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THE INTERACTIONS OF EMPLOYEE ENGAGEMENT, TELECOMMUTING AND PERFORMANCE FOR THE FUTURE OF WORK

by

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Submitted in fulfilment of the requirements for the degree *Philosophiae Doctor*, with specialisation in Business Management (PhD in Business Management) in the

Faculty of Economic and Management Sciences

at the

University of Pretoria

Promoter: Professor C.E. Eresia-Eke

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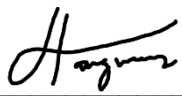

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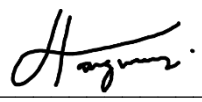
The Research Ethics Committee Approval certificate (Number: EMS019/23) is presented in Appendix A.



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DEDICATION

I dedicate this doctoral capstone in loving and devoted memory to my father, “Boss” Dr Mbulaheni Aaron Ravhudzulo (1949-2017), my hero, and inspiration, whose encouragement and sacrifices were instrumental to my PhD journey. Throughout my life, you have always stood by me, and I have always known that even if the whole world is against me, you will always be in my corner, supporting me. You embedded the love for education and success in me from an early age. Your career not only served as an inspiration for this study, but also as an example of what it means to be principled, hardworking, and highly successful, while remaining humble and balancing personal and family responsibilities.

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Ndi nn̓e Ravhudzulo, Mu̓tavhatsindi, mutshela thombe, Munzhelele wa ha Mutele. Mu̓duhulu wa vha̓to̓da ndimo ane a ila mutshila wa mbudzi, mutumbu a tshi l̓a. Mu̓to̓da ndimo, asa̓to̓di shango l̓a muthu, waha Nyavhulungu vhutete, vhu lunzhedzwaho nga vhare na njele. Vha sina njele vhaya vhu fhaladza.

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"Don't hide your light! Let it shine for all; let your good deeds glow for all to see, so that they will praise your heavenly Father." **Matthew 5:16.**

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ABSTRACT

The Interactions of Employee Engagement, Telecommuting and Performance for the Future of Work

Promoter: Professor C.E. Eresia-Eke
Department: Business Management
Degree: Philosophiae Doctor (PhD) with specialisation in Business Management

Background: The COVID-19 pandemic catalysed a monumental shift in the world of work, particularly in the Information Communication Technology sector, where telecommuting gained prominence. As organisations adapt to a 'new normal' owing to a transformation in workplace practices, it is imperative as dictated by the study's objectives to understand the interactions of employee engagement, telecommuting propensity, and employee performance, more so in a developing country, like South Africa, in preparation for the future of work.

Research Problem: The new global behavioural norm has forced organisations and employees to adapt quickly to the rapidly changing work environment. Global trends indicate a substantial increase in telecommuting adoption, especially during the COVID-19 pandemic. However, this has led to the emergence of some challenges to employee engagement and performance with profound implications for the healthy well-being of employees. More specifically, these challenges can instigate reduced employee engagement, increased turnover, and lower productivity, ultimately impacting organisational competitiveness and sustainability. This raises serious concerns as the success or failure of an organisation depends on its workforce, especially the extent to which they are engaged at work and are productive. With the uptake of telecommuting in the ICT sector that plays a critical role in the South African economy, any negative effects that emanate from the practice of telecommuting will potentially bode dire consequences for the future of work in South Africa. The ramifications of an inadequate comprehension of key employee outcomes and their correlation to telecommuting in a developing economy context such as South Africa, characterised by elevated unemployment rates are profound.

Research Purpose: Specifically, this study hypothesises direct relationships between employee engagement and telecommuting propensity, employee engagement and employee performance, as well as telecommuting propensity and employee performance. Further, this study hypothesises that telecommuting mediates and moderates the relationship between employee engagement and employee performance, as well as employee engagement dimensions (physical, cognitive, and emotional) and employee performance. Finally, in pursuit of the objective about moderated-moderation, this study analyses the moderating role of demographic variables, namely age, educational level, and organisational profile in the telecommuting propensity moderated relationship between employee engagement, its dimensions and employee performance. The results of this study will be instrumental to driving change by informing practice, guiding decision-making, and advancing knowledge in the domains of business management, human resources, and business strategy.

Theoretical Framework: Employee engagement is illuminated through the Employee Engagement Theory, and basically refers to an employee's emotional, physical, and cognitive commitment to their organisation. Telecommuting is elucidated through the Social Exchange Theory, and it explains the reciprocal relationship between employers and employees. Finally, employee performance is defined through the Triarchy Model of Employee Performance that encompasses task performance, contextual performance, and adaptive performance.

Research Methodology: This study employed a positivist, deductive, quantitative, and cross-sectional methodology in pursuit of its research objectives. To distribute the survey instrument, a combination of snowball, purposive, and self-selection sampling techniques was used. A total of 1368 questionnaires were distributed, although 1054 employees in the South African ICT sector accessed the survey. Of these, 478 responses were complete, resulting in an effective 45% response rate. Statistical techniques that encompassed descriptive statistics and inferential methods spanning factor analysis, correlation analysis, regression analysis, and structural equation modelling were employed in the study, to analyse and interpret the data as well as generate empirical findings.

Findings/results: The study discovers direct, moderating, and moderated-moderation relationships among some of the study's constructs. Employee engagement and physical engagement are positively related to employee performance. Further, employee engagement is positively related to telecommuting propensity while telecommuting propensity only moderates the relationship between cognitive engagement and employee performance as well as the relationship between emotional engagement and employee performance. The study also found nuanced moderated-moderation effects of age on relationships between some of the study's constructs.

Recommendations and Implications: In the new era of telecommuting, employees need to adapt, learn, and innovate. Organisations and managers must strive to ensure that the future of work is inclusive, collaborative, sustainable, and human-centred. In times of uncertainty like the COVID-19 pandemic, keeping employees engaged and productive is vital for organisational survival and continuity. Managers should encourage collaborative workspaces and face-to-face meetings to improve team bonding, knowledge sharing, and innovation in a bid to strengthen workplace relationships. In sectors like ICT, high employee engagement is key for productivity and employee performance, as engaged employees typically work more effectively towards organisational goals.

Conclusion: This study provides novel empirical data, knowledge, and insights related to the interconnectedness of employee engagement, its dimensions, telecommuting propensity, and employee performance. Theoretically, this study makes a unique contribution to the fields of business management, human resources, and business strategy. Methodologically, this study provides empirical evidence by means of the introduction of telecommuting propensity as an intervening variable, while interrogating hypothesised relationships with structural equation modelling and the construction of reflective higher order constructs of employee engagement and employee performance. Practically, the study contributes - through actionable recommendations for organisations and managers to encourage preparedness and adaptation, for the future of work.

Keywords: COVID-19 pandemic; Employee Engagement; Employee Performance; Future of Work; ICT Sector; Telecommuting Propensity

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ABBREVIATIONS, ACRONYMS, AND GLOSSARY

The following abbreviations were used in this thesis:

Abbreviation	Meaning
AGFI	Adjusted Goodness-of-Fit Index
AI	Artificial Intelligence
AIC	Akaike Information Criterion
AMOS	Analysis of Moment Structures
AP	Adaptive Performance
AVE	Average Explained Variance
CAIC	Corrected Akaike's Information Criterion
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CMIN/df	Relative Chi-Square Index
CogEng	Cognitive Engagement
CP	Contextual Performance
CR	Composite Reliability
DV	Dependent Variable
EmoEng	Emotional Engagement
EE	Employee Engagement
EFA	Exploratory Factor Analysis
EP	Employee Performance
FoW	Future of Work
GOF	Goodness of Fit
GFI	Goodness of Fit Index
HTMT	Heterotrait-Monotrait Ratio
ICT	Information Communication Technology
IFI	Incremental Fit Index
IV	Independent Variable
LLCI	Lower asymptotic confidence interval
MRA	Multiple Regression Analysis
NFI	Normed Fit Index
PGFI	Parsimony Goodness of Fit Index
PhyEng	Physical Engagement
PNFI	Parsimony Normed Fit Index
RFI	Relative Fit Index
RMS	Root Mean Square
RMSEA	Root Mean Square Error of Approximation
SD	Standard Deviation

SE	Standard Error
SEM	Structural Equation Modelling
SET	Social Exchange Theory
SPSS	Statistical Package for Social Sciences
SRMR	Standardised Root Mean Square Residual
TCP	Telecommuting Propensity
TLI	Tucker-Lewis Index
TP	Task Performance
ULCI	Upper asymptotic confidence interval

LIST OF SYMBOLS

The following symbols were used in this thesis:

Abbreviation	Meaning
α	Alpha
β	Beta
f^2	Effect Size
n	Number of observations
N	Total Population Size
p	Significant probability/Statistical significance
r	Pearson Product-Moment correlation coefficient
R^2	Squared multiple correlation
ΔR^2	Delta R-squared
χ^2	Chi-Square
χ^2/df	Chi-Square distribution

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

The world of work, as it has been known, ceased to exist in the onset of the COVID-19 pandemic (De Klerk, Joubert & Mosca, 2021:5). The outbreak of the pandemic and institutional responses to cope with it instigated a drastic shift in the private and professional lives of employees (Schmid *et al.*, 2021:4). Much of this can be attributed to the need for organisations to develop social distancing practices to prevent the spread of the disease (OECD, 2020:1). Consequently, the recourse to telecommuting has become attractive (Belzunegui-Eraso & Erro-Garcés, 2020:5).

Instructively, the strategic responses of organisations have proven pivotal in navigating the challenges posed by the COVID-19 pandemic for organisations, given the substantial social, economic, and political changes it has instigated, making long-term planning challenging until the crisis subsides (Milder, 2020:136). This assertion holds merit, particularly in the context of the COVID-19 pandemic, since the long-term effects are unknown (Daly & Robinson, 2021:604). It is plausible, as noted in a study by Pinzaru, Zbuchea and Anghel (2020), that the comprehensive analysis of the ramifications stemming from the COVID-19 pandemic remains an ongoing endeavour. Moreover, organisations are faced with an overwhelming, competing, and tough economic climate as they navigate the COVID-19 pandemic (Baig *et al.*, 2020:2).

While some organisations across all industries have implemented new policies for their employees (Okereafor & Manny, 2020:13), others have reviewed their production operations, business, and social practices (Katz, Callorda & Jung, 2020:10) in response to the exigencies of the pandemic (Raoufi & Fayek, 2021:48). Indeed, it has become imperative for organisations to concurrently develop mechanisms to help them overcome the unanticipated operational and financial challenges introduced by the COVID-19 pandemic while rapidly addressing the needs of their customers and employees (Tey *et al.*, 2020:191). The situation is exacerbated by the reality that organisations are also experiencing unprecedented workforce disruption while implementing agile operations propelled by accelerated digital transformation (Nagel, 2020:871).

This is evident in the fact that there is a shift towards increased telecommuting by the workforce in organisations (Kachra & Brown, 2020:9). Notably, the COVID-19 pandemic has influenced organisations, giving rise to both opportunities and challenges (Spicer, 2020:1738) and by responding to these through telecommuting. The workplace has become substantially transformed (Tavares *et al.*, 2021:341). In effect, the outbreak of the pandemic became a driving force for the modernisation of work through telecommuting systems (Buomprisco *et al.*, 2021:1) as organisations sought to respond to the health risks posed by the pandemic (Gostin, Moon & Meier, 2020:1615). This perspective finds support from Amankwah-Amoah *et al.* (2021:604), who contend that in recent years, there has been a notable rise in the prevalence of telecommuting, and its adoption was accelerated during the COVID-19 pandemic. Remarkably, telecommuting largely being introduced by the COVID-19 pandemic, has helped organisations improve their resilience and agility as they continue to operate in the quest to realise their business objectives (Weil & Murugesan, 2020:6).

1.1.1 Background to the Study

The Information and Communication Technology (ICT) sector in South Africa has undergone significant transformation over the past few decades, emerging as a pivotal component of the nation's economic and social development (Aruleba & Jere, 2022:4; David & Grobler, 2020:1396) efforts. With a burgeoning digital economy, the South African ICT landscape is characterised by a robust telecommunications infrastructure, a growing internet penetration rate, and a dynamic mobile market (Adeleye & Eboagu, 2019:35). In addition, a study by Mwapwele *et al.* (2019) asserts that Government initiatives and policies, such as the National Development Plan 2030 and the South Africa Connect broadband policy, have been instrumental in fostering an environment conducive to technological advancement and innovation.

This rapid evolution in the ICT sector has laid a foundation for new work modalities, including telecommuting, which has become increasingly prevalent in response to global trends and the COVID-19 pandemic (Mahomed, Oba & Sony, 2023:105; Urbaniec, Małkowska & Włodarkiewicz-Klimek, 2022:2). Against this backdrop and the reality that the sector remains

central to the evolution of work globally, the nature of the interplay between employee engagement (EE), telecommuting, and employee performance (EP) within this context may potentially shape the future of work in South Africa.

Advancements in the Information Communication Technology (ICT) domain, as epitomised by telecommuting, have morphed organisations and their relationships with stakeholders, principally by enabling reliable and quick information-sharing (Ar & Abbas, 2021:1) that is independent of physical proximity (Giuliano, Kang & Yuan, 2019:381). It is against this backdrop that telecommuting has become an essential tool for organisations to maintain operations during the pandemic (Khan *et al.*, 2021:790).

Telecommuting is a form of boundary-less work and a flexible work arrangement where employees often replace their regular working hours from the office with working remotely (Abilash & Siju, 2021:2; Caranto, Sergio & Oribiana, 2020:37). Expectedly, remote work, facilitated by telecommuting, is anticipated to persist as a permanent facet of the FoW (Elbogen *et al.*, 2022:410). Benefits of telecommuting include increased flexibility, reduced commuting time, costs, and the ability to work from anywhere (Filip *et al.*, 2022:3). While telecommuting offers various benefits to both employers and employees (Popovici & Popovici, 2020:470), the challenges it poses and its impact on EE and EP have been a topic of debate (Messenger, 2019:16). Partially, due to the recourse to telecommuting, some of the challenges experienced by employees have been identified as exhaustion, isolation, anxiety, and increased stress (Gupta & Sahoo, 2020:6).

Further challenges identified by Van Zoonen and Sivunen (2022:611) include social isolation, reduced communication, fewer collaboration opportunities, and decreased accountability. These challenges arguably stem from the management of their work-family interface (Michel, Rotch & O'Neill, 2022:8), a loss in employees' sense of agency, as the pandemic stripped them of their autonomy (Anicich *et al.*, 2020:3), and increased EP expectations from their organisations (Venkatesh *et al.*, 2021:643). Despite the challenges and obstacles, organisations have not been dissuaded from implementing work-from-home policies to minimise the adverse economic impact (Khurasheed, Iqbal & Siddiqui, 2021:906) of the COVID-19 pandemic. According to Sischka and Steffgen (2021:3), before the COVID-

19 pandemic, telecommuting was considered a perk, however, since the outbreak of the pandemic, more than 66% of employees were forced into remote full-time work (Kazi Turin Rahman & Arif, 2020:283). Recognising this, Pouly (2020:4) contends that in challenging circumstances, the imperative adoption of telecommuting has emerged as essential for sustaining organisational functionality since it facilitates the fulfilment of business requirements by harnessing technological means.

Telecommuting plays a crucial role in the business landscape, necessitating proficient leadership to facilitate employees' roles effectively through the utilisation of technology (Dirani *et al.*, 2020:8). Hodder (2020:3) confirms that the prominence of telecommuting as a way of responding to the COVID-19 pandemic is a reminder that technology can help employers manage productivity. Interestingly, according to Belzunegui-Eraso and Erro-Garcés (2020:4), where individuals work and the type of work they hold, are crucial in explaining the propensity to telecommute. This holds significance considering the influence exerted by telecommuting on the equilibrium between work and personal life, a phenomenon influenced by diverse factors including workload volume and individual past experiences (Caringal-Go *et al.*, 2022:115).

It is curious, though, that findings made by studies focused on examining the relationships between telecommuting and EE are typically inconsistent (Golden & Veiga, 2005:302). EE refers to an employee’s choice to willingly and fully invest their authentic selves physically, cognitively and emotionally in their work roles that promote connections to work and to others, personal presence and active, full role performances’ (Kahn, 1990:694). The results of a meta-analysis of 46 studies conducted by Gajendran and Harrison (2007) show that telecommuting had beneficial effects on more distal outcomes, such as job satisfaction, EP, turnover intent, and role stress.

Conversely, Sardeshmukh, Sharma and Golden (2012:102) found that telecommuting is negatively related to EE. In addition, a study conducted by Cheng and Zhang (2022) revealed some negative implications of telecommuting, especially because it leads to detachment from work. In essence, employees engaged in telecommuting might experience a sense of disconnection from both their colleagues and the organisation (Toniolo-Barrios &

Pitt, 2021:190), leading to a sense of disengagement from the organisation's mission and goals (Tijunaitis, Jeske & Shultz, 2019:361). However, a study by Hickman and Robison (2020) affirms that EE increases when employees telecommute. Given the importance of EE to organisations (Larasati & Hasanati, 2019:391) and how telecommuting improves employee productivity (Muzee, Kizza & Mugabe, 2021:128), it is imperative to understand the association between the two variables. Carnevale and Hatak (2020:184) assert that further research is required to comprehend the impact of telecommuting on employees' engagement levels.

This is important since engaged employees typically demonstrate heightened productivity, innovation, and loyalty towards their employer (Rožman & Štrukelj, 2021:795). Understandably, according to Bhattacharya and Mittal (2020:66), when telecommuting, EP can be impacted by several factors, including the characteristics of the job, the level of supervision, support, the employee's individual characteristics and work habits. EP consists of task performance (TP), contextual performance (CP), and adaptive performance (AP) (Yoo & Kim, 2021:423)

In a study of 229 employees who telecommute, Khan, Mohammed and Harith (2018:7) identified a positive association between telecommuting and EP. Furthermore, Butler, Aasheim and Williams (2007:103) found positive evidence that telecommuting increases productivity and, more importantly, that this increase is sustainable over time. Similarly, a study conducted by Onyemaechi, Chinyere and Emmanuel (2018) revealed that telecommuting also exhibits a positive, albeit weak, relationship with EP. In contrast, Ferreira *et al.* (2021:19) postulate that employees who telecommute may struggle to stay motivated, focused, and productive, leading to lower performance levels.

Curiously, a study conducted by Campo, Avolio and Carlier (2021), however, found no relationship between telecommuting and EP. Echoing this, Westfall (2004:96) asserted that there is no evidence supporting the claim that telecommuting substantially increases productivity. In addition, Kajongwe and Sithole (2022:10) uphold that telecommuting lacks substantial associations with autonomy, affective commitment, intent to stay or EP. Noting the lack of consensus among scholars as it pertains to the possible association between

telecommuting and EP, Harker Martin and MacDonnell (2012:612) declare that more research is necessary to better understand the relationship between telecommuting and EP, albeit in different contexts.

From a theoretical perspective, the contradictions between the results of prior studies that examined telecommuting provides evidence of a weak understanding of the concept in the context of the organisation (Bélanger, Watson-Manheim & Swan, 2013:1258). Yuan, Ye and Zhong (2020:63) acknowledge the challenges created in the domain of EE and EP because of telecommuting. Göbel *et al.* (2020:4) argue that employees involved in telecommuting experience an increase in the prominence of consequences influencing human behaviour. This is particularly because telecommuting has become the norm rather than the exception in various industries (Wanjaa & Mwikya, 2021:698).

Perhaps due to its pervasiveness and visible contrast to traditional, in-office work, there is debate regarding the implications of telecommuting for human capital outcomes, such as EP, EE, and organisational culture (Greer & Payne, 2014:88). Specifically, telecommuting depends on several factors such as demographic status, family structure, economic condition, an inclination for face-to-face interactions, quality of the work environment, as well as lifestyle (Nayak & Pandit, 2021:99). It may well be that telecommuting affects certain facets of EE and EP more than others because according to Chanana and Sangeeta (2021:6) various organisations are doing EE practices in a creative manner to keep their employees satisfied and committed.

This knowledge would be invaluable as organisations seek innovative ways to enable EP, post the COVID-19 pandemic. As such, this study seeks to interrogate the interactions of EE, TCP, and EP while exploring the mediating and moderating effects of TCP on the relationships between EE and EP for the FoW.

1.2 RESEARCH PROBLEM

The outbreak of the COVID-19 disease has had an enormous effect on the world and resulted in a new model through which business is conducted (Tkachuk *et al.*, 2020:46). The new global behavioural norm has forced organisations and employees to prepare for the

future of work (Manzanedo & Manning, 2020:10). Moreover, since December 2019, when the first Coronavirus cases were identified, the pandemic compelled employees to telecommute due to social distancing requirements (Putro & Riyanto, 2020:485). The change in routine working arrangements pivoting to telecommuting was due to organisations looking for ways to protect their staff and remain functional (Andersson & Pamin, 2021:2).

Expectedly, telecommuting experienced rapid growth due to the COVID-19 pandemic and resulted in flexible working arrangements in many organisations (Denham, 2021:3). Some organisations needed to change their office-based work arrangements. According to Vorster (2020:16), flexible working has been found to increase reciprocity and willingness to work overtime as well as change work hours. Curiously, the uptake of telecommuting has resulted in rapid, widespread changes to many aspects of organisational processes (Contreras, Baykal & Abid, 2020:7), which have, to some extent, encumbered employee visibility and resulted in increased social isolation (Tinneveld, 2022:28).

