The Relationship Between Work Setting and Innovative Behaviour:

The Influence of Innovation Climate and Work Orientation

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Abstract

To understand innovation in hybrid work settings, this study tested a model of innovative behaviour drawn from the dynamic componential model of creativity and innovation. This model explored how work setting, innovation climate and work orientation relate to innovative behaviour. The sample for the study comprised 482 employees in an international financial services institution based in South Africa, known for its innovation. The analysis conducted a one-way ANOVA, performed correlational analyses using Pearson's correlation coefficient, and tested a series of nested general linear models. The findings show that there was no direct correlation between work setting and innovative behaviour. There was also no direct correlation between work orientation and innovative behaviour, and work orientation did not moderate the relationship between work setting and innovative behaviour. There was an association between fostering a favourable innovation climate and employee innovative behaviour. However, a favourable innovation climate did not influence the relationship between work setting and innovative behaviour. The study therefore demonstrated that cultivating a high innovation climate will enhance innovative behaviour in both 'bricks and mortar'[1] and remote work settings.

***Keywords*:** Innovative Behaviour, "Hybrid Work", "Work Setting", "Innovation Climate", "Work Orientation"

[1]'Bricks and mortar' refer to working in a physical building as opposed to working at a venue outside the office or online.

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CHAPTER 1 – INTRODUCTION

Innovation is a key factor for business success. There is a significant amount of research dedicated to the topic of organisational innovation in the literature but there is much scope for research on innovative behaviour within South African organisations in the post Covid-19 context. Innovation in South Africa is especially crucial for economic growth, addressing social challenges, and enhancing global competitiveness. The remote working scenarios of the Covid-19 pandemic changed work patterns across the globe. Many employees now embrace working from home; while employers contemplate the implications of remote work, and develop policies related to the full or partial return of employees to office-based work. Employers need to grapple with the balance of optimal outcomes for both employees and organisations. Balancing the tension between retaining employees, and maximising organisational outcomes is a challenging area of human resources management. Against this background, understanding the role that work setting (i.e., remote, hybrid or bricks and mortar setting) has on the innovative behaviour of employees in "real-world" scenarios is an important study.

Prior to the Covid-19 pandemic, there was little research available on how remote work impacts creativity and innovation. Furthermore, the pandemic led to widespread mandatory work-from-home measures, disrupting established work patterns. This shift has made it challenging to generalise findings from pre-pandemic studies, as the remote work dynamics introduced during the crisis may have had unique consequences for various aspects of work, including innovation, compared to when working from home was optional (Kniffin et al., 2021). In the evolving landscape of post-pandemic research, recent global organisational reports and media publications emphasize the integral role and benefits of hybrid and work-from-home arrangements, shaping the new paradigm of work in South Africa and worldwide. For example, an article on South African post-pandemic outlet, News24, reported findings of a global Cisco survey in 2022 in 27 countries, including South Africa, India, and Vietnam. The survey found that hybrid work had a positive impact on performance, work-life balance, well-being, and company culture. Of the South African participants of this survey who were from a wide range of industries, 86% reported positively on hybrid working models in all areas of employee well-being, including financial, social, physical, and psychological. This was above the global average of 78%. While 33.5% of South Africans were in favour of fully remote work, the study showed that employees were in favour of a hybrid model that offers flexibility to attain a work-life integration that bests suit them and their employers.

The Cisco report (2022) indicated the benefits of hybrid working arrangements split between working from home and in the office globally, also reporting that companies were not prepared for hybrid work and that further analysis around these arrangements is needed (Ebrahim, 2022). There is some suggestion in recent surveys that creativity and innovation may be impacted both positively and negatively in a remote work setting: A study by Microsoft indicated that working from home means employees may be disconnected from their co-workers, making it difficult to brainstorm ideas, directly impacting on innovative practice within the business (Leprince-Rinquet, 2020). This was supported by another recent study which showed how remote teams are less likely to make breakthrough innovations compared to their onsite colleagues, suggesting that the fusion of ideas is inhibited when working remotely (Lin et al., 2023). Video conferences have been found to inhibit creative thinking (The working-from-home illusion fades, 2023). Other surveys suggest remote work has widened opportunities for creative work for employees: Allowing for the identification of areas of opportunity, and spurring research towards creative innovation; carving out physical and temporal creative zones; and embracing the ability to leverage appropriate technology that will uplift creativity (Berezhansky, 2020). There are opportunities for organisations to learn from the pandemic and enhance their current practices (Opperman, 2023). Specifically, there are possibilities to establish work setting policies that will enhance innovation. Organisations that prioritise creativity at all levels are poised to be catalysts for positive change, driving recovery and shaping an improved post-pandemic world (Berezhansky, 2020). Further research on how work setting impacts innovation adds to this understanding.

Work setting has been identified as a key variable in understanding the post-pandemic implications for innovation in Amabile and Pratt's dynamic componential model of creativity and innovation (Amabile & Pratt, 2016). This theory formed the basis of this study although it is beyond the scope of this research to incorporate every element of the model (described in detail in the chapter 2 literature review). The study identifies previously underexplored elements within the model that align with this research. Four variables emerged as particularly relevant and intriguing for the study, namely:

1) *Innovative Behaviour* – this is the dependent variable, and the measure for innovation.
2) *Innovation Climate* – this is a core part of the model. Managing innovation climate can be an effective tool in promoting innovative behaviour (Amabile, 1988).
3) *Work Setting* – this study follows a pivotal time in changes in context of the workplace. The physical work setting, which is operationalised in different ways, was chosen to

measure the impact of the increasingly popular remote and hybrid ways of working on innovative behaviour.

4) *Work Orientation* – The concept of work orientation is a relatively new construct. Although previous research has examined its role in organisational behaviour, its influence on meaningful work and, its impact on innovative behaviour requires further exploration.

For the purposes of this research, the four variables were structured into a model as a means of testing their relationships and influences within the dynamic componential model of creativity and innovation (Amabile & Pratt, 2016). In this way, this study contributed to the emerging research of the components needed to optimise innovative behaviour in different work settings. The following chapters commence with a literature review in chapter 2. Because of the complexity of this area of research, the literature review explains the definitions and key variables, it also describes the theoretical model and how the variables are incorporated into the model. Previous research and gaps in the literature are explored. This is followed by an outline of the methodology in chapter 3, a presentation of the results in chapter 4, and a discussion of findings, limitations, and conclusions in chapter 5.

CHAPTER 2 - LITERATURE REVIEW

Introduction

This literature review begins by stating the aim of this study, followed by definitions of the key variables in the study. Thereafter, recent research in these areas is outlined, providing a background to this study in a South African context. The dynamic componential model of creativity and innovation (Amabile & Pratt, 2016) will be described is some detail as it forms the theoretical framework for this study. The study's variables—namely, work setting, innovative behaviour, innovation climate, and work orientation—are elucidated, and their positions and roles within the model are identified.

Aims

The aim of this research is to test a model of innovative behaviour drawn from the dynamic componential model of creativity and innovation, with specific reference to the role of work setting, innovation climate and work orientation in relation to innovative behaviour.

Before defining these variables, the background from which this study emanates, will firstly be described.

Background

Working from home has become prevalent in South African organisations and the need to understand how this impacts innovation is necessary for business success. In a recent report *Working from Home Around the Globe:2023 Report* (Aksoy et al., 2023), which included 34 countries, including South Africa, the full days worked from home in South Africa was equivalent to the global average. The current working arrangements of the participants are 66.5% for fully onsite, 25.6% for hybrid and 7.9 % for full work from home (WFH). The average number of WFH days per week that South African employees desire, was one of the highest globally of 2.6 days per week which was above the average of 2 days per week. The average number of planned WFH days globally per week by employers was 1.5 days per week, higher than the average of 1.1 days per week. While there is a gap globally between the number WFH days per week desired by employees and planned by employers, South Africa had one of the highest gaps, where employees would like to work from home 1.3 days more than employers plan for them. To address this need to work remotely, it is crucial for employers to understand the benefits and disadvantages of both working from home and in the office, and how this can enhance innovation.

While the desire to work from home is evident, remote working post-pandemic has created challenges for organisations, particularly regarding organisational culture and climate. Employees have moved away from the primary sources shaping culture and climate in the office environment, to a remote work setting where these sources may differ or may have divergent manifestations. This shift poses numerous challenges to organisations, including maintaining a culture which supports and enhances creativity and innovation. While studies in these fields are gradually emerging, the field is still new. Further research is indicated, particularly in the South African context, where innovation is crucial in an environment where there is a shortage of skills and a need for companies to be competitive (Milner & Criticos, 2023).

This study explores the variables of work setting, innovative behaviour, innovation climate and work orientation, which will now be defined.

Definitions

Defining work setting

Work setting consists of remote work, hybrid work and working in the office. Olson (1983) defines remote work as work which takes place outside the typical boundaries of an organisation both in terms of working hours and physical location. This may include the term ‘work from anywhere’ which incorporates working from home or at a venue outside the office such as a coffee shop (Kniffin et al., 2021). Hybrid work combines a mix of both in the office (‘bricks and mortar’) and remote working (Gratton, 2021).

Defining Innovative Behaviour

There has been a lack of agreement and clear boundaries amongst researchers regarding how to define and distinguish between creativity and innovation. It is therefore important to explore the meaning and differences between creativity and innovation. Amabile and Pratt (2016) describe how creativity and innovation are inherently connected and differentiated components of the same process. Amabile and Pratt (2016) define creativity as “the production of novel and useful ideas by an individual or small group of individuals working together” (p.158). Innovation is defined as effective execution of creative ideas within an organisation, as opposed to ideas obtained outside an organisation (Amabile & Pratt, 2016, p. 158). Andersen et al. (2014, p.4) proposes a similar definition of creativity and innovation, suggesting that

creativity involves generating ideas, while innovation involves executing those ideas within an organisational context.

These definitions imply that creativity involves the generation of ideas, whereas innovation involves the distinct process of implementing ideas. However, Kleysen and Street (2001) integrate the components of creativity and innovation into a theory of innovative behaviour, defining it as "all individual actions directed at the generation, introduction, and/or application of beneficial novelty at any organizational level" (p. 285). They explain that this “beneficial novelty” may apply to new product ideas or technologies, administrative procedures or work processes that will result in improved relations, and more efficient and effective outcomes (Kleysen & Street, 2001, p. 285). This theorisation suggests that innovative behaviour incorporates both the generation and application of creative ideas in organisations. Innovative Behaviour will be used as the preferred definition for this study, as this definition is the one that matches the focus of this research, namely fostering innovation across various organisational aspects and levels.

Defining Innovation Climate

Before defining innovation climate, it is important to understand the constructs of organisation culture and climate. Organisational culture comprises intangible factors including values, beliefs and assumptions that are inferred and guide behaviours in the work setting (Schneider et al., 2013). These intangible factors cultivate a culture for creativity by manifesting in structures, practices, and policies. In turn, the way that policies, practices, and procedures are perceived and meaning attached to them by all employees, will define the organisational climate (Reichers & Schneider, 1990). Schneider et al. (2013) explain that climate manifests through a “social information process” involving the meaning attached to these policies, practices, and procedures and “the behaviors they observe being rewarded, supported and expected” (p. 381). In contrast to culture, climate identifies the tangible factors that organisations adopt to express the desired behaviours required to achieve their objectives. These behaviours in turn define the overall character of the organisational and subcultures within them (Schneider et al., 2013). This in turn influences creativity by creating a climate that dictates the organisation’s creativity goals and how to attain these outcomes (Telsuk et al., 1997).

Schneider et al., (2013) further specify that research into innovative climate should not be generic and general in that it should rather focus on a specific process and/or a relevant

outcome. Multi-faceted climates exist in the workplace, therefore climate research should break down the generic climate into specific dimensions (Schneider et al., 2013). It is more valuable to define facet-specific climates to clarify the precise meaning of the term. Previous research has found that the development of new ideas and working methods has been found to be influenced by innovation climate (Strating & Nieboer, 2009). Someach and Drach-Zahavy (2011) demonstrate that innovation climate is a crucial factor in assisting with the stage of idea implementation, as it indicates the extent to which the values and norms of the team encourage innovation. Their study demonstrated that a strong climate for innovation led to team creativity translating into innovation implementation (Someach & Drach-Zahavy, 2011). In researching the relationship of climate and individual innovative behaviour, the climate for innovation facet, referred to as innovation climate, has been adopted for this study.

Defining Work Orientation

The definition of work orientation was inspired by Bellah et al. (1985) who defined it as a construct that supports reasons why people work and the different categories of meaning employees attribute to working (Pitacho et al., 2019; Willner et al., 2020; Wrzesniewski et al., 1997). Amabile and Pratt (2016), refer to it as internalised assessments regarding what renders work meaningful. There are various categories of work orientation, which are explained later in this chapter.

The key variables of work setting, innovative behaviour, innovation climate, and work orientation have now been defined. This research explores the role of work setting, innovation climate, and work orientation in relation to innovative behaviour. The theoretical framework that constitutes the backbone of this study will now be deconstructed and explained.

Theoretical Framework

In a bibliometric study on organisational creativity conducted by Fetrati et al. (2022), the relationships between the top 20 papers in the field was analysed, which resulted in identifying the seven most influential models of creativity in organisations and dividing them into two tracks to bridge the gap in in the literature. Teresa M. Amabile was found to be one of the most cited authors on organisational creativity and her model was found to be one of the most influential in the field of organisational creativity between 1980 and 2020. Amabile and Pratt's dynamic componential model of creativity and innovation was selected from all the models for the first track. Fetrati et al. (2022) recommended that the factors from the models in the second track that were missing from the dynamic componential model were to be added

to this model to make it inclusive and provide a sound and extensive theoretical framework for further research. Furthermore, after the development of the original componential model of organisational innovation (Amabile, 1988), Amabile and Pratt (2016) have incorporated key insights from widely cited creativity and innovation theories into their model, including another highly cited model, the interactionist model of creative behaviour (Woodman et al., 1993).

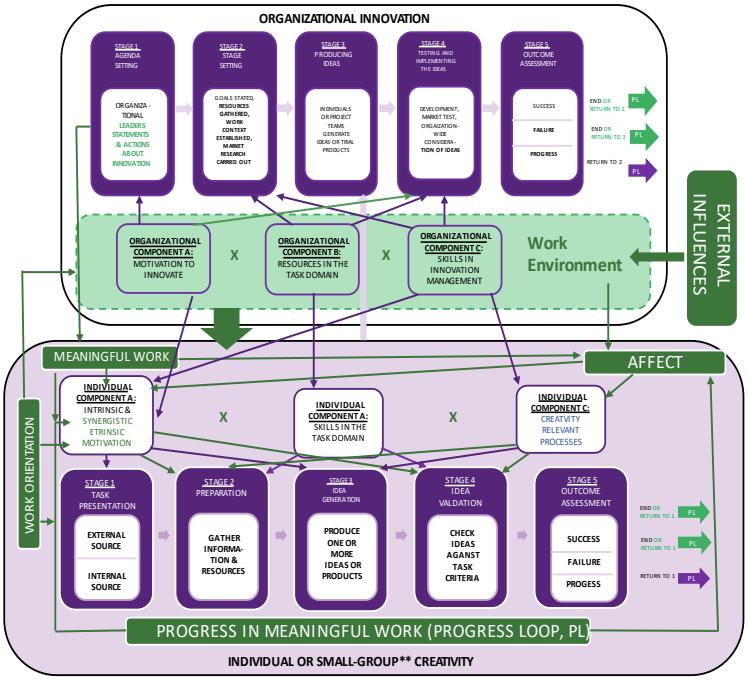
The dynamic componential model of creativity and innovation (Amabile & Pratt, 2016) is thus one of the most widely used and accepted models in organisational research, making it the model of choice for this study. The following sections break down and explore the different levels and components of the model, identifying the variables for this study within the model.

The Dynamic Componential Model of Creativity and Innovation in Organisations

Figure 1 illustrates the dynamic componential model of creativity and innovation in organisations. This model encompasses a comprehensive array of internal and external components that both support and influence the creative process at the individual or small group level, as well as innovation at the organisational level. The additional research and components of the model that were added in 2016 to the first edition, make it more dynamic with the addition of feedback loops. Furthermore, new linkages were made between innovation on an organisational level and creativity on an individual level and additional important psychological factors were added. The original components of the model are illustrated in figure 1 in purple. The green components were added to make it dynamic.

Figure 1

The Dynamic Componential Model of Creativity and Innovation in Organisations



Amabile and Pratt (2016) note that not all insights from creativity and innovation research could be included in the revised model. They also acknowledge that a distinction should be made between individual and small-group creativity but at the time of publishing the model there was a lack of sufficient research to separate the two. One cannot assume that collaboration between a small group or team operates the same as creativity on an individual level. Furthermore, individuals' creative ideas cannot simply be aggregated to a team creativity construct as engagement and collaborative processes over time impact team creativity (Kim et al., 2022). The nature of the model is dynamic due to the intercorrelations between the feedback loops, arrows, linkages, and the multiple iterative processes on both an individual and organisational level. Therefore, individual, team and organisational components need to be researched to better understand these intercorrelations and in what way they ultimately impact innovative behaviour.

This is supported by Anderson et al., (2014) who state that creativity and innovation can manifest on an individual, team, or organisational level, or a combination of these levels, and will be advantageous across some or all these levels. They also highlight the multilevel

complexity and interconnectivity of these processes. Further research on the interconnectivity between individuals, groups, organisations, and external factors, including context, economic and socio-cultural factors, needs to be researched further (Amabile & Pratt, 2016).

It is impossible to include every element of the model in this research project. Many of the components have already been extensively researched and accepted. For example Fischer et al. (2019) conducted research on intrinsic and synergistic extrinsic motivation and Cai et al. (2018) researched the relationship of servant leadership, meaningful work, job autonomy and innovative behaviour, drawing on the model in both studies. However, it is important to study the new components of the model, which have not yet been researched. It is equally relevant, with the recent changes in the work environment necessitated by COVID-19, to examine the impact of work setting on these components.

To identify and place the elements of this research in the model, the basic components and processes that comprise the overall model are described in the following sections. Firstly, the five stages of creativity and innovation is explained. Secondly, the skills, resources, motivation, and external influences that form part of the work environment, and play a role in maximising creativity and innovation, are explored. Lastly, the psychological factors that impact creativity on an individual or small group level are explored.

The Five Stages of Creativity and Innovation

Figure 2 depicts the five stages of innovation at an organisational level, and creativity at an individual or small-group level, as well as the factors that influence each stage. Stage 1 of the diagram identifies a goal or a problem, referring to agenda setting on an organisational level, and task presentation on an individual or small-group level. Stage 2 sets the stage on an organisational level, and preparation on an individual small group level by gathering the required resources. Stage 3 generates ideas on both levels. Stage 4 comprises testing, validating, or implementing the ideas and stage 5 assesses the outcomes by measuring the success or failure of the idea. The arrows on both levels suggest that there is a feedback loop to a previous stage, making it an iterative and dynamic process.

