB_40, OB_41, OB_42, OB_44, and OB_45 are revised scores.

Appendix C: Consent Letter

Letter of consent and invitation to participate

Dear Sir or Madam,

I am conducting research that seeks to “Assess Corporate Entrepreneurship capabilities within Universities Facilities Management and Infrastructure Development departments in the Western Cape, South Africa” by measuring the entrepreneurial behaviour of the facility middle and operational managers and employees. This assessment will be conducted using the Corporate Entrepreneurial Assessment Instrument (CEAI) which consists of five CE capabilities, namely, top management support, work discretion/autonomy, rewards/reinforcement, time availability, and organizational boundaries. CE is a growing concept that is seen to be a key differentiator amongst competitors who emulate each other’s service offering as it promotes innovation, business performance and prepares entrepreneurial orientation of organizations. The research aims to evaluate the need for CE in the South African Universities Facilities Management and Infrastructure Development department by conducting an in-depth corporate diagnosis to identify a set of procedures, systems; cultures, etc., which inhibits and constrains potential intrapreneurs. Acknowledging, supporting and encouraging entrepreneurial activities promotes innovation within existing organizations without entrepreneurs necessarily leaving their organizations to pursue entrepreneurial ventures.

To help us better understand CE in your organization, we request your participation in completing an online survey which should take no more than 15 minutes of your time. The survey focuses on the five CE capabilities. We seek personal information that is limited and non-invasive. The confidentiality of information supplied by respondents shall be respected, as such, no information supplied shall be used for any other purpose except for this research. A Non-Disclosure agreement shall be signed. Note that the names of participants will be kept anonymous and the findings in the thesis will be reported without the identifiers. I therefore invite your organization to participate in this research study as respondents. Your participation is voluntary and you can withdraw at any time without penalty. By completing the survey, you indicate that you voluntarily participate in this research. If you have any concerns, please contact my supervisors or myself. Our details are provided below.

Yours Sincerely

Ms. Ziyanda Dyongo
Researcher
E: ziyandad98@gmail.com
T: 079 192 4608

Mr. Xolani Nghona
Supervisor
E: nghonax@cput.ac.za
T: 060 566 2092

APPENDIX C: Ethical clearance




FACULTY OF ENGINEERING & THE BUILT ENVIRONMENT

On **08 June 2021**, the Engineering and Built Environment Ethics Committee of the Cape Peninsula University of Technology granted ethics approval to **Ziyanda Dyongo**, student number **210078618** for research activities related to his research proposal at the Cape Peninsula University of Technology.

Title of Proposal	An Assessment of Corporate Entrepreneurship Capabilities within the large Facilities Management companies in the Western Cape, South Africa
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Comments:

Data will be collected via structured questionnaires

	9 June 2021
Prof V Fester Assistant Dean: RTIP – Faculty of Engineering & the Built Environment	Date