Unfortunately, according to Savić (2020:101), many organisations were ill-prepared for telecommuting, which was enforced by the new reality of the COVID-19 pandemic. There were delays in implementing telecommuting, which invariably impacted productivity (Belzunegui-Eraso & Erro-Garcés, 2020:13). Remarkably, a study by Dvorak (2021) reports that there were little to no protocols to prepare organisations and individuals mentally, physically, emotionally, and financially. The COVID-19 pandemic presented a unique opportunity to understand the potential for enhanced telecommuting with a greater potential for future developments to allow for international collaboration and cross-border employment in future (Al-Habaibeh *et al.*, 2021:107).

Moreover, the extraordinary context of the COVID-19 pandemic presented a rare opportunity to scrutinise the advantages and impediments associated with telecommuting (De Klerk *et al.*, 2021:11), especially for employees who previously did not have the opportunity to telecommute (Mohammadi *et al.*, 2023:611). Nonetheless, the new way of work owing to telecommuting required employees to adjust to their new remote work environment (Matli, 2020:1250) and continue contributing to the achievement of organisational objectives by remaining engaged with their work (Pattnaik & Jena, 2020:875).

The impacts of the COVID-19 pandemic on organisations and people are vast (Merrill, 2021:7). The impact of the pandemic extends to the ICT sector as well, highlighting the sector's vulnerability (Sherif, 2020:6). Telecommuting during the COVID-19 pandemic resulted in devastating threats to human lifestyle, health, economy, and organisations human capital practices (Odone *et al.*, 2020:88). Understanding the ramifications of telecommuting preferences on mental health and holistic well-being is imperative (Wöhrmann & Ebner, 2021:355) due to the significance of EE, and performance (Demerouti *et al.*, 2010:147). It is noteworthy that when employees are not well, the organisation does not perform, especially when workplace well-being measures are not implemented (Sasaki *et al.*, 2020:3).

Clearly, an organisation's success or failure depends upon its workforce (Anwar & Abdullah, 2021:39), whose engagement levels need to be maintained (Kurdi & Alshurideh, 2020:3987). Notably, managers need to ensure employees well-being (Turner, 2020:51) both physically and mentally (Adams, 2019:584). This would help prevent a range of mental health conditions, including anxiety, depression, burnout, and other stress-related disorders (Michie, 2002:67). Therefore, as the trend of telecommuting continues to rise, it is essential to understand the potential risks and challenges associated with this type of work arrangement (Ryoo *et al.*, 2023:7), particularly regarding EE and EP (Wang *et al.*, 2023:632). Indeed, as organisations strive to navigate the ongoing impacts of the COVID-19 pandemic (Carnevale & Hatak, 2020:183), the possible adverse effects that telecommuting may pose to employee well-being and arguably the pursuit of the organisation's objectives remain a challenge (Kawada, 2020:775).

This was the case across all industries and, arguably, even more so in ICT (Patil & Gopalakrishnan, 2020:3910). Markedly, South Africa's ICT sector plays a pivotal role in the country's economy, particularly in providing services within the realms of telecommunications, broadcasting, and the postal industry (ICASA, 2020:18). Moreover, South Africa's ICT sector has progressively assumed a crucial role in the nation's economy, making substantial contributions to its Gross Domestic Product, and generating employment opportunities (Gillwald, Moyo & Christoph Stork, 2012:75). More so, because the South

African ICT sector constitutes a substantial proportion of the nation's export activities (Statistics South Africa, 2017:4).

Given the critical role that the ICT sector plays in the South African economy (Wolf, 2001:7), any negative effects that emanate from telecommuting in the ICT sector will potentially bode dire consequences for the FoW in South Africa (Balliester & Elsheikhi, 2018:8). It is therefore crucial for employees who work in the ICT sector to have a healthy well-being (Sharma & Kumra, 2020:640). In essence, employees' well-being must be prioritised when employees are telecommuting (Singh & Verma, 2020:17). The ramifications of telecommuting to the population and the significance of the ICT sector in a country such as South Africa, where unemployment numbers are high (Khobai *et al.*, 2020:176) means that if the ICT sector does not enable other industries, there will be negative consequences in terms of job losses (Birkel *et al.*, 2019:13). Stemming from this, if EE, TCP, and EP are not well understood, the aftermath on aspects such as organisational competitiveness, profitability and sustainability will be unfavourable.

1.3 PURPOSE OF THE STUDY

Employees represent the most invaluable assets within an organisation, essential for its sustenance and functionality (Dubey, Pathak & Sahu, 2020:1493). This underscores the importance of employees who may be even more valuable in organisations with effective EE mechanisms (Osborne & Hammoud, 2017:54). Sorenson (2013:3) argued that engaged employees help their organisations perform better, ultimately contributing to meaningful business outcomes such as profitability. Against this backdrop that Taneja, Sewell and Odom (2015:46) suggest that organisations should strengthen their EE strategy as it could engender a competitive advantage. Increased EE correlates positively with heightened prospects for revenue growth within an organisation (Markos & Sridevi, 2010:92).

Employees are expected to maintain performance levels, even in the face of challenging circumstances, such as the COVID-19 pandemic (Collings *et al.*, 2021:824). For this to happen, a collective compassionate action within groups is necessary (Wee & Fehr, 2021:1814). Clearly, the presence of COVID-19 prompted interventions by organisations to contain the impact on the performance of employees (Narayanamurthy & Tortorella,

2021:108076). The COVID-19 pandemic sparked behavioural changes that influence employees emotional, cognitive, and physical well-being and can ultimately impact their performance (Graves & Karabayeva, 2020:167). Considering that the success and performance of an employee in an organisation are determined by the level of competence and professionalism (Paais & Pattiruhu, 2020:578).

In keeping with the changes, organisations have started to redesign their approach to work by integrating technological innovations into their daily practices, allowing individuals to define their work conditions and content (Demerouti *et al.*, 2014:8). This has meant greater emphasis on output as opposed to employees just being present since organisations strive for more efficient work processes at a reduced cost (Dahanayake, 2022:302). The prevalent working conditions leveraging on telecommuting have affected EE and EP (Duque *et al.*, 2020:14), given that telecommuting has emerged as a predominant professional experience for employees that organisations have embraced as a strategy to ensure business continuity (Mihalca, Irimiaş & Brendea, 2021:620).

Since the implementation of telecommuting, the perceived benefits of working remotely have resulted in organisations expanding their plans for hiring remote workers in the future (Bezovski, Temjanovski & Sofijanova, 2021:90). While many organisations have taken decisive actions to safeguard jobs and support work from home initiatives (Fine *et al.*, 2020:2), the transition comes at a time when decision-making processes, organisational coordination and employee productivity are most affected (Xiao *et al.*, 2021:181). Specifically, other employment criteria, such as managerial trust, work tasks, and responsibilities play a vital role in telecommuting (Ravalet & Rérat, 2019:584). In this regard Sander, Caza and Jordan (2019:339) note that a conducive work environment has the potential to impact employees' performance capabilities. Given the dynamic nature of the organisational environment, there is justification for exploring the interplay between TCP, EE, and EP.

To this end, employees must work in an environment that is conducive when telecommuting (Tavares *et al.*, 2021:348). This is because telecommuting can impact employee well-being and mental health adversely (Magnavita, Tripepi & Chiorri, 2021:8). This in turn, can have

significant implications for EP (Dal'Bosco *et al.*, 2020:74). The prevailing reality emphasises the dynamic nature of situations. According to Sharifi and Khavarian-Garmsir (2020:12), lessons gleaned from the COVID-19 pandemic serve as a stark reminder of the potential of for another similar global health crisis. Based on this reality, it would be invaluable to better understand the implications that telecommuting poses, the unique challenges, such as social isolation, a poor work-life balance (Vorster, 2020:7) and strategies to support a telecommuting workforce effectively (Arslan, Gölgeci & Larimo, 2020:7).

Fletcher and Robinson (2013) assert insufficient scholarly scrutiny has been directed towards the telecommuting domain within non-western contexts. The assertion is corroborated by Motyka (2018:227) who declared that the worldwide nature of the problem suggests the need for further research. More specifically, scholars posit the necessity for additional research to investigate potentially significant mediating (Kim, Kolb & Kim, 2013:267) and moderating factors (Alfes *et al.*, 2013:25) in the relationship between EE and EP. Spurred by this, within the framework of the South African ICT sector, the present study aims to elucidate the relationships between EE, TCP, and EP. Furthermore, this study endeavours to examine and explore the mediating as well as moderating effects of TCP on the relationship between EE and EP, and their respective dimensions. In specific terms, the study sets out to try and realise the following objectives.

(i) To explore the relationship between EE and TCP in the ICT sector in South Africa.
(ii) To explore the relationship between EE and EP in the ICT sector in South Africa.
(iii) To explore the relationship between TCP and EP in the ICT sector in South Africa.
(iv) To explore the mediating role of TCP in the relationship between EE and EP in the ICT sector in South Africa.
(v) To explore the mediating role of TCP in the relationship between EE dimensions and EP dimensions in the ICT sector in South Africa.
(vi) To explore the moderating role of TCP in the relationship between EE and EP in the ICT sector in South Africa.
(vii) To explore the moderating role of TCP in the relationship between EE dimensions and EP dimensions in the ICT sector in South Africa.

1.4 THEORETICAL FOUNDATION FOR THE STUDY

In the present study, EE is illuminated through the EE theory. Telecommuting is elucidated through the Social Exchange Theory (SET). Lastly, EP is defined through the Triarchy Model of EP.

1.4.1 Employee Engagement Theory

In the current research endeavour, the adopting of the EE theory as the theoretical framework offers a robust foundation for comprehensively understanding the multifaceted phenomenon of EE. Stemming from organisational psychology and management theories, the EE theory posits that EE encompasses the emotional, cognitive, and behavioural dimensions of an employee's connection to their work and organisation (Ghosh, Sekiguchi & Fujimoto, 2020:6). Through this theoretical lens, the present study provides insights into the dimensions of EE.

EE represents the extent to which an individual shows self-preference in job tasks to promote connections between themselves and their job (Lee, Rocco & Shuck, 2020:6). Recent endeavours have concentrated on the developmental aspects of EE and the empirical evidence pertaining to anticipated outcomes arising from an engaged workforce (De-la-Calle-Durán & Rodríguez-Sánchez, 2021:7). EE plays a crucial role in the workplace and requires managers to ensure consistent interactions with employees, considering the diversified pool of employees (Ramesh, 2021:18).

In essence, EE is a major concern for organisations because of the perceived effect that engagement has on EP and attitudes (Kataria, Rastogi & Garg, 2013:56) as well as personal disengagement (Othman *et al.*, 2019:787). Invariably, understanding employees' investment in their work can be pivotal for elucidating the relationship between job performance and behaviour (Rich, Lepine & Crawford, 2010:617). While examining the concept of EE, Ariani (2013:46) observes that the degree of investments that the employee may make in their work can be contingent upon the type of engagement that they embody which may be cognitive, emotional, or physical engagement (PhyEng).

The PhyEng dimension finds expression in the amount of effort the employees exert on their work (Budrienė & Diskienė, 2020:43). This dimension measures the degree to which employees invest energy in their work (Abun *et al.*, 2021:118). Cognitive engagement (CogEng) denotes the employees' convictions regarding the organisation, its managers, and the overall work environment (Sundaray, 2011:54).

The CogEng dimension measures the extent to which employees are focused while at work (El-Sayad, Md Saad & Thurasamy, 2021:531). Emotional engagement (EmoEng) is how employees feel about the organisation and its colleagues (Jha, Sareen & Potnuru, 2019:3). The dimension of EmoEng measures the extent to which employees are involved with their work (Bedarkar & Pandita, 2014:109). A study by Kahn (1990) originally theorised that there may be three dimensions of engagement as presented in Figure 1.1. Moreover, research by Saks (2006) developed scales suitable for measuring the concept of engagement.

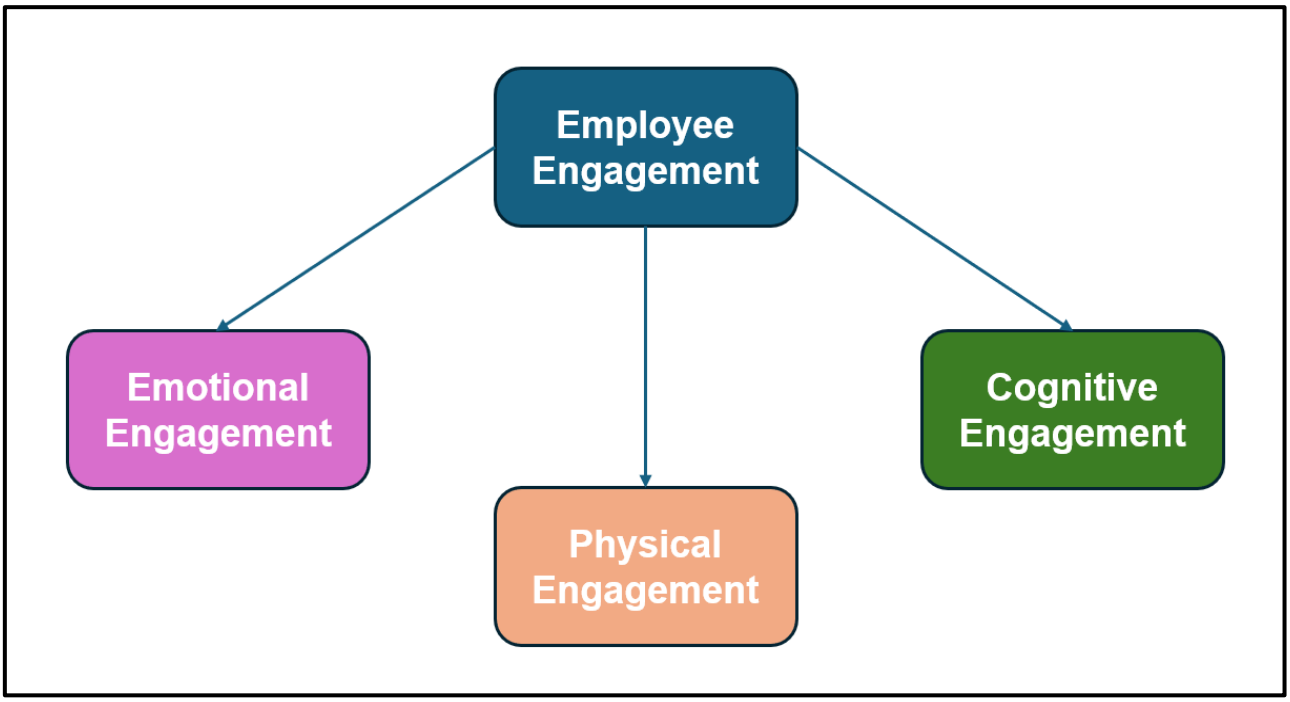

Figure 1.1: Employee engagement dimensions

Source: Adapted from Kahn (1990)

The EE theory posits that individuals who exhibit a high level of engagement in their occupational roles channel not only their physical exertion but also direct their attention towards the attainment of role-specific objectives (Rana, Pant & Chopra, 2019:21) and demonstrate cognitive vigilance and emotional attachment to the organisation (Ashforth & Humphrey, 1995:110). Owing to this, engaged employees perform better in their jobs (Bakker & Bal, 2010:203) and this, in turn, arguably results in positive organisational-level outcomes (Wood *et al.*, 2020:256).

1.4.2 Telecommuting Theory

In the present study, the SET was adopted as the overarching theoretical framework utilised to elucidate the complexities of telecommuting. The SET, originating from the field of social psychology, posits that human behaviour is driven by the principle of reciprocity and the exchange of resources within social interactions. By applying the lens of SET to telecommuting, this study offers a thorough understanding of the dynamics related to telecommuting arrangements.

Asmussen *et al.* (2024:2) posit that there are three aspects of telecommuting, namely adoption, frequency, and the location of work. Notably, Asgari, Gupta and Jin (2023:612) assert that telecommuting can be measured in terms of the option, preference, and/or frequency. Given that the propensity to telecommute, even after the COVID-19 pandemic will continue to a large extent (Georgescu *et al.*, 2021:679), this study has adopted the TCP aspect of telecommuting, which is expected to characterise the FoW.

Bae and Kim (2016:358) assert that the SET is a prevalent theory for studying employees who are telecommuting. This theory postulates that individuals seek social situations that maximise their beliefs and minimise personal disadvantages (Ghahtarani, Sheikhmohammady & Rostami, 2020:191). If an employee is not benefitting from their interactions at work, then the employee may be dissatisfied with their work situation (Azeem *et al.*, 2020:1292).

Huang *et al.* (2016:249) propose that according to SET, in interdependent relationships and transactions between parties, there exists a reciprocal exchange of benefits referred to as "quid pro quo". Where telecommuting is involved, SET can be applied to the employee and employer relationship (Grant, 2021:9). The application of SET has been corroborated by preceding studies, in the context of telecommuting (Rodríguez-Modroño & López-Igual, 2021:9). As an illustration, a study conducted by Palumbo *et al.* (2022) affirms that an examination of telecommuting's implications can be conducted through the SET.

Using SET, Kelliher and Anderson (2010:5) argued that for an employee that is telecommuting, a feeling of obligation towards the employer is generated. It may well be that the employee immerses themselves more profoundly in their role performance as a reciprocation for the resources provided by the organisation (Suomi *et al.*, 2021:32). Consequently, inspired by the SET, Kuruzovich *et al.* (2021:30) aver that employees who are telecommuting are likely to help the organisation achieve its goals.

Employees who benefit from flexibility policies such as telecommuting, are likely to reciprocate with more favourable work attitudes and behaviours (Kim, Ma & Wang, 2023:12). Notwithstanding, the rapid shift to full-time telecommuting which has been adopted by several organisations, disrupted habituated social relationships at the workplace, and upset employee social baselines (Becker *et al.*, 2022:451). Resultantly, with increased telecommuting, employee behaviour and their obligations towards the organisation are affected, as postulated by the SET (Sifatu *et al.*, 2020:726).

1.4.3 Employee Performance Theory

In the present study, the adoption of the Triarchy Model of EP serves as the theoretical underpinning for elucidating the multifaceted nature of EP. The Triarchy Model of EP posits that EP is influenced by three primary factors, namely TP, CP, and AP. By embracing the Triarchy Model of EP, this theoretical lens affords a thorough comprehension of the diverse dimensions of EP.

The concept of EP entails fostering a collective comprehension within the workforce regarding the organisational objectives, achieved by aligning employees' agreed-upon metrics, competency requisites, developmental strategies, skill sets, and achievement of outcomes with the organisational goals (Indika, 2021:205). In the opinion of Viswesvaran and Ones (2000:216), scholars have different perspectives on the concept of job performance. Arulrajah, Opatha and Nawaratne (2015:7) posit that job performance is defined by the degree to which an employee proficiently executes their designated duties and responsibilities, evaluated through criteria encompassing both the quality and quantity of work. More so, performance is often assessed using financial metrics and can additionally be gauged through a blend of job-related factors and anticipated employee conduct (Motowidlo, 2003:91).

It is instructive to note that EP comprises several dimensions (Shoss, Witt & Vera, 2012:911). EP contains a cluster of behaviours that result from employees' knowledge, abilities, and skills (Sony & Mekoth, 2016:21). It can be concluded that EP comprises three dimensions namely Task Performance (TP), Adaptive Performance (AP), and Contextual Performance (CP) (Imron *et al.*, 2020:302). The three EP dimensions are considered performance measures that serve as evaluative criteria in the assessment of an employee's overall performance within the organisational context (Hakeem *et al.*, 2021:895). These dimensions provide a nuanced understanding of the employee's capabilities and proficiency (Abas & Imam, 2016:120), offering a comprehensive framework for gauging their impact on organisational goals and objectives (Chiesa *et al.*, 2009:498). The Triarchy Model of EP as conceptualised by Pradhan and Jena (2017:6), presented in Figure 1.2, provides a comprehensive framework to investigate EP.