Figure 2

The Five Stages of Creativity and Innovation

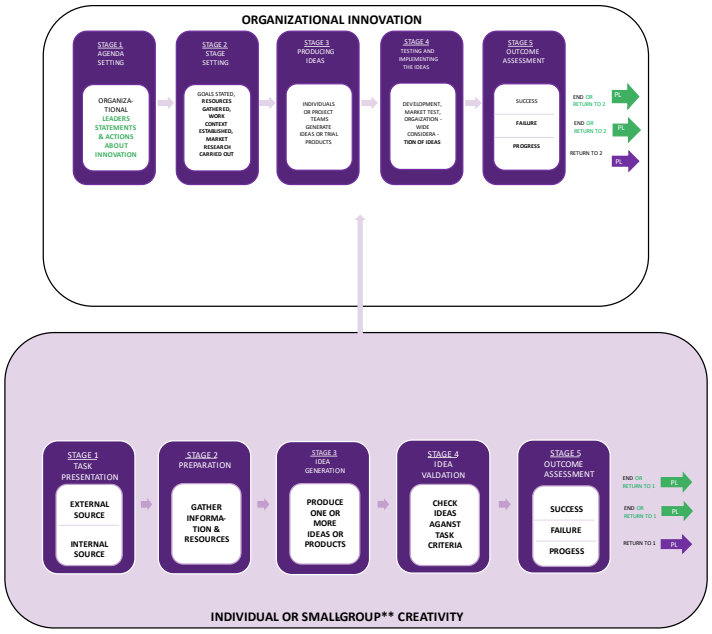


Figure 2 indicates, with the light purple arrow, that the creative process at an individual or small-group level connects into stage 3 of the organisational innovation process which will then continue to stage 4 of testing and implementation. This is where the construct of innovative behaviour, as defined above, becomes apparent. Stage 3 is where individuals or teams generate ideas on an organisational level, consistent with the earlier definition of individual innovative behaviour by Kleysen and Street (2001), where individual actions generate, introduce, and apply ideas at an organisational level. Furthermore, the second component of individual innovative behaviour, the execution of ideas, are incorporated in stage 4 at an organisational level, namely the implementation of the ideas. The construct of individual innovative behaviour as it relates to the model framework is delineated further below.

Individual Innovative Behaviour. Previous research has treated individual innovative behaviour as a unidimensional construct. In contrast, Kleysen and Street (2001) introduce it as a multidimensional construct, which has been supported by subsequent studies and tested in different contexts (Ghosh & Srivastava, 2018). Kleysen and Street (2001) categorise innovative behaviour into "*opportunity exploration*, *generativity*, *formative investigation*, *championing*, and *application"* (p. 284). They further explain that opportunity exploration comprises discovering new opportunities through behaviours such as paying attention, looking for and recognising opportunities and gathering information about them. Generativity comprises generating ideas, solutions, representations, categories, and combinations of ideas for the purpose of growing companies, employees and their products, processes, and services. Formative investigation consists of formulating, experimenting, and evaluating ideas and solutions. Championing entails mobilising resources, influencing, negotiating, and taking risks to bring ideas to reality. Lastly, application is made up of implementation, modification and the routinisation of innovations (Kleysen & Street, 2001).

These categories of innovative behaviour as defined by Kleysen and Street (2001), are consistent with stages three (producing ideas) and four (implementing and testing ideas) of the stages of organisational innovation previously outlined earlier in this chapter. Opportunity exploration forms the precursor to producing ideas. This emanates from both the process of individual or small group creativity (indicated by the light purple arrow in figure 2) and information gathering included in stage 2 of stage setting. Generativity is part of Stage 3 of producing ideas. Formative investigation, which includes evaluating ideas and solutions, as well as championing and application, where the ideas are tested and implemented into the organisation, comprises stage 4, testing and implementing the ideas.

For the purposes of this research, the separate sub-constructs defined by Kleysen and Street (2001), which have shown to be related to each other and can occur at the same time (Steyn & De Bruin, 2019), will comprise a single measure for the dependent variable referred to as Individual Innovative Behaviour (IIB).

The next aspect of the model describes the components of the work environment required to maximise creativity and innovation.

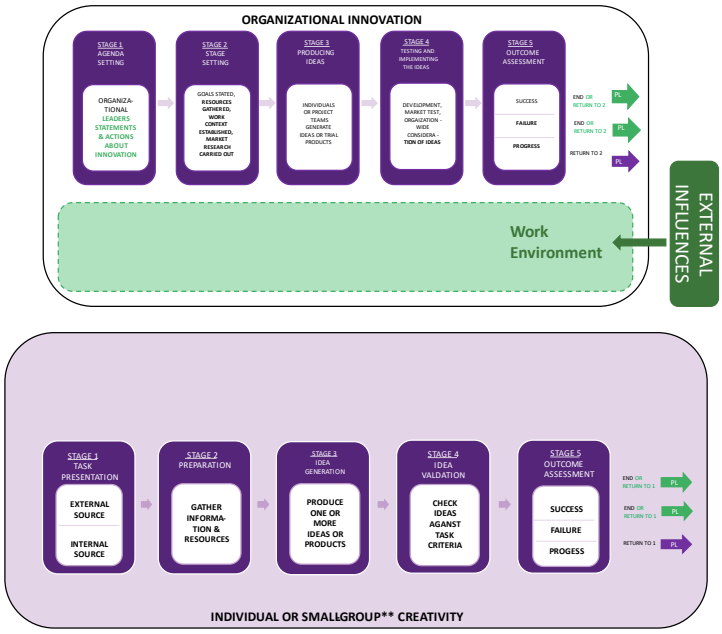
Components of the Work Environment that Maximise Creativity and Innovation: Skills, Resources, Motivation, and External influences.

Before describing the components of the work environment that maximise creativity and innovation, the nature of the work environment is explored in relation to Figure 3:

Work Environment. The work environment is an open system and is impacted by factors both internal and external to the organisation (Amabile & Pratt, 2016). External influences include social, economic, and political phenomena (Amabile & Pratt, 2016). These are represented in Figure 3 below. It can be argued that post pandemic trends in work arrangements, such as hybrid work, form part of these external influences, while company work setting polices and innovation climate are examples of internal organisational factors.

Figure 3

External Influences in the Work Environment



Before elaborating on these further, internal components of skills, resources, and motivation, which play a role in maximising innovation at an organisational level, are explored. Figure 4 (below) illustrates what Amabile and Pratt, (2016) term components A, B and C respectively that are hypothesised to maximise creativity and innovation. On an individual or small group level, there are three components. The first is intrinsic and synergistic extrinsic

motivation. The second is skills in the task domain, such as expertise, technical capability, or knowledge (Amabile and Pratt, 2016). The third is creativity-relevant processes such as creative thinking skills or techniques (Amabile and Pratt, 2016). On an organisational level, the first component is a driver or motivation to innovate. The second is resources in the task domain, such as expertise, interest, finance, infrastructure, access to data, and time. The third is skills in innovation management, such as goal setting, open communication systems, feedback, and collaboration. Amabile and Pratt (2016) state that each of the three components of motivation, resources, and skills, which make up the work environment, are crucial for successful creativity and innovation, represented by the "X" symbols in Figure 4.

Where the components of motivation, skills and resources overlap is where creativity and innovation are maximised (Amabile, 1988) as illustrated in Figure 5 (below Figure 4), which demonstrates by means of the feedback arrows on either side, that the components of creativity on an individual or small group level and innovation on an organisational level are inextricably linked.

Figure 4

The Individual and Organisational Components that Maximise Creativity and Innovation

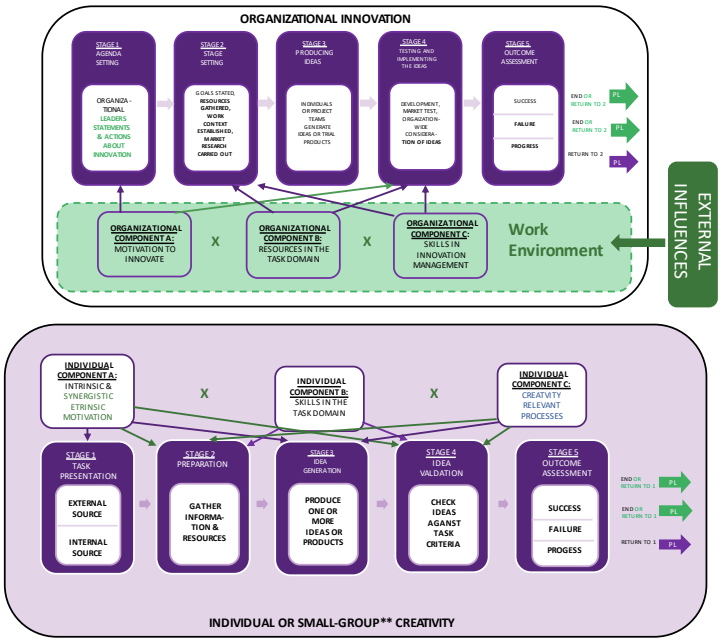
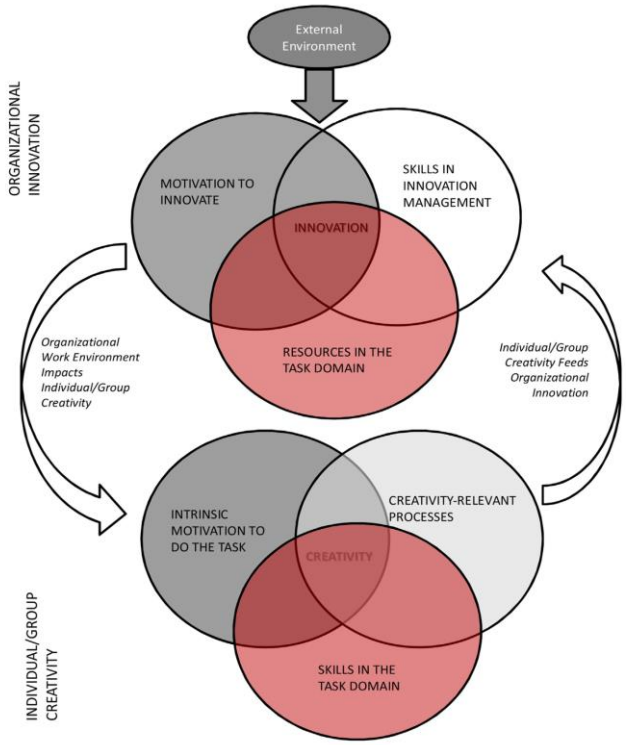


Figure 5

An Abstraction of the Components Influencing Innovation and Creativity and How They Interact (Amabile & Pratt, 2016, p.161)



Fetrati et al. (2022) argue that the component of skills in innovation management in organisational innovation is too vague and requires a framework to categorise these skills through further research. One such way to attain this categorisation, is to investigate the role organisational climate plays within the work environment, which according to Amabile (1988), can be used as a tool to influence creativity. An understanding of the role that culture and climate play in creativity in organisations has been found to be generally lacking (Fetrati et al., 2022). Further research into the components of innovation climates and its relationship to innovative behaviour will assist in gaining insight into the appropriate management interventions required for creativity outcomes (Dubina, 2006).

Innovation Climate. Schneider et al. (2013) highlights the need to research and understand climate as it provides input on the psychology of how people experience their daily work setting and identifies the tangible factors that are required to achieve effective behaviour. They argue that ideally research into climate should aggregate individual perceptions into higher levels of team and organisational analysis (Schneider et al.,2013). In other words, the perceptions on an individual level should be combined to a unit (team) and/or organisational level (Schneider et al., 2013). This is supported by Andersen and West (1998) and Newman et al., (2020), who emphasise how the analysis of climate should be conducted at a work group or team level, since shared climates will evolve through these shared perceptions and will be integrated into the core environment of the organisation. Therefore, organisational climate can play a role in connecting individual and team levels together, as individuals who interact with colleagues are likely to develop a shared understanding of the way things are done and this will develop into a shared climate. However, it is not always possible to aggregate the analysis and there are a significant number of studies that are analysed on an individual level (Newman et al., 2020; Ragazzoni et al., 2002). This is particularly pertinent when investigating the moderating effects of innovation climate, where past research has focused on outcomes at both a team and individual level (Newman et al., 2020). Newman et al., (2020) raise methodological concerns for research which has studied outcomes on a team and organisational level and stress the need for further research on existing studies to include more diverse person-situation theoretical perspectives to enhance the understanding of how innovation climate develops and influences key outputs. They also highlight the need to investigate the influence of "exogenous jolts" (p.98) on innovation. It can be argued that the Covid-19 pandemic can be classified as one of these "exogenous jolts".

Innovation Climate is measured by team climate, using the Team Climate Inventory (TCI) and consists of five dimensions as developed and described by Anderson and West, (1998). The TCI is comprised of "*vision*, *participative safety, task orientation, support for innovation*, and *interaction frequency"* (Kivimäki et al., 1997, p.381-387). The first dimension, vision, consists of four defined objectives which provides focus and direction (Anderson and West, 1998). It is firstly comprised of clarity, where the vision needs to be understood by all employees involved in the process; Secondly, vision consists of visionary nature, where employees need to be committed to the group objectives by being enabled to see value in the outcome; The third component of vision is attainability, where the vision should be realistic to achieve; The final component of vision is sharedness, where it should be accepted by

employees in the team (Anderson & West, 1998). The second dimension of the TCI is participative safety, which involves creating a decision-making process which is personally non-threatening in any form (Anderson & West, 1998). Task orientation is the third dimension and generally manifests in a dedication to achieving high standards in task execution, together with a supportive climate that encourages improvements to existing policies, procedures, and methods (Anderson & West, 1998). The fourth dimension, support for innovation, is where active support is given for innovative behaviour (Anderson & West, 1998). The fifth dimension is interaction frequency, an important construct due to the role that communication and interaction play in disseminating ideas (Kivimaki et al., 1997).

The relationship between team climate and individual innovation has been shown in previous research (Amabile et al., 1996). While group composition, characteristics, and processes influence group creativity (Woodman et al., 1993), studies have found that group or team members' dynamics do influence individual innovation (Scott & Bruce, 1994). Pirola-Merlo and Mann (2004) found mixed support for the relationship between team climate and individual creativity, but there have been more recent studies by Chen et al., (2013) and (Newman et al., 2020) finding a relationship between team climate and individual innovation. However, further research is still indicated on a cross-level and multilevel analysis as well as facet specific climates for innovation and its role in innovation in organisations (Anderson et al., 2014). While the research mentioned above conducted team climate and innovation studies in specific contexts, there is a gap in the literature investigating this relationship in the context of different work settings.

The Moderating Role of Innovation Climate. Another focus in the literature has been on innovation climate as a moderator of innovation relationships. Innovation climates strengthened the relationships between an array of variables (Newman et al., 2020). For example, when innovation climate was high, the relationship between ethical leadership and creativity was strengthened (Chen & Hou, 2016). Sung and Choi (2014) found that there was a stronger relationship between interpersonal and organisational learning practices and innovative behaviour when innovation climate was higher. Further research of the role of moderators can provide a better understanding of what influences innovative behaviour (Somech & Drach-Zahvay, 2011). This study tests if a supportive innovation climate in different work settings impacts innovative behaviour favourably by investigating innovation climate as a moderator in the relationship between innovative behaviour and work settings. A favourable innovation climate which sustains components of the TCI such as support for

innovation, participative safety, and interaction frequency, may strengthen the relationship between work setting and innovative behaviour.

Work Setting. Work setting is a component of the work environment. In defining the work environment, in addition to psychological and social factors, Amabile and Gryskiewicz (1989), acknowledge that work environment includes physical environmental variables. This includes work setting, which comprises 'bricks and mortar', remote and hybrid working. The external influence of post-pandemic trends in work setting will impact the internal work environment through the work setting policies adopted by companies. Therefore, the ramifications of work settings on innovative behaviour needs to be further researched.

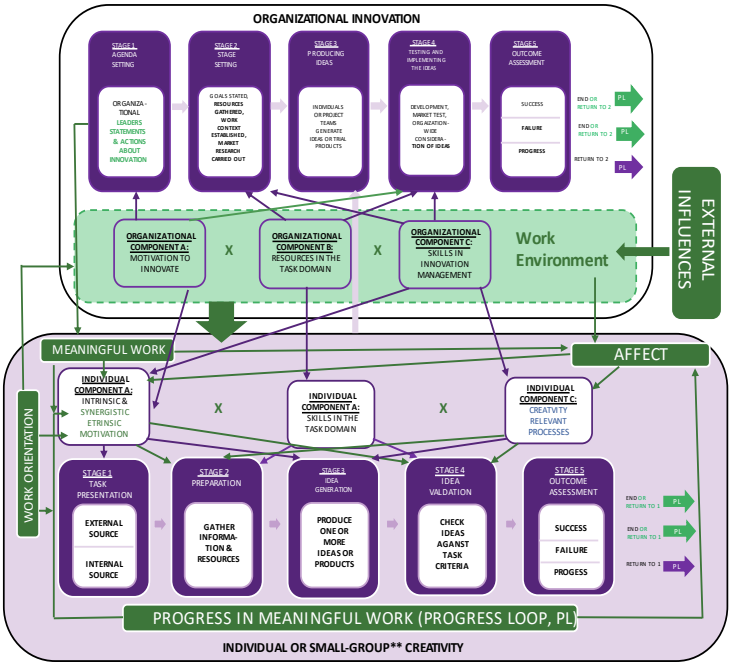
The parts of the model that have been discussed so far are the stages of creativity and innovation, the components that maximise creativity and innovation, and the work environment and external influences on innovation. The variables of individual innovative behaviour, innovation climate and work setting have been contextualised in the model. The last variable of work orientation will now be described in the final component of the model, which is one of the components of the psychological factors that influence individual creativity.

The Psychological Factors that Influence Creativity

Figure 6 illustrates psychological factors that research has found impact individual creativity. These psychological factors interact with each other, influence and are influenced by the organisational factors. The psychological factors are highlighted in green boxes in the lower purple box of figure 6, namely *progress in meaningful work*, *meaningful work*, *affect*, and *work orientation* are important considerations is creativity on an individual level. These factors can promote or hinder the creative process. The role of progress in meaningful work and an understanding of meaningful work is explored in the following section to provide a context and understanding of how these variables relate to work orientation and creativity. The discovery of the progress principle and the factors related to it, reflect the power of progress in creative work and innovation in organisations (Amabile & Pratt, 2016). Figure 6 depicts the impact of the progress principle, wherein advancing in meaningful work or anticipating progress influences intrinsic motivation. This, in turn, fosters creativity by initiating another iteration of the process, as the individual re-engages in the cycle.