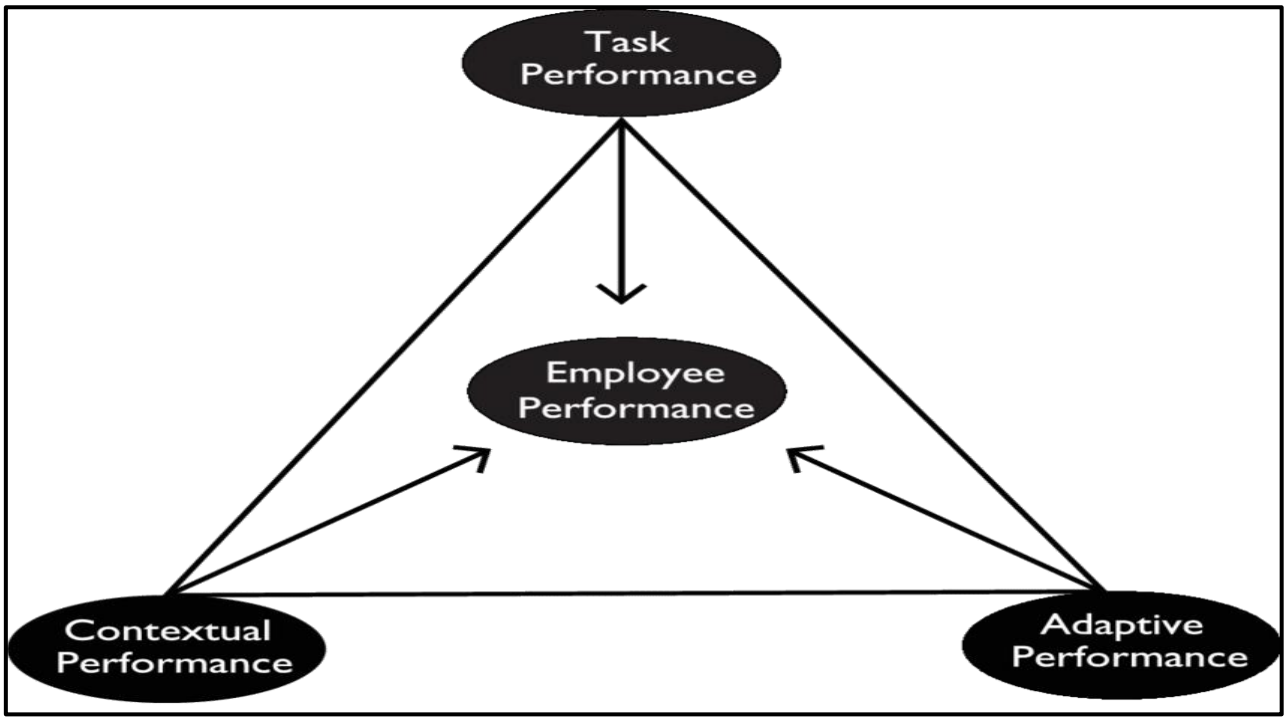

Figure 1.2: Employee performance dimensions
Source: Adapted from Pradhan and Jena (2017:6)

CP is a kind of prosocial behaviour demonstrated by individuals in a work set-up which are expected, although not mentioned in the job description (Bateman & Organ, 1983:593). According to a study by Neal and Hesketh (1999), an employee's aptitude to acclimatise and offer essential support to the job profile in a dynamic work situation is referred to as AP, a component of EP. Stewart and Brown (2019:275) declare that it is the contribution that an employee makes to an organisation that tends to be described as TP. TP stems from job explicit behaviours that an employee exhibits as part of the assigned job responsibilities which require more cognitive ability (Pradhan & Jena, 2017:3).

EP is an important topic for organisations and is evaluated by the outcomes of the employee's behaviour and outlines how well an employee has done or completed a task (Perera *et al.*, 2014:97). The achievement of an employee's high-level performance is an organisational objective of primacy (Kazmi & Javaid, 2022:112) and for this reason, performing employees are necessary to sustain, improve, and give organisations a competitive advantage (Hamadamin & Atan, 2019:5).

1.5 SIGNIFICANCE OF THE STUDY

Changes to the way of working, which arose due to the COVID-19 pandemic and required employees to telecommute have influenced a range of work-life issues (Chung *et al.*, 2020:6). The swift development of telecommunications and the Internet coupled with the increasing speed of information exchange, have influenced how organisations have embraced alternate working arrangements to increase employee productivity (Ye, 2012:20).

Essentially, historic changes and exigencies precipitated by the COVID-19 pandemic have created a necessity for organisations to keep their employees focused and engaged in turbulent times to ensure that organisations are successful in future (Risley, 2020:659). Organisations are faced with the prospect of creating conditions for performance based on the multifaceted nature of jobs, the changing work environment (Petrou, Demerouti & Schaufeli, 2015:3), and the need for employees to be engaged (Mani, 2011:16) as these have become increasingly essential factors in organisational competitiveness (Duque *et al.*, 2020:14).

From an academic point of view, the findings of this study are likely to attract scholarly interest in the evolution of key business management practices pertaining to EE and EP for employees working in the South African ICT sector. This study addresses the gap that calls for more research interest into the links between EE and EP, or TCP post the COVID-19 pandemic (see Kuppachi, 2023; Mohammadi *et al.*, 2023; Toscano & Zappalà, 2021).

Given the substantial transformations induced by the COVID-19 pandemic, posing threats to organisational sustainability as well as influencing EE and EP, the findings of this study hold practical significance. Within the context of business operations and considering the evolution in the FoW and human capital principles, organisations as well as their managers stand to gain considerable advantages by understanding how to effectively navigate the enduring repercussions of a pandemic. The results from this study will assist organisations in understanding the interactions between EE, TCP, and EP for the FoW and how they can leverage this to remain competitive.

1.6 RESEARCH DESIGN AND METHODOLOGY

In this section, the study's research design comprising the choice of research philosophy, approach to theory development, methodological choice, strategy, time horizon, as well as techniques and procedures are explicated.

Philosophically, this study embraces an ontological philosophy, emphasising a focus on reality independent of the researcher's perspective where the validity of such reality is ascertainable through the systematic collection of empirical facts. Within its epistemological framework, positivism perceives knowledge as being generated and validated through empirical evidence and the use of human senses (Majeed, 2019:122). Instructively, the positivist philosophy is grounded in an empirical epistemological foundation, prioritising an objective body of evidence over the immediate personal experiences and intuitions of individuals (Browne, 2018:2541). Methodologically, this study employs the Saunders *et al.* (2019:130) research onion to develop the research methodology. Consequently, this study adopted a positivist philosophy, deductive reasoning framework, mono-method quantitative methodology, survey strategy and adhered to a cross-sectional time horizon.

The research instrument for this study contained statements drawn from existing and validated instruments, accompanied by a 5-point Likert scale with answer options ranging from strongly disagree (1) to strongly agree (5). The respondent population comprised 478 employees working in the South African ICT sector. The survey was distributed through *Qualtrics*, an online platform to enable reach and participation of respondents. As part of the data analysis process, this study employed a range of descriptive and inferential statistical tools, including the Statistical Package for the Social Sciences (SPSS) and Analysis of Moment Structures (AMOS) software for correlation analysis, factor analysis and SEM for examining the data.

1.7 DELIMITATIONS OF THE STUDY

Specific demarcations have been deliberately established within this study to effectively govern the extent of research inquiry. The delimitations determine the boundaries of this study. It is pertinent to acknowledge that within an organisational context, diverse categories

of employees exist. Firstly, the unit of analysis for the present study will be employees who work in private and public sector organisations in the ICT sector. Secondly, the study's geographical focus is South Africa, potentially limiting the generalisability of findings to other nations. Thirdly, the survey instrument could create common method bias when participants respond. To mitigate this, the survey instrument will be arranged in a manner that minimises response bias.

This study does not include employees from sectors other than the ICT sector in South Africa. Thus, findings may not be applicable to employees in other industries. Further, this study is confined to South Africa, excluding data from employees working in other countries which limits the study's relevance to South African ICT sector employees only. In addition, the study is restricted to private and public sector organisations, excluding other organisations that operate in other sectors. Given that this study is designed as cross-sectional, it does not include longitudinal data which may account for changes over time. Finally, data was collected from respondents through a survey and any responses or data such as informal feedback or observational data are excluded. Ultimately, this study will be executed with meticulous attention to the selection of an optimal research design and methodologies, ensuring their appropriateness in addressing the defined research objectives.

1.8 PROPOSED CONTRIBUTIONS OF THE STUDY

This study anticipates making theoretical, empirical, and practical contributions for the advancement of knowledge in the domains of business management, business strategy, and human resources.

1.8.1 Theoretical Contribution

This study will augment the extant literature concerning EE, EP, and TCP, specifically within the confines of the ICT sector in South Africa. The study heeds the call for prospective research probing the correlation between telecommuting and EE due to the COVID-19 pandemic (Merrill, 2021:33), since there is still much research to be done in the field of EE to better guide management practices (Sun & Bunchapattanasakda, 2019:76). Moreso, this study acknowledges the increasing repository of knowledge and will contribute to the

understanding of the Triarchy Model of EP as developed by Pradhan and Jena (2017:14). Accordingly, this study aims to provide a comprehensive assessment to the advancement of knowledge in understanding employees remote performance (Feng & Savani, 2020:729).

Furthermore, this study will highlight the implications of the FoW, especially pertinent is its relevance to the evolving landscape of employment and the requisite comprehension regarding the correlation between EP and EE. Considering that the COVID-19 pandemic is a recent phenomenon, in closing the research gaps identified in prior studies (Asmussen *et al.*, 2024:38; De-la-Calle-Durán & Rodríguez-Sánchez, 2021; Lyttelton, Zang & Musick, 2020:7; Narayanamurthy & Tortorella, 2021:108077), it is forecasted that the findings will contribute to the business management growing body of knowledge and provide a response for further research on either EE, EP or TCP, and the FoW.

1.8.2 Practical Contributions

The onset of the COVID-19 pandemic has precipitated a surge in telecommuting, with employees spending prolonged durations working online to maintain productivity (Bolisani *et al.*, 2020:469). This is because organisations continue to expect more from their employees to remain sustainable in a competitive market (Pawirosumarto, Sarjana & Gunawan, 2017:1353) and be the best in providing services to their customers with the objective of progressing the organisation (Pyöriä *et al.*, 2017:10). Consequently, organisations must understand the link between EE and EP and its significance in the corporate world (Gupta & Sharma, 2016:62).

Considering that EE, telecommuting, and EP are critical organisational interests (Benjamin, 2020:14), this study aims to highlight the interactions between EE, telecommuting, and EP. This is instructive since the FoW will be enabled by the ICT sector which is central to the support of other industries and economies through technology (Xiang *et al.*, 2021:2). This study will be valuable for managers to navigate changing times, the FoW, and will be of interest and beneficial to other industries where ICT is leveraged for more effective as well as sustained business operations (see Blount & Gloet, 2021:163; Obrenovic *et al.*, 2020:19).

1.9 CHAPTER SUMMARY

Chapter 1 presented the introduction, problem statement, purpose of the study, introduction to key constructs, the framework of the study, the research objectives, significance of the study, limitations, and forecasted contributions. The background to the study provided an overview of EE, TCP, and EP and the importance of these constructs for organisational success. The problem statement delineated the impetus for this study by emphasising the backdrop of the COVID-19 pandemic.

The changes brought about by the pandemic have presented organisations with an opportunity to look at their key drivers, namely EE and EP and how these will be affected given the change in the way of work. The research objectives are outlined followed by the purpose, significance, and the limitations of this study. Chapter 1 provides the base for the development of the subsequent chapters in the study.

1.10 OUTLINE OF THE STUDY AND DEMARCATION OF CHAPTERS

This study consists of six chapters, outlined as follow:

Chapter 1: Introduction

Chapter 1 focuses on the background to the research. It defines the research problem and states the research objectives. The significance of the research is discussed, and the key terms defined. Key theories are explicated to provide the framework within which the study is conducted. In an introductory manner, the chapter scans extant literature on the notions of EP, TCP, and EE, duly mindful of the implications for the FoW. The chapter further presents the delimitations and forecasted contributions of the study.

Chapter 2: Theoretical Framework: EE, TCP, and EP

Chapter 2 constructs the theoretical framework for the research by reviewing existing literature on EE, TCP, and EP. Through an in-depth exploration of the relevant scholarly works, this chapter integrates theoretical perspectives and lays the foundation to offer a nuanced understanding of the key constructs of this study.

Chapter 3: The nexus between EE, TCP, and EP

Chapter 3 is focused on the nexus of EE, TCP, and EP. In addition, the mediating and moderating role of TCP on the relationship between EE and EP is explored. The discussion in Chapter 3 brings to the fore, probable interactions between the variables. In particular, the relationships between each of the EE and EP dimensions are explored. Further, the role of TCP on the relationship between EE and EP is investigated. Resultantly, the formulation of the study's hypotheses is informed by insights derived from the comprehensive analysis of extant literature in Chapters 2 and 3.

Chapter 4: Research Design and Methodology

In Chapter 4, the research design and methodology employed in the execution of this study is provided. This chapter delineates the systematic procedures undertaken to fulfil the research objectives. The discourse presents the research progression path and includes issues linked to the survey method, sampling procedure, data collection, instrument, and the respondent profile. Further, this chapter highlights the statistical tools employed in the analysis of data.

Chapter 5: Presentation of Research Findings

This chapter presents the descriptive and inferential statistical results obtained. The findings of the study are based on a correlation analysis of the relationships between constructs of the present study. In this chapter, the results of the tested hypotheses and an expansive discussion on the findings in relation to the hypothesised relationships between EE and its dimensions, TCP, and EP will be presented.

Chapter 6: Conclusions and Recommendations

The final chapter of this research focuses on the conclusions drawn from the study's results and its implications for theory and practice. The research hypotheses, limitations and contribution of the research will be revisited and recommendations for future research as well as implications will be presented.

CHAPTER 2: THEORETICAL CONTEXT

2.1 INTRODUCTION

Today's competitive business environment is constantly changing (Sharp, Irani & Desai, 1999:155), and requires organisations with employees who have knowledge, and capabilities (DeNisi, Hitt & Jackson, 2003:10). Moreover, the dramatic evolution in business has resulted in organisations consolidating and reconciling their assets to achieve competitive sustainability (Gold, Malhotra & Segars, 2001:186). Hence, it is crucial for the success of organisations to establish a pleasant working environment for employees (Woodruffe, 2006:4), to ensure their performance (Chandrasekar, 2011:5), because of the paradigm shift from the normal way of working to new ways of working through telecommuting (Ansong & Boateng, 2018:1). Admittedly, the role of telecommuting in EE is a sphere that is still being investigated by several scholars (Gerards, De Grip & Baudewijns, 2018:527) and the adoption of novel work methodologies necessitates managers to acquire new knowledge and skills (Duque *et al.*, 2020:14).

Kahn's (1990) study captured the way in which employees allocate their physical, cognitive, and emotional energies to fulfil their roles in the workplace. Engaged employees are more dedicated, committed and have an emotional association with their work as well as their organisation (Chanana & Sangeeta, 2021:3). The concept of EE recognises that employees need self-expression in their working lives because employees withdraw and defend themselves when they are disengaged (Mcbain, 2006:22). According to Akhmetshin *et al.* (2019:51), the absence of EE threatens organisational sustainability. Owing to the potential effect that EE has on the organisation's workforce, it has become a matter of priority for organisations (Saks, 2017:76). Given the strong evidence of the positive effects and benefits of EE for employees and organisations and the potential competitive advantage that can result from having a highly engaged workforce, the greatest concern for organisations is how to improve and enhance EE (Saks, 2022:2). The role of employees in the organisational quest for profits and a competitive advantage (Sitopu, Sitinjak & Marpaung, 2021:72), cannot be understated. This is even more instructive with the rapidly changing business environment, that is characterised by increased competition (Riyanto, Endri & Herlisha, 2021:162), which has heightened the need for improved EP.

EP finds expression in AP, TP, and CP as three main dimensions of individual work performance (Varshney & Varshney, 2020:5). Moreover, EP outlines a collective comprehension within the workforce regarding the organisational objectives, achieved through aligning performance objectives with employee competencies, skills, and delivery of outcomes (Indika, 2021:205). Considering that employees' work will be increasingly hybrid, organisations need to reimagine the entire employee experience and create conditions that allow employees to thrive in the workplace (Dahik *et al.*, 2020:5). By the same token, this continues to be the case irrespective of the new business climate that promotes remote working (Ancillo, Del Val Núñez & Gavrila, 2021:2303), and requires employees to telecommute (Vartiainen, 2021:14).

Generally, the increase in access to technology has revolutionised the corporate work environment allowing employees to telecommute instead of going to a central workplace (Kelly & Shoemaker, 2021:11). The conditions for telecommuting are changing drastically in many industries and telecommuting practices are spreading to newly created categories of employees (Vilhelmson & Thulin, 2016:80). For example, a study by Kopf (2018) highlights that in a perpetually changing business environment, it is difficult to determine exactly how many organisations employ telecommuters. Though they are convinced that there is a growing number of telecommuters, Budnitz, Tranos and Chapman (2020:9) argue that the benefits of flexibility do not necessarily apply to all types of work. According to Asgari *et al.* (2023:612), there have been enormous efforts to identify and assess TCP which include personal and job-related attributes.

Resultantly, the types of jobs that are suited to telecommuting are related to administration, ICT, design, finance, marketing, human resources, project management and writing (Mendrika *et al.*, 2021:46). Although the FoW and telecommuting are uncertain (Blount & Gloet, 2021:77), it is expected that many organisations and large technology entities are likely to cultivate a sense of community, connection and belonging for their employees (El Hajal, 2022:23).

Noticeably, the workplace is inherently part of the society and economy in which it exists, and organisations have sought to implement fundamental changes to their structures in response to the changing business environment (Mitchell, Shen & Snell, 2022:2667). The way work gets done is changing, as well as how employees work, coupled with changes to where they work are shifting at an accelerated pace (Ware & Grantham, 2003:143). These changes are notable because if they endure, they could potentially have multiple consequences which will radically alter the FoW and influence other aspects of society (Forbes *et al.*, 2020:9). In the FoW, the inclusion of employees is necessary for the visioning and development of work practices (Schulte *et al.*, 2020:810). Thus, to prepare for the FoW, organisations should redefine, rethink, and transform the total workplace ecosystem for their employees based on the models and dynamics necessary to address the evolution of pandemics, exemplified by COVID-19 (Ancillo *et al.*, 2021:2304).

2.2 RESEARCH CONTEXT

The onslaught of the COVID-19 pandemic in South Africa negatively impacted the world of work and accounted for devastating losses in working hours (Agba, Ocheni & Agba, 2020:121), which resulted in uncertainty in an economically disparate society where most of the population resides below the poverty line (Naidu, 2020:559). Preceding the onset of the COVID-19 pandemic, the South African economy grappled with two consecutive periods of adverse Gross Domestic Product performance, entering a technical recession in early 2020 (Asmal & Rooney, 2021:3).

The pandemic resulted in a negative and large labour market shock, resulting in job losses, and exacerbating existing inequalities (Jain *et al.*, 2020:19). In addition, the COVID-19 pandemic had a noteworthy effect on the economy, and various industries (Chollisni *et al.*, 2022:420). The most affected sectors were ICT, e-commerce, education, agriculture, and energy (Fedirko & Zatonatska, 2020:94). While some services could be provided remotely, the ICT sector came under pressure to provide technology services (Prasad *et al.*, 2020:373).

To mitigate some of the adverse effects in the workplace created by the transmission of the COVID-19 virus, digital transformation in the ICT sector ensured that employees in the healthcare, eCommerce and manufacturing sectors were provided means for work to be accomplished remotely (Prasad, Vaidya & Mangipudi, 2020:373) during the pandemic. Expectedly, therefore, digital transformation led to an increase in the demand for ICT services and solutions (Abay, Tafere & Woldemichael, 2020:23). In the same way, reliable and affordable connectivity became crucial for telecommuting during the pandemic (Zajdel *et al.*, 2021:11).

The shift to telecommuting and digital operations prescribed changes in the workforce dynamics and skills requirements (Savić, 2020:103), demanding organisations to ensure their employees were engaged and in a better position to survive the unprecedented era (Nayal, Pandey & Paul, 2022:370). Likewise, the social context in organisations is consistently connected to the well-being of employees (Kashyap, Joseph & Deshmukh, 2016:12), since it contributes to EE (Raza *et al.*, 2021:1107) and EP (Swanson *et al.*, 2020:88). It is, therefore, crucial to understand the way employees work and their performance (Kniffin *et al.*, 2021:12), some of which may have been influenced by the COVID-19 pandemic. There is no gainsaying that some of these behavioural changes were enabled by ICTs (Omoyajowo *et al.*, 2021:268).

2.3 THEORETICAL CONTEXT

This section offers an examination of the theoretical underpinnings that support the concepts of EE, telecommuting, and EP within the framework of this study. The EE theory initially conceptualised by William Kahn in 1990, the SET first proposed by Peter Blau in 1964, and the Triarchy Model of EP developed by Rabindra Kumar Pradhan and Lalatendu Kesari Jena in 2017, were relied upon to establish the theoretical foundation for the study.

2.3.1 A Theoretical Context for Employee Engagement

The rapid rise of managers' interest in EE, as well as the need for solutions on how to promote engagement in organisations has inevitably led to a gap in practice, scholarship, and theory (Zigarmi *et al.*, 2009:301). Consequently, as organisations and specialists turn to scholars for tested strategies on how to engage employees, they are gradually met with a gap in research (Shuck & Reio Jr, 2011:421). It is, therefore, necessary to understand the three EE dimensions in the context of South Africa (Rothmann & Rothmann Jr, 2010:10).

The concept behind Kahn's (1990) theory of engagement relates to the identification of three dimensions being physically involved, emotionally connected and cognitively vigilant (Simpson, 2009:1018). The EE theory postulates that engaged employees are characterised by optimism, self-efficacy, exerting influence over events affecting their lives, and perceiving their significance to the organisation (Xanthopoulou *et al.*, 2009:241). Against this backdrop, the theoretical framework that will be used to comprehend EE for this study, is the EE theory.

Employees' psychological connection with their work has received attention in the information economy of the twenty-first century, including the conception that organisations do not only need to recruit top talent, but also inspire and enable employees to utilise their full potential (Bakker, Albrecht & Leiter, 2011:5). As a result, employees are expected to be engaged in the organisational context (Al-Dalahmeh, Khalaf & Obeidat, 2018:17).

There are different perspectives of EE according to various scholars as presented in Table 2.1 which is testament to the fact that the construct has been operationalised and measured in disparate ways. Though considerable variability exists in the definitions of EE, a consensus prevails that it constitutes a multi-dimensional construct, encompassing three distinct yet interconnected dimensions (Fredricks, Filsecker & Lawson, 2016:4).

Table 2.1: Perspectives of EE

Authors	Perspectives of EE
(Kahn, 1990)	The mobilisation of organisational members' personal identities toward their professional roles. In engagement, individuals utilise and manifest themselves physically, cognitively, and emotionally in the execution of their role responsibilities.
(Nelson & Simmons, 2003)	The way in which employees feel positive emotions toward their work, find their work to be personally meaningful, consider their workload to be manageable, and have hope about the future of their work.
(Swanberg *et al.*, 2011)	EE is a composite attitudinal and behavioural construct with emotional, cognitive, and behavioural measures.
(Albrecht *et al.*, 2015)	EE is fundamentally a motivational construct. A highly awakened emotional state with two features: energy and involvement.
(Eldor & Vigoda-Gadot, 2017)	EE is the active, motivational nature reflected in the persistent energy that engaged employees invest in their work.
(Saks, 2019)	The combination of knowledge, emotion and behaviour related to the individual's role performance.
Source: Author's own compilation	

From Table 2.1, it is apparent that EE is defined according to individual or organisational perspectives depending on core aspects of EE or the advantages it presents. The various viewpoints provide a common notion that EE is driven by self or external motivation. According to Ruck, Welch & Menara (2017:913), employees harness their organisation and express themselves through their roles. The Gallup Organisation, which is widely recognised and associated with EE, focuses on engaged employees as individuals who work with fervour, foster innovation, and propel their organisation forward through the depth of their connection with it (Sorenson, 2014:4).

According to Andrew and Sofian (2012:499), EE has mostly been defined as a combination of emotional and intellectual commitment to the organisation. The active and stationary states of EE embedded within their definitions suggests that employees behave differently (Nimon, Shuck & Zigarmi, 2016:1151). Although the definition and meaning of EE in academic literature often overlaps, EE has been characterised as a discrete and distinctive construct, and comprises emotional, cognitive, and behavioural components linked to employees' role performance (Saks, 2006:602). The present study adopts the definition for EE as first proposed by Kahn (1990:694), which entails the ability for employees to harness

their work roles by employing and expressing themselves physically, emotionally, and cognitively during role performances.

Accordingly, Kahn and Heaphy (2013:83) explicate that EE entails the simultaneous physical and psychological presence while occupying and executing an organisational role. A study conducted by De-la-Calle-Durán and Rodríguez-Sánchez (2021) established that EE pertains to a fulfilling, positive, work-related state of mind that is characterised by vigour, absorption, and dedication. Indeed, the concept of EE has evolved taking into consideration that there are various factors that classify an engaged employee (Anitha, 2014:308). Employees demonstrate higher levels of engagement when they perceive their work as meaningful and believe that their contributions positively impact the organisation (Fairlie, 2011:510). Working conditions and practices fostering structural empowerment afford employees a perception of autonomy and involvement, granting them control over their work (Monje-Amor, Vázquez & Faíña, 2020:171).

Empowering employees with the ability to take ownership for their tasks, increases their sense of responsibility and engagement (Lin & Ping, 2016:11). Correspondingly, work environments that support employees' career growth are important since engagement is the result of employee perception and belief (Ijaz & Tarar, 2020:44). The emotional aspects bring together the employee's satisfaction, sense of inspiration and affirmation they get from their work (Berry & Morris, 2008:3). Curiously, where the organisation provides a supportive environment, highly engaged employees are likely to sacrifice work-life balance to achieve organisational goals (Parkes & Langford, 2008:279).

Other factors that play an essential role in implementing EE include compensation, job environment, culture, and communication (Azmy, 2019:197). Given that EE has been shown to have such a broad range of positive individual, team, and organisational outcomes, understanding the factors of EE, such as meaningful work, autonomy, empowerment, opportunities for growth and work-life balance (Albrecht, Green & Marty, 2021:4055) is critical to cultivate EE. While there is polarisation of opinion on whether EE is internal or external to the employee, some scholars opine that an employee brings it to the workplace, while others think that the workplace produces it (Meesala, 2011:159).

Furthermore, Piyachat, Chanongkorn and Panisa (2014:59) posit that it is the degree of discretionary effort demonstrated by employees in their employment role. Yadav, Pandita and Singh (2022:514) outline EE as the cognitive state of an employee in which they direct their actions with passion, commitment, and dedication toward organisational goals. Although Cheema, Akram and Javed (2015:140) contend that EE can fully present in the work environment and the employee will be eager to work hard and feel safe to interact with other employees. Furthermore, it may be said that EE not only results in higher productivity (Abraham, 2012:27), talent retention, and increased loyalty, but also improves the organisation's reputation, profitability (Staniec & Kalińska-Kula, 2021:34), and customer service (Gupta & Sharma, 2016:54).

Accordingly, EE is considered critical as it affects many organisational outcomes (Popli & Rizvi, 2016:967). In a study conducted by Rich *et al.* (2010), the developed scale maintained the distinction between physical cognitive and emotional dimensions and further found that though they were empirically distinct, the dimensions could nonetheless be combined into a single construct. This implies intriguing prospects concerning the status of the EE construct, which holds particular significance for organisations (Bailey *et al.*, 2017:12), more so in the light of the recognition of the component dimensions EmoEng, PhyEng and CogEng.

2.3.1.1 Emotional engagement dimension

The emotional aspect of EE pertains to the subjective feelings experienced by employees and their disposition towards the organisation and its leadership, whether positive or negative (Sundaray, 2011:54). By the same token, the emotional dimension of EE involves understanding positive emotions, advancing motivation, and having a sense of belonging and purpose (Costa, Passos & Bakker, 2014:414). Undoubtedly, positive emotions play a substantial role in EE that can be fostered through a supportive work environment, recognition, meaningful work, and opportunities for growth and development (Kemp, Leila Borders & Ricks, 2013:636).

Moreover, employees who perceive their work as meaningful and in alignment with their values and beliefs are more prone to exhibit higher levels of engagement (Allan, Duffy & Collisson, 2018:39), while having a sense of meaning and purpose (Shuck & Rose, 2013:341). This affords organisations the chance to foster a sense of meaning and purpose by articulating a coherent vision (Melewar, Bassett & Simões, 2006:142), linking individual employee roles to broader organisational goals while emphasising employees' contributions (Shore & Wayne, 1993:775). Equally, employees who have a sense of autonomy and empowerment experience higher levels of engagement (Gagné & Bhave, 2010:164). Involving employees in decision-making processes, fosters a sense of ownership, and encourage the expression of their perspectives which contributes to heightened EE (Govender & Bussin, 2020:4).

Consequently, supportive leaders who provide feedback, guidance, recognition and create a supportive work culture can foster EmoEng among employees (Wirawan, Jufri & Saman, 2020:1148). Ultimately, according to findings documented in a study by Wood *et al.* (2020), attaining a harmonious work-life equilibrium is imperative for EmoEng, since it engenders heightened engagement among employees in both professional and personal aspects.

2.3.1.2 Physical engagement dimension

The physical dimension of EE pertains to the somatic energies expended by individuals in fulfilling their roles (Gupta & Shukla, 2018:47). Employees who are physically engaged deploy themselves fully into their work roles (Rich *et al.*, 2010:618), and demonstrate positive engagement behaviour (Kumar & Sia, 2012:32). A study by Selimović, Pilav-Velić and Krndžija (2021) posits that the configuration and arrangement of the workplace can exert a significant influence on EE. Consequently, when employees perceive a sense of safety and support in their physical well-being, there is a likelihood of an increase in their engagement and a focused commitment to their work (Chanana & Sangeeta, 2021:2). For employees to be physically engaged, organisations have a responsibility of prioritising occupational health and safety measures in the environment (Tursunbayeva, 2019:3).

Interestingly, Shifrin and Michel (2022:63) contend that organisations that support flexible work arrangements such as telecommuting, facilitate the enhancement of employees' physical well-being. This could possibly be because flexibility reduces commuting time, increases autonomy, increases productivity, and the employee has a better work-life balance which can positively impact EE levels (Steidelmüller, Meyer & Müller, 2020:998). An important aspect of the PhyEng dimension is encouraging employees to take regular breaks (Kim, Park & Headrick, 2018:35), as this leads to enhanced cognitive functions for employees (Jones, 2022:36).

2.3.1.3 Cognitive engagement dimension

The cognitive aspect of EE draws on the idea of investment and a willingness to exert a requisite effort to comprehend complex ideas and master challenging skills (Fredricks, Blumenfeld & Paris, 2004:60). The CogEng dimension represents a facet of the employee's investment in a holistic and simultaneously an engagement experience (Rich *et al.*, 2010:622). It is the view of Kim, Kim and Wachter (2013:362) that this dimension involves mental processes, and perceptions, including attitudes that influence how employees think, interpret, and engage with their work. Notably, employees need a clear understanding of their roles, responsibilities, and expectations for positive engagement (Joo *et al.*, 2017:449). Thus, the cognitive dimension of engagement is influenced by employees' desire for continuous learning, growth, and mastery (Pohl, 2020:253). Resultantly, engaged employees frequently possess a perception of autonomy and influence regarding their work processes (Singh, 2016:203). This allows employees to use their critical thinking skills, expertise, and creativity, leading to greater engagement (Jiang & Yang, 2015:1227).

In essence, employees CogEng is influenced by the availability of resources, information and support needed to perform their tasks effectively (Diedericks & Rothmann, 2013:227). In agreement with this view, Lin and Fan (2020:677) opine that it is necessary to provide employees with the necessary tools, information, and technology which will enable them to work efficiently, resulting in reduced cognitive barriers. This is because employees are more prone to CogEng when they perceive alignment between their personal values and the values advocated by the organisation (Amos & Weathington, 2008:616).

2.3.2 A Theoretical Context for Telecommuting

The advent of hybrid work models, including telecommuting, has diminished the significance of the physical dimension within the organisational context (Costa, Susak & Haluga, 2022:202). Particularly in hybrid working organisations, the lack of employee visibility and interaction can lead to weaker social issues which managers need to resolve (Kropp, 2021:4). It is similarly argued by Prodanova and Kocarev (2021:7), that a suitable work environment supported by appropriate technology when employees are telecommuting could facilitate working processes that foster positive behavioural responses and perceptions. Naturally, the perceived value of telecommuting and its reciprocity could change depending on employee types (Windsor, 2018:34). Telecommuting, also known as remote work or teleworking is a technology-driven mode of work (Ma, 2021:203). It is a work arrangement where employees perform their job duties from a location outside of the traditional office environment (Sofijanova, Temjanovski & Bezovski, 2021:85), typically their homes or other remote locations (Linda *et al.*, 2022:5752).

Instructively, the COVID-19 pandemic has rapidly accelerated the use of telecommuting and employer attitudes as well as policies toward telecommuting (Liang, Miwa & Morikawa, 2023:4) including TCP. Telecommuting has been made possible through technological advancements, such as the Internet and video conferencing (Allen, Golden & Shockley, 2015:41). These technological interfaces allow employees to be connected and enable collaboration with their colleagues and managers (Bélanger & Allport, 2008:102). Agba *et al.* (2022:90) postulate that telecommuting employees are less productive and less committed compared to office workers. This may be because higher telecommuting intensity exacerbates the negative effects of telecommuting (Gajendran & Harrison, 2007:1530). This view stems from the contention that telecommuting decreases face-to-face social interactions, and strains relationships with co-workers and managers, coupled with increased feelings of isolation (Golden & Veiga, 2005:302). Curiously, Nakrošienė, Bučiūnienė and Goštautaitė (2019:99) argue that the productivity of workers can be seen as a contra argument thought to social isolation and a lack of communication with colleagues, disadvantaging telecommuting.

In their study, Ranasinghe and Darshani (2020) established that prolonged periods of telecommuting have made employees feel isolated from the regular workplace. To address this, Emerson (1976:359) argues that more social exchanges would need to occur between telecommuting employees and their organisation to prevent workplace isolation. While this may be the case, Ryan (2022:11) opines that there has been limited research conducted on isolation and productivity for telecommuting workers. Blahopoulou *et al.* (2022:2509), however, contend that telecommuting offers more advantages when it is a free choice, as opposed to when employees are forced.

Seemingly, telecommuting offers several advantages as it provides greater work flexibility, efficiency, and increased productivity (Hambly & Lee, 2019:197). In this way, employees who see telecommuting as a benefit become affectively dedicated to their respective organisations and reciprocate positively (Zhang *et al.*, 2019:4), increasing their propensity to telecommute (Bélanger, 1999:141).

Consequently, employees choose behaviour that maximises their likelihood of meeting self-interest (De Clercq, Haq & Azeem, 2019:15). Further benefits of telecommuting for employers include increased employee retention and the ability to tap into a broader talent pool by hiring employees from different locations (Dyer, 2021:43). It is, however, important to note that telecommuting is not suitable for all types of jobs or industries (Tahlyan *et al.*, 2022:390), making telecommuting less feasible (Wang, Hossain & Nurul Habib, 2022:83).

It is perhaps because of this that Chen and Sriphon (2022:5883) argue that not all telecommuting employees are satisfied with working remotely, which translates to having less social interaction with their co-workers. Notably, while obscuring the distinctions between work and family (Sarbu, 2018:40), telecommuting can pose challenges to communication and team cohesion due to its potential to weaken social relations (Krzywdzinski, 2022:4). Therefore, the efficiency and sustainability of telecommuting depends on several factors, namely, personal, technological, or physical (Simuț *et al.*, 2021:8).

In this regard, organisational support from both managers and co-workers during telecommuting becomes crucial in mitigating counterproductive work behaviours, enhancing job satisfaction, and improving performance (Nemțeanu, Dabija & Stanca, 2021:608). As a result, perceived organisational and co-worker support is likely to lead to employees remaining in their job (Holland & Collins, 2022:25). In enabling interpersonal exchange and reciprocal outcomes, the SET highlights the reinforcement and contingent connections (Arasanmi & Krishna, 2019:176), since telecommuting relies on the use of information technology tools to collaborate with co-workers (Altawil, 2021:121) and fosters social interaction.

The SET proposes that trust, particularly in terms of employees being able to count on others to meet their obligations, is the basis for most relationships in the business environment (Shore *et al.*, 2006:839). Telecommuting, however, affects this trust and by extension, the social relationships of employees (Van Zoonen *et al.*, 2021:13). Consistent with the SET, important factors affecting employee success, such as satisfaction, trust, and cooperation develop through social exchange (Ohemeng, Obuobisa Darko & Amoako-Asiedu, 2020:17). Admittedly, the lack of interaction with co-workers results in diminishing counterproductive work behaviours (Rofcanin *et al.*, 2019:20). Ostensibly, social exchange leads to more positive interpersonal, emotional, and cognitive outcomes depending on the production of expected results over time (Lau & Cobb, 2010:910).

2.3.2.1 Social exchange theory

Employees with a strong perception of social exchange will be prosocial, showing motivation to a greater degree, which results in a response that reciprocates benefits and support by engaging in behaviours that exceed the minimum requirements for employment (Andersen, Buch & Kuvaas, 2020:1474). The SET enlightens the dynamics of social relationships and interactions (Surma, 2016:346), which represent a succession of successful and reciprocal transactions that have the potential to elevate an economic association into a high-quality social exchange relationship (Cropanzano *et al.*, 2017:479).

For this reason, the SET offers an explanatory framework for psychological processes underlying employee behaviours that are relevant to organisational efficiency and performance (Aselage & Eisenberger, 2003:492). Equally, the SET which analyses people's behaviour in terms of exchange of resources may result in employees voluntarily exhibiting certain behaviour to do certain things because of the motivation of expectation (Li *et al.*, 2020:3).

Seemingly, the SET provides a useful framework for understanding telecommuting in terms of the reciprocal social exchange dynamic existing between employees and their organisation (Majiros, 2013:532). Furthermore, the SET posits that employees who express contentment with their organisation's telecommuting initiative are inclined to perceive a sense of organisational concern for their well-being (Caillier, 2016:6). The reason being that telecommuting is done from a more convenient location that reduces time spent commuting and thus affords employees more time to handle their obligations (Thulin, Bertil & Martina, 2019:5).

Despite the rising interest in adopting telecommuting, greater understanding is needed on its extent and effects to employees (Kossek, Lautsch & Eaton, 2006:348). The SET is a useful framework and provides a lens for examining telecommuting (He, 2020:291), as it is known as one of the most influential conceptual paradigms for comprehending how telecommuting employees react to flexible work arrangements with the aim of reciprocating benefits to their employer (Kelliher & Anderson, 2010:83). This line of reasoning has received much attention, most of which utilises Blau's (1964) framework, according to which successful exchanges can cause an individual to be committed to the other.

The aspect of SET that has garnered the most research attention has been the notion of workplace relationships that evolve when employers take care of their employees (Cropanzano & Mitchell, 2005:882). The perception that the organisation is concerned about employee's well-being is then expected to cause employees to reciprocate by remaining with the organisation (Lee & Hong, 2011:10).

According to Obuobisa-Darko (2020:13), employees choose to engage in their work, depending on how they perceive support and evaluate the benefits and cost of the relationship to determine whether they will continue with the social interaction and give their best or not. Sungu, Weng and Kitule (2019:1412) outline that perceived organisational support, employee effort, rewards, benefits, perceived equity, fairness, trust, and reciprocity are components of the SET. When applied to telecommuting, these components can be examined appropriately (Almaaitah *et al.*, 2017:27). More so, in their study, Kwon and Kim-Goh (2022) assert that these components influence employee outcomes.

2.3.3 A Theoretical Context for Employee Performance

In a bid to understand EP, empirical studies have been conducted over decades to understand the diverse contexts, cultures and disciplines that promote EP (Atatsi, Stoffers & Kil, 2019:23). EP is critical as a business imperative since it contributes to organisational success (Akob, 2021:28). Accordingly, EP relates to organisational efforts and how well the employee carries out their work duties (Virgiawan, Riyanto & Endri, 2021:76). The concept of EP encompasses what must be accomplished and how it can be realised (Brhane & Zewdie, 2018:72).

Employees contribute to the organisation's performance through TP, although CP comprises behaviours that uphold the organisational, social, and psychological atmosphere (Sonnentag, Volmer & Spychala, 2008:428). Due to the changing work environment, the need for employees with AP behaviours have become increasingly important (Pulakos *et al.*, 2000:612). EP is considered the backbone of the organisation since it leads to effective development (Awadh & Saad, 2013:168). Managers have the responsibility of implementing effective strategies to ensure employees can maintain high levels of performance (Ali & Anwar, 2021:22), due to emerging hybrid work preferences (Babapour Chafi, Hultberg & Bozic Yams, 2022:11), and telecommuting (Erdoğdu & Watson, 2023:492). EP reflects a quality organisation (Sugiarti, Finatariani & Rahman, 2021:221), and is intricately associated with the outcomes of employees' efforts, encompassing dimensions such as quality, quantity, and timeliness (Maryani, Entang & Tukiran, 2021:9).

EP describes the positive contribution of an employee to the performance of the organisation as it accumulates the result of skills, efforts, and liabilities of employees' contribution towards organisational goal achievement (Dahkoul, 2018:138). Commonly, EP is perceived as the correlation between the employee's capability to fulfil their tasks, align with management expectations, and achieve their targets (Mensah, Bawole & Wedchayanon, 2016:1546). EP is inextricably linked to the job satisfaction experience that employees experience while performing their primary responsibilities and functions (Hajiali *et al.*, 2022:58). This opinion is countered by Balouch and Hassan (2014:134) who suggest that no direct relationship between job satisfaction and EP exists. However, in their study, Pancasila, Haryono and Sulistyo (2020) uphold that job satisfaction does not influence EP. Based on these diverse views and considering the importance of EP (Harjanti, 2019:16), it is imperative for organisations to understand EP and employee outcomes since it reflects organisational performance (Top, Abdullah & Faraj, 2020:51).

The notion of EP is of paramount importance to both employees and organisations (El Masri & Suliman, 2019:128). Moreover, EP denotes the financial or non-financial results achieved by an employee, directly tied to the organisation's success and performance (Anitha, 2014:313). A study conducted by Sharkie (2009) asserts that EP is a multicomponent concept that includes EP aspects and behavioural attributes from an expected outcome. Accordingly, EP has received much attention since it is considered a source of competitive advantage, enhances overall organisational effectiveness (Johari & Yahya, 2009:145), and increases productivity (Muniroh, Hamidah & Abdullah, 2022:61). For the purposes of this study, a Triarchy Model of EP as proposed by Pradhan and Jena (2017:6) covering the expected distal outcomes of TP, AP, and CP, will be utilised as a theoretical prism to examining EP.

2.3.3.1 Task performance dimension

TP pertains to particular behaviours and actions directly related with meeting the formal obligations inherent in an employee's role (Yu & Frenkel, 2013:1166). This encompasses the core duties, responsibilities, and skills needed for employees to perform the job effectively (Motowidlo & Kell, 2013:476). TP is a fundamental component of EP, since it is

often assessed on how well employees accomplish their assigned tasks and achieve the desired outcomes (Locke, 1970:487). TP involves demonstrating the required job specific skills and competencies to carry out assigned tasks successfully (Newton *et al.*, 2020:11).

The second aspect of TP is goal achievement which comprises the achievement of performance targets, objectives, and standards set for employees' roles (Andreas, 2022:28). The third aspect of TP reflects on the level of proficiency and competence an employee possesses in performing their job and encompasses the ability to ensure that tasks are completed to the expected standards (Ángeles López-Cabarcos, Vázquez-Rodríguez & Quiñoá-Piñeiro, 2022:364). The fourth aspect is productivity, where employees who consistently demonstrate high TP contribute to increased output, efficiency, and effectiveness in achieving organisational goals (Locke & Latham, 2019:96). The last aspect of TP is continuous improvement which involves the organisation's commitment to ongoing employee improvement and development (Niati, Siregar & Prayoga, 2021:2386). To evaluate TP, organisations utilise performance appraisals to assess the employees' ability to accomplish their assigned tasks in accordance with performance expectations (Rodriguez & Walters, 2017:209). Fundamentally, employees must be adaptive when completing their tasks (Gwinner *et al.*, 2005:132).