Figure 6

The Psychological Factors that Influence Individual Creativity



If an individual achieves a creative outcome, this will be viewed as progress. This is called the progress loop (PL). Intrinsic motivation directly or indirectly impacts each stage of the creativity process. Success can end the creative process but also enhance intrinsic motivation, thereby perpetuating the need to be creative. Failure can end the creative process but in a psychologically safe environment it also impacts intrinsic motivation and may re-commence the creative process (Amabile & Pratt, 2016).

Figure 6 shows that the progress loop and these iterative processes also apply on an organisational level, illustrated by the arrows labelled PL, that feedback into Stage 2 of the organisational innovation process. In addition, progress at an organisational level may stimulate individual creativity. Intrinsic motivation is crucial in the process, but Amabile's prior research highlights that synergistic extrinsic motivation comes into play when the extrinsic motivator is perceived as offering information to enhance competence, without exerting control that might make individuals feel undermined (Amabile & Pratt, 2016). This has been confirmed

by similar research, where extrinsic motivators positively moderated the relationship between intrinsic motivation and creativity and innovation (Fischer et al., 2019).

Fundamental to the progress principle is the concept of meaningful work. In the broader organisational context, meaningful work has been identified as one of the seven key drivers of a productive, healthy, and safe organisation (Barling, 2023). In the context of creativity, work must have meaning and significance to the individual for them to engage and re-engage in the creative process (Amabile & Pratt, 2016). This will impact intrinsic motivation, a notion illustrated by the green arrow feeding into the individual component graphic, thereby indicating enhancing creativity. Meaningful work strengthens the progress loop, because if work has meaning to an individual, they want to persist despite setbacks. It also mediates the relationship between organisational leaders' statements and actions about innovation (stage 1 of organisational innovation) and intrinsic motivation. This is because individuals who see their work as meaningful, will find these statements and actions motivating. This is illustrated by the green arrows from Stage 1 of the info-graphic depicting organisational innovation, linking meaningful work to individual component A (Amabile & Pratt, 2016). The influence of meaningful work on innovative behaviour has subsequently been documented in other studies (Cai et al., 2018). It has also been found to impact the individual's well-being, work, and organisational attitudes (Wrzesniewski et al., 1997).

Meaningful Work and Innovative Behaviour. The relevance of meaningful work on innovative behaviour in different work settings needs further research. In a recent article in the Financial Times, Arora (2023) writes that employers should be focusing on the office space as an environment that fosters creativity, collaboration, and meaningful mentorship and not just a place that fosters meaningful social connections. In their research into how young professionals view the future of work and the implications it has for employers, Arora et al. (2022) found that the degree of autonomy cultivated from working remotely has fostered more meaning and purpose in their work. Studies have also referred to meaning in the context of meaningful interactions at the office (George et al., 2022) and during the pandemic this was replaced by encouraging employees to engage in other meaningful experiences such as yoga, meditation, and charity work. Post-pandemic, employees need to be reminded of the impact their work has on others around them (Barling, 2023). Employers should consider a way of work that fosters meaning to the individual and how this can be channelled into a broader collective culture that creates a climate with a sense of belonging and fosters collaboration (Arora et al, 2022). Ultimately, meaningful work will impact innovation, as it motivates employees to engage in creative processes (Amabile & Pratt, 2016). However, both creative work and progress in creative work will be more meaningful and therefore more motivating to some employees than others. Amabile and Pratt (2016) emphasise that exploring different work orientations plays a significant role in understanding this phenomenon, through its relationship with intrinsic motivation and meaningful work. Therefore, the last psychological factor in the model that is key to meaningful work and creativity, is work orientation.

Work Orientation. Robertson (1990) identified work orientation as one of three components that comprise meaningful work, the other two being work centrality and work values. Work centrality describes how individuals prioritise their work in relation to other facets in their lives (Paullay et al., 1994). Work values are "the general and relatively stable goals that people seek as products of their jobs" (Savickas, 2014, p.4). Previous studies have used work orientation to describe an individual personality dimension to understand job performance (Day & Bedeian, 1991). Somech and Drach-Zahavy (2011) refer to past research in the creativity fields where highly creative personalities have positively impacted team innovation.

As previously defined, work orientations are an individuals' own considerations of the meaning in their work (Amabile & Pratt, 2016). These considerations are influenced by various sources including organisational leaders (thus the green arrow in figure 5 from work orientation into the arrow leading from leaders' statements in stage 1 in organisational innovation to

meaningful work). If individuals perceive doing innovative or creative work as meaningful, they will be motivated by leaders' statements. Furthermore, Amabile and Pratt (2016) explain that creativity will be seen as intrinsically motivating if it is perceived at the core of "what makes work worth doing" (p. 171). Therefore, a green arrow links work orientation to intrinsic motivation in Individual Component A. Lastly, work orientations may impact perseverance in the progress loop through persistence. The arrow from work orientation into the progress loop illustrates, as previously described, that re-engaging in the creative process may be more meaningful and motivating to some than others, depending on their work orientation. Therefore, it is important to understand the different work orientations and their role in creativity in the workplace.

There have been several attempts to categorise work orientations. Bellah et al. (1985) introduced the categorisation that a person acquires meaning from work in the form of a job, a career, and a calling. Other studies by Pitacho et al (2019) and Wrzesniewski et al. (1997) support this categorisation. A job orientation refers to employees who work for financial security and see the meaning of work as only a source of paying the bills (Wrzesniewski et al., 1997). Pitacho et al. (2019) describe it as not an end but rather a means for monetary acquisition. They are generally extrinsically motivated and exhibit lower levels of creativity (Amabile & Pratt, 2016). Employees with a career orientation are competitive and focused on promotion in organisations (Wrzesniewski et al., 1997). They tend to be more extrinsically than intrinsically motivated by status, power and prestige (Pitacho et al., 2019) and their creativity will be driven by their need for advancement (Amabile & Pratt, 2016). Employees with a calling orientation love working, view work as part of their lives and they work for the common good (Wrzesniewski et al., 1997). They are willing to make sacrifices for their work, view work as an end itself and highly meaningful (Pitacho et al., 2019). They are intrinsically motivated and consequently have high levels of creativity (Amabile & Pratt, 2016).

Pitacho et al. (2019) investigated the relationship between the three dimensions and suggest other dimensions and sub-dimensions of these categories exist and that employees can display a mixture of work orientations. They also suggest that one dimension can positively influence another. For example, when an employee views work as a calling, they could strive for career progression to achieve this end; similarly, those with a job orientation can associate with a career orientation as a means of attaining greater monetary reward. This reinforces studies that have shown that intrinsic and extrinsic motivators can work together (Fischer et al., 2019).

Subsequently, Amabile and Pratt (2016) have categorised work orientation into six types and hypothesise their link to creativity. These types include job, career, calling/service, but extend it to *kinship*, *craftmanship* and *passion*. They explain that those with kinship work orientations view work as an opportunity to make family-like connections and may hinder creativity. Those with craftmanship work orientations view work as a means for optimising quality which can also manifest in valuing personal growth, and this will be positively linked to creativity. Those with a passion orientation love what they do and are highly creative.

In a more recent study to develop a Work Orientation Questionnaire, Willner et al. (2020) categorised work orientation into *career*, *calling*, *job*, added busyness, and *social embeddedness* as additional work orientation categories. They describe busyness-orientated employees as individuals who value work as a means of keeping themselves occupied. Similar to the kinship category proposed by Amabile and Pratt (2016), employees who display the social embeddedness category, want to feel part of a group and have a need to belong and feel part of a community (Willner et al., 2020). Willner et al. (2020) found validity and reliability for their five-factor scale. Therefore, the five categories in the form of the Work Orientation Questionnaire (WOQ), will be used for this research. Further research is needed to test the WOQ in a more diverse environment, both in terms of samples and alternate constructs to career decisions (Willner et al., 2020). Amabile and Pratt (2016) also acknowledge that their categories of work orientation are hypothesized, with indirect links to work orientation and creativity, and therefore need further research.

The Moderating Role of Work Orientation. As previously mentioned, Somech and Drach-Zahvay (2011) argue that further research of the role of moderators can provide a better understanding of what influences innovative behaviour. Previous research has provided support for the relationship of work orientation with important organisational behavioural constructs such as well-being, commitment, and job satisfaction, with implications for understanding behavioural differences in the work setting and career counselling (Pitacho et al., 2019). A review of the literature showed no studies of the WOQ being used in the context of innovative behaviour. This study evaluates whether some work orientations thrive in different work settings compared to others, which may then either foster or hinder innovative behaviour. For example, an employee whose work orientation is social embeddedness may thrive in the office environment where they feel part of a group and less isolated than working remotely. This may consequently enhance their innovative behaviour. Testing work orientation as a moderator between work setting and individual innovative behaviour will therefore contribute to

understanding the influences of innovative behaviour in different work settings. Specific categories of work orientation may strengthen the relationship between work setting and innovative behaviour.

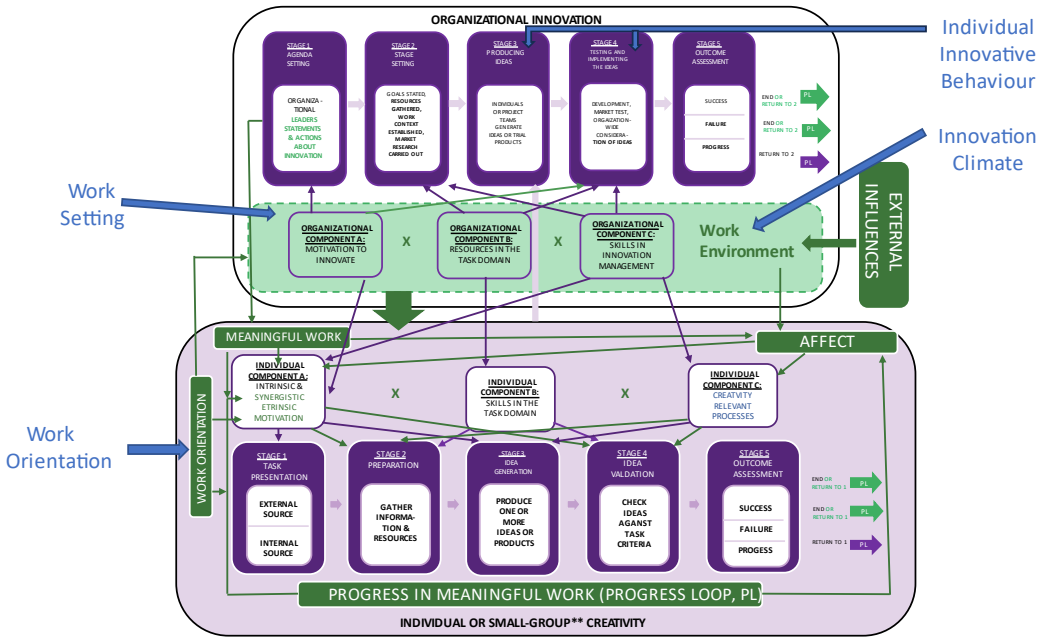
The dynamic componential model of creativity and innovation has been fully explained and the components for this study has been defined. The placing of the variables for this research into the model, will now be illustrated and summarised.

Research Components of the Model

The components of the model for this research are indicated in blue in figure 7 below. These are work orientation, one of the psychological factors that influence individual creativity, innovation climate, and work setting, both of which form part of the organisational work environment. Individual innovative behaviour, which emanates from the individual creativity process, sits in stage 3, and flows into stage 4 of the organisational innovation process. The key variables for this research have been identified and how testing them for this study will address some of the gaps in the model.

Figure 7

Research Components of the Model



To summarise, the dynamic componential model of creativity and innovation offers a widely accepted framework for investigating the interplay among various levels of creativity and innovation. This is achieved through the examination of constructs such as work orientation and innovation climate, exploring their influence on the relationship between work setting and innovative behaviour.

The following section, Chapter 3 addresses the methodologies used to answer the research questions guiding this study. The research questions investigate the relationship between Work Settings and Individual Innovative Behaviour, the relationship between Work Settings and Innovation Climate, the relationship between Innovation Climate and Individual Innovative Behaviour, and the relationship between Work Orientation and Individual Innovative Behaviour. The moderating role of Innovation Climate between Work Setting and Individual Innovative Behaviour, and Work Orientation between Work Setting and Individual Innovative Behaviour are also investigated. This is followed by a presentation of the results in chapter 4, and a discussion and conclusion in chapter 5.

CHAPTER 3 - METHODOLOGY

Introduction

This chapter firstly outlines the research questions and proposed model for testing the research questions. The methodology adopted for this research is addressed, including the research design, procedure, and setting. Details of the sample and sampling are then described as well as the measuring instruments administered. The analysis of the data is discussed and lastly, the components of the ethical approval processes are outlined.

Research questions

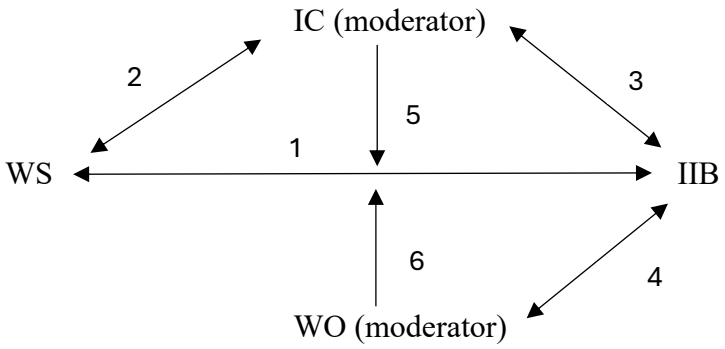
The study set out to test the following research questions and model:

1. Is there a relationship between Work Settings and Individual Innovative Behaviour?
2. Is there a relationship between Work Settings and Innovation Climate?
3. Is there a relationship between Innovation Climate and Individual Innovative Behaviour?
4. Is there a relationship between Work Orientation and Individual Innovative Behaviour?
5. Does Innovation Climate moderate the relationship between Work Setting and Individual Innovative Behaviour?
6. Does Work Orientation moderate the relationship between Work Setting and Individual Innovative Behaviour?

Figure 8 illustrates the proposed model representing the research questions. The numbers in the model correspond to the number of each research question. The number 1 in figure 8 addresses the research question 1, if a relationship exists between WS and IIB. Number 2 addresses research question 2, if a relationship exists between WS and IC. Number 3 addresses research question 3, if a relationship exists between IC and IIB. Number 4 addresses research question 4, if a relationship exists between WO and IIB. Number 5 and 6 look at the moderating roles of IC and WO respectively, on the relationship between WS and IIB.

Figure 8

Proposed Model Representing the Relationships that the Research Investigated.



Research Design

The philosophical position of this research is a positivist paradigm. The criteria for positivist paradigm include an observable and measurable reality that can be generalised (Aksoy et al., 2023). The researcher endeavours to attain an objective search for facts (Kivunja & Kuyini, 2017). Typically the research is quantitative on a large sample (Saunders et al., 2012). Quantitative research methods measure variables that will produce numeric or measurable outcomes (Field, 2013). This research fulfilled these criteria.

This research was non-experimental, correlational, and cross-sectional. Non-experimental research is where the variables will not be manipulated but rather measured (Field, 2013). It is a more cost-effective way of gathering data for model building (Stuart et al., 2009). Correlational research is characteristic of the relationship or association between variables being observed, the variables are not manipulated, and it does not indicate the causal relationship between variables (Field, 2013). Cross-sectional research is where several variables are measured at one point in time (Field, 2013). This methodology was useful for testing the proposed model.

Procedure and Setting

The organisation that participated in this study was ideally placed for sample selection, as it is an international financial services institution based in South African. The company was founded in 1992 and is a renowned market leader in insurance and banking services, organically grown with a strong focus on innovation. According to Damanpour (1991), organic companies are those that continually innovate. On the back of the company's innovative

success, it operates in 40 international markets, servicing over 40 million customers in partnership with leading financial services organisations.

A proposal for the study was submitted to the HR department who distributed it to all its business units. Six business units agreed to participate in the research, of which one business unit was based overseas, the other five were based in South Africa. At the time, the organisation was at the end of piloting a hybrid working arrangement, where employees were working from home but had to come into the office at specified times. They indicated that the research was of interest to them as part of the pilot project. The questionnaire was first sent to the HR representatives for review. Items in the demographic questionnaire were aligned with company terminology. The final questionnaire was administered using the REDCAP platform and was sent as an email by the business unit human resource representative. An email that was written and signed was sent with a link to the questionnaire and including an estimated time to complete it. It also contained contact details of the researcher and supervisor, the title of the research, assurance of voluntary participation, anonymity, confidentiality, and a contact email should they have wanted to receive a summary of the report (see Appendix 4). Anonymity was ensured as names were not recorded. No email addresses were received except for three participants who requested a copy of the research summary report.

The questionnaire was administered in July 2022 over a few weeks. Reminders and follow up emails were sent by the HR representatives during that time. The survey was closed mid-August once an adequate sample size for the research was achieved.

Sampling and Sample Size

The sampling technique for this research can be classified as voluntary response sampling since the respondent to the questionnaire essentially volunteered themselves to be part of the sample. This falls under the classification of non-probability sampling since each member of the population did not have an equal chance of being selected for the study as the questionnaire was administered in certain divisions of the company that opted into the study (Alvi, 2016).

The sample consisted of employees from six business units. Table 1 indicates the number of employees of the business units who participated and the response rate.

Table 1

Number of Employees Per Participating Business Unit and the Response Rate

Business Unit	1	2	3	4	5	6	Total
Number of employees	650	1000	286	227	464	993	3620
Number of complete responses	68	137	40	51	70	116	482
% Response rate	10.5	13.7	14.0	22.5	15.0	11.7	13.3

A total of 3620 employees from the six business units received the questionnaire. A total of 576 responses were received of which 96 responses were incomplete and deleted. The total sample size used for the analysis was 482. The overall response rate was 13.3% with business unit 4 having the highest response rate of 22.5% The breakdown of respondents per business unit is shown in the Table 2 below, indicating that business unit 2 had the highest response rate of 28.4% followed by business unit 6 of 24.1%.

Table 2

Percentage Response Rate per Business Unit

Business Unit	1	2	3	4	5	6	Total
% Response per Business Unit	14.1	28.4	8.3	10.6	14.5	24.1	100

Demographics

A biographical questionnaire was administered to determine the characteristics of the sample. These included age, level of education, marital status, number of children, number of children living at home, gender, job level, job family, tenure, and job satisfaction. The overall breakdown of the demographics is reflected in Table 3 below.