2.3.3.2 Adaptive performance dimension

AP denotes the employee's capacity to adapt and excel in reaction to evolving circumstances, new challenges, or unforeseen occurrences within the workplace (Marques-Quinteiro *et al.*, 2019:97). This involves employees being proactive in learning new ways to perform their jobs while problem solving and contributing to organisational success (Pulakos *et al.*, 2000:613). In their study, Park and Park (2021) assert that the key aspects of AP and its importance to overall EP include adaptability, role flexibility, workforce agility, proactivity, resilience, and workforce agility. This view is consistent with a study by Sonnentag and Frese (2002) who observe that AP encompasses learning processes and constitutes a pivotal dimension of performance.

2.3.3.3 Contextual performance dimension

CP refers to the voluntary behaviours exhibited by employees who contribute to the effective functioning of the organisation (Palenzuela, Delgado & Rodríguez, 2019:116), and encompasses activities that may indirectly enhance the organisational objectives (Ingusci *et al.*, 2019:3). Bolino *et al.* (2013:543), challenged this position and argue that employees who develop contextual behaviours may experience greater role ambiguity, work overload, stress at work, and conflicts when it occurs too frequently in the workplace. CP captures the essence of EP, such as leading higher performance outcomes and increased effectiveness (Organ, Podsakoff & MacKenzie, 2005:212). Based on organisational sustainability where functional flexibility is achieved through employee growth, this understanding is crucial considering the skills and capacities that employees will need in the future (Davidescu *et al.*, 2020:7) of work.

2.4 THE FUTURE OF WORK

The era of globalisation is an era full of challenges including tough competition that will require organisations to create a competitive advantage (Ridwan, Mulyani & Ali, 2020:839). The emergence of new forms of work has resulted in a lack of conceptual clarity on the FoW due to the various changes that work is undergoing such as telecommuting (Santana & Cobo, 2020:858).

Findings from a study by Ozimek (2020) reveal that there is potential for improving productivity and the shift to telecommuting could eliminate many challenges that come with having traditional office-based employees. The main challenge for the FoW is structural change where organisations will need to acquire appropriately skilled employees to reap productivity gains (Arntz, Gregory & Zierahn, 2019:21), while managing large scale transformations that could involve workforce needs and business processes (Lund *et al.*, 2019:11). Additionally, some of the persistent challenges underscored in this emerging work context encompass personal productivity, well-being, societal implications, the role of technology, and collaborative efforts (Teevan, Hecht & Jaffe, 2020:46).

It may well be that these challenges could conceivably exert an impact on EE as managers modify their organisations with metrics designed to monitor flexibility and productivity, particularly in contexts where telecommuting becomes increasingly prevalent (Surma *et al.*, 2021:15). Employees are increasingly requesting the option of telecommuting and some organisations are progressively amenable to telecommuting requests (Potter, 2003:73). The surge of interest in telecommuting, however, places new challenges on managers who may be establishing telecommuting arrangements (Zhang, 2022:2295), for tasks that do not focus on outcomes or observable behaviour (Pearlson & Saunders, 2001:119).

Considering that employee productivity may not be perfectly evident, distortions may arise based on observable outputs (Sauermann, 2016:5). The supervision of telecommuting employees in a remote setting has presented a challenge for managers who have previously managed employees in the office building (Crandall & Gao, 2005:34). Similarly, current workplaces present more demands, this poses the substantial challenge of well-being, social isolation, and EP, which are of considerable relevance to telecommuting employees (Geh, 2022:1637), in the context of the FoW (Stoian *et al.*, 2022:17). The Fow is undergoing substantial transformations, and this could mean that industries with more flexible working arrangements are better positioned to attract the workforce of the future (Singh, 2021:49). Organisations that successfully navigate these shifts are likely to create a more engaged workforce (Ng, Lit & Cheung, 2022:2), achieve higher productivity (Criscuolo *et al.*, 2021:5), and stay competitive in the evolving job market (Lenka, 2021:2690).

Overall, the FoW envisions a more flexible (Kochan & Dyer, 2020:13), and technology-enabled environment where different types of digital technologies may have heterogeneous effects on skills requirements (Balsmeier & Woerter, 2019:2). Against this backdrop, organisations will need to develop a resilient workforce by effectively managing their employees to emerge stronger (Dean, 2020:197), possibly while embracing telecommuting and keeping employees reasonably engaged.

2.5 CHAPTER SUMMARY

Within this chapter, the research context is delineated, with particular emphasis on elucidating the repercussions of the COVID-19 pandemic on South Africa's ICT sector. The COVID-19 pandemic has drastically affected various sectors including ICT, requiring several strategies and adaptations to support TCP. Understanding its implications is crucial for the purposes of the present study. This chapter presents the theoretical context for this study, providing a basis for understanding the constructs for the study.

The chapter examines the concept of EE, emphasising its critical role as a determinant for organisational success. In this chapter, the theoretical underpinnings of EE, with a focus on three dimensions namely PhyEng, CogEng, and EmoEng are presented. With the surge in telecommuting, this chapter provides the theoretical context for understanding telecommuting. It explores the SET, which explains the dynamics of social interactions and relationships in the context of TCP.

Notably, EP is a critical aspect of organisational productivity, and this chapter lays the theoretical groundwork for studying EP, introducing the Triarchy Model of EP as the theoretical foundation for EP. Finally, this chapter concludes with a discussion on the FoW, exploring potential trends, and shifts in the workplace. Notably, this chapter highlights that understanding the FoW is essential for organisations to adapt and thrive in dynamic environments.

CHAPTER 3: THE NEXUS BETWEEN EE, TCP, and EP

3.1 INTRODUCTION

The COVID-19 pandemic has caused complex change throughout the world, impacting individuals and organisations, specifically in the context of telecommuting (Merrill, 2021:5). While telecommuting has been on the rise, efforts to reduce the transmission of COVID-19 which included non-essential business closures, lockdown, stay at home, and social distancing (Brynjolfsson *et al.*, 2020:24), have resulted in a rapid increase in the number of telecommuting employees in the ICT, finance, and business services industries (Bick, Blandin & Mertens, 2020:12). This abrupt shift presents an opportunity for substantial learning, potentially influencing alterations in employee behaviour (Feng *et al.*, 2022:28), the effect of time spent on work because of the location (Bieser *et al.*, 2021:164), and propensity to telecommute (Sener & Bhat, 2011:141).

Accordingly, managers not only have the responsibility of enhancing business results, but also focusing on EE and EP (Rožman *et al.*, 2021:13), since EE and EP are concepts linked to the behaviour of employees (Khan *et al.*, 2019:118). Specifically, in academic literature, engaged employees have been linked to metrics of organisational interest, including EP (Inamizu & Makishima, 2018:129). It is against this backdrop, considering the rapid pace at which the transition to telecommuting has occurred (Tavares *et al.*, 2021:349), and employees' propensity to telecommute (O'keefe *et al.*, 2016:13), that it is valuable to explore the interactions of EE, TCP, and EP.

This chapter presents literature on the intricate relationships between EE, TC), and EP. The chapter explores EE in detail, highlighting its dimensions and importance, followed by a discourse on telecommuting, its rising prevalence. Subsequently, the chapter addresses EP, defining its various facets and measures. This chapter aims to provide a nuanced understanding of how the constructs of this study interact.

3.2 EMPLOYEE ENGAGEMENT

It is valuable to explore EE during times of change (De-la-Calle-Durán & Rodríguez-Sánchez, 2021:5), particularly considering an increasingly competitive business landscape (Nicklin, Cerasoli & Dydyn, 2016:12). Competition between organisations, either for talent or for customers, is becoming tougher, with pressures on organisations to differentiate themselves (Reilly, 2018:42), forcing a change in the conventional approach to products, technologies, processes, and business models (Nidumolu, Prahalad & Rangaswami, 2009:57).

In many ways, the change that has occurred resulted in employees feeling less engaged with their work environment (Evans *et al.*, 2022:781). This is the reason why EE has become a new frontier for empirical investigations on variables that influence organisational outcomes (Puspitasari & Darwin, 2021:335). Kahn's (1990) three core dimensions of EE, namely PhyEng, CogEng, and EmoEng have served as a foundation for subsequent exploration of the concept of EE. Each dimension assumes a crucial role in influencing an employee's level of engagement, commitment, and loyalty to both their tasks and the organisation (Joshi & Sodhi, 2011:165). The simultaneous presence of all three dimensions of EE enhances the likelihood of employees experiencing job satisfaction and actively contributing to the establishment of a positive organisational culture (Obuobisa-Darko, 2020:18). Engaged employees are inclined to cultivate robust interpersonal relationships with their co-workers (Ifinedo, 2014:75), develop a sense of loyalty to the organisation (Saxena & Singh, 2015:291), and maintain mental harmony while pursuing organisational objectives (Lin, Liu & Huang, 2021:1201).

Undoubtedly, having a work environment that promotes a positive EE culture is consistently associated with beneficial business outcomes, including reduced turnover and increased customer satisfaction (Attridge, 2009:389). This phenomenon arises due to the propensity of engaged employees to exceed their job obligations and demonstrate a positive demeanour, even amidst challenging circumstances (Abraham, 2012:27). The conceptualisation of EE as a unique and important motivational concept suggests a need

for organisations to engage employees so that they can achieve success in their tasks and avoid failure (Van Beek *et al.*, 2013:59). Perhaps, due to the continued evidence of EE linkages to positive business outcomes, it is imperative for organisations to implement strategies and interventions (Schuck & Wollard, 2013:133) to create an engaged, high-performing, and reliable workforce (Shahid, 2019:47). To summarise, EE is regarded as a pivotal construct influencing outcomes in the workplace (Dubbelt, Demerouti & Rispens, 2019:311).

Moreover, it is essential for organisations to foster an environment that encourages and supports EmoEng, PhyEng, and CogEng among their employees (Mukerjee, 2014:165). Additionally, engaging employees is a long-term task that requires organisations to instil a sense of involvement, decision-making, commitment, and a sense of community in their employees (Chandani *et al.*, 2016:6), because changes such as telecommuting have made a noticeable impact on employee interactions with their colleagues (Wöhrmann & Ebner, 2021:354). As telecommuting proliferates, an understanding of the factors that may diminish employees' work meaning and engagement is important for managers (Bakar, 2013:10), due to the impact this has on organisational efficiency and effectiveness (Adekoya *et al.*, 2019:39).

3.3 TELECOMMUTING

Organisational change in transitioning to telecommuting, combined with the new challenges of working remotely have been complex and interrelated (Fana *et al.*, 2020:22). Moreover, organisations are faced with the challenge of determining whether telecommuting is suitable for their environments and employees (Karanikas & Cauchi, 2020:5). Organisations have, however, implemented telecommuting without knowing how to do it effectively (Raišienė *et al.*, 2021:127) and find themselves in a situation where they must figure out how best they can manage the changing expectations of their employees, who have experienced the alternate work mode (Raghuram, 2021:157).

This notwithstanding, a study by Wen and Geng (2021) reports that telecommuting has a direct impact on employees. This is because an employee's decision to participate in nonmandatory activities has a significant impact on their propensity to telecommute (Asgari & Jin, 2017:47) and furthermore, telecommuting blurs the distinction between the work and the home environment (Kuruzovich *et al.*, 2021:3). Interestingly, in a study of telecommuting employees, Kossek *et al.* (2006) report that employees who have a distinct work-life boundary exhibit a positive well-being. Additionally, given that telecommuting provides employees with individual and organisational flexibility (Raffaele & Connell, 2016:23), it leads to an improved work-life balance (Uresha, 2021:2234).

In their study, Kwon and Kim-Goh (2022) report that telecommuting employees are prone to achieve superior work outcomes as a result of flexible schedules and locations for work. In addition, telecommuting can be a good alternative in managing work-life effectiveness when compared to a traditional work environment setting (Caranto, Sergio & Oribiana, 2020:41). In the same way, for employees seeking to fulfil their work obligations and survive in the work environment, telecommuting can enable them to make this possible (Nakrošienė *et al.*, 2019:100). Consequently, organisations are faced with the task of implementing new innovative technologies to create a work environment that enables the engagement, autonomy, and the individual needs of employees (Karácsony, 2021:7).

Moreso, telecommuting empowers employees and provides them with flexibility and independence, it leads to more satisfaction in their jobs (Tabassum & Sarker, 2021:52). Although there are advantages to telecommuting, one of the potential downsides of telecommuting is the reduced face-to-face interaction, which can lead to communication and collaboration challenges (Coenen & Kok, 2014:570). However, because of isolation when employees are telecommuting, sociological and psychological challenges occur (Savić, 2020:102). Notably, as the work environment and perceived social supports change, telecommuting exerts an influence on employee well-being (Hager, 2018:38), and propensity to telecommute (Singh *et al.*, 2013:383).

Consequently, telecommuting may lead to employees disengaging from the organisation (Wut, Lee & Xu, 2022:3). This highlights the importance of developing appropriate policies for telecommuting in organisations (Barbuto *et al.*, 2020:14). Due to the influence that telecommuting has on organisational outcomes (Ibrahim *et al.*, 2023:261), various factors complicate the understanding of telecommuting (Lyttelton, Zang & Musick, 2022:231). Further, telecommuting may generate different outcomes based on the strategic choices made within the organisation (Ferrara *et al.*, 2022:8). Indubitably, when organisations fail to understand how telecommuting influences outcomes, it could lead to difficulties when designing and implementing appropriate work practices (Hu & Oh, 2021:443), even more so because internal and external constraints such as psychosocial factors limit TCP (Adobati & Debernardi, 2022:9).

Accordingly, organisations must enable telecommuting employees with resources and safeguard their productivity as this affects organisational outcomes (Harker Martin & MacDonnell, 2012:611), the work atmosphere (Dahlstrom, 2013:439), and influences the productivity of employees (Massoudi & Hamdi, 2017:41). Notwithstanding the fact that Mihalca *et al.* (2021:621) opine that it is yet to be determined whether telecommuting has detrimental effects on outcomes such as EP. This may be the case since much of the empirical research on telecommuting has been conducted at the individual outcomes level, whereas the decision to telecommute is driven by organisational outcomes (Harker Martin & MacDonnell, 2012:603).

New business models such as flexible and temporary work, are expected to become more prevalent in the FoW (Balliester & Elsheikhi, 2018:38). Resultantly, organisations bear a significant responsibility in shaping the future of the workforce through the acknowledgment and implementation of flexible work arrangements (Rouvroye *et al.*, 2022:1936). Particularly because of the anticipated benefits of EP, since management is becoming increasingly aware that an employee's performance is directly related to physical and emotional health (Yu, Park & Hyun, 2021:532).

3.4 EMPLOYEE PERFORMANCE

EP is the total expectation that the organisation has of their employees' during a specific period (Motowidlo, 2003:92). When dealing with role performances, employees get involved physically in their work, apply cognitive effort to successfully complete the assigned work, develop emotional ties with co-workers, and simultaneously express how they feel about their tasks to be performed (Arora, 2012:33). Given that organisations rely on the heightened performance of their employees to achieve their objectives (Bin & Shmailan, 2015:2), employees' responsiveness through their behaviour and attitude are pivotal to EP (Hameed & Waheed, 2011:228). In addition, the behaviour of employees results in a competitive advantage for the organisation (Awadh & Saad, 2013:169).

In particular, EP refers to the expected value to the organisation (Rich *et al.*, 2010:620), comprising of various attributes, such as standards of work, targets, or predetermined criteria for employees to deliver against (Rizki, Parashakti & Saragih, 2019:233). Consequently, the EP construct is a variable that is likely to contribute or detract from employees' organisational effectiveness (Leitão, Pereira & Gonçalves, 2019:13), because of how EP focuses on the achievement of various tasks and responsibilities in the workplace (Fidyah & Setiawati, 2020:65).

According to Jiang *et al.* (2020:5), the nature of EP reflects the abilities and capabilities of each employee in the organisation. However, Kalogiannidis (2020:2) asserts that beyond competence, skills, and professionalism, there exist supplementary factors influencing the level of performance. Ingusci *et al.* (2019:3) hypothesised that seeking challenges through AP could be a way that employees cope with the negative consequences of work which may lead to positive outcomes such as CP. Likewise, Hosie, Sharma and Kingshott (2019:19) contend that involvement in work beyond TP is vital to aspects of organisational productivity. Instructively, EP can be evaluated based on different dimensions of TP, AP, and CP (Haist, 2021:5), each of which provides valuable insights into an employee's contributions and capabilities (Beltrán-Martín & Bou-Llusar, 2018:107).

The dimensions of EP can have distinct impacts on employees (Al Zefeiti & Mohamad, 2017:155), shaping their experience, satisfaction, and overall effectiveness in the workplace (Wrzesniewski & Dutton, 2001:179). For example, proficient performance in core job responsibilities, coupled with meeting or surpassing set expectations, frequently engenders a perception of accomplishment and job satisfaction among employees (Dziuba, Ingaldi & Zhuravskaya, 2020:24). Knowing they are excelling in their roles can boost employees' confidence in their skills, overall happiness, and enhanced optimism at work (Mazzetti *et al.*, 2016:684). Moreover, high TP is more likely to be recognised and rewarded by employers (Khan, Waqas & Muneer, 2017:938).

Additionally, employee acknowledgment and rewards are likely to enhance employees' motivation and commitment to continuing their high level of performance (Ibrar & Khan, 2015:98). Whereas employee's competence and efficiency in TP can help reduce stress related to job insecurity or feelings of being overwhelmed (Janssen, Van de Vliert & West, 2004:137). As a result, consistently strong TP by employees is likely to open doors to career growth and advancement within the organisation (Lee & Lee, 2018:288). Accordingly, employees who excel in their roles may be considered for promotions or higher-level responsibilities (Breaugh, 2011:264).

Employees with a willingness to learn new skills and adapt to changing circumstances are likely to experience professional growth, as well as opportunities for development (Zaharee *et al.*, 2018), which positively influences EP (Alqudah, Carballo-Penela & Ruzo-Sanmartín, 2022:8). While employees with higher levels of AP exhibit greater resilience in navigating challenges, setbacks, as well as uncertainties, they demonstrate a positive correlation between their adaptability to market demands and enhanced overall performance (Jena & Goyal, 2022:4). Fuertes *et al.* (2020:7) denote that EP is associated with employee achievement, in accordance with the expectations of the organisation. Indeed, EP is linked to business success factors (Shahid & Azhar, 2013:258). This is because organisations that recognise and nurture employees are likely to stimulate a motivated, engaged, and high-performing workforce (Sung & Ashton, 2005:52).

In line with performance expectations and implications for business management, organisations must gain a better understanding of EE to enhance EP in the workplace (Ismail, Iqbal & Nasr, 2019:509). Owing to this, researchers have explored employee management practices in the ICT sector and the consequence of improving employee outcomes, due to the link these have on the overall success of the organisation (Al-Dalahmeh & Héder-Rima, 2021:60).

3.5 THE NEXUS BETWEEN EMPLOYEE ENGAGEMENT AND EMPLOYEE PERFORMANCE

Successful managers have increasingly realised that EP is a strategic imperative that carries more significance due to the positive link it has to EE (Al-Amin, 2017:28). According to Al-Dalahmeh *et al.* (2018:18) previous studies have shown links between initiatives undertaken by managers and organisations that improve EE and EP. The prevailing perception is that employees exhibiting elevated levels of engagement are inclined to invest greater effort in their tasks, thereby manifesting heightened levels of performance (Sarwar *et al.*, 2020:16). Notably, Markos and Sridevi (2010:89) discovered that when engaged employees work on their job assignments more enthusiastically, the result is a higher output.

In addition, Kurdi and Alshurideh (2020:3891) observed that organisational success is typically associated with the presence of highly satisfied employees who find fulfilment in both their tasks and the work environment. Consequently, engaged employees tend to be intrinsically motivated to perform well (Kuvaas & Dysvik, 2010:2342), leading to a deeper commitment to achieve individual and organisational goals (Gupta & Sharma, 2016:46). This robust motivational inclination can notably influence performance outcomes, as individuals demonstrate a willingness to invest additional effort in their tasks and willingly undertake supplementary responsibilities (Aziri, 2011:85).

Moreover, EE plays a central role in delivering some of the important outcomes associated with successful, high performing organisations (Robertson & Cooper, 2010:325). Given that at most organisations, performance is the culmination of collaborative endeavours, when

employees exhibit EE, it may positively impact other employees (Bakker, Demerouti & Xanthopoulou, 2012:17).). Consistent with this viewpoint, a study conducted by Markos and Sridevi (2010) similarly revealed that EE exerts a favourable influence on efficiency, productivity, and organisational performance. While certain studies have demonstrated an association between EE and EP (Rana, 2019:259), Judge *et al.* (2001:380) contend that there is a negligible correlation between EE and EP. Likewise, a study by Leiter and Bakker (2010) found negative relationships between EE and EP.

Similarly, Greene and Miller (1996:223) maintain that there is a low to moderate correlation between EE and EP. Although, Macey and Schneider (2008:15) contend that the extent to which EE has a direct link to EP is somewhat ambiguous. This is consistent with the opinion by Kular *et al.* (2008:19) that existing literature has been unclear on the links between EE and EP. Moreover, scholars contend that the association between EE and EP is not invariably straightforward in terms of causality (Schaufeli, 2013:8). Although higher EE is often associated with better performance, it is also possible that EP can lead to an increased EE (Bedarkar & Pandita, 2014:111), even though the direction of causality can be challenging to determine in cross-sectional studies (Bailey *et al.*, 2017:25).

The relationship between EE and EP may be influenced by other variables (Tampubolon, 2017:476), both internal and external (Rizka, Sumardjo & Setiadi, 2022:227). Factors such as job characteristics, organisational culture, leadership style, and individual differences impact EE (Nurcahyo *et al.*, 2018:9), while job satisfaction, motivation, and work environment can impact EP (Aldoseri & Almaamari, 2020:307). Intriguingly, an overemphasis on trying to increase EE without necessarily considering the overall work context and job characteristics that influence EP, may impact the relationship negatively (Prasetya, 2018:8). While higher EE may lead to short-term improvements in EP (Shimazu *et al.*, 2018:14), long-term sustainability while continually striving for higher EE, is not effective in the absence of other organisational interventions (Knight, Patterson & Dawson, 2017:808). Some studies remonstrate that EE affects EP (Linggiallo *et al.*, 2021:39). For example, employing a sample of 587 employees across diverse industries, Halbesleben and Wheeler (2008) report that EE has a minor effect on EP.

Moreover, findings derived from a study conducted by Meswantri and Ilyas (2018) regarding EE and EP provide evidence supporting the presence of employees characterised by low EE and yet exhibit high EP towards the organisation. The complex relationship between EE and EP (Dom & Ahmad, 2019:3), particularly within the context of the COVID-19 pandemic, has led to increased delegation, smaller teams, and changes which are efficiency-enhancing while others are efficiency-reducing (Foss, 2021:273).

Resultantly, uncertainty caused by these changes have introduced variations in how EE affects EP (Bakker & Leiter, 2017:69). The full understanding of whether the association between EE and EP manifests positively, negatively, or with statistically inconsequential effects remains incomplete, particularly within the context of the ICT sector in South Africa. Notably, no studies investigating such associations in a post-COVID era within this specific context have been conducted. Nonetheless, duly cognisant of the various positions in extant literature as it pertains to the relationship or lack thereof between EE and EP, this study elects to hypothesise that with specific respect to employees in South Africa's ICT sector:

H_1: EE has a positive relationship with EP

3.5.1 Physical Engagement and Task Performance

The fast development of ICT and the increasing digitalisation of various sectors of society has resulted in work traditionally not considered appropriate for telecommuting to be deemed suitable (Elldér, 2019:201). Telecommuting use is expanding among employees with routine tasks that were previously inflexibly tied to the office desk (Thulin, Vilhelmson & Johansson, 2019:3). As this will likely be the case for the foreseeable future (Caligiuri & De Cieri, 2021:13), it is necessary to examine whether the changes brought about by even a partial transition to telecommuting affect the level of engagement at work (Wontorczyk & Rożnowski, 2022:4). As a result, organisations have adopted virtual workspaces and the importance of the physical office setting has shifted (Boland *et al.*, 2020:2).

It may well be that due to telecommuting, the changing work environment impacts engagement as it involves physical changes to how employees carry out their jobs (Sardeshmukh *et al.*, 2012:194). Accordingly, the association between PhyEng and TP fluctuates in accordance with the attributes inherent in the job (Christian, Garza & Slaughter, 2011:94). A study conducted by Anitha (2014) exposed that EE dimensions positively and significantly affect EP. One of the dimensions, namely PhyEng, tends to be the most overt form of EE as employees' actions and efforts can often be seen (Schaufeli, 2013:15).

Employees who go the extra mile by working harder to further the success of the organisation are physically engaged (Shuck, Adelson & Reio Jr, 2017:957). Consequently, physically engaged employees possess the capacity to concentrate on their tasks and channel all their energy toward their work (Bakker *et al.*, 2012:17). Corresponding with this assertion, Lin *et al.* (2016:154), opine that PhyEng may influence TP. In addition, employees who exert themselves on the job to maintain autonomy and control towards their job are physically engaged (Jacobs, 2013:35). Although the amount of physical effort spent doing work can vary in different occupations (Kuok & Taormina, 2017:267), the state of employees PhyEng promotes productivity and collaboration (Buckley *et al.*, 2015:1360).

Accordingly, employees' participation contributes to better communication (Kang & Sung, 2017:95) and collective problem-solving which can positively influence TP (Sofijanova & Zabijakin-Chatleska, 2013:35). Notably, while PhyEng can contribute to TP, it is not the sole feature influencing TP, since there are other factors such as jobs, the environment, and employee related aspects (Diamantidis & Chatzoglou, 2019:172). In addition, attributes, such as the job content, employees' ability, proficiency in completing tasks, and work knowledge also play a role in determining TP (Yang, Jiang & Cheng, 2022:5).

There remains a debate on the negative effects that PhyEng has on employees, such as energy exhaustion, anxiety, and fatigue which lead to performance degradation and unprofessional behaviours (Yao *et al.*, 2022). Yu *et al.* (2018:1093) argue that excessive PhyEng without adequate rest or recovery can lead to physical fatigue which affects

employees' ability to deliver on tasks. Further, Commissaris *et al.* (2014:1576) suggest that PhyEng does not lend itself to an improvement in TP. Similarly, Jackson and Frame (2018:6) found no impact by PhyEng on TP. This may be because employees who are behaviourally disengaged withdraw their energies physically and leave the organisation (Erdil & Müceldili, 2014:450). For physically demanding jobs, PhyEng can be an important aspect of TP (Spook *et al.*, 2019:6).

However, for jobs where PhyEng is not a primary requirement, such as knowledge work (Heerwagen *et al.*, 2004:511), the direct impact of PhyEng on TP may be less apparent as there is limited research on what drives knowledge workers to fully engage in their work context (Toth, Heinänen & Puumalainen, 2021:19). In addition, integrating the principle of diminishing marginal utility (Chen *et al.*, 2018:3), too much inclusive leadership can lead to an unanticipated negative effect on employees TP when taken too far (Xiaotao *et al.*, 2018:891). Moreover, employee TP may vary across individuals with different physical abilities, though they exhibit similar levels of PhyEng (Lansman & Hunt, 1982:10). Against this backdrop, Kumar and Sia (2012:41) assert that PhyEng, independently, should not be equated with overall EE.

Instructively, however, a study conducted by Alfanza (2021) reports that within the framework of the COVID-19 pandemic, concerning job performance and work-life balance, organisations have the responsibility of maintaining a climate of co-responsibility and trust among employees to ensure the continuity of business productivity to reduce economic inactivity. This is important because employees job performance can be impacted negatively by complex activities, such as telecommuting (DeRossette, 2016:21).

Therefore, it is plausible as reported in a study by Makhanu, Mukanzi and Nyikuli (2018), that the notable and positive correlation between PhyEng and job performance underscores the crucial importance of PhyEng in the workplace. Further, a study by Khan, Mohammed and Harith (2018) reports that positive experiences and knowledge possessed by telecommuting employees are essential to their mental and physical state. Crucially, not all tasks are amenable to remote working owing to the content of duties, company culture,

business, and infrastructural readiness (Aloisi & De Stefano, 2022:294). While this may be the case, telecommuting engenders additional challenges for employees, leading to the onset of anxiety, disruptions, and technostress induced by digitalisation (Ewers & Kangmennaang, 2023:9).

These factors, substantiated by prolonged COVID-19 restrictions, have been instrumental in diminishing employee satisfaction, reducing performance, and fostering counterproductive behaviour (Nemteanu & Dabija, 2021:3670). Consequently, these behaviours result in lower TP due to non-cooperation by employees (Singh, 2019:13). While recognising that there is no consensus in extant literature as to the precise nature of association, if it exists, between PhyEng and TP, this study hypothesises that in the cohort of employees in the ICT sector in South Africa:

$H_{2.1}$: There is a statistically significant positive relationship between PhyEng and TP

3.5.2 Physical Engagement and Adaptive Performance

With increasing complexity in the business environment, turbulent, and unstable, the required level of employees' adaptability includes the capacity to set priorities, handle problems as well as the ability to learn and adapt to ongoing changes (Cullen *et al.*, 2014:270). Given the constantly changing work environment, these behaviours are considered increasingly important for organisations (Lim *et al.*, 2017:6). In virtual workspaces, organisations need to find ways to maintain and foster PhyEng (Scherrer *et al.*, 2010:126). Although AP is narrowed to employees' response to environmental change (Griffin, Neal & Parker, 2007:328), organisations have the responsibility of enabling AP as it remains the best motivator for telecommuting employees (McGregor & Doshi, 2020:2).

Managing the AP of teams is a practical concern for organisations (Rosen *et al.*, 2011:108), since engaged employees become physically engaged in their tasks, while disengaged employees become disconnected with the organisation (Olivier & Rothmann, 2007:49). PhyEng in the workplace affords employees increased face-to-face interactions with both their colleagues and managers (Shuck, Rocco & Albornoz, 2011:308). These physical

engagements generate physiological resources which may provide the physical energy required for PhyEng (McGrath *et al.*, 2017:1221).

Although Kirkman *et al.* (2004:187) argue that face-to-face interactions are not critical for increasing EP, Rothmann and Rothmann Jr (2010:3) contend that employees will experience a sense of meaningfulness from interactions with their colleagues. This is because being physically present allows employees to receive immediate feedback, get exposure to new ideas and perspectives (Chanana & Sangeeta, 2021:6), which can enhance AP and lead to employees' adaptability to change in the work environment (Park & Park, 2019:295).

In light of the shifting work environment, which significantly reduces face-to-face interactions, organisations must increasingly prioritise understanding what will attract and retain employees (Carnevale & Hatak, 2020:184), to create a compelling workplace for them (Hiltrop, 1999:429). Further, it is essential to recognise that there are other factors that influence AP, such as learning new technologies (Kim, Im & Shin, 2022:310). The behaviours that outline employees' capabilities for AP are creative problem solving, handling work emergencies/work stress, training effort, and interpersonal adaptability (Charbonnier-Voirin & Roussel, 2012:281).

Considering that AP encompasses a set of behaviours rather than ability or intent (Shoss *et al.*, 2012:911), employees who demonstrate physically oriented abilities are likely to fit the work environment better (Mc Loughlin & Priyadarshini, 2021:4) and are likely to focus on their work, perform better (Kamarulzaman *et al.*, 2011:266), engage, and connect with their colleagues (Millward, Haslam & Postmes, 2007:556). According to a study by Shen and Jiang (2019), physically engaged employees observe and learn from their colleagues' behaviours and best practices. Observing how others adapt to challenges and handle situations can serve as a valuable learning experience (Le Clus, 2011:358), facilitating the development of AP (Forsyth *et al.*, 2016). As a result, solving problems creatively, learning, and making decisions could enable AP (Stokes, Schneider & Lyons, 2010:214).

Similarly, learning experiences involving physical interaction have been effective (Marshall, 2007:168), especially regarding PhyEng (Burch *et al.*, 2015:228). Consequently, employees who experience higher PhyEng develop better adaptability skills (Tladinyane & Van der Merwe, 2016:7). While PhyEng might be essential for certain adaptive behaviours (Shen, 2014:53), it may not directly impact all aspects of AP (Park & Park, 2019:312), depending on different intrinsic characteristics (AlAbri, Siron & Alam, 2022:6224). Chiefly, intrinsic motivation, particularly in terms of purpose and organisational commitment, and its relevance to AP proves intricate (Tan & Antonio, 2022:177) especially considering the context of the COVID-19 pandemic.

The situation may be complicated because according to Oleksa-Marewska and Tokar (2022:14391), PhyEng is influenced by several factors, such as remote work environments, communication, digital readiness, and leadership styles across different business settings. This makes it increasingly difficult for organisations to definitively create the environmental conditions that would elicit AP (Tucker & Gunther, 2009:40). Instructively, the positive affective state of EE is crucial in shaping a conducive and resourceful work environment (Nikolova, Schaufeli & Notelaers, 2019:772).

Remarkably, a physically engaged employee is more energetic and completes their work-related tasks (Edokpolor, Otache & Osifo, 2022:115). Caution must be exercised in drawing conclusions about PhyEng's association with AP, as Ramawickrama, Opatha and PushpaKumari (2017:68) observe that unique work environments and situational factors may stimulate or hinder AP. Duly considerate of the discourse and variables that influence AP in business settings as noted by Park *et al.* (2020:2) among others, this study is cognisant of the COVID-19 induced changes in workplaces such as those within the ICT sector in South Africa and anticipates that:

$H_{2.2}$: There is a statistically significant positive relationship between PhyEng and AP

3.5.3 Physical Engagement and Contextual Performance

PhyEng attains its zenith when employees encounter favourable events and engaging daily job demands, particularly in instances where they have access to ample job resources (Bakker & Leiter, 2017:68). Specifically in resource-constraint environments, CP is impacted negatively which disadvantages employees and affects the organisation's ability to gain a competitive advantage (Amankwah-Amoah & Syllias, 2020:247). According to Didit and Nikmah (2020:23), social support, among other job resources, fosters PhyEng among employees. Indeed, elevated levels of PhyEng can result in heightened employee commitment, satisfaction, reduced absenteeism, and enhanced role performance (Alzyoud, Othman & Mohd Isa, 2015:103).

Physical demands and work conditions are contextual characteristics likely associated with CP (Christian *et al.*, 2011:101), which is conducive to achieving organisational goals (Wu, Hu & Zheng, 2019:4). Employees who are physically engaged are often perceived as approachable and more inclined to assist others willingly (Zeijen, Petrou & Bakker, 2020:441), contributing to a culture of mutual support, and influencing CP. Employees who adopt CP contribute to improving the organisation's corporate culture and ambience, leading to organisational success (Veeraragavan & Arulkumar, 2021:152). CP, an extra-role behaviour, entails employees participating voluntarily in additional work responsibilities beyond their formal obligations and has become vitally important for organisations (Zaw & Takahashi, 2022:241).

In view of the importance of CP, employees must be given the physical resources they need to perform such behaviours (Rubaca & Majid Khan, 2021:283). Employees with more physical resources perform better and are physically engaged (Bakker, Demerouti & Ten Brummelhuis, 2012:556). Widodo (2021:377) argues that CP also encompasses behaviours extending beyond direct job tasks, exerting substantial influence on organisational, social, and psychological contexts. Further, employees who do not engage in CP may be unfairly denied organisational rewards when they are valuable, which may adversely affect employees' attitudes and increase turnover (Küçük & Tastan, 2020:748).

Curiously, when employees perceive an organisation's focus on equal representation and growth opportunities as fair in a diverse workforce, they get demotivated to engage in CP (Dongrey & Rokade, 2022:11). Furthermore, according to Droste (2023:4), scholars argue that CP in the workplace goes far beyond output and is suitable for employees in roles that are more subjective.

Employee's involvement in CP affects how others perceive their personality (Le Sante, Eaton & Viswesvaran, 2021:94) and is associated with TP (Chen, 2019:4). It may well be because physically engaged employees demonstrate commitment (Simons & Buitendach, 2013:3), which promotes behaviours that encourage organisational success (Shahid & Azhar, 2013:262). As a result, a study by Pradhan, Jena and Bhattacharyya (2018) asserts that this extra effort or pro-social employee behaviour leads to CP.

Regarding the relationship between PhyEng and CP, a study by Kahn (1990) discovered that both individual and organisational factors affect the psychological experience of work which may lead to positive work behaviours. Likewise, the relationship between PhyEng and CP might also be contingent on activities that may not represent formal work tasks, although still making a contribution to the effectiveness of the organisation (Kappagoda, 2018:164).

Additionally, while some work roles might require PhyEng (Banihani & Syed, 2017:138), they may not necessarily involve extensive CP behaviours (Motowidlo & Van Scotter, 1994:476). This is because the physical work environment can significantly influence an employee's ability to physically participate in their work duties (Noah & Steve, 2012:37). In some cases, as noted by Mohd, Shah and Zailan (2016:423) as well as Witt *et al.* (2002:913), the work environment might not facilitate PhyEng and CP. Undoubtedly, the physical work environment including factors such as the office space, storage of materials, and furniture can influence employees' ability to perform and their level of PhyEng with their tasks (Chandrasekar, 2011:14). Moreover, engaged employees mobilise their job resources to stay engaged (Bakker & Demerouti, 2014:2).

Relying on the result obtained in their study, Rothmann and Rothmann Jr (2010) concluded that a lack in physical resources leads to employees' disengagement from their work. Similarly, a study by Rubaca and Majid Khan (2021) involving 245 employees in Pakistan reveals that individuals with elevated levels of job resourcefulness are inclined to participate more CP and effectively fulfil their job requirements.

Further, Barbars (2017) conducted a study on 426 employees in the ICT sector in Latvia and observed that employee competitiveness influence PhyEng. This finding is vital as organisations rely on innovative employees who surpass growth targets to attain a competitive edge and facilitate organisational advancement (Awino, 2013:194). In the context of the ICT sector, PhyEng job factors influence psychological well-being, self-acceptance, and personal growth (Prasad & Mangipudi, 2021:1016).

Indeed, well-adjusted employees tend to be higher performers and exhibit CP (Singh & Mahmood, 2017:235). Dongrey and Rokade (2021:11) also observed that their CP is negatively impacted when employees do not feel psychologically safe to ask for help, take risks, or feel accepted in the organisation. According to Hung *et al.* (2022:6), compulsory citizenship behaviour is negatively correlated with CP and psychological safety. In harmony with this assertion, Piccoli, Reisel and De Witte (2021:161) pronounce a negative and indirect effect between job insecurity and CP which is more discretionary than in-role behaviours. The diverse findings make accurately predicting the exact nature of the relationship between PhyEng and CP a difficult proposition. Nonetheless, mindful of the inconsistent views in extant literature related to the possible multifaceted and context-dependent nature of the relationship between PhyEng and CP, this study elects to hypothesise that in the cohort of employees working in South Africa's ICT sector:

$H_{2.3}$: There is a statistically significant positive relationship between PhyEng and CP

3.5.4 Cognitive Engagement and Task Performance

Engaged employees cognitively harness and invest themselves when performing their jobs and are likely to find opportunities to improve their performance (Ho, Wong & Lee, 2011:13). CogEng denotes the employees' convictions regarding the organisation, its managers, and the overall work environment (Sundaray, 2011:54). Specifically, cognitively engaged employees demonstrate focus, attentiveness, and concentration on their work-related assignments (Kovaleski & Arghode, 2021:797). Correspondingly, cognitively engaged employees pay attention to details and are attuned to potential areas for improvement within the organisation (Kovaleski & Arghode, 2021:808). In their study, Bakker and Bal (2010) report that employees with high CogEng are more proactive in providing support and assistance to their colleagues. Conversely, disengaged employees show less cognitive and emotional connection with others which may result in incomplete tasks and poor performance (Al, 2019:183). This is because CogEng relies on a collaborative (Bailey, Myatt & Wilson, 2013:7), and supportive work environment (García-Villamisar & Hughes, 2007:143). Instructively, employees who are cognitively engaged demonstrate a strong commitment to their work and willingly undertake additional responsibilities (Kosaka & Sato, 2020:230).

In some instances, employees volunteer for projects or participate on committees, demonstrating a commitment to the organisation's goals which contributes to TP (Carlson *et al.*, 2008:41). Indeed, cognitively engaged employees have a better grasp of the organisation's mission (Taneja *et al.*, 2015:47). This understanding drives their alignment with the organisation's vision, as they use their skills and behaviours, leading to TP (Alagaraja & Shuck, 2015:24) as well as employees' providing high quality service to customers through TP (Kim & Kim, 2021:2051). Accordingly, cognitively engaged employees develop a sense of satisfaction and sustain a continuous performance cycle when processing their tasks (Huang *et al.*, 2010:705). Moreover, when employees are cognitively engaged in their tasks, they typically concentrate more effectively, thereby potentially improving the accuracy and efficiency of task completion (Rafaeli *et al.*, 2012:944).

Clearly, the relationship between CogEng and TP is evidently susceptible to multiple influences, including task complexity, task demands, and the degree of autonomy afforded to employees in their respective roles (Sia & Appu, 2015:775). However, employees that perform a variety of tasks have higher levels of CogEng (Shantz *et al.*, 2013:23). Interestingly, a study by Greene and Miller (1996) found that meaningful CogEng suppresses the negative effects of low engagement on TP.

Scholars such as Mullette-Gillman, Leong and Kurnianingsih (2015:14) argue that prolonged CogEng leads to the subjective feeling of fatigue which destabilises decision-making, and may also deteriorate TP (Shigihara *et al.*, 2013:9). Furthermore, the concept of CogEng may be overly focused on the level of involvement or attention an individual has during a task, without necessarily considering the quality or effectiveness of CogEng (Ho *et al.*, 2011:16). This aligns with the conclusions drawn from a study conducted by Meijman and Mulder (2013), that by simply being mentally involved in a task through CogEng does not guarantee optimal TP.

According to Nagadeepa (2021:2937), CogEng has a significant influence on understanding and learning. Notably, the responsibility to learn lies on the individual or teams (Lemmetty & Collin, 2020:48). This finding is vital as reported in a study by Kyndt, Vermeire and Cabus (2016) since learning is important for organisations to face rapid-changing environments and competitive innovation. Yoon, Hill and Kim (2021:413) report that CogEng leads to increased learning.