Table 3

Demographic Details of the Sample

Demographic	Category	N	%
Age	Mean	38.1 (range =22-60)	
Level of education	No formal education	1	0.2
	High/Senior school	113	23.4
	Vocational training/diploma	117	24.3
	Undergraduate degree/ Honours	194	40.3
	Masters	33	6.9
	PHD	3	0.6
	Other	21	4.4
Marital status	Single/Never married	167	34.7
	Married/living with partner	277	57.6
	Widowed	5	1
	Divorced	32	6.7
	Missing data	1	
Number of children	0	189	39.4
	1	106	22.1
	2	122	25.4
	3	51	10.6
	4+	12	2.5
	Missing data	2	
Number of children living at home	0	200	41.7
	1	119	24.8
	2	112	23.3
	3	41	8.5
	4+	8	1.7
	Missing data	2	
Gender	Male	234	48.6
	Female	247	51.2
	Other	1	
Job level	Staff	245	50.8
	Team leader/Associate Specialist	88	18.3
	Manager / Specialist	79	16.4
	Divisional Manager/ Senior Specialist / Director	39	8.1
	Deputy General Manager/ Principal Specialist / VP	21	4.4
	General Manager / Chief Specialist / Senior VP and above	10	2.1

Demographic	Category	N	%
Job family	Analytics and Product Development	63	13.4
	Banking	1	0.2
	Client Services	82	17.4
	Clinical	6	1.3
	Finance	38	8.1
	Investment	0	0
	Marketing and Communications	10	2.1
	Multidisciplinary Leader	5	1.1
	Operations and Administrations	82	17.4
	People (Human Resources)	25	5.3
	Portfolio Program and Project	9	1.9
	Manager	16	3.4
	Compliance and Audit Services	15	3.2
	Sales and Distribution	119	25.3
	Systems and Technology Infrastructure	11	
	Missing data		
Tenure in organisation	0-2 years	118	24.5
	3-6 years	143	29.7
	7-10 years	99	20.6
	11-15 years	58	12.1
	16-20 years	45	9.4
	21+ years	18	3.7
	Missing data	1	
Tenure in current position	0-2 years	212	44.2
	3-5 years	180	37.5
	6-10 years	55	11.5
	10+ years	33	6.9
	Missing data	2	

Table 3 shows that the mean age of the sample was 38.11 years. The sample was highly educated with most participants having an undergraduate degree, honours qualification, vocational training, or a diploma. More than half of the sample (57.5%) were married or living with a partner, 47.0% having one or two children while 39.2% having no children. There was almost an even spread of male (48.6%) and female (51.2%) participants. The race demographics were not recorded as the company requested it not to be included in the questionnaire.

The job level was mostly junior employees. The job family makeup in each business unit were predominantly systems and technology infrastructure followed by client services

and operations and administrations. Most other job family categories had minimal representation.

The tenure in the organisation was mostly comprised of employees who had worked for the company for 3-6 years and 0-2 years. In terms of position tenure, most of the respondents had been in their jobs for less than 5 years.

Measuring Instruments

The following measuring instruments were included in the survey:

Work Setting Questionnaire

The work setting questionnaire was used to measure whether employees worked at home, in the office, both or another venue. To measure the work setting consistently, the questionnaire included number of days working in the office, work location, questions pertaining to physical workspaces such a where in the house or the office they worked and the frequency, and nature of interactions with colleagues.

The work location variable was measured by asking respondents to select one of the following: “in the last few weeks, I have mainly worked from the office, my home, both or other venue”.

All permissions and licencing agreements were received for the following measuring instruments.

The Work Orientation Questionnaire (WOQ)

The WOQ was used to assess work orientation. As described in the chapter 2, The WOQ comprised 5 sub-scales, namely job, career, calling, social embeddedness and busyness (Willner et al., 2020). Each subscale consisted of 5 items. The scale consisted of a 7-point response rating scale from not at all to very much. Reliabilities for the sub-scales ranged from 0.77-0.88, validity and sound psychometric properties were confirmed (Willner et al., 2019). Examples of some items were “I view my work as my life’s mission”, “I would like to advance in the professional hierarchy of my field”, “The people I work with are like family to me”, “I work only because I need the money” and “I dislike having nothing to do so I would rather work”. Refer to Appendix 1 for the WOQ Questionnaire.

The Individual Innovative Behavioural (IIB) scale

The IIB scale was used to measure the dependent variable of innovative behaviour. The IIB scale consisted of 14 items which combine as a single measure of IIB. The scale consisted of a 6-point scale from never to always. The scale had good construct validity and a reliability of 0.945 (Kleysen and Street, 2001). Some examples of the items included "In your current job, how often do you": "Generate ideas or solutions to address problems?", "Test-out ideas or solutions to address unmet needs?" and "Implement changes that seem beneficial?". Refer to Appendix 2 for the IIB scale.

The shortened Team Climate Inventory (TCI)

Innovation Climate (IC) was assessed using the Team Climate Inventory (TCI) which consisted of 18 items (Kivimäki et al., 1997). The TCI comprised 5 sub-scales – vision (4 items), participative safety (4 items), task orientation (3 items), support for innovation (3 items) and interaction frequency (4 items). The scale consisted of a 5-point response rating scale from strongly disagree to strongly agree. The reliability of the 5-factor scale is between 0.83-0.94. It has good construct validity (Kivimäki et al., 1997). Some examples of the items included "How far are you in agreement with the objectives?", "People feel understood and accepted by each other", "Do members of the team build on each other's ideas in order to achieve the best possible outcome?", "In this team we take the time needed to develop new ideas" and "We interact frequently". Refer to Appendix 3 for the shortened TCI scale.

Data Analysis

Data analysis was carried out using SAS version 9.4 for Windows. The reliability of the scales was assessed using Cronbach alpha; a method for comparing shared variance or covariance. The scales and subscales were all found to be reliable as follows: Work Orientation Calling 0.85, Work Orientation Job 0.80, Work Orientation Social Embeddedness 0.79, Work Orientation Career 0.89, Work Orientation Busyness 0.77, Individual Innovative Behaviour 0.96, Team Climate Total 0.95, Team Climate Vision 0.86, Team Climate Participative Safety 0.91, Team Climate Task Orientation 0.82, Team Climate Support for Innovation 0.87, and Team Climate Interaction Frequency 0.92. These Cronbach alpha results for each scale and subscale are outlined in detail in chapter 5 in the findings of the study.

To answer each research question, the following analyses was conducted:

1. Is there a relationship between Work Settings Individual Innovative Behaviour?

A one-way ANOVA was conducted to assess the relationship between Work Settings and Individual Innovative Behaviour

2. Is there a relationship between Work Settings and Innovation Climate?

A one-way ANOVA was conducted to assess the relationship between Work Setting and Individual Innovation Climate

3. Is there a relationship between Innovation Climate and Individual Innovative Behaviour?

A correlation analysis using Pearson's correlation coefficient was performed to determine the association between Innovation Climate and Individual Innovative Behaviour

4. Is there a relationship between Work Orientation and Individual Innovative Behaviour?

Pearson's correlation coefficient was used to determine the association between Work Orientation and Individual Innovative Behaviour

5. Does Innovation Climate moderate the relationship between Work Setting and Individual Innovative Behaviour?
6. Does Work Orientation moderate the relationship between Work Setting and Individual Innovative Behaviour?

The moderating effect of Work Orientation (WO) and Innovation Climate (IC) respectively, on the relationship between Work Setting (WS) and Individual Innovative Behaviour (IIB) was investigated by testing a series of nested general linear models. Bobbit (2021) explains that nested general linear models are a type of regression model where one model contains a subset of one or more independent variables in another model, creating a nested or hierarchical structure. This structure assists with understanding how variables interact within nested groups. It allows for comparison between models by analysing if additional variables significantly improve the model fit. This process involves comparing a model that includes all independent variables to a model with only a subset of independent variables. By evaluating which model better fits the dataset, we can identify the independent variables that significantly enhance the model (Bobbit, 2021). The nested models for this study, outlined below, were compared using the R^2 delta F-test, the method used to determine whether adding additional variables to the model significantly improves the model fit.

Nested General Linear Models

Model 1: Work Setting (WS)

This model tested the association of Work Setting with Individual Innovative Behaviour.

$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both)$

Model 2: Work Setting (WS) and Innovation Climate (IC)

This model tested the association of Work Setting and Innovation Climate on Individual Innovative Behaviour.

$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_3(IC)$

Model 3: Work Setting (WS), Innovation Climate (IC) and the Interaction

This model tested the association of Work Setting, Innovation Climate and their interaction with Individual Innovative Behaviour.

$$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_3(IC) + a_4(WS\_remote)*(IC) + a_5(WS\_both)*(IC)$$

Model 4: Work Setting (WS) and Work Orientation (WO)

This model tested the association of Work Setting and Work Orientation with Individual Innovative Behaviour.

$$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_6(WO\_calling) + a_7(WO\_job) + a_8(WO\_SE) + a_9(WO\_career) + a_{10}(WO\_busyness)$$

Model 5: Work Setting (WS), Work Orientation (WO) and the Interaction

This model tested the association of Work Setting, Work Orientation and their interaction with Individual Innovative Behaviour.

$$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_6(WO\_calling) + a_7(WO\_job) + a_8(WO\_SE) + a_9(WO\_career) + a_{10}(WO\_busyness) + a_{11}(WS\_remote)(WO\_calling) + a_{12}(WS\_remote)(WO\_job) + a_{13}(WS\_remote)(WO\_SE) + {}_{14}(WS\_remote)(WO\_career) + a_{15}(WS\_remote)(WO\_busyness)$$

$+ a_{16}(WS\_both)WO\_calling) + a_{17}(WS\_both)(WO\_job) + a_{18}(WS\_both)(WO\_SE)$

$+ a_{19}(WS\_both)(WO\_career) + a_{20}(WS\_both)(WO\_busyness)$

Model 6: Work Setting (WS), Innovation Climate (IC) and Work Orientation (WO)

This model tested the association of Work Setting, Innovation Climate and Work Orientation with Individual Innovative Behaviour.

$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_3(IC) + a_6(WO\_calling) + a_7(WO\_job) +$

$a_8(WO\_SE) + a_9(WO\_career) + a_{10}(WO\_busyness)$

Model 7: Work Setting (WS), Innovation Climate (IC), Work Orientation (WO) and Work Setting-Team Climate Interaction

This model tested the association of Work Setting, Innovation Climate, Work Orientation and the Work Setting-Innovation Climate interaction with Individual Innovative Behaviour.

$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_3(IC) + a_4(WS\_remote)*(IC)$

$+ a_5(WS\_both)*(IC) + a_6(WO\_calling) + a_7(WO\_job) + a_8(WO\_SE) + a_9(WO\_career)$

$+ a_{10}(WO\_busyness)$

Model 8: Work Setting (WS), Innovation Climate (IC), Work Orientation (WO) and Work Setting-Work Orientation Interaction

This model tested the association of Work Setting, Innovation Climate (IC), Work Orientation and the Work Setting-Work Orientation interaction with Individual Innovative Behaviour.

$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_3(IC) + a_6(WO\_calling) + a_7(WO\_job) +$

$a_8(WO\_SE) + a_9(WO\_career) + a_{10}(WO\_busyness) + a_{11}(WS\_remote)(WO\_calling)$

$+ a_{12}(WS\_remote)(WO\_job) + a_{13}(WS\_remote)(WO\_SE)$

$+ {}_{14}(WS\_remote)(WO\_career) + a_{15}(WS\_remote)(WO\_busyness)$

$+ a_{16}(WS\_both)WO\_calling) + a_{17}(WS\_both)(WO\_job) + a_{18}(WS\_both)(WO\_SE)$

$+ a_{19}(WS\_both)(WO\_career) + a_{20}(WS\_both)(WO\_busyness)$

Model 9: Work Setting (WS), Innovation Climate (IC), Work Orientation (WO) and Both Work Setting-Innovation Climate and Work Setting-Work Orientation Interactions

This full model tested all the variables, Work Setting, Innovation Climate, Work Orientation and both Work Setting-Innovation Climate and Work Setting-Work Orientation interactions with Individual Innovative Behaviour.

$$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_3(IC) + a_4(WS\_remote)*(IC)$$
$$+ a_5(WS\_both)*(IC) + a_6(WO\_calling) + a_7(WO\_job) + a_8(WO\_SE)$$
$$+ a_9(WO\_career) + a_{10}(WO\_busyness) + a_{11}(WS\_remote)(WO\_calling)$$
$$+ a_{12}(WS\_remote)(WO\_job) + a_{13}(WS\_remote)(WO\_SE)$$
$$+ a_{14}(WS\_remote)(WO\_career) + a_{15}(WS\_remote)(WO\_busyness)$$
$$+ a_{16}(WS\_both)WO\_calling) + a_{17}(WS\_both)(WO\_job) + a_{18}(WS\_both)(WO\_SE)$$
$$+ a_{19}(WS\_both)(WO\_career) + a_{20}(WS\_both)(WO\_busyness)$$

Sample Size

Multiple regression analysis requires 5-10 observations (respondents) per parameter to be estimated (Hair et al., 2013). The largest proposed model (Model 9) has 21 parameters, thus a minimum of 105-210 observations was required. The actual sample size of 482 exceeded this requirement.

Ethics

Application was made to the Human Research Ethics Committee (non-medical) and all the guidelines and processes were followed. A progress report was submitted, as requested, in December 2022. The nature of this research was low risk and non-intrusive or harmful to the respondents. Informed consent was confirmed by a covering letter to the questionnaire and completion of the survey was considered consent. Participation was voluntary, confidential, and anonymous. The data was securely stored on a password protected computer and will be stored for as long as it is required.

Conclusion

The methodology adopted for this research was quantitative, non-experimental, correlational, and cross sectional, characteristic of a positivist paradigm. The sample consisted

of 482 respondents from a large global financial services company based in Johannesburg. The questionnaire comprised five instruments to measure the different variables, which were distributed as an online survey completed in July and August 2022. Ethical considerations and processes were followed.

Chapter 4 present the results of the survey instruments as outlined in this chapter, followed by a discussion of findings in chapter 5.

CHAPTER 4 – RESULTS

Introduction

This chapter presents the results of the analyses. It commences by restating the aims of the study and the research questions. The descriptive statistics and reliabilities of the scales and subscales are presented. The work setting findings are detailed, followed by the results of the ANOVA and correlation analyses, and the nested general linear models undertaken to answer each research question.

Aims

The aim of this research is to test a model of innovative behaviour drawn from the dynamic componential model of creativity and innovation, with specific reference to the role of work setting, innovation climate and work orientation in relation to innovative behaviour.

Research questions

The research questions of the study were as follows:

1. Is there a relationship between Work Settings and Individual Innovative Behaviour?
2. Is there a relationship between Work Settings and Innovation Climate?
3. Is there a relationship between Innovation Climate and Individual Innovative Behaviour?
4. Is there a relationship between Work Orientation and Individual Innovative Behaviour?
5. Does Innovation Climate moderate the relationship between Work Setting and Individual Innovative Behaviour?
6. Does Work Orientation moderate the relationship between Work Setting and Individual Innovative Behaviour?

Descriptive Statistics and Reliability of Scales and Subscales

The descriptive statistics and reliabilities of the scales and subscales are presented in Table 4 below.

Table 4

Descriptive Statistics and Reliabilities of Scales and Subscales

Variable	N	Mean	SD	Median	25th Percentile	75th Percentile	Min	Max	Cronbach Alpha
WO Calling	482	4.8	1.4	4.8	3.8	5.8	1	7	0.85
WO Job	482	4.0	1.5	4.0	3.0	5.0	1	7	0.80
WO Social Embeddedness	482	4.9	1.2	5.0	4.2	5.8	1	7	0.79
WO Career	482	5.5	1.4	5.8	4.8	6.6	1	7	0.89
WO Busyness	482	3.2	1.4	3.2	2.0	4.4	1	7	0.77
Innovative Behaviour (IIB)	482	4.6	1.0	4.8	4.0	5.4	1	6	0.96
Team Climate (TCI) Total	482	4.0	0.7	4.1	3.7	4.6	1.7	5	0.95
TCI Vision	482	4.2	0.6	4.3	4.0	4.8	1.5	5	0.88
TCI Participative Safety	482	4.1	0.9	4.0	3.8	4.8	1	5	0.91
TCI Task Orientation	482	3.9	0.8	4.0	3.3	4.7	1	5	0.82
TCI Support for Innovation	482	3.9	0.9	4.0	3.3	4.3	1	5	0.87
TCI Interaction Frequency	482	4.0	0.9	4.0	3.5	4.8	1	5	0.92

Table 4 confirms that the scales and subscales were all found to be reliable. The subscales of the Work Orientation Questionnaire measured the work orientation categories of calling, job, social embeddedness, career, and busyness. These subscales all scored a Cronbach alpha above >0.7. Individual Innovative Behaviour scored a high Cronbach alpha of 0.91. The values of Cronbach alpha were all high (>0.8), for the overall Team Climate Inventory (TCI) as well as its subscales of Vision, Participative Safety, Task Orientation, Support for Innovation, and Interaction Frequency.

The mean scores in Table 1 reflect that the Work Orientations of Career scored the highest of 5.5., followed by Social Embeddedness (4.9) and Calling (4.8). The mean scores also reflect the Individual Innovative Behaviour scores were relatively high, totalling 4.6 out of 6. The Team Climate Inventory scores were high, totalling 4.0 out of 5, with the subscales of Vision, Participative Safety and Interaction Frequency scoring the highest, above 4 out of 5.

Work Setting

Work location was used as the measure for the Work Setting (WS) variable. Table 5 reflects the work setting results, including work location and days per week worked from the office.

Table 5

Work Setting Results

Measures	Category	N	%
Main work location in past two weeks	Office	96	19.9
	Home	269	55.8
	Both	111	23.0
	Other venue	6	1.2
Days per week typically worked from the office	0	88	18.3
	1	78	16.2
	2	134	27.8
	3	45	9.3
	4	41	8.5
	5	96	19.9

Most of the sample indicated they worked from home in the last two weeks, with 55.8% working from home and 19.9% working in the office. The days per week typically worked from the office was 2 days (27.8%).

Interaction frequency was measured as part of the work setting questionnaire. This was a separate measure to the interaction frequency subscale of the TCI as it measured the interaction frequency by job level whereas the TCI subscale tested the interaction frequency with team members. Table 6 reflects the results of interaction frequency by job level over the two-week period prior to them completing the survey. Table 6 reflects that there was high level of interaction with colleagues, team members and business unit leaders overall and for each business unit. There was minimal interaction with executives overall for each business unit.

Table 6

Frequency of Interaction in Past 2 Weeks

Job Level	Never	Rarely	Sometimes	Often	Always
Executive	46.5	17.4	16.4	14.1	5.6
Exco member	42.5	19.5	18.0	15.4	4.6
Leader	2.3	3.9	14.5	44.4	34.9
Team members	0.4	1.0	6.4	35.1	57.1
Colleagues	0.6	3.1	11.2	34.2	50.8

The second aspect of assessing interaction examined whether it occurred online, in person, or a combination of both. Table 7 displays the results indicating that while there is in-person interaction among employees, colleagues, team members, and leaders, a greater extent of interaction took place online.

Table 7

Method of Interaction in Past 2 Weeks

Job Level	Online	In Person	Both	No Interaction
Executive	25.9	7.5	18.0	48.5
Exco member	28.4	8.7	18.0	44.8
Leader	37.3	9.3	51.0	2.3
Team members	31.3	13.5	54.1	1.0
Colleagues	30.9	13.1	55.0	1.0

Results of the Analyses for each Research Question

Research question 1: Is there a relationship between work settings and individual innovative behaviour?

Table 8

Association Between Individual Innovative Behaviour and Work Setting

Dependent Variable: iib_average

Source	DF	Sum of Squares	Mean Square	F Value	Pr>F
Model	2	3.0087422	1.5043711	1.47	0.2304
Error	479	489.3772389	1.0216644		
Corrected Total	481	492.3859811			

R-Square	Coeff Var	Root MSE	iib_average Mean
0.006111	21.94593	1.0101774	4.605747

Source	DF	Type III SS	Mean Square	F Value	Pr>F
work_location	2	3.00874219	1.50437109	1.47	0.2304

Table 8 illustrates the outcomes of the ANOVA conducted to examine the connection between Work Setting and Individual Innovative Behaviour. The analysis revealed no statistically significant association between Individual Innovative Behaviour and Work Setting (DF=481, R-square = 0.006, p=0.23).

Research Question 2 - is there a relationship between innovation climate and work settings?

An ANOVA was conducted to examine the relationship between Work Setting and Innovation Climate (IC), indicating that there is no statistically significant association between Innovation Climate (measured as Team Climate) and Work Setting (DF=481, R-Square=0.0059, p=0.24). Table 9 presents these findings.

Table 9

Association Between Innovation Climate (Measured by TCI) and Work Setting

Dependent Variable: team_climate_average_TotalTCI					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	1.3300405	0.6650202	1.43	0.2402
Error	479	222.6540790	0.4648311		
Corrected Total	481	223.9841195			

R_Square	Coeff Var	Root MSE	Team_climate_average_TotalTCI Mean
0.005938	16.90991	0.681785	4.031867

Source	DF	Type III S S	Mean Square	F Value	Pr > F
work_location	2	1.33004048	0.66502024	1.43	0.2402

Research question 3: Is there a relationship between Innovation Climate and Individual Innovative Behaviour?

Research question 4: Is there a relationship between Work Orientation and Individual Innovative Behaviour?

Correlation Analysis Results. A correlation analysis was conducted between all the scales and subscales. These included Innovative Behaviour, the Work Orientation categories of Calling, Job, Social Embeddedness, Career and Busyness, the total Team Climate Inventory (TCI) and the subscales of the TCI, including Vision, Participative Safety, Task Orientation, Support for Innovation, and Interaction Frequency. The results are reflected in Table 10.

Table 10

Correlation Matrix

	Innovative Behavior	wo_ calling	wo_j ob	wo_ se	wo_ career	Wo _busyness	Tota lTCI	TC_ Visions	TC_ ParticSafet	TC_ TaskOrienta	TC_ Supportforl	TC_ Interaction
Innovative Behaviour	1											
calling	-0,015 0,74	1										
job	0,008 0,86	**-0,365** **<.0001**	1									
Social emb	0,030 0,51	**0,639** **<.0001**	**-0,266** **<.0001**	1								
career	0,059 0,20	**0,472** **<.0001**	**-0,133** **0,004**	**0,510** **<.0001**	1							
busyness	0,010 0,83	**0,637** **<.0001**	**-0,277** **<.0001**	**0,476** **<.0001**	**0,367** **<.0001**	1						
Team Climate	**0,381** **<.0001**	-0,002 0,96	0,031 0,50	0,003 0,95	0,046 0,31	0,029 0,52	1					
Vision	**0,349** **<.0001**	-0,015 0,73	0,017 0,71	0,023 0,62	0,083 0,07	0,013 0,78	**0,808** **<.0001**	1				
ParticSafety	**0,268** **<.0001**	-0,001 0,98	0,020 0,66	-0,014 0,75	0,014 0,76	0,033 0,47	**0,901** **<.0001**	**0,677** **<.0001**	1			
TaskOrienta	**0,318** **<.0001**	-0,021 0,65	0,033 0,47	-0,029 0,52	0,029 0,53	-0,008 0,86	**0,868** **<.0001**	**0,651** **<.0001**	**0,768** **<.0001**	1		
Supportfor Innov	**0,309** **<.0001**	0,001 0,98	-0,006 0,89	0,018 0,70	0,028 0,53	0,053 0,24	**0,851** **<.0001**	**0,597** **<.0001**	**0,689** **<.0001**	**0,739** **<.0001**	1	
Interaction Freq	**0,384** **<.0001**	0,020 0,67	0,058 0,20	0,015 0,74	0,048 0,29	0,029 0,52	**0,841** **<.0001**	**0,573** **<.0001**	**0,677** **<.0001**	**0,610** **<.0001**	**0,653** **<.0001**	1

The correlation matrix in table 10 shows the correlation coefficients and its related test for significance. Where the test was statistically significant, both the correlation coefficient and the alpha are shown in bold.

Regarding Research Question 3, which explored the connection between Innovation Climate and Individual Innovative Behaviour, the correlation matrix indicated a statistically significant, moderate, positive correlation ($r=0.381$; $p<0.0001$). Additionally, statistically significant moderate, positive correlations were observed between Individual Innovative Behaviour and the subscales of Vision, Task Orientation, Support for Innovation, and Interaction Frequency ($r>0.3$; $p<0.0001$).

Regarding Research Question 4, which explored the correlation between Work Orientation and Individual Innovative Behaviour, the analysis revealed no statistically significant relationship between the two variables. As demonstrated in Table 10, there was no significant correlation between Individual Innovative Behaviour and any of the Work Orientation scales.

Research question 5: Does Innovation Climate moderate the relationship between Work Setting and Individual Innovative Behaviour? and

Research question 6: Does Work Orientation moderate the relationship between Work Setting and Individual Innovative Behaviour?

To answer research question 5 and 6, which investigated if Innovation Climate and Work Orientation respectively moderate the relationship between Work Setting and Individual Innovative Behaviour, a series of nested general linear models were tested. The purpose of the nested models was to ascertain the most parsimonious model. This was achieved by comparing models which incorporated the independent variables of Work Setting (WS), Innovation Climate (IC) and Work Orientation (WO) as subsets and then as a full set, thereby determining the model that was the best fit to the data. The regression analysis results are presented in the form of the following nine nested general linear models.

Model 1

Work Setting

$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both)$

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	3.0087422	1.5043711	1.47	0.2304
Error	479	489.3772389	1.0216644		
Corrected Total	481	492.3859811			

R-Square	Coeff Var	Root MSE	iib_average Mean
0.006111	21.94593	1.010774	4.605747

Source	DF	Type III S S	Mean Square	F Value	Pr > F
work_location	2	3.00874219	1.50437109	1.47	0.2304

Parameter	Estimate		Standard Error	t Value	Pr > |t|
Intercept	4.696875000	B	0.10316170	45.53	<.0001
work_location Both	-0.000118243	B	0.14087768	-0.00	0.9993
work_location Remote	-0.159675000	B	0.11982270	-1.33	0.1833
work_location Office	0.000000000	B			

The Model 1 regression analysis suggests that Work Setting was not statistically significantly associated with Individual Innovative Behaviour. This model has a poor fit to the data ($R^2 = 0.006$).

Model 2

Work Setting and Innovation Climate

$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_3(IC)$

The GLM Procedure

Dependent Variable: iib_average

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	72.9030234	24.3010078	27.69	<.0001
Error	478	419.4829577	0.8775794		
Corrected Total	481	492.3859811			

R-Square	Coeff Var	Root MSE	iib_average Mean
0.148061	20.33963	0.936792	4.605747

Source	DF	Type III S S	Mean Square	F Value	PR > F
work_location	2	1.35671150	0.67835575	0.77	0.4622
IC	1	69.89428126	69.89428126	79.64	<.0001

Parameter	Estimate		Standard Error	t Value	PR > |t|
Intercept	2.425462908	B	0.27188382	8.92	<.0001
work_location Both	-0.035194136	B	0.13062550	-0.27	0.7877
work_location Remote	-0.123720910	B	0.11112552	-1.11	0.2661
work_location Office		B			
IC	0.560280482		0.06278095	8.92	<.0001

The Model 2 regression analysis suggests Innovation Climate was statistically significantly, positively associated with Individual Innovative Behaviour, while Work Setting was not statistically significantly associated with Individual Innovative Behaviour. The model fit was considerably improved ($R^2 = 0.14$) and the F-test shows that Model 2 was a statistically significantly better fit to the data than Model 1 ($p<0.0001$)

Model 3

Work Setting, Innovation Climate and the Interaction

$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_3(IC) + a_4(WS\_remote)*(IC) + a_5(WS\_both)*(IC)$

The GLM Procedure

Dependent Variable: iib_average

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	75.2886161	15.0577232	17.18	<.0001
Error	476	417.0973650	0.8762550		
Corrected Total	481	492.3859811			

R-Square	Coeff Var	Root MSE	iib_average Mean
0.152906	20.32428	0.936085	4.605747

Source	DF	Type III S S	Mean Square	F Value	PR > F
work_location	2	2.15404058	1.07702029	1.23	0.2935
IC	1	61.47685769	61.47685769	70.16	<.0001
IC*work_location	2	2.38559269	1.19279635	1.36	0.2573

Parameter	Estimate		Standard Error	t Value	PR > |t|
Intercept	2.701117647	B	0.56517346	4.78	<.0001
work_location Both	-1.136314534	B	0.80359506	-1.41	0.1580
work_location Remote	-0.208679754	B	0.65592153	-0.32	0.7505
work_location Office	0.000000000	B			
IC	0.492285788	B	0.13740288	3.58	0.0004
IC* work_location Both	0.268512668	B	0.19408899	1.38	0.1672
IC*work_location Remote	0.020199930	B	0.16012583	0.13	0.8997
IC* work_location Office	0.0000000000	B			

The Model 3 regression analysis suggests that the interaction between Work Setting and Innovation Climate was not statistically significant. As before only the main effect of Innovation Climate was statistically significant. The model fit was like that of Model 2 (R^2 = 0.15) and the F-test confirms that Model 3 was not a better fit to the data compared to model 2.

The results from this nested regression analysis suggested the conclusion that when Work Orientation was not included, Innovation Climate was independently linked to Individual Innovative Behaviour. However, it did not serve as a moderator in the relationship between Work Setting and Individual Innovative Behaviour.

Model 4

Work Setting and Work Orientation

$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_6(WO\_calling) + a_7(WO\_job) + a_8(WO\_SE) + a_9(WO\_career) + a_{10}(WO\_busyness)$

The GLM Procedure

Dependent Variable: iib_average

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	5.6813732	0.8116247	0.79	0.5956
Error	474	486.7046079	1.0268030		
Corrected Total	481	492.3859811			

R-Square	Coeff Var	Root MSE	iib_average Mean
0.011538	22.00105	1.013313	4.605747

Source	DF	Type III S S	Mean Square	F Value	PR > F
work_location	2	2.21425953	1.10712977	1.08	0.3410
wo_calling_average	1	1.20273197	1.20273197	1.17	0.2797
wo_job_average	1	0.00057733	0.00057733	0.00	0.9811
wo_se_average	1	0.37956625	0.37956625	0.37	0.5435
wo_career_average	1	1.39040114	1.39040114	1.35	0.2451
wo_busyness_average	1	0.02007585	0.02007585	0.02	0.8889

Parameter	Estimate		Standard Error	t Value	PR > |t|
Intercept	4.504092172	B	0.31957139	14.09	<.0001
work_location Both	0.015328321	B	0.14344512	0.11	0.9149
work_location Remote	-0.130930987	B	0.12429606	-1.05	0.2927
work_location Office	0.000000000	B			
wo_calling_average	-0.056167938		0.05189764	-1.08	0.2797
wo_job_average	0.000813470		0.03430630	0.02	0.9811
wo_se_average	0.032381887		0.05326009	0.61	0.5435
wo_career_average	0.046853543		0.04026391	1.16	0.2451
wo_busyness_average	0.006052130		0.04328275	0.14	0.8889

As anticipated from earlier analysis, Work Setting and Work Orientation were not statistically significantly associated with Individual Innovative Behaviour. This model was a poor fit to the data ($R^2 = 0.012$) and the F-test confirmed that Model 4 was not a better fit to the data compared to Model 1 ($p=0.45$).

Model 5

Work Setting, Work Orientation and the Interaction

$$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_6(WO\_calling) + a_7(WO\_job) + a_8(WO\_SE) + a_9(WO\_career) + a_{10}(WO\_busyness) + a_{11}(WS\_remote)(WO\_calling) + a_{12}(WS\_remote)(WO\_job) + a_{13}(WS\_remote)(WO\_SE) + {}_{14}(WS\_remote)(WO\_career) + a_{15}(WS\_remote)(WO\_busyness) + a_{16}(WS\_both)WO\_calling) + a_{17}(WS\_both)(WO\_job) + a_{18}(WS\_both)(WO\_SE) + a_{19}(WS\_both)(WO\_career) + a_{20}(WS\_both)(WO\_busyness)$$

The GLM Procedure

Dependent Variable: iib_average

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	17	10.5210922	0.6188878	0.60	0.8958
Error	464	481.8648889	1.0385019		
Corrected Total	481	492.3859811			

R-Square	Coeff Var	Root MSE	iib_average Mean
0.021368	22.12603	1.019069	4.605747

Source	DF	Type III S S	Mean Square	F Value	PR > F
work_location	2	0.02260243	0.01130122	0.01	0.9892
wo_calling_average	1	0.31482761	0.31482761	0.30	0.5822
wo_job_average	1	0.07873926	0.07873926	0.08	0.7832
wo_se_average	1	0.00138123	0.00138123	0.00	0.9709
wo_career_average	1	0.84009544	0.84009544	0.81	0.3689
wo_busyness_average	1	0.44315715	0.44315715	0.43	0.5139
wo_callin*work_locat	2	0.68172234	0.34086117	0.33	0.7204
wo_job_av*work_locat	2	0.30847239	0.15423619	0.15	0.8620
wo_se_ave*work_locat	2	0.35061650	0.17530825	0.17	0.8447
wo_career*work_locat	2	0.06327414	0.03163707	0.03	0.9700
wo_busyne*work_locat	2	2.31038751	1.15519376	1.11	0.3297

The interaction between Work Setting and Work Orientation was not statistically significant; nor was the main effect of Work Orientation, as before. The model fit was like that of Model 4 ($R^2 = 0.021$) and the F-test confirms that Model 5 was not a better fit to the data compared to Model 4 (p=0.51).

Model 5 findings suggest that Work Orientation was not independently associated with Individual Innovative Behaviour and did not moderate the relationship between Work Setting and Individual Innovative Behaviour.

Model 6

Work Setting, Innovation Climate and Work Orientation

$$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_3(IC) + a_6(WO\_calling) + a_7(WO\_job) + a_8(WO\_SE) + a_9(WO\_career) + a_{10}(WO\_busyness)$$

The GLM Procedure

Dependent Variable: iib_average

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	8	74.7758642	9.3469830	10.59	<.0001
Error	473	417.6101169	0.8828967		
Corrected Total	481	492.3859811			

R-Square	Coeff Var	Root MSE	iib_average Mean
0.151864	20.40116	0.939626	4.605747

Source	DF	Type III S S	Mean Square	F Value	PR > F
work_location	2	1.01656279	1.10712977	0.58	0.5627
IC	1	69.09449103	69.09449103	78.26	<.0001
wo_calling_average	1	0.82256103	0.82256103	0.93	0.3349
wo_job_average	1	0.05554970	0.05554970	0.06	0.8021
wo_se_average	1	0.53676441	0.53676441	0.61	0.4359
wo_career_average	1	0.65265007	0.65265007	0.74	0.3903
wo_busyness_average	1	0.02191640	0.02191640	0.02	0.8749

Parameter	Estimate		Standard Error	t Value	PR > |t|
Intercept	2.331764005	B	0.38485445	6.06	<.0001
work_location Both	-0.030008474	B	0.13311263	-0.23	0.8217
work_location Remote	-0.109466230	B	0.11528291	-0.95	0.3428
work_location Office	0.000000000	B			
IC	0.558288709		0.06310911	8.85	<.0001
wo_calling_average	-0.046462327		0.04813620	-0.97	0.3349
wo_job_average	-0.007983316		0.03182712	-0.25	0.8021
wo_se_average	0.038511724		0.04939193	0.78	0.43
wo_career_average	0.032132426		0.03737303	0.86	0.3903
wo_busyness_average	-0.006327318		0.04015966	-0.16	0.8749

The findings of Model 6 suggest that Innovation Climate was statistically significantly, positively associated with Individual Innovative Behaviour, while Work Setting and Work Orientation were not. The model fit ($R^2 = 0.15$) and the F-test showed that Model 6 was not a statistically significantly better fit to the data than Model 2 ($p=0.50$) (i.e. the addition of Work Orientation to Model 2 did not prove useful), but that Model 6 was a statistically significantly better fit to the data than Model 4 ($p<0.0001$) (i.e. adding Innovation Climate to Model 4 was useful).

Model 7

Work Setting, Innovation Climate, Work Orientation and Work Setting-Innovation Climate Interaction

$$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_3(IC) + a_4(WS\_remote)*(IC) + a_5(WS\_both)*(IC)\ a_6(WO\_calling) + a_7(WO\_job) + a_8(WO\_SE) + a_9(WO\_career) + a_{10}(WO\_busyness)$$

The GLM Procedure

Dependent Variable: iib_average

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	77.1915268	7.7191527	8.76	<.0001
Error	471	415.1944544	0.8815169		
Corrected Total	481	492.3859811			

R-Square	Coeff Var	Root MSE	iib_average Mean
0.156770	20.38521	0.938891	4.605747

Source	DF	Type III S S	Mean Square	F Value	PR > F
work_location	2	2.21016220	1.10508110	1.25	0.2864
IC	1	60.49126648	60.49126648	68.62	<.0001
IC*work_location	2	2.41566257	1.20783128	1.37	0.2551
wo_calling_average	1	0.74051075	0.74051075	0.84	0.3599
wo_job_average	1	0.07666667	0.07666667	0.09	0.4359
wo_se_average	1	0.33278065	0.33278065	0.38	0.5392
wo_career_average	1	0.83795752	0.83795752	0.95	0.3301
wo_busyness_average	1	0.06406873	0.06406873	0.07	0.7876

The findings of Model 7 suggested that the interaction between Work Setting and Innovation Climate was not statistically significant; only the main effect of Innovation Climate proved statistically significant, as before. The model fit was like that of Model 6 ($R^2 = 0.16$)

and the F-test confirmed that Model 7 was not a better fit to the data compared to Model 6 ($p=0.24$).