Interestingly, according to Schroth (2019:12), the integration of learning in the workplace can lead to the success of employees. It may well be that CogEng enhances TP by facilitating learning in the work environment, particularly since CogEng influences affective aspects of tasks (Hiver & Wu, 2023:82). Amoako-Asiedu and Obuobisa-Darko (2017:28) postulate that being cognitively engaged is not just about employees being attentive to doing tasks.

Curiously, where employees engage in multiple tasks simultaneously, CogEng does not significantly influence TP (Flowerday & Schraw, 2003:212). According to Wadhera and Kakkar (2020:467), CogEng is basically dependent on the task at hand due to the autonomy that the employee must possess. Further, cognitive strategies, such as task planning and preparation promote employee interaction in the organisation (Dao, 2020:28). Contrarily, CogEng exerts a negative, yet less significant effect on organisational performance (Mikalef *et al.*, 2023:8). Similarly, Joplin *et al.* (2019:821) as well as Silitonga *et al.* (2020:342) assert that low TP leads to disengaged employees, which affects organisational performance.

According to Sameer (2018:82), the employee's ability to have self-efficacy is crucial for their success in the organisation. Central to an employee's achievement is a positive emotional experience which is closely related to work engagement and widens their cognitive range (Zhang & Su, 2020:3). The sustainability of organisations relies on both continuous innovation and the emotional well-being of employees (Mulligan *et al.*, 2021:11). CogEng amplifies the magnitude of the positive correlation between job crafting and the physical arrangement of employees within the workplace (Nagarajan, Alagiriswamy & Parayitam, 2023:136). In particular, high employee TP helps the organisation achieve productivity, growth, and a competitive advantage (Bastian & Widodo, 2022:124).

According to Lai *et al.* (2020:2), engaged employees are attentive, connected, integrated, and focused on TP. This is important, considering that cognitively engaged employees are innovative and generate new ideas that can improve their own work (Tarafdar, Beath & Ross, 2019:43). Remarkably, the demand for labour due to technological innovation characterises the challenges related to the FoW (Borzaga, Salvatori & Bodini, 2019:39) and many elements of the FoW alongside the way employees interact with technologies have become critical for survival in the economic environment (Kudyba, 2020:285). Mustajab *et al.* (2020:14) assert that telecommuting employees' ability to execute their tasks effectively is likely to present advantages for the organisation as they will be focused, motivated, and committed to their work.

The relationship between CogEng and TP may vary based on individual differences, such as cognitive abilities, and motivation levels (Van Iddekinge *et al.*, 2018:257). This complicates the effort to predict the relationship between CogEng and TP, especially since organisations bear the responsibility of contemporaneously recognising CogEng and TP while taking steps to nurture them among their employees, due to the possible implications for the FoW. Owing to this, accurately conjecturing the relationship between CogEng and TP in such a context as the South African ICT sector becomes a complicated prospect. Nonetheless, duly cognisant of the positions in extant literature on the possible associations between CogEng and TP, yet mindful of the implications for the FoW, the present study hypothesises that:

$H_{3.1}$: There is a statistically significant positive relationship between CogEng and TP

3.5.5 Cognitive Engagement and Adaptive Performance

Organisations require employees that adapt quickly and efficiently to different conditions in their job roles (Bartsch *et al.*, 2021:72). Indeed, AP requires employee involvement and active participation in decision-making (Ababneh, 2021:1219). Resultantly, cognitively engaged employees are acutely aware of their role in the environment (Dhanalakshmi & Gurunathan, 2014:184).

Considering that employees must be able to think creatively, solve problems and take decisions (Tripathy, 2018:4), cognitively engaged employees can identify potential challenges and develop innovative solutions (Shuck & Reio Jr, 2014:44). CogEng is demonstrated by employees who have the capability to learn quickly and effectively in new or challenging situations (Kim, Hong & Song, 2018:5). In addition, employees actively seek opportunities to enhance their performance and adjust their behaviours (Müceldili, Tatar & Erdil, 2020:42), contributing to AP (Demerouti *et al.*, 2021:394). Particularly, employees who are cognitively engaged are predisposed to embrace change and perceive it as a chance for personal and professional development (Erwin & Garman, 2010:43).

In embracing change, cognitively engaged employees adapt their behaviour to suit different work situations (Vance *et al.*, 2016:63). This adaptability enables employees to handle unexpected challenges effectively (Lee, Xu & Yang, 2021:2) which is crucial for AP in dynamic work environments (Johnstone & Wilson-Prangley, 2021:9). Chiefly, AP necessitates employees to navigate ambiguity and uncertainty (Pulakos *et al.*, 2000:613). In their study, Baran and Woznyj (2020) posit that AP involves employees being able to rapidly make sense of new situations.

Admittedly, cognitively engaged employees are more comfortable with ambiguity and are better equipped to navigate uncertain situations (Dell'Era *et al.*, 2020:330). Moreover, cognitively engaged employees display greater resilience when facing challenges (LaGree *et al.*, 2023:860). The ability for employees to overcome challenges could contribute to their AP (Van den Heuvel *et al.*, 2020:5). Resultantly, there are several factors such as job complexity, autonomy, and the specific demands of the work environment that influence employees CogEng (Schraub, Stegmaier & Sonntag, 2011:35).

While there may be some links between CogEng and AP (Chinn, Barzilai & Duncan, 2021:52), Kanten, Kanten and Gurlek (2015:1364) reported that CogEng has no direct effect on AP. More so, because predictors that may help to determine the AP of employees remain undiscovered (Jabeen & Danish, 2021:456), which may affect the association to CogEng (Linnenbrink-Garcia, Patall & Pekrun, 2016:232).

Additionally, scholars argue that immoderate CogEng can create a cognitive overload (Shoss *et al.*, 2012:914), which requires employees to adapt their behaviour extensively, ultimately impacting AP (Bechtoldt *et al.*, 2011:1089). While CogEng might facilitate AP in some situations (Mcloughlin, 2021:45), other determinants include self-efficacy (Lent & Brown, 2013:121), and employee stress levels (Shahzad *et al.*, 2021:3).

The findings and arguments regarding CogEng and AP from previous studies inspire the present study to posit that as organisations demand more from their employees in a changing business environment, however, employees can leverage off their capabilities and invest in working on the tasks while adjusting to and understanding change in the workplace. Resultantly, this study is encouraged to hypothesise that:

$H_{3.2}$: There is a statistically significant positive relationship between CogEng and AP

3.5.6 Cognitive Engagement and Contextual Performance

CogEng involves thinking processes and the employee's investment in in-depth learning, metacognition, and heedfulness geared toward the job (Rich *et al.*, 2010:618). Curiously, CogEng literature does not clarify the cognitive processes that are involved in being engaged (Chi *et al.*, 2018:1781). Rather, extant studies revealed that CogEng is best broken down into elements of absorption and attention (Dessart, Veloutsou & Morgan-Thomas, 2015:212). CP incorporates key aspects of attention and absorption when employees fulfil their job responsibilities (Meyers *et al.*, 2019:488).

Ordinarily, CP as a voluntary behaviour, supports organisational effectiveness (Pradhan *et al.*, 2018:449), and is the constellation of behavioural psychological characteristics involving high levels of CogEng that lead to CP (Bish & Kabanoff, 2014:17). According to Witt *et al.* (2002:913) employees engage in behavioural self-management, altering their behaviour which reduces their CP. These behaviours require employees to be cognitively engaged (Gan, 2018:1272) for them to contribute to organisational success (Davenport & Ronanki, 2018:114). Admittedly, cognitively engaged employees are available at work, absorbed in their roles (Jiang & Shen, 2023:953), and provide support to their colleagues (Taibah & Ho, 2023:277).

In supporting their colleagues, they derive CogEng through their work roles (Bish & Kabanoff, 2014:130), and ultimately achieve CP (Reilly & Aronson, 2009:317). In addition, cognitively engaged employees anticipate the organisation's needs and create a collaborative work environment (Joo *et al.*, 2017:453) while supporting their colleagues (Bhatti *et al.*, 2022:1981). In their study Jelača *et al.* (2022), assert that employees involvement shows their commitment to the organisation which leads to increased CP. On the contrary, disengaged employees detach themselves from CogEng behaviour (Truss *et al.*, 2013:2659). In line with this view, Shaukat, Yousaf and Sanders (2017:16) concur that less cooperation amongst employees leads to decreased CP. Rana *et al.* (2019:19) argue that disengaged employees lack cohesion and undermine what their cognitively engaged colleagues accomplish.

Although employees are cognitively engaged (Yousaf, Shaukat & Umrani, 2020:169), they may not exhibit CP behaviours (Podsakoff & MacKenzie, 2014:138), if the organisational culture does not reward such employee actions (Kovari, 2021:3). In addition, according to Westgate and Wilson (2018:16), and Makki and Abid (2017:39), the nature of the specific tasks and job roles can influence the relationship between CogEng and CP. On the contrary, Sverke *et al.* (2019:5) argue that counterproductive performance-related behaviours may be negative for the organisation as well as the employee. Further, according to Giorgi *et al.* (2018:703) work-related burnout has a negative impact on CP, particularly since employees who tend to be less optimistic and resilient at work are more prone to experience burnout (Sanchez-Gomez & Breso, 2020:16).

Considering that CP is conducive to achieving organisational goals and does not involve direct production and service activities (Wu *et al.*, 2019:4), it is important for employees to seek challenges for their growth (Ingusci *et al.*, 2019:8). Perhaps because CogEng implies the employee's consciousness about the mission and responsibility in the workplace (Svensson *et al.*, 2021:677). Moreover, the employee's thinking processes involved in CogEng (Chi et al., 2018:1785) are necessary for sectors such as ICT where the continuous and self-directed acquisition of knowledge is fundamental (Senkbeil & Ihme, 2017:147).

Instructively, employees who focus on and successfully pursue important work goals perceive work-related opportunities in future (Rudolph *et al.*, 2018:233). It may well be that employees that demonstrate job crafting behaviours exhibit CP (Oprea *et al.*, 2019:738). It could be argued that employees with higher levels of CogEng are likely to leverage CP through their voluntary behaviours for organisational success. Consequently, this study hypothesises that:

$H_{3.3}$: There is a statistically significant positive relationship between CogEng and CP

3.5.7 Emotional Engagement and Task Performance

In addition to the quality of participation in work activities, the quantity of performance by employees is critical to the focus on positive outcomes (Cameron, 2012:31), since virtuous business practices impact both individual and organisational performance (Bright, Cameron & Caza, 2006:252). Resultantly, psychological capacities which result in employees working with energy and delight have been linked to TP (West, Patera & Carsten, 2009:253). Furthermore, the positive emotions that employees experience result in EmoEng (Brinck, 2014:745). These positive emotional experiences are necessary for effective employee TP (Geue, 2018:7). Instructively, EmoEng reflects a holistic investment in the employee's task, leading to employees who are more vigilant and focused on their tasks (Christian *et al.*, 2011:120). Equally, behavioural engagement in TP is visible in how employees invest time in task participation (Phung, 2017:755).

Emotionally invested employees demonstrate an increased requirement for information to confirm their continual sense of belonging within the organisation (Welch, 2011:341) and are more motivated and enthusiastic about their work (Roberts & Davenport, 2002:21). This high level of motivation can drive them to invest extra effort and perform their tasks well (Riyanto *et al.*, 2021:171), which leads to improved TP (West & Dawson, 2012:11). Similarly, EmoEng improves an employee's capacity to concentrate on their work tasks (Rai, 2012:259). Moreover, when employees feel connected and invested in their job (Kronenwett & Rigotti, 2019:512), this enables TP (Ozyilmaz, 2020:194).

Furthermore, emotionally engaged employees align their efforts with the organisation's objectives (Storey *et al.*, 2008:304), which enables the development of TP that contributes to the overall success (Qiu, 2022:17). Additionally, employees with heightened EmoEng demonstrate enhanced proficiency in regulating their emotions (Barreiro & Treglown, 2020:5) which contributes to positive organisational outcomes, such as customer service and TP (Yagil, 2012:155), especially in customer-facing roles (Castanheira, 2016:799). Various factors, such as task-specific skills and support provided by the organisation, influence EmoEng (Bhardwaj & Kalia, 2021:195). Similarly, leadership and environmental factors influence TP (Decuypere & Schaufeli, 2020:88). Hence, it is conceivable as reported in a study by Nagarajan *et al.* (2023) that EmoEng intensifies the potency of the link between job crafting and the physical workplace setting.

The occurrence of varied antecedents in EmoEng and TP may render the inference of the potential association between these two variables intricate and multifaceted. Yet, a study by Lam, Xu and Loi (2018) uncovered that EmoEng job demands exhibit a negative correlation with TP. According to Leonard and Harvey (2008:598), employees that deliver excessive TP may experience frustration and anxiety which may manifest in negative behaviour. Moreover, a restricted embrace of EmoEng is probable to culminate in a missed opportunity for employees to harness their potential (Mazzei, Butera & Quaratino, 2019:24).

The reason is that employees experience EmoEng differently and respond to it differently (Hill *et al.*, 2017:2). In some cases when employees experience burnout due to the work environment being hostile, EmoEng is negatively affected by TP and this leads to a diminished interpersonal trust (Bang & Reio Jr, 2017:219). EmoEng is also likely to affect TP negatively when organisations do not pay due attention to factors that promote the optimal psychological functioning of employees (Castellano *et al.*, 2019:78). It would seem that the lack of EmoEng is associated with negative results of TP (Mañas *et al.*, 2018:3).

Considering that a prerequisite for EmoEng is to identify various stakeholders in the organisation (Dirin, Laine & Nieminen, 2017:307), understanding the sustainability of EmoEng and behaviour changes is crucial for organisations (Maiteny, 2002:8). Further, Lata *et al.* (2021:36) postulate that a lack of enabling organisational interventions, may affect EmoEng. In general, employees with high emotional abilities are engaged and typically experience a more positive mood (Pérez-Fuentes *et al.*, 2018). This mirrors the reality that employees with higher emotional intelligence report higher vigour and dedication at work, which in turn, increases their job satisfaction (Extremera *et al.*, 2018:10). Curiously, Moletsane, Tefera and Migiro (2019) conducted a study on 73 factory workers in KwaZulu Natal Province, South Africa, and found no evidence linking the level of employees' engagement to productivity, although low levels of engagement have been suggested as a factor that causes low levels of productivity.

Moreover, in their study, Janse van Rensburg, Rothmann and Diedericks (2018) postulate that the South African ICT sector exhibits a rapid rate of change, swift innovations and extreme job demands. This could have unique implications for EmoEng, considering an opinion by Saputra and Hutajulu (2020:350) that it is a business imperative for organisations to prioritise employees and ensure they are emotionally engaged. Further, as work engagement is positively related to inventive work behaviour, the more engaged employees are, the more innovative behaviour they will demonstrate (Van Zyl *et al.*, 2021:4018).

This lays credence to the requirement for employees to achieve TP, especially in a high performing sector such as ICT (Kundu & Mor, 2017:169), whose functions permeate all other production and service sectors (Aguado *et al.*, 2019:54). Mindful of the state of literary discourse as it pertains to EmoEng and TP as well as the responsibility that both the organisation and employees have for EmoEng, this study hypothesises that:

$H_{4.1}$: There is a statistically significant positive relationship between EmoEng and TP

3.5.8 Emotional Engagement and Adaptive Performance

Much like AP, EmoEng has been evolving as research progresses (Marlow, 2016:11). Beguilingly, the concept of AP is closely related to the changing needs of the business environment (Shoss et al., 2012:910). Accordingly, in their study, Luo *et al.* (2021) posit that existing studies have not explicitly explained the relationship between EmoEng and AP. Adams and Webster (2021:551), opine that AP is one of the most organisationally relevant dimensions of EP. This is because of employees' ability to learn quickly and innovate leads to AP (Luthia, 2022:116). Similarly, employees' ability to adapt quickly is critical because it may increase the degree of motivation (Kurniasih, Setyoko & Saputra, 2022:149), which compels employees to be enthusiastic and utilise their energy in the form of EmoEng (Bhuvanaiah & Raya, 2015:93).

Emotionally engaged employees have an emotional connection to their work (Saks, 2006:615) and are committed to the organisation (Gyensare *et al.*, 2017:8). The emotional connection that expresses commitment is likely to enhance employees' AP (Kaya & Karatepe, 2020:2080). Likewise, if the organisation cultivates personal psychological capital in a targeted way, employees will have the ability to cope with environmental changes and enhance their AP (Luo *et al.*, 2021:14).

Although the complexity of jobs, increasing demands of productivity, continuous innovation and creativity have doubled the emotional labour of employees (Reshman & Sripirabaa, 2020:3), emotionally engaged employees try new approaches and better ways of doing their work (Zhou & George, 2003:546). Notably, emotionally engaged employees approach challenges creatively, which contributes to their AP, unlike disengaged employees who represent a liability to the organisation (Rao, 2016:340). Moreover, emotionally engaged employees are receptive to feedback, and they use it for continuous improvement (Nesbit, 2012:209). In essence, understanding the emotional values and needs of employees is essential for organisations (Carter & Baghurst, 2014:456).

Unsurprisingly, the relationship between EmoEng and AP can be influenced by several factors, including the specific nature of adaptive behaviours required in the job (Bindl & Parker, 2010:390), though as observed by Boylan and Turner (2017:185), it may be more apparent in complex and dynamic job roles. The level of an employee's emotional intelligence is a contributing factor to the employee's ability to adapt (Sánchez López *et al.*, 2022:406). So, higher emotional intelligence is associated with EmoEng (Thomas & Allen, 2021:115) and it may be that this could aid AP. Contrastingly, a study by Stanley *et al.* (2021), however, discovered that in some cases, excessive EmoEng may hinder AP as employees may struggle to cope with additional demands or changes.

Instructively, AP is a complex construct that encompasses various behaviours, such as problem-solving, learning agility, and openness to change (Sherehiy, Karwowski & Layer, 2007:454). Park and Park (2019:312) argue that EmoEng alone might not fully influence all aspects of AP due to the responsive work behaviours required to adapt to changing conditions and demands. Adding to this, when employees are uncomfortable in performing their roles, they will not be proactive (Diamantidis & Chatzoglou, 2019:187). While other factors such as job security contribute to AP, unfavourable levels of negative work experience could result in a negative EmoEng as employees deliver high performance, but in the long run are fatigued (Mäder & Niessen, 2017:259).

Undoubtedly, employees experience EmoEng differently (Green Jr *et al.*, 2017:8) which could be because resilience levels differ among employees based on their problem solving, critical thinking, and planning which are integral, in the face of challenging experiences in the workplace (Rose & Palattiyil, 2020:24). Given the different levels of emotional demand, where personal and related factors may have different implications (Hussein, 2018:915), the question arises on the effect of EmoEng on employee success through increased motivation (Özhan & Kocadere, 2020:2025). According to Aguinis and Burgi-Tian (2021:237), AP is particularly relevant during periods of crisis and rapid change since employees' ability to learn quickly and innovate are critical for the survival of the organisation.

As a result, organisations have the responsibility of stimulating AP under austere conditions (Oprea et al., 2019:736). Lim *et al.* (2020:5) contend that EmoEng could be a significant predictor in building loyalty towards the organisation. Loyal customers, for instance, are likely to be satisfied with the organisation, essentially because of their experience of the levels of commitment displayed by employees (Itani, Jaramillo & Paesbrugghe, 2020:9). As the FoW continues to evolve with increasing automation and remote collaboration (Jetha *et al.*, 2021:653), the present study posits that when employees are emotionally engaged, it would enable them to operate satisfactorily, and this implies a favourable effect on AP. Based on the theoretical reasoning and the overall pattern of the findings from extant literature, this study predicts that:

$H_{4.2}$: There is a statistically significant positive relationship between EmoEng and AP

3.5.9 Emotional Engagement and Contextual Performance

Several CP concepts have been developed that differentiate between behaviours needed to support the smooth functioning of the organisation (Witt *et al.*, 2002:911), and proactive employee behaviours which aim at improving work procedures (Muchhal, 2014:60). As employees can mostly decide for themselves if they want to take on activities that are not prescribed by their function, they will only display CP if they feel engaged at work (Sonnentag & Frese, 2002:16).

In their study, Markos and Sridevi (2010) discovered that engaged employees exhibit emotional attachment to their organisation, go beyond the contractual obligations of employment, and demonstrate high levels of involvement with their organisation. Employees who demonstrate CP persist with enthusiasm and extra effort to complete their tasks (Palenzuela *et al.*, 2019:116). Likewise, employees who feel valued and confident in their work are empowered to make decisions, which generates enthusiasm (Chukwuma *et al.*, 2019:275). The enthusiasm that employees demonstrate is linked to CP behaviours (Smither & London, 2009:315) which in turn raises the CP of employees (Jena, 2022:1322).