The findings from Model 7 indicated that, without factoring the potential moderating effect of Work Orientation, Innovation Climate was independently associated with Individual Innovative Behaviour. However, it did not act as a moderator in the relationship between Work Setting and Individual Innovative Behaviour.

Model 8

Work Setting, Innovation Climate, Work Orientation and Work Setting-Work Orientation Interaction

$$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_3(IC) + a_6(WO\_calling) + a_7(WO\_job) + a_8(WO\_SE) + a_9(WO\_career) + a_{10}(WO\_busyness) + a_{11}(WS\_remote)(WO\_calling) + a_{12}(WS\_remote)(WO\_job) + a_{13}(WS\_remote)(WO\_SE) + {}_{14}(WS\_remote)(WO\_career) + a_{15}(WS\_remote)(WO\_busyness) + a_{16}(WS\_both)WO\_calling) + a_{17}(WS\_both)(WO\_job) + a_{18}(WS\_both)(WO\_SE) + a_{19}(WS\_both)(WO\_career) + a_{20}(WS\_both)(WO\_busyness)$$

The GLM Procedure

Dependent Variable: iib_average

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	18	79.7324898	4.4295828	4.97	<.0001
Error	463	412.6534913	0.8912602		
Corrected Total	481	492.3859811			

R-Square	Coeff Var	Root MSE	iib_average Mean
0.161931	20.49756	0.944066	4.605747

Source	DF	Type III S S	Mean Square	F Value	PR > F
work_location	2	0.06652649	0.03326325	0.04	0.9634
IC	1	69.21139759	69.21139759	77.66	<.0001
wo_calling_average	1	0.02948714	0.02948714	0.84	0.8557
wo_job_average	1	0.13582906	0.13582906	0.09	0.6964
wo_se_average	1	0.00109725	0.00109725	0.38	0.9720
wo_career_average	1	0.29683520	0.29683520	0.95	0.5641
wo_busyness_average	1	0.05885809	0.05885809	0.07	0.7973
wo_callin*work_locat	2	1.11680232	0.55840116	0.63	0.5349
wo_job_av*work_locat	2	0.26134559	0.13067280	0.15	0.8637
wo_se_ave*work_locat	2	0.76886299	0.38443149	0.43	0.6499
wo_se_career*work_locat	2	0.26193721	0.13096861	0.15	0.8634
wo_se_busyne*work_locat	2	0.99037740	0.49518870	0.56	0.5741

The findings of Model 8 suggested that the interaction between Work Setting and Work Orientation was not statistically significant; only the main effect of Innovation Climate was statistically significant, as before. The model fit was like that of Model 6 ($R^2 = 0.16$) and the F-test confirmed that Model 8 was not a better fit to the data compared to Model 6 (p=0.46).

The results derived from Model 7 indicated that, when not factoring the potential moderating influence of Innovation Climate, Work Orientation was not independently linked to Individual Innovative Behaviour. Additionally, it did not serve as a moderator in the relationship between Work Setting and Individual Innovative Behaviour.

Model 9

Work Setting, Innovation Climate, Work Orientation and both Work Setting-Innovation Climate and Work Setting-Work Orientation Interactions

$$IIB = a_0 + a_1(WS\_remote) + a_2(WS\_both) + a_3(IC) + a_4(WS\_remote)*(IC) + a_5(WS\_both)*(IC) + a_6(WO\_calling) + a_7(WO\_job) + a_8(WO\_SE) + a_9(WO\_career) + a_{10}(WO\_busyness) + a_{11}(WS\_remote)(WO\_calling) + a_{12}(WS\_remote)(WO\_job) + a_{13}(WS\_remote)(WO\_SE) + {}_{14}(WS\_remote)(WO\_career) + a_{15}(WS\_remote)(WO\_busyness) + a_{16}(WS\_both)WO\_calling) + a_{17}(WS\_both)(WO\_job) + a_{18}(WS\_both)(WO\_SE) + a_{19}(WS\_both)(WO\_career) + a_{20}(WS\_both)(WO\_busyness)$$

The GLM Procedure

Dependent Variable: iib_average

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	20	82.0240320	4.1012016	4.61	<.0001
Error	461	410.3619491	0.8901561		
Corrected Total	481	492.3859811			

R-Square	Coeff Var	Root MSE	iib_average Mean
0.166585	20.48486	0.943481	4.605747

Source	DF	Type III S S	Mean Square	F Value	PR > F
work_location	2	0.67039680	0.33519840	0.38	0.6864
IC	1	60.69801601	60.69801601	68.19	<.0001
IC*work_location	2	2.29154217	1.14577108	1.29	0.2770
wo_calling_average	1	0.01210312	0.01210312	0.01	0.9072
wo_job_average	1	0.14910247	0.14910247	0.17	0.6825
wo_se_average	1	0.03102361	0.03102361	0.03	0.8520
wo_career_average	1	0.43503394	0.43503394	0.49	0.4849
wo_busyness_average	1	0.01109189	0.01109189	0.01	0.9112
wo_callin*work_locat	2	1.05783984	0.52891992	0.59	0.5524
wo_job_av*work_locat	2	0.29022729	0.14511365	0.16	0.8496
wo_se_ave*work_locat	2	1.02607544	0.51303772	0.58	0.5624
wo_se_career*work_locat	2	0.28822862	0.14411431	0.16	0.8506
wo_se_busyne*work_locat	2	0.67088162	0.33544081	0.38	0.6862

The Model 9 regression analysis suggested that Innovation Climate was statistically significantly, positively associated with Individual Innovative Behaviour, while Work Setting, Work Orientation, the Work Setting-Innovation Climate interaction, and the Work Setting-Work Orientation interaction were not. The model fit ($R^2 = 0.17$) and the F-test showed that Model 9 was not a statistically significantly better fit to the data than Model 7 ($p=0.46$). Adding the Work Setting-Work Orientation interaction to Model 7 was not useful, and Model 9 was not a statistically significantly better fit for the data than Model 8 ($p=0.24$). Including the Work Setting-Innovation Climate interaction in Model 9 was also not useful.

Model 2 was identified as the most parsimonious choice, and the results of comparing nested models 1-9 to determine the optimal model are presented in Tables 11 and 12 below. Table 11 summarises the results of each of the models, showing the R^2, number of predictors, and the sum of squares error (SSE).

Table 11

Model Comparison 1

Model	Description	R2	number predictors	n	SSE
1	WS	0.006	2	482	489.4
2	WS,IC	0.148	3	482	419.5
3	WS,IC,WSxIC	0.153	5	482	417.1
4	WS,WO	0.012	7	482	486.7
5	WS,WO,WSxWO	0.021	17	482	481.9
6	WS,IC,WO	0.152	8	482	417.6
7	WS,IC,WO,WSxIC	0.157	10	482	415.2
8	WS,IC,WO,WSxWO	0.162	18	482	412.7
9	WS,IC,WO,WSxIC,WSxWO	0.167	20	482	410.4

To elaborate on the variability in the dependent variable (IIB), Table 11 demonstrates that augmenting the number of predictors from models 1 to 9 enhances the goodness of fit (R^2). However, this needs to be balanced by the complexity of each model (represented by the number of predictors). Given the low number of predictors of IC and WS in Model 2, the slightly increased R^2 (0.148) and lower SSE (419.5) scores, indicate that Model 2 was the optimal model.

Table 12 shows the comparison between the various models, comparing the larger to the smaller models, with the F-value, F-crit scores, and P-value.

Table 12

Model Comparison 2

Model (larger)	Model (smaller)	F-calc	F-crit	p-value
2	1	79.7	3.86	0.0000
3	2	1.4	3.86	0.24
4	1	0.6	3.86	0.45
5	4	0.4	3.86	0.51
6	4	78.1	3.86	0.0000
6	2	0.4	3.86	0.50
7	6	1.4	3.86	0.24
8	6	0.6	3.86	0.46
9	7	0.6	3.86	0.46
9	8	1.4	3.86	0.24

The model columns in Table 12 compare the number of predictors, where the larger model column has more independent variables than the smaller model column. The F-test compares the different models to ascertain which model is the best fit to the data. In row 1, Model 2 is compared to Model 1, showing an optimal F-calc of 79.7 and a p-value of 0.0000, which indicates a significant difference between the two models. Therefore, Model 2 consistently provided the best fit to the data with the smallest number of variables.

Based on the results, the research questions can be answered as follows:

1. There was no statistically significant relationship between Work Setting (WS) and Individual Innovative Behaviour (IIB).
2. There was no statistically significant relationship between Work Settings (WS) and Innovation Climate (IC).
3. There was a statistically significant relationship between Innovation Climate (IC) and Individual Innovative Behaviour (IIB).
4. There was no statistically significant relationship between Work Orientation (WO) and Individual Innovative Behaviour (IIB).
5. Innovation climate (IC) did not moderate the relationship between Work Setting (WS) and Individual Innovative Behaviour (IIB).

6. Work Orientation (WO) did not moderate the relationship between Work Setting (WS) and Individual Innovative Behaviour (IIB).

Conclusion

The findings showed that Work Setting was not significantly associated with Individual Innovative Behaviour. Work Orientation was not independently associated with Individual Innovative Behaviour, nor did it moderate the relationship between Work Setting and Individual Innovative Behaviour. Innovation Climate was independently associated with Individual Innovative Behaviour; however, it did not moderate the relationship between Work Setting and Individual Innovative Behaviour.

Chapter 5 presents the discussion, limitations, and implications for future research.

CHAPTER 5 – DISCUSSION

Introduction

The discussion begins by revisiting the research aims, the characteristics of the respondents, and the theoretical model. This provides a context to present the key findings for each research question and discuss the possible reasons for these findings. The limitations of the research and implications for future research are explored, followed by theoretical and practical implications.

Research Aims

The aim of this research was to test a model of innovative behaviour drawn from the dynamic componential model of creativity and innovation, with specific reference to the role of work setting, innovation climate, and work orientation in relation to innovative behaviour.

Characteristics of Respondents

At the time the research was administered, the organisation that participated in the study was piloting a hybrid working arrangement as employees were gradually returning to the office after the Covid-19 pandemic. It is important to understand the characteristics of the respondents to the survey The respondents consisted of young, highly educated employees with an even spread of male and female participants. They were predominantly junior employees in systems, technology, client services, operations, and administrations.

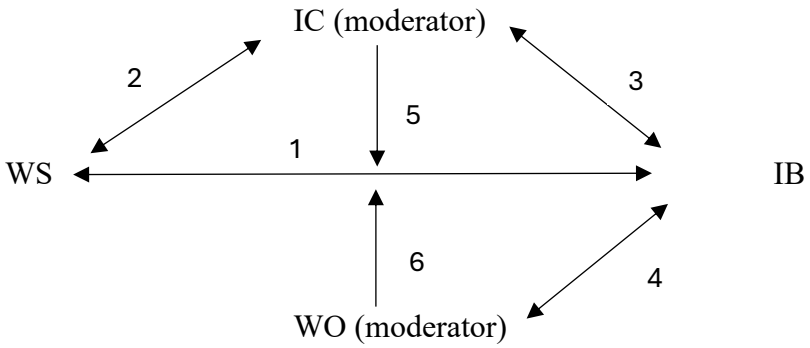
Most of the respondents had worked at the company for at least 3 years and longer and had high levels of job satisfaction. The scoring levels for innovative behaviour and innovation climate were high, reaffirming the innovative characteristics of the organisation. The individual innovative behaviour scale responses ranged from 1 to 6. The respondents' mean score was 4.03 and standard deviation was 0.68. The team climate inventory (TCI) scores responses ranged from 1 to 5, with the subscales of vision, participative safety and interaction frequency scoring the highest. The mean for the total TCI was 4.61 and standard deviation was 1.01. The business unit based in the USA scored in similar ranges to the five other business units based in South Africa, suggesting a consistent company-wide innovation climate and culture of innovation.

Recap of the Model Tested in the Study

Figure 8 recaps the same model presented in chapter 3, of the proposed relationships between the key variables and the six research questions. The numbers in the model correspond to the number of each research question.

Figure 8

Proposed Model Representing the Relationships Between the Key Variables and the Six Research Questions.



The key variable for this study in exploring innovative behaviour in a post-pandemic world, was Work Setting (WS), specifically physical work setting. The work setting variable was explored to test how remote and hybrid ways of working influenced innovative behaviour, illustrated by (1). Previous research has tested the relationship between innovation climate (IC) and innovative behaviour (IB) before the pandemic. However, to enrich the understanding of how work setting impacts innovative behaviour, the relationship between innovation climate and work settings (2), and innovation climate and innovative behaviour (3) was tested in a context where hybrid work was being piloted post-pandemic. The relationship between work setting and innovative behaviour was further tested by investigating the moderating role of innovation climate on the relationship between work setting and innovative behaviour (5). Work orientation, a variable that needs further research in the context of meaningful work, was investigated by testing its relationship with innovative behaviour (4), and its moderating role on the relationship between work settings and innovative behaviour (6).

Having tested the model through the statistical analysis detailed in Chapter 4, the findings showed that work setting was not significantly associated with individual innovative

behaviour. Work orientation was not independently associated with individual innovative behaviour, nor did it moderate the relationship between work setting and individual innovative behaviour. Individual innovative behaviour was independently linked to innovation climate, yet it did not act as a moderator in the relationship between work setting and individual innovative behaviour.

Key Findings for each Research Question

The following sections provide detailed findings in relation to each research question.

1. The Relationship Between Individual Innovative Behaviour and Different Work Settings

The dynamic componential model of creativity and innovation had not been tested post-pandemic, to assess linkages in innovative behaviour to components of the work environment, specifically work settings. Recent research and reports show mixed findings in relation to the relationship of innovative behaviour and work setting. Studies by Leprince-Rinquet, (2020) and Lin et al., (2023) suggested working from home may have a negative impact on the ability to innovate. Other surveys suggested remote work has widened opportunities for creative work for employees (Berezhansky, 2020). While there is much speculation about the office environment being more conducive to better innovative behaviour, this study showed that there was no statistically significant relationship between individual innovative behaviour and work settings. Employees displayed similar levels of innovative behaviour whether they worked remotely or in the office. There are a few possible explanations for this finding. Firstly, the company's robust culture of innovation could be influencing this outcome by sustaining the similar levels of innovative behaviour in a remote work setting as one would expect to encounter in an office environment. Secondly, the questionnaire was administered at a time when the company was piloting a hybrid working policy shortly after the pandemic. Most of the sample were predominantly working at home, with under half of the sample working 1-2 days a week in the office. The results could therefore be unique to that point in time (Kniffin et al., 2021). A further research opportunity certainly exists in the possibility of repeating the research in the post-pandemic work environment to see if similar or different results would manifest.

2. The Relationship Between Innovation Climate and Different Work Settings

The literature has shown innovation climate as a useful tool in the work environment in influencing creativity (Amabile, 1988). However, there was a gap in the literature post-pandemic, in understanding the relationship of innovation climate and work settings. The sources shaping innovation culture and climate may differ in a remote work setting and this challenges employers to maintain a climate that supports and enhances creativity and innovation. While studies in these fields are gradually emerging, the field is still new. A further exploration of the factors in the work environment in Amabile and Pratt's (2016) model, looked at the relationship between innovation climate and different work settings. This study showed there was no statistically significant relationship between innovation climate and work settings, indicating that innovation climate had the same manifestation both at home and in the office. This finding contributes to the model and broader literature in enriching our understanding of the relationship of innovation climate and different work settings.

In addition to a strong company innovation culture that was previously mentioned, interaction between employers, their colleagues and business unit leaders could have also shaped a healthy innovation climate in both work settings. This is in line with previous studies which show that interaction levels correlate with organisational innovation (Kivimaki et al., 1997). Frequent interaction improves the ability to innovate by enhancing skills in innovation management such as goal setting, open communication systems, feedback, and collaboration (Amabile & Pratt, 2016). In this study, interaction frequency was measured both in the work setting questionnaire and was also a subscale of the Team Climate Inventory. The work setting questionnaire indicates that there was a high level of interaction with colleagues, team members and business unit leaders overall. Similarly, the Team Climate Inventory indicated frequent team interaction, scoring 4.0 out of 5. This study also showed that more of the interactions took place online than in person as indicated in table 7. This phenomenon could explain the non-significant finding between Innovation Climate and Work Setting since employees may have been interacting as frequently online as they would have in person in the office.

3. The Relationship Between Innovation Climate and Individual Innovative Behaviour

Managing innovation climate can be an effective tool in promoting innovative behaviour (Amabile, 1988). Amabile and Pratt's (2016) model suggests a relationship between innovation climate and individual innovative behaviour. Previous research found team support for innovation climate enhanced individual innovative behaviour (Chen et al., 2013). In a

systematic review of the literature on innovation climate, Newman et al., (2020) cited a strong relationship between team climate and individual innovation in numerous studies. The results of this analysis supported the finding demonstrating a statistically significant relationship between innovation climate and individual innovative behaviour. This confirmed the evidence in the literature of the relationship between of innovation climate and innovative behaviour (Amabile & Gryskiewicz, 1989; Hunter et al., 2007; Yeh-Yun Lin & Liu, 2012). It reaffirmed linkages between innovation climate in the work environment, and innovative behaviour on an organisational level in the dynamic componential model of creativity and innovation.

4. The Relationship Between Work Orientation and Individual Innovative Behaviour

According to Amabile and Pratt (2016), meaningful work impacts innovation, as it motivates employees to engage in creative processes. Employers therefore should consider a way of work that fosters meaning to the individual (Arora et al, 2022). Past research in the creativity fields refer to highly creative personalities having a positive impact on team innovation (Somech & Drach-Zahavy, 2013). Given that prior research has employed work orientation to characterise an individual's personality dimension for comprehending job performance (Day & Bedeian, 1991), the literature indicates the importance of investigating the potential impact of various work orientations on understanding how meaningful work and progress in meaningful work influence innovative behaviour (Amabile & Pratt, 2016). Amabile and Pratt (2016) hypothesise categories of work orientation with indirect links to work orientation and creativity, but these needed further research. The Work Orientation Questionnaire (WOQ) was found to be psychometrically sound, and its five orientations are the closest to encapsulating Amabile and Pratt's (2016) suggested work orientation categories (Willner et al., 2020). Willner et al. (2020) also noted that the WOQ was tested on a limited sample, a career decision website, which may not be representative of the general population. Future research should test the WOQ on different samples. Furthermore, there is no evidence in the literature of studies of the WOQ being used in the context of innovative behaviour.

As discussed earlier in Chapter 2, Amabile and Pratt (2016) suggest that investigating various work orientations can significantly contribute to understanding the role of meaningful work and its influence on innovation, particularly in motivating employees to participate in creative processes. Creative work and progress in creative work are more meaningful and therefore more motivating to some employees than others (Amabile & Pratt, 2016). Previous studies have shown that work orientation may influence organisational constructs such as

motivation (Pitacho et al., 2019). Therefore, we expected a relationship between work orientation and innovative behaviour. This study found no statistically significant relationship between work orientation and individual innovative behaviour. Willner et al. (2020) states that the WOQ may require further testing and development to classify individuals according to their work orientation profiles. As the initial validation of the WOQ was conducted on a career development website, testing it in an organisational context would assist in ensuring its validity in the workplace. This may possibly obtain a more accurate classification and understanding of work orientation profiles and their broader role in innovative behaviour. For example, it would be interesting to explore in the context of innovative behaviour whether particular work orientations are more stable over time, or more common at different ages and stages of career advancement (Willner et al., 2020).

To further understand how the variables of innovation climate and work orientation impact the relationship between innovative behaviour and different work settings, the moderating roles of these variables were investigated in the final two research questions.

5. Innovation Climate as a Moderator Between Work Setting and Individual Innovative Behaviour

To further investigate the influence of innovation climate to the variables in the model, the moderating role of innovation climate between work setting and innovative behaviour was tested. Research has found a moderating role of innovation climate between various antecedents and organisational outcomes. In previous studies high innovation climates strengthened the relationships between an array of variables (Newman et al., 2020). For example, when innovation climate is high, the relationship between ethical leadership and creativity is strengthened (Chen & Hou, 2016). Sung and Choi (2014) report that there is a stronger relationship between interpersonal and organisational learning practices and innovative behaviour when innovation climate is higher. However, there was a gap in the research of innovation climate's role in moderating the relationship between work settings and innovative behaviour. This study found that innovation climate did not moderate the relationship between work setting and individual innovative behaviour. This contributes further to the literature in understanding the antecedents and organisational outcomes that are influenced by a positive innovation climate as well as the linkages that maximise innovative behaviour in different work settings in the dynamic componential model of creativity and innovation.

6. Work Orientation as a Moderator Between Work Setting and Individual Innovative Behaviour

Further research of the role of moderators, other than innovation climate, can provide a better understanding of other factors that influence innovative behaviour (Somech & Drach-Zahvay, 2011). Work orientation and work setting are both highlighted as areas for future research in the model. As discussed in research question 4, the roles of work orientations in meaningful work and its impact on innovative behaviour through its role in motivating employees to engage in creative processes, required further examination. Based on theories suggested by the research, it was appropriate to explore whether certain categories of work orientations affected innovative behaviour in different work settings. For example, it is possible an employee who scored high on a social embeddedness category, where they have a need to feel part of a group or belong to a community, might have had a different level of innovative behaviour if they worked online or in the office. Perhaps their need to feel part of a group may have been compromised by working remotely, and this may have had a negative effect on their innovative behaviour. Similarly, an employee with a career orientation who works primarily to achieve career advancement, may be more autonomous (Amabile & Pratt, 2016). They may consequently have thrived working remotely.

To test the possible influence of work orientation on innovative behaviour in the different work settings, this study investigated the moderating role of work orientation on work setting and innovative behaviour. This study demonstrated that work orientation did not moderate this relationship suggesting that the different work orientations did not influence the relationship between innovative behaviour and work setting. The limitations of the WOQ mentioned previously may have contributed to this outcome. These findings propose that it may be possible to be innovative in either work setting irrespective of your work orientation.

Limitations

There are several research design, sampling, circumstantial, and scale limitations when considering the results of this study.

Firstly, the non-experimental, correlational, and cross-sectional research design posed some limitations on the findings. The research design did not infer causation between the variables. The survey was administered at a specific point in time when the employees were returning to work after the pandemic, and the company was piloting a hybrid working arrangement. Employees were encouraged to be in the office for two days per week. If the research was

conducted now, where life has returned to normal yet work-from- home is still in place, it would be interesting to assess whether the results would be similar. It can be argued that pre- and post-pandemic working-from-home arrangements were optional. During the pandemic working-from-home was mandatory so perhaps the remote work dynamics introduced during the crisis may have had unique consequences for various aspects of work (Kniffin et al., 2021).

Secondly, while the sample size exceeded the requirement for a multiple regression analysis, the overall response rate of 13.3% was relatively low to the overall total number of employees in the participating business units. Possible reasons for this could be that people were too busy to complete the survey. Furthermore, the company conducts many internal surveys so they may have been reluctant to complete another survey. The business units with higher response rates were endorsed by senior management and staff were encouraged to complete the survey. This was not the case for all the divisions that exhibited lower response rates. Therefore, the generalisability of the results to other organisations may be limited.

Thirdly, the company was known for its value of innovation and optimism. This may override the results and the outcomes may be different in other organisations and industries.

Fourthly, the analysis was conducted on an individual level. A multilevel analysis on a team or organisational level would enrich our understanding of the complexities of the model (Newman et al., 2020).

Finally, the scales used were all self-reporting, which is a widely used method of analysis at the individual level (Anderson et al., 2014). However, respondents may not be honest or may inflate their responses, despite anonymity and confidentiality being assured. A more objective and balanced measure of innovative behaviour is needed (Cai et al., 2018; Somech & Drach-Zahavy, 2013). Furthermore, the work orientation scale is a relatively new scale that has not been widely tested in organisations.

Implications for Future Research

To infer causality, future research should readminister the survey in the post-pandemic present or future, where the workplace is normalised, while work-from-home arrangements are still in place. It could then be determined whether the results would differ.

To enable the generalisation of the findings, the sample should be larger and include different industries and organisations, particularly in a South African context. Since this sample was part of a company that was known for a culture of innovation, the high innovation culture may have constrained the results. Further research should include another type of

organisation or a variety of organisations in other industries with different cultures. Since managing innovation climate has been found to be an important factor in innovative behaviour irrespective of work setting, further research could focus on other factors that may influence innovation climates. It would be useful to investigate how innovation climates develop over time, and the moderating roles of demographic, cultural and the other organisational and situational factors (Newman et al., 2020). For example, what could be pertinent to the South African context is to look at the moderating roles of cultural diversity, which has been shown to foster innovation, and how situational factors such as connectivity, load-shedding and transport challenges influence innovation climate (Byrne, 2022).

In addition, multi-level analysis should be conducted on a team and organisational level levels, over and above individual levels, to further understand the different levels of complexity of innovation. Further research can also expand on how specific innovation skills such as associating, questioning, observing, experimenting, and networking (Dyer et al., 2009) can be encouraged through innovation climate. The interaction of different work climates on innovation climate can be further explored (Schneider et al., 2013). These may include climates for initiative, proactive climate and implementation climate (Newman et al., 2020).

Finally, to improve the reliability and validity of the measuring instruments, future research should introduce more objective and balanced measures of innovative behaviour and should further test validity of the work orientation scale in different work settings.

Theoretical Implications

The result of this study added empirical contributions to the dynamic componential model of creativity and innovation. A model for innovative behaviour was tested in this study, investigating innovation climate, while also focusing on work orientation, and work setting as variables which require further research. The results supported the relationship between innovation climate and innovative behaviour. However, no relationships were found between work setting and innovative behaviour, work setting and innovation climate, and work orientation and innovative behaviour. Both innovation climate and work orientation did not moderate the relationship between work setting and innovative behaviour.

Work setting and innovation climate formed part of the work environment in the model. The analysis of work setting and its linkages to innovative behaviour and innovation climate, contributed to a better understanding of work environment in the model. The findings of this study were consistent with prior research, confirming a statistically significant relationship

between innovation climate and innovative behaviour (G. Chen et al., 2013; Newman et al., 2020). This affirms previous studies that managing innovation climate can be an effective tool in promoting innovative behaviour (Amabile, 1988).

As previously mentioned in the literature, Fetrati et al. (2022) argued that the component of skills in innovation management in organisational innovation was too vague in the model and required a framework to categorise these skills through further research. One way to attain this categorisation, was to investigate the role organisational climate plays within the work environment, which according to Amabile (1988), can be used as a tool to influence creativity. This study's focus on innovation climate in the broader context of organisational climate contributed to a better understanding of the role organisational climate plays within the work environment, specifically in different work settings. Further research can also be conducted on work setting and its relationship to other components of the model, to understand the broader implications of remote work on creativity and innovation.

Amabile and Pratt (2016) recommend investigating the relationship of different types of work orientations and creativity. The dominant work orientation categories in this study were career, social embeddedness and calling, which possibly talks to the kind of employee that work at the company: career-focused, with a sense of belonging and duty. This study found no significant relationship between the work orientation categories and innovative behaviour, indicating that innovative behaviour outcomes was not related to these work orientation categories. However, it neither had a direct significant relationship to innovative behaviour, nor did it moderate the relationship between work setting and innovative behaviour. To further contribute to understanding the role work orientation has in the broader context of meaningful work, future research should focus on the influence of work orientation on other variables in the model and how it impacts innovative behaviour.

The investigation of the relationships of the variables to innovative behaviour enriched our understanding of producing, testing, and implementing new ideas, stage 3 and 4 of the organisational innovation process. The importance of innovation climate was found in this study. To provide further clarity on the linkages between individual creativity and the organisational innovation processes, future research into climate should aggregate individual perceptions into higher levels of team and organisational analysis (Schneider et al., 2013). Analysing responses on a team or group level will enable a better understanding of the impact

of innovation climate in driving team and organisational outcomes (Newman et al., 2020). This will contribute to understanding the multi-level complexities of the model.

Practical Implications

This study showed that work setting, and work orientation had no statistically significant relationship with innovative behaviour, whereas innovation climate did. Therefore, sustaining a positive innovation climate is an important factor in optimising innovative behaviour regardless of work setting.

The Effectiveness of Innovation Climate in Optimising Innovative Behaviour.

To understand the effectiveness of innovation climate as a tool for promoting innovative behaviour in different work settings, the categories that comprise innovation climate need to be explored. The categories of innovation climate were measured by the sub-scales of the Team Climate Inventory, which were vision, participative safety, task orientation, support for innovation and interaction frequency (Anderson & West, 1998). As previously mentioned, the subscales of vision, participative safety and interaction frequency had high scores, all above 4 out of 5. The subscales all had a statistically significant relationship with innovative behaviour and had the same manifestation in both work settings. It is therefore pertinent to elaborate further on each of these categories.

Anderson and West (1998) state that vision can be managed by employers by ensuring that firstly, the vision is understood by all employees involved in the process, secondly, that employees are committed to the group objectives by enabling to see value in the outcome, thirdly, the vision should be realistic to achieve, and fourthly, it should be accepted by employees in the team. The high score on the vision subscale suggests that vision was possibly well managed by employers in both work settings. This finding has important implications for innovation as the vision subscale had a positive correlation with innovative behaviour.

Employers can manage participative safety by creating a decision-making process which is personally non-threatening in any form (Anderson & West, 1998). The overall high participative safety scores suggest that this category was also well managed. This also had a positive correlation with innovative behaviour.

Interaction frequency, which has been previously discussed, is an important construct in innovative behaviour due to the role that communication and interaction between employees play in spreading ideas (Kivimäki et al., 1997). The overall scores were high, indicating

frequent interaction between employees. A positive correlation was found with innovative behaviour. This may have been enabled by effective management, structures, policies, and technology. According to Opperman (2023), employers can manage effective communication and interaction in both work settings by making time and physical and virtual spaces to build personal relationships, formalised meetings, processes, and the use of digital collaboration tools such as zoom or Microsoft TEAMS. Team members who are interdependent can apply office schedules to a remote work setting and can adopt common schedules across team members to enhance communication and coordination (Breideband et al., 2023). Instituting structures and policies to minimise conflict, align teams and ensure the safety and thoroughness of communication are important for remote work success (Kniffin et al., 2021). It is likely that the respondents were well managed to ensure frequent interaction and had access to tools and structures to do so. The sample seems to have had a work set up conducive to working effectively in a remote work setting as most of the sample indicated they worked from a dedicated workspace at home (see table 13 in appendix 5). Studies have shown that working in a dedicated workspace results in better alignment with teammates, lower team conflict, and higher scheduling freedom (Breideband et al., 2023). These factors can possibly influence the interaction frequency in terms of its impact on collaboration and effective communication.

The last two dimensions of the team climate inventory points to the management of task orientation, generally manifesting in a dedication to achieving high standards in task execution, together with support for innovation, where a supportive climate encourages improvements to existing policies, procedures, and methods (Anderson & West, 1998). The results suggest these subscales were also well managed. Both these scores were relatively high (task orientation scoring 3.9 out of 5 and support for innovation scoring 3.8 out of 5) and had a positive correlation with innovative behaviour.

Conclusion

As organisations grapple with strategies to manage the new way of working in a post-pandemic world, this study has contributed empirical evidence to understand the complexities of innovative behaviour in the context of remote work. While work orientation had no statistically significant relationship with innovative behaviour, innovation climate was found to have the same relationship on innovative behaviour whether an employee worked at home or in the office. The study therefore underscored the importance of fostering a favourable innovation climate as means to manage innovative behaviour regardless of work setting.

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APPENDICES

APPENDIX 1

Work Orientation Questionnaire (WOQ)

What meaning does work have for you?

The world of work in the twenty-first century is a dynamic one. The purpose of this short questionnaire
(3-5 minutes) is to find out what work means to you.

You are asked to indicate how well each of the 26 statements below describes you
(1 – *not at all* to 7- *very much*).

Please begin by filling in the following information:

Age: ____ Sex: Male / Female (please circle)

Number of years of education (starting from first grade): _____

In the last six months have you been working: O Full time O Part-time

What is your occupation? _____

How satisfied are you with your occupation? (please circle the appropriate number)

Not satisfied at all 1 2 3 4 5 6 7 8 9 Completely satisfied

For each statement, please circle the appropriate number. Please do not skip any questions.

	Not at all						*Very Much*
1. What I do at work is important to me.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
2. I view my work as something I was meant to do.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
3. If I had enough money, I would not continue to work.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
4. My work is an opportunity for me to be part of a group or team.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
5. I would like to advance in the professional hierarchy of my field.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
6. On days when I am not working, time seems to move very slowly.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
7. I view my work as my life's mission.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
8. If I could receive a salary for staying home all day, I wouldn't work.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
9. It is important for me to be socially connected to the people I work with.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
10. I hope to gain influence and power in my workplace.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
11. It is hard for me to imagine how I would spend my time without work.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
12. My work is one of the most important things in my life.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
13. My main reason for working is to earn a living that will allow me to lead my life outside of work.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
14. I put in effort to feel part of the organization I work for.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
15. I hope to get promoted in the near future.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
16. I dislike having nothing to do, so I would rather work.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
17. My work makes the world a better place.	*1*	*2*	*3*	*4*	*5*	*6*	*7*

18. ***My primary motivation for working is financial – "to pay the bills".***	***1 2 3 4 5 6 7***
19. ***The people I work with are like a family to me.***	***1 2 3 4 5 6 7***
20. ***I expect to be in a better position in my professional field one day.***	***1 2 3 4 5 6 7***
21. ***When I am home on vacation, I get bored quickly.***	***1 2 3 4 5 6 7***
22. ***My work gives my life meaning.***	***1 2 3 4 5 6 7***
23. ***I work only because I need the money.***	***1 2 3 4 5 6 7***
24. ***I would like my relationships with my coworkers to extend beyond the workplace.***	***1 2 3 4 5 6 7***
25. ***I hope to attain a position with additional responsibilities soon.***	***1 2 3 4 5 6 7***
26. ***Without work my life would be empty and dull.***	***1 2 3 4 5 6 7***

Scoring of the Work Orientations Questionnaire

The score of each scale is the mean ratings of its items

	Warm up item	***1***
1	***Calling***	***2, 7, 12, 17, 22***
2	***Job***	***3, 8, 13, 18, 23***
3	***Social embeddedness***	***4, 9, 14, 19, 24***
4	***Career***	***5, 10, 15, 20, 25***
5	***Busyness***	***6, 11, 16, 21, 26***

APPENDIX 2

Individual Innovative Behaviour

In your current job, how often do you:

1. Look for opportunities to improve existing process, technology, product, service or work relationship?
2. Recognise opportunities to make a positive difference in your work, department, organisation or with customers
3. Pay attention to non-routine issues in your work, department, organisation or the market place?
4. Generate ideas or solutions to address problems?
5. Define problems more broadly in order to gain greater insight into them?
6. Experiment with new ideas and solutions?
7. Test-out ideas or solutions to address unmet needs?
8. Evaluate the strengths and weaknesses of new ideas?
9. Try to persuade others of importance of a new idea or solution?
10. Push ideas forward so that they have a chance to become implemented?
11. Take the risk to support new ideas?
12. Implement changes that seem beneficial?
13. Work the bugs out of new approaches when applying them to an existing process, technology, product or service?
14. Incorporate new ideas for improving an existing process, technology, product or service into daily routines?

Scale: 1 = never, 2 = almost never, 3 = sometimes, 4 = fairly often, 5 = very often, 6 = always

APPENDIX 3

Team Climate Inventory

Vision

1. How far are you in agreement with the objectives?
2. To what extent do you think your team's objectives are clearly understood?
3. To what extent do you think your team's objectives can actually be achieved?
4. How worthwhile do you think these objectives are to the organisation?

Participative safety

5. We have a "we are in it together" attitude
6. People keep each other informed about work-related issues in the team
7. People feel understood and accepted by each other
8. There are real attempts to share information throughout the team

Task Orientation

9. Are team members prepared to question the basis of what the team is doing?
10. Does the team critically appraise potential weaknesses in what it is doing in order to achieve the best possible outcome?
11. Do members of the team build on each other's ideas in order to achieve the best possible outcome?

Support for innovation

12. People in this team are always searching for fresh, new ways of looking at problems
13. In this team we take the time needed to develop new ideas
14. People in the team cooperate in order to develop and apply new ideas

Interaction frequency

15. We keep in regular contact with each other
16. We interact frequently
17. We keep in touch with each other as a team
18. Members of the team meet frequently to talk both formally and informally

Scale: 5-point response from strongly disagree to strongly agree

APPENDIX 4

Participant Information Sheet and Survey Questionnaire as shown in Redcap

Participant information Sheet

(to be included in the email with the link to the questionnaire attached)

Dear Sir/Madam

My name is Bethia Matisonn. I am a Masters Student in Organisational Psychology at the University of the Witwatersrand, Johannesburg. My supervisor is Prof Karen Milner. I am conducting research about innovative behaviour in different work settings (at home and in the office). The study title is

Work Orientation as a moderator of the relationship between Innovation Climate and Individual Innovative Behaviour in different work settings

I am inviting you to take part by completing this online questionnaire. If you decide to take part, the questionnaire will take approximately 10-15 minutes to complete.

Participation is confidential and anonymous. The results of the research study will not include your name, email address or anything else that can identify you.

Participation in this research study in voluntary. You do not have to take part. You can stop participation up until you have submitted your response. You will not get any direct benefits if you choose to join the research study. You will not lose any services, benefits or rights you would normally have if you decided not to join. Taking part in the research will not cost you anything. You will not be paid for being in this research study. Completing and submitting the survey is taken to mean consent to participate, as well as permission for other researchers to use the data collected from this research study.

This research study will be written up as a research report. No individual will be identified by name or position in any report or publication. The report will be available on the university library website. If you would like to receive a summary of this report, please contact me directly on the email address below and I will be happy to send it to you.

If you have any questions during or after the research study, feel free to contact me or my supervisor on the details listed below. If you have any concerns about ethical procedures of this research study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), tel +27 11 717 1408, email hrecnon-medical@wits.ac.za

Yours sincerely

Bethia Matisonn

Researcher: Bethia Matisonn, Email: 9000809T@wits.ac.za : +27832289160

Supervisor: Prof Karen Milner, Email: Karen.Milner@wits.ac.za +27 833760047

#	Variable / Field Name	Field Label *Field Note*	Field Attributes (Field Type, Validation, Choices, Calculations, etc.)
1	[participant_id]	Participant ID	text
2	[business_unit]	Section Header: *You are on section 1 out of 5 sections. Please fill out the information below.* Name of business unit	radio, Required 1, Discovery Life 2, Group Information Systems 3, Vitality Group SA 4, Vitality Group USA 5, Vitality SA 6, Discovery Insure 7, Discovery Health 8, Exec Office 9, Other
3	[permanent_or_contractor]	Are you a permanent (Full-time) worker or a contractor (Part-time)?	radio, Required 1, Permanent 2, Contractor
4	[job_level]	Job Level	radio, Required 1, Staff 2, Team Leader / Associate Specialist 3, Manager / Specialist 4, Divisional Manager / Senior Specialist / Director 5, Deputy General Manager / Principal Specialist / Vice President 6, General Manager / Chief Specialist/ Senior Vice President and above
5	[job_family]	Job Family	radio 1, Analytics and Product Development 2, Banking 3, Client Services 4, Clinical 5, Finance 6, Investment 7, Marketing and Communications 8, Multidisciplinary Leader

			9 Operations and Administrations 10 People 11 Portfolio Program and Project Management 12 Compliance and Audit Services 13 Sales and Distribution 14 Systems and Technology Infrastructure
6	[org_tenure]	Tenure in the organisation (how long have you worked for the organisation)	radio 1 0-2 years 2 3-6 years 3 7-10 years 4 11-15 years 5 16-20 years 6 21+ years
7	[position_tenure]	Tenure in your current position (how long have you worked in your current position)	radio 1 0-2 years 2 3-5 years 3 6-10 years 4 10+ years
8	[level_of_education]	Level of education	radio 1 No formal education 2 High/Senior School 3 Vocational training/Diploma 4 Undergraduate degree/Honours 5 Masters 6 PHD 7 Other
9	[marital_status]	Marital Status	radio 1 Single/Never married 2 Married/Living with a partner 3 Widowed 4 Divorced

10	[number_of_children]	Number of children	radio 0 = 0 1 = 1 2 = 2 3 = 3 4 = 4+
11	[no_children_home]	Number of children living at home	radio 0 = 0 1 = 1 2 = 2 3 = 3 4 = 4+
12	[job_satisfaction]	How satisfied are you with your occupation? *1 = Not satisfied, 7 = completely satisifed*	radio, Required 1 = 1=Not at all Satisfied 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7=Completely satisified
13	[gender]	Gender	radio 1 = Male 2 = Female 3 = Other
14	[age]	How old are you?	text (integer, Min: 16, Max: 100)
Instrument:Work Setting(work_setting) Enabled as survey Collapse			
16	[remote_working_freq]	Section Header: *You are on section 2 out of 5 sections. Please answer the questions below regarding your work set up in the last 2 weeks* How often have you worked out of the office (remotely) in the last 2 weeks	radio, Required 1 = Never 2 = Rarely 3 = Sometimes 4 = Often 5 = Always
17	[work_location]	Over the last 2 weeks, I have mainly worked	radio, Required

			1 From the office 2 From my home 3 Both 4 Other venue
18	[work_office_freq]	In a typical working month, how many days per week do you work in the office	radio, Required 1 0 2 1 3 2 4 3 5 4 6 5 Custom alignment: RH
19	[study_home]	Section Header: *Over the past two weeks, how much time have you spent working in the following spaces either at home, in the office or out of the office* A dedicated non-shared workspace at home (e.g. study)	radio (Matrix), Required 1 Never 2 Rarely 3 Sometimes 4 Often 5 Always
20	[common_area_home]	A common area at home (e.g. dining room/kitchen)	radio (Matrix), Required 1 Never 2 Rarely 3 Sometimes 4 Often 5 Always
21	[room_in_house]	Another bedroom/room in the house	radio (Matrix), Required 1 Never 2 Rarely 3 Sometimes 4 Often 5 Always
22	[outside_home]	Patio/Balcony/Garden at home	radio (Matrix), Required 1 Never 2 Rarely

			3 Sometimes 4 Often 5 Always
23	[public_space]	Coffee shop or other public space	radio (Matrix), Required 1 Never 2 Rarely 3 Sometimes 4 Often 5 Always
24	[desk_at_work]	At your desk/office at work	radio (Matrix), Required 1 Never 2 Rarely 3 Sometimes 4 Often 5 Always
25	[other_workspace]	Other	radio (Matrix) 1 Never 2 Rarely 3 Sometimes 4 Often 5 Always
26	[interaction_exec]	Section Header: *Over the past 2 weeks, how often did you interact with your* Executive	radio (Matrix), Required 1 Never 2 Rarely 3 Sometimes 4 Often 5 Always
27	[interaction_exco]	Exco Member	radio (Matrix), Required 1 Never 2 Rarely 3 Sometimes 4 Often 5 Always

28	[interaction_leader]	Leader	radio (Matrix), Required 1 Never 2 Rarely 3 Sometimes 4 Often 5 Always
29	[interaction_team]	Team Members	radio (Matrix), Required 1 Never 2 Rarely 3 Sometimes 4 Often 5 Always
30	[interaction_colleagues]	Colleagues	radio (Matrix), Required 1 Never 2 Rarely 3 Sometimes 4 Often 5 Always
31	[executive_interaction]	Section Header: *How did this interaction take place with each of these people or groups* Executive	radio (Matrix), Required 1 Online 2 In Person 3 Both 4 No interaction
32	[exco_interaction]	Exco Member	radio (Matrix), Required 1 Online 2 In Person 3 Both 4 No interaction
33	[leader_interaction]	Leader	radio (Matrix), Required 1 Online 2 In Person 3 Both 4 No interaction

34	[team_interaction]	Team Members	radio (Matrix), Required 1 Online 2 In Person 3 Both 4 No interaction
35	[colleagues_interaction]	Colleagues	radio (Matrix), Required 1 Online 2 In Person 3 Both 4 No interaction
Instrument:Work Orientation(work_orientation) Enabled as survey Collapse			
37	[test_wo]	Section Header: *You are on section 3 out of 5 sections. Please rate what meaning work has for you, from "not at all" to "very much"* What I do at work is important to me	radio (Matrix), Required 1 1 = Not at all 2 2 3 3 4 4 5 5 6 6 7 7 = Very much
38	[calling_1_meant_to_do]	I view my work as something I am meant to do	radio (Matrix), Required 1 1 = Not at all 2 2 3 3 4 4 5 5 6 6 7 7 = Very much
39	[job_1_enough_money]	If I had enough money, I would not continue to work	radio (Matrix), Required 1 1 = Not at all 2 2 3 3 4 4 5 5

			6 | 6 7 | 7 = Very much
40	[se_1_part_of_group]	My work is an opportunity for me to be part of a group or team	radio (Matrix), Required 1 | 1 = Not at all 2 | 2 3 | 3 4 | 4 5 | 5 6 | 6 7 | 7 = Very much
41	[career_1_heirarchy_advance]	I would like to advance in the professional hierarchy of my field	radio (Matrix), Required 1 | 1 = Not at all 2 | 2 3 | 3 4 | 4 5 | 5 6 | 6 7 | 7 = Very much
42	[busy_1_time_moves_slowly]	On the days when I am not working, time seems to move very slowly	radio (Matrix), Required 1 | 1 = Not at all 2 | 2 3 | 3 4 | 4 5 | 5 6 | 6 7 | 7 = Very much
43	[calling_2_life_mission]	I view my work as my life's mission	radio (Matrix), Required 1 | 1 = Not at all 2 | 2 3 | 3 4 | 4 5 | 5 6 | 6

			7 = Very much
44	[job_2_stay_home]	If I could receive a salary for staying home all day, I wouldn't work	radio (Matrix), Required 1 = Not at all 2 3 4 5 6 7 = Very much
45	[se_2_socially_connected]	It is important to me to be socially connected to the people I work with	radio (Matrix), Required 1 = Not at all 2 3 4 5 6 7 = Very much
46	[career_2_influence_power]	I hope to gain influence and power in my workplace	radio (Matrix), Required 1 = Not at all 2 3 4 5 6 7 = Very much
47	[busy_2_how_spend_time]	It is hard for me to imagine how I would spend my time without work	radio (Matrix), Required 1 = Not at all 2 3 4 5 6 7 = Very much

48	[calling_3_most_important]	My work is one of the most important things in my life	radio (Matrix), Required 1 = 1 = Not at all 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 = Very much
49	[job_3_earn_living]	The main reason for working is to earn a living that will allow me to lead my life outside work	radio (Matrix), Required 1 = 1 = Not at all 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 = Very much
50	[se_3_feel_part]	I put in effort to feel part of the organisation I work for	radio (Matrix), Required 1 = 1 = Not at all 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 = Very much
51	[career_3_promoted]	I hope to get promoted in the near future	radio (Matrix), Required 1 = 1 = Not at all 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 = Very much
52	[busy_3_nothing_to_do]	I dislike having nothing to do so I would rather work	radio (Matrix), Required

			1 = Not at all 2 3 4 5 6 7 = Very much
53	[calling_4_world_better]	My work makes the world a better place	radio (Matrix), Required 1 = Not at all 2 3 4 5 6 7 = Very much
54	[job_4_pay_bills]	My primary motivation for working is financial - "to pay the bills"	radio (Matrix), Required 1 = Not at all 2 3 4 5 6 7 = Very much
55	[se_4_like_family]	The people I work with are like a family to me	radio (Matrix), Required 1 = Not at all 2 3 4 5 6 7 = Very much
56	[career_4_better_position]	I expect to be in a better position in my professional field one day	radio (Matrix), Required 1 = Not at all

			2 | 2 3 | 3 4 | 4 5 | 5 6 | 6 7 | 7 = Very much
57	[busy_4_bored_quickly]	When I am on vacation I get bored quickly	radio (Matrix), Required 1 | 1 = Not at all 2 | 2 3 | 3 4 | 4 5 | 5 6 | 6 7 | 7 = Very much
58	[calling_5_life_meaning]	My work gives life meaning	radio (Matrix), Required 1 | 1 = Not at all 2 | 2 3 | 3 4 | 4 5 | 5 6 | 6 7 | 7 = Very much
59	[job_5_need_money]	I work only because I need the money	radio (Matrix), Required 1 | 1 = Not at all 2 | 2 3 | 3 4 | 4 5 | 5 6 | 6 7 | 7 = Very much
60	[se_5_relationships_beyond]	I would like my relationships with my co-workers to extend beyond the workplace	radio (Matrix), Required 1 | 1 = Not at all 2 | 2

			3 | 3 4 | 4 5 | 5 6 | 6 7 | 7 = Very much
61	[career_5_add_responsib]	I hope to attain a position with additional responsibilities soon	radio (Matrix), Required 1 | 1 = Not at all 2 | 2 3 | 3 4 | 4 5 | 5 6 | 6 7 | 7 = Very much
62	[busy_5_life_empty]	Without my work my life would be empty and dull	radio (Matrix), Required 1 | 1 = Not at all 2 | 2 3 | 3 4 | 4 5 | 5 6 | 6 7 | 7 = Very much
Instrument:Individual Innovative Behaviour(individual_innovative_behaviour) Enabled as survey Collapse			
64	[iib_1_look_for]	Section Header: *You are on section 4 out of 5 sections. Please rate the following on this 6 - point scale from "Never" to "Always". In your current job, how often do you:* Look for opportunities to improve existing process, technology, product, service or work relationship?	radio (Matrix), Required 1 | 1=Never 2 | 2 3 | 3 4 | 4 5 | 5 6 | 6=Always
65	[iib_2_recognise]	Recognise opportunities to make a positive difference in your work, department,	radio (Matrix), Required 1 | 1=Never 2 | 2

		organisation or with customers	3 3 4 4 5 5 6 6=Always
66	[iib_3_pay_attention]	Pay attention to non-routine issues in your work, department, organisation or the market place?	radio (Matrix), Required 1 1=Never 2 2 3 3 4 4 5 5 6 6=Always
67	[iib_4_generate]	Generate ideas or solutions to address problems?	radio (Matrix), Required 1 1=Never 2 2 3 3 4 4 5 5 6 6=Always
68	[iib_5_define]	Define problems more broadly in order to gain greater insight into them?	radio (Matrix), Required 1 1=Never 2 2 3 3 4 4 5 5 6 6=Always
69	[iib_6_experiment]	Experiment with new ideas and solutions?	radio (Matrix), Required 1 1=Never 2 2 3 3 4 4 5 5 6 6=Always

70	[iib_7_test_out]	Test-out ideas or solutions to address unmet needs?	radio (Matrix), Required 1 1=Never 2 2 3 3 4 4 5 5 6 6=Always
71	[iib_8_evaluate]	Evaluate the strengths and weaknesses of new ideas?	radio (Matrix), Required 1 1=Never 2 2 3 3 4 4 5 5 6 6=Always
72	[iib_9_persuade]	Try to persuade others of the importance of a new idea or solution?	radio (Matrix), Required 1 1=Never 2 2 3 3 4 4 5 5 6 6=Always
73	[iib_10_push_forward]	Push ideas forward so that they have a chance to become implemented?	radio (Matrix), Required 1 1=Never 2 2 3 3 4 4 5 5 6 6=Always
74	[iib_11_take_risk]	Take the risk to support new ideas?	radio (Matrix), Required 1 1=Never 2 2 3 3 4 4

			5 | 5 6 | 6=Always
75	[iib_12_implement]	Implement changes that seem beneficial?	radio (Matrix), Required 1 | 1=Never 2 | 2 3 | 3 4 | 4 5 | 5 6 | 6=Always
76	[iib_13_work_bugs]	Work the bugs out of new approaches when applying them to an existing process, technology, product or service?	radio (Matrix), Required 1 | 1=Never 2 | 2 3 | 3 4 | 4 5 | 5 6 | 6=Always
77	[iib_14_incorporate]	Incorporate new ideas for improving an existing process, technology, product or service into daily routines?	radio (Matrix), Required 1 | 1=Never 2 | 2 3 | 3 4 | 4 5 | 5 6 | 6=Always
Instrument:Team Climate Inventory(team_climate_inventory) Enabled as survey Collapse			
79	[tci_1_agree_objectives]	Section Header: *You are on section 5 out of 5 sections...almost complete! Please rate the following 5-point scale ranging from strongly disagree to strongly agree with reference to the team with which you work. If you work in more than one team, choose only one team when rating the items below.* I agree with my team's objectives	radio (Matrix), Required 1 | Strongly disagree 2 | Disagree 3 | Neutral 4 | Agree 5 | Strongly Agree
80	[tci_2_understand_obj]	My team's objectives are clearly understood	radio (Matrix), Required

			1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
81	[tci_3_achieve_obj]	My team's objectives can actually be achieved	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
82	[tci_4_obj_worthwhile]	These objectives are worthwhile to the organisation	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
83	[tci_5_in_it_together]	We have a "we are in it together" attitude	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
84	[tci_6_keep_informed]	People keep each other informed about work-related issues in the team	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
85	[tci_7_understood_accepted]	People feel understood and accepted by each other	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral

			4 Agree 5 Strongly Agree
86	[tci_8_share_info]	There are real attempts to share information throughout the team	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
87	[tci_9_question]	Team members are prepared to question the basis of what the team is doing	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
88	[tci_10_appraise_weaknesses]	The team critically appraises potential weaknesses in what it is doing in order to achieve the best possible outcome	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
89	[tci_11_build_on_ideas]	Members of the team build on each other's ideas in order to achieve the best possible outcome	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
90	[tci_12_fresh_new_ways]	People in this team are always searching for fresh, new ways of looking at problems	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree

91	[tci_13_develop_new_ideas]	In this team we take the time needed to develop new ideas	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
92	[tci_14_cooperate]	People in the team cooperate in order to develop and apply new ideas	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
93	[tci_15_regular_contact]	We keep in regular contact with each other	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
94	[tci_16_interact_frequently]	We interact frequently	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
95	[tci_17_keep_in_touch]	We keep in touch with each other as a team	radio (Matrix), Required 1 Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree
96	[tci_18_meet_frequently]	Members of the team meet frequently to talk both formally and informally	radio (Matrix), Required 1 Strongly disagree 2 Disagree

			3 Neutral 4 Agree 5 Strongly Agree

APPENDIX 5

Workspaces

Table 13

Description of workspaces

	Never	Rarely	Sometimes	Often	Always
Dedicated space at home	19.9	6.0	7.7	23.7	42.7
Common area at home	52.9	15.8	10.2	11.6	9.5
Another room in the house	59.5	12.4	10.4	7.5	10.2
Patio/balcony/garden	77.2	12.2	7.3	1.7	1.7
Public space	78.6	14.3	5.0	1.9	0.2
At work	16.4	13.3	24.7	18.9	26.8
Other	88.8	4.6	3.1	1.9	1.7

Table 13 demonstrates the finding that most people who worked remotely indicated that they worked at a dedicated office space at home (42.7%) as opposed to working in a common area, another room in the house, a balcony, patio or garden, or public space.