This suggests that managers can facilitate EmoEng when employees face high emotional demands due to their work (Martinez, Salanova & Cruz-Ortiz, 2020:100), leading to the achievement of organisational goals through CP (Wu *et al.*, 2019:4). For this purpose, managers have the responsibility of directing their employees to deliver on organisational objectives, since CP is increasingly critical to help organisations thrive in competition (Chrisanty *et al.*, 2021:73). According to Christian *et al.* (2011:124), CP is imperative in organisations, because when employees are engaged, they are inclined to foster a social environment that is conducive to teamwork and CP. In an era where organisations are more than ever dependent on EP (Aryee *et al.*, 2008:407), behaviours that are necessary for CP include organisational and task-job support (Aslan & Yildirim, 2017:545). Since emotional demands are an everyday occurrence (Brunetto *et al.*, 2014:2353), the involvement of employees through EmoEng is fundamental in the organisation (Gupta, 2015:45). Instructively, the significance of employees' EmoEng in the organisation is noteworthy (Fletcher & Robinson, 2013:303). Consequently, emotionally engaged employees are more likely to positively influence team dynamics (Reilly, 2023:210). Considering that EmoEng involves the use of emotions, behaviours, and affective reactions, such as interest, a sense of belonging and frustration (Pentaraki & Burkholder, 2017:3). It may well be, as observed by Scarduzio and Malvini Redden (2015:9) as well as Chala and Bouranta (2021:129) that the camaraderie and collaboration that employees generate within their teams may enhance CP.

To summarise, employees EmoEng shapes a culture of support (De Leersnyder, Boiger & Mesquita, 2013:9), and overall organisational success (Hartini, Fakhrorazi & Islam, 2019:223). According to Carlson *et al.* (2008:37), CP is thought to be a universal indicator of job performance. Although some employees may experience high levels of EmoEng, others may have a negative emotional experience (Riedl, Masullo & Whipple, 2020:3), exemplified by emotional exhaustion and less productivity (Wang & Suh, 2018:7). This is apparent since McCloughen and Foster (2018:2699), Gilbert and Basran (2019:614), as well as Kelly *et al.* (2020:9) noted that EmoEng requires interpersonal interactions, and prosocial motives, for employees to perform.

Employees who can resolve complex issues contribute positively to the organisation's problem-solving capacity (Kleynhans, Heyns & Stander, 2021:9). Remarkably, employees utilise their proactive personality for CP (Yang *et al.*, 2020:281). Further, employees contribute to the organisation through CP which results in fostering a sense of teamwork among colleagues, leading to a more pleasant and inclusive work environment (Goodman & Svyantek, 1999:255). Engaging in CP is likely to provide employees with a sense of purpose and fulfilment extending beyond their job responsibilities (Karabay, 2021:373), leading to increased job satisfaction (Busso, 2003:12). This denotes the importance of CP which entails behaviours and efforts that are not directly related to employees' work (Cheng & Gu, 2022:3).

Instructively, satisfied employees perform better at their duties, become more responsible, and feel part of the organisation (Dziuba et al., 2020:24). A study conducted by Baluyos, Rivera and Baluyos (2019) asserts that job satisfaction is a requirement for work performance. Notably, emotionally engaged employees may experience job satisfaction, and therefore exhibit high job performance (Nguyen *et al.*, 2021:214). Afterall, employee emotions are considered important in creating a sustainable workplace (Kong *et al.*, 2021:4).

Although the findings regarding the association between EmoEng and CP exhibit some inconsistency, according to Wu, Chen & Li (2014:35), there exists evidence indicating a positive correlation between EmoEng and CP. Although some studies have found that specific dimensions of EmoEng may be more strongly related to certain aspects of CP than others (Rahman *et al.*, 2017:1110). Owing to the diverse findings, it may be arduous to accurately infer what the exact nature of the relationship between EmoEng and CP could be, especially in the context of South Africa's ICT sector where the COVID-19 pandemic has expedited workplace transformations. Nonetheless, this study, with due consideration for prior findings in extant literature elects to predict that in the cohort of employees in South Africa's ICT sector, EmoEng could be a vital heuristic for CP and so, it is hypothesised that:

$H_{4.3}$: There is a statistically significant positive relationship between EmoEng and CP

3.6 THE NEXUS BETWEEN TELECOMMUTING PROPENSISTY AND EMPLOYEE PERFORMANCE

When it comes to the relationship between EP and telecommuting, telecommuting is promoted as an approach to improve EP outcomes (Malik, Singh & Chan, 2017:145). Telecommuting is perceived to increase productivity and improve EP within the organisation and is indeed beneficial for organisations (Onyemaechi *et al.*, 2018:57). However, less is understood about how telecommuting employees relate to their organisations and how this relationship affects key outcomes, such as EP (Dahlstrom, 2013:439). The implication of this is that researchers argue about whether telecommuting is effective or not (Allen *et al.*, 2015:54). For example, Marasigan (2020:15) argues that EP detrimentally affects the experiences of employees engaged in telecommuting compared to those who are exclusively office-based. Additionally, Beauregard, Basile, and Canónico (2019:11) assert that the advantages of telecommuting substantiate the claim of its efficacy.

Contrastingly, however, Sokolic (2022:206) suggests that when employees are telecommuting, lower levels of performance tend to materialise. Likewise, Karácsony (2021:4) reports that when employees are telecommuting, EP is affected negatively with minimal benefits to employees. Identically, Tavares (2017:34) argues that it is hard to determine if telecommuting even has any impact on EP. Likewise, Kuruzovich *et al.* (2021:5) assert that telecommuting can have a negative effect on EP, which indicates that there may be specific challenges when employees telecommute for extensive periods. For instance, prolonged telecommuting could be detrimental to the social and emotional well-being of employees (Alfanza, 2021:108). In support of this viewpoint, Pearlson and Saunders (2001:117) assert that there is no difference in the performance and productivity levels between on-site and telecommuting employees. While organisations strive to be competitive, they are forced to evolve their strategies to be successful (Zöllner & Sulíková, 2021:3), since EP will not change based on the reason that employees have started telecommuting (Singh, 2021:22). Contributing to the discourse, Delanoeije (2019:5) opines that EP could be unaffected by telecommuting since the number of telecommuting days may not be high enough to interfere substantially with EP.

Curiously, when employees are telecommuting, patterns that make EP achievable are recognisable (Turetken *et al.*, 2010:58). Undoubtedly, telecommuting offers employees greater flexibility in managing their work schedules and personal commitments (Chatterjee, Chaudhuri & Vrontis, 2022:1503), which is likely to lead to EP (Orishede & Ndudi, 2020:96). Conversely, as employees continue to telecommute, there is a chance that it could affect EP negatively (Jamal, Anwar & Khan, 2022:1332). Agreeing with this assertion, Irawanto, Novianti and Roz (2021:104) report that telecommuting results in a diminished level of job satisfaction and exerts a negative impact on work-life balance. According to Wang *et al.* (2022:3163), improving employees experience when they are telecommuting can enhance EP. Popovici and Popovici (2020:470), however, assert that the business impact of telecommuting both good and bad, can be hard to measure. While this assertion holds true, telecommuting may offer advantages, such as increased productivity, as it directly affects the work-life balance of employees (Zhang, 2020:46), and their propensity to telecommute (Ismail, Hamsa & Mohamed, 2016:486). This improved work-life balance can lead to increased job satisfaction (Abilash & Siju, 2021:4) and well-being (Bertram, 2021:42). A study by Major, Verive and Joice (2008) reports that the effect that telecommuting may have on EP is contingent upon a mix of several variables, unlimited to individual work habits, job nature, and the support provided by the organisation. This complicates the effort to predict how telecommuting could relate with EP in different contexts (Camacho & Barrios, 2022:446). Furthermore, a study by Niu *et al.* (2021) revealed that telecommuting portends both positive and negative effects and this is dictated by the idiosyncrasies of each circumstance. Owing to this, accurately forecasting the exact nature of the relationship that TCP might demonstrate with EP in a specific context such as the ICT sector in South Africa, becomes complex and a difficult proposition. Nonetheless, duly considerate of the inconsistent positions in extant literature related to the possible relationship between TCP and EP, yet being mindful of the ramifications of the recent COVID-19 pandemic and the FoW in a developing economy like South Africa, the study elects to hypothesise that in the specific context of the ICT sector:

H_6: There is a statistically significant positive relationship between TCP and EP

3.7 THE NEXUS BETWEEN EMPLOYEE ENGAGEMENT AND TELECOMMUTING

The concept of EE has garnered prominence in the field of management research (Pandita & Bedarkar, 2015:30), and is a matter of concern for managers, due to its critical role in promoting innovation, competitiveness, and organisational effectiveness (Bedarkar & Pandita, 2014:107). The fundamental premise is that employees strive to attain desirable outcomes (Adisa, Ogbonnaya & Adekoya, 2023:7). Agarwal (2014:63) posits that trust is important for enhancing EE. Particularly because employees are confronted with various challenges and demands (Lai *et al.*, 2020:3), that affect the degree of EE in their roles which contribute to overall organisational success (Zacharias, Rahawarin & Yusriadi, 2021:308).

EE is, essentially, a concept that organisations cannot afford to ignore as it is a significant factor in organisational success (Soni & Rastogi, 2019:465). The importance of EE for the organisation, combined with increasing adoption in telecommuting, creates a critical need to explore the interaction between EE and telecommuting (Raghavan, Demircioglu & Orazgaliyev, 2021:11942), because of EE's potential impact on telecommuting (Weideman & Hofmeyr, 2020:52). This is imperative given that the survival of employees in the workplace is at the core of employee disengagement (Shuck et al., 2011:310). Propelled by this reality, organisations have invested in efforts to find creative ways to mitigate EE challenges (Arrowsmith & Parker, 2013:2699), in the quest for a sustained competitive advantage (Cheng et al., 2019:294). The desire for smooth operations and increased competitiveness (Alzoubi et al., 2020:703) makes it important for managers to maintain acceptable EE levels even when their employees are telecommuting as it can boost employee morale (Jallow, 2021:17).

In harmony with this view, a study by Crichlow (2023) reports that EE is necessary for telecommuting teams. Similarly, Chanana and Sangeeta (2021:5) opine that engaging employees who telecommute generates a culture of openness in which employees can get new ideas. Interestingly, a study by (Obrad & Circa, 2021) conducted on a sample of 400 teachers in Romania reports that engagement is a determinant for work engagement in the context of telecommuting.

Similarly, EE is higher on telecommuting days compared to non-telecommuting days because employees have discretion over the way or the timing in which they execute their working tasks, compared to when they work in the office (Delanoeije & Verbruggen, 2020:27). Moreover, a study by Keel (2018) discovered that EE significantly predicts turnover intentions of telecommuting customer service representatives.

According to Schaufeli and Bakker (2010:10) the phrases EE and work engagement are used interchangeably. Wontorczyk and Rożnowski (2022:17) posit that there is no difference in terms of any type of work engagement, regardless of the form in which it is performed, including telecommuting contexts. Likewise, in their study, Aggarwal *et al.* (2020) report that work engagement has a negative impact on employee psychological withdrawal behaviour. Similarly, Ugwu, Enwereuzor and Mazei (2023:354) suggest a negative correlation between work engagement and work-life balance.

Conversely, a study by Steidelmüller *et al.* (2020) reports that work engagement is associated to telework. In harmony with this view, Osoian and Petre (2022:22) assert that a positive correlation is evident between work engagement and telecommuting, which suggests that telecommuting offers advantages. More so, organisations can increase work engagement by providing adequate work resources, such as increased visibility and social support when employees work remotely (Chen, 2023:6). Instructively, in the ICT sector, the COVID-19 pandemic has accelerated the adoption of telecommuting due to lockdowns and social distancing measures that compelled companies to embrace remote work (Kogus *et al.*, 2022:302). This shift is likely to have lasting implications for the FoW. Moreover, trying to create engaged employees as opposed to disengaged employees is essential (Boeh, 2003:4), especially when they have a propensity to telecommute. Consequently, it is crucial to foster engagement among employees, especially those who telecommute as this can be particularly beneficial for organisations in telecommuting settings (Tate, Lartey & Randall, 2019:340).

The lack of consensus in extant literature as it pertains to the relationship between EE and TCP, can be attributed to contextual factors such as organisational culture, industry type, and geographical location which may influence this relationship differently. Moreover, temporal dynamics, including advancements in technology and shifts in industry norms may contribute to variations in the association between EE and TCP. Accordingly, comprehending the intricate interplay between EE and TCP within the context of the ICT sector in South Africa following the COVID-19 pandemic is essential for organisations. This underscores the need for pragmatic research and a more intricate comprehension of this correlation to contribute to the scholarly discourse within this specific domain. This study anticipates that under evolving conditions of work, EE will influence TCP. As a result, it is hypothesised that:

H_5: There is a statistically significant positive relationship between EE and TCP

3.8 TELECOMMUTING PROPENSITY AS AN INTERVENING VARIABLE ON THE RELATIONSHIP BETWEEN EMPLOYEE ENGAGEMENT AND EMPLOYEE PERFORMANCE

With the fast-changing world of work, managers need to ensure that their employees are engaged and empowered to perform (Toe, Murhadi & Lin, 2013:142). This is because when employees are engaged, it will positively affect their performance (Obuobisa-Darko, 2020:13). Moreover, Contreras *et al.* (2020:2) argue that telecommuting remains a subject of debate owing to its generation of unclear differentiations between work and non-work spheres, the personal and social implications associated with absence from a physical workplace, and the benefits and drawbacks of flexible work schedules. More so, because telecommuting typically affords employees more autonomy and flexibility in maintaining their work schedules (Anderson, Kaplan & Vega, 2015:884). Resultantly, telecommuting allows employees to work at different places outside the office (Metselaar, den Dulk & Vermeeren, 2022:2). In addition, the expansion in technology services have made telecommuting a viable option and sometimes a requirement in today's marketplace (Derven, 2007:111).

The employee work environment which includes telecommuting (Narayanan *et al.*, 2017:47), exerts a strong influence on an employee's ability to perform (Vanesa *et al.*, 2019:39), and accomplish their jobs (Dávila, Poleza & Varvakis, 2022:345). However, telecommuting requires employees to be disciplined to prevent their performance from suffering (Shrestha, 2022:8). In recent times, telecommuting has become an option for organisations to organise employees working hours in line with the varying needs of customers (Crowley *et al.*, 2020:68) due to employees' propensity to telecommute (Walls, Safirova & Jiang, 2007:116). Therefore, organisations are entrusted with the obligation to furnish employees with requisite resources and support (Edelmann, Schossboeck & Albrecht, 2021:440), to facilitate employee outcomes (Byrd, 2022:147). In particular, technology is a key resource for telecommuting employees since it provides employees with the tools to collaborate and communicate (Morrison, Chigona & Malanga, 2019:3).

To optimise the role of telecommuting in the relationship between EE and EP, organisations must strike a balance between providing flexibility and ensuring that employees remain connected (Bezovski *et al.*, 2021:97), engaged, and supported (Shipman, Burrell & Huff Mac Pherson, 2023:1081). Typically, telecommuting allows employees to focus on their tasks and deliver higher-quality work (Khan *et al.*, 2018:3). However, telecommuting can also introduce challenges that can hinder performance (Mahler, 2012:417). Contrastingly, some employees may struggle with maintaining focus or face challenges in creating a productive workspace to equip themselves for collaborating remotely (Lund *et al.*, 2020:3). However, technical difficulties or limitations in accessing the necessary resources can hinder EP (Karia & Asaari, 2016:188).

Telecommuting employees exhibiting disengagement manifest deficiencies in customer service, display a dearth of commitment, and deliver subpar performance (Bin & Shmailan, 2015:6). Telecommuting has therefore been linked with lower work engagement (Vander Elst *et al.*, 2017:183). Nonetheless, when employees, including telecommuters, exhibit engagement, they tend to dedicate their energy to their tasks (Steger *et al.*, 2013:349).

So, it is plausible as noted by Chaudhary *et al.* (2022:572) as well as Butoi and Ștefănuț (2022:9) that telecommuting does not influence the relationship between EE and EP. Instead, in a study conducted on 405 employees who work in a technology services company in the United States of America, Golden and Eddleston (2020) report that telecommuting can be considered as a contextual factor that may interact with EE. Furthermore, Awit and Marticio (2022:17) assert that telecommuting can be a contextual aspect that may impact EP. Notably, autonomy and flexibility can enable highly engaged employees to align with their work strengths and preferences (Gabriel & Aguinis, 2022:187). However, for employees who require manager guidance, increased autonomy may lead to reduced EP (Adamovic, 2022:10), because the telecommuting setup relies heavily on digital communication tools for collaboration with their colleagues (Tsumarau, 2021:20).

This perspective aligns with the discoveries delineated in a scholarly investigation conducted by Giauque *et al.* (2022), which elucidates that granting autonomy in task organisation and fostering collaborative interactions among co-workers yield favourable outcomes in terms of EE and EP, while concurrently mitigating exhaustion levels. Similarly, effective collaboration when employees are telecommuting is pivotal to EP (Makori & Mauti, 2023:12). In essence, if employees struggle with collaboration, their performance may be affected negatively (Widar *et al.*, 2022:14). Understanding the effect of telecommuting on EP is crucial (Vega, Anderson & Kaplan, 2015:315), more so for the FoW. Notwithstanding, the increased interest on the use of telecommuting (Singh & Verma, 2020:635) and TCP compels researchers to investigate its effect on EP (Silva, Wilhelm & Tabak, 2022:12). Within this context, and given the rapidly evolving global workplace paradigm, telecommuting is influenced by internal and external factors which encompass technological advancements, policy decisions, the inherent nature of the job, the competence of telecommuters, and organisational support (Agba *et al.*, 2022:91). Researchers have analysed the effects of telecommuting across industries (Awit & Marticio, 2022:15), and have postulated that it is more convenient and applicable to knowledge-based workers (Susilo, 2020:24).

The possible moderating role that telecommuting can play is evidenced in the study of Leung and Choo (2022:68) that showed that telecommuting interferes in the association between workplace flexibility and job involvement within a cohort of teachers. Despite this, telecommuting might interact with multiple variables simultaneously (Wei, Wang & Yu, 2022:11), leading to complex interaction effects (Martin, 2020:114). Curiously, Vleeshouwers *et al.* (2022:2048) assert that mechanisms explaining how telecommuting may influence the psychosocial work environment are lacking, and since most studies only reflect one or a few work environment factors, interrelations between factors, as well as potential moderating, mediating or reciprocal effects are unexplored.

Indeed, telecommuting has been widely studied by researchers from various disciplines, such as management, psychology, sociology, and economics (Busu & Gyorgy, 2021:665). Nevertheless, the outcomes of these investigations have been varied and inconclusive, indicating that telecommuting may exert divergent effects on distinct employees, organisations, and contexts (Allen *et al.*, 2015:45). Some scholars have suggested that telecommuting can be seen as a mediating variable (Schall, 2019:17). Although others argue that telecommuting is a moderating variable (Candel & Arnăutu, 2021:50).

Perhaps due to its prevalence, telecommuting is likely to interfere in the association between work-related attitudes and behaviours, such as job satisfaction and organisational commitment (Dahlstrom, 2013:440). Telecommuting can also be seen as a moderating variable in organisational behaviour, as it can affect how other variables interact (Kuruzovich *et al.*, 2021:30). Further, telecommuting interferes with how organisational outcomes such as commitment, turnover, and performance relate to each other (Nicklin *et al.*, 2016:48). For example, telecommuting can influence how leadership style affects employee satisfaction (Moffa, 2023:63), in such a manner that different types of leadership may be more-or-less effective for telecommuters than for office workers (Wojcak *et al.*, 2016:37). In addition, telecommuting moderates the relationship between self-efficacy and adjustment to work intensity (Raghuram, Wiesenfeld & Garud, 2003:189).

Telecommuting can be seen as a variable that can enhance or diminish the effects of other variables, depending on the context, the outcome of interest (Shabanpour *et al.*, 2018:580), and propensity to telecommute (Denham, 2021:516). Interestingly, Garcia Prieto Palacios Roji (2022:10) argue that telecommuting interferes with the relationship between telecommuting intensity and the intention to quit. Further, Dambrin (2004:363) reports that telecommuting interferes with the manager-employee relationship since it pertains to the loss of control over telecommuters. So, it is plausible as noted in a study by Jaafar and Rahim (2022) that telecommuting disrupts the equilibrium between work and personal life, consequently impacting employee productivity.

Curiously, the role of telecommuting as a moderator has also been found in the relationship between traffic and air pollution (Giovanis, 2018:21) which contribute to the work environment. In harmony with this view Tan and Antonio (2022:192) assert that telecommuting interferes with the relationship between perceived e-leadership and organisational commitment. Chidambaram *et al.* (2022:9), in particular, present findings on the moderating influence of telecommuting in alleviating the detrimental impacts of the COVID-19 pandemic on work engagement.

The findings in extant literature lend credence to the interference of TCP on various organisational as well as employee outcomes and provides a compelling basis to anticipate that TCP might interfere, either in a mediating or moderating role, in the relationship between EE and EP. This precedence provides impetus for the present study to hypothesise that in the cohort of employees in South Africa's ICT sector, especially in the context of the COVID-19 pandemic that:

H_7: TCP has a mediating effect on the relationship between EE and EP

H_8: TCP has a moderating effect on the relationship between EE and EP

3.9 CONCEPTUAL FRAMEWORK OF THE RESEARCH

Relying on the current discourse in extant literature, the present study employed a deductive approach to formulate its hypotheses. The present study aims to investigate fourteen hypotheses (**H_1** to **H_8**), as delineated in the conceptual framework depicted in Figure 3.1. The conceptual framework expresses some of the complex relationships between EE, TCP, and EP.

As shown in the conceptual framework, the IV is EE with three dimensions of PhyEng, CogEng and EmoEng. The DV is EP with three dimensions of TP, AP, and CP. TCP is presented as a mediating or moderating variable that interferes with the hypothesised relationship between EE and EP. Multiple arrows with associated tags **H_1** to **H_8** have been used to illustrate the directions of the hypothesised relationships. The correlations among the variables, as illustrated in the conceptual framework, align with objectives outlined in this study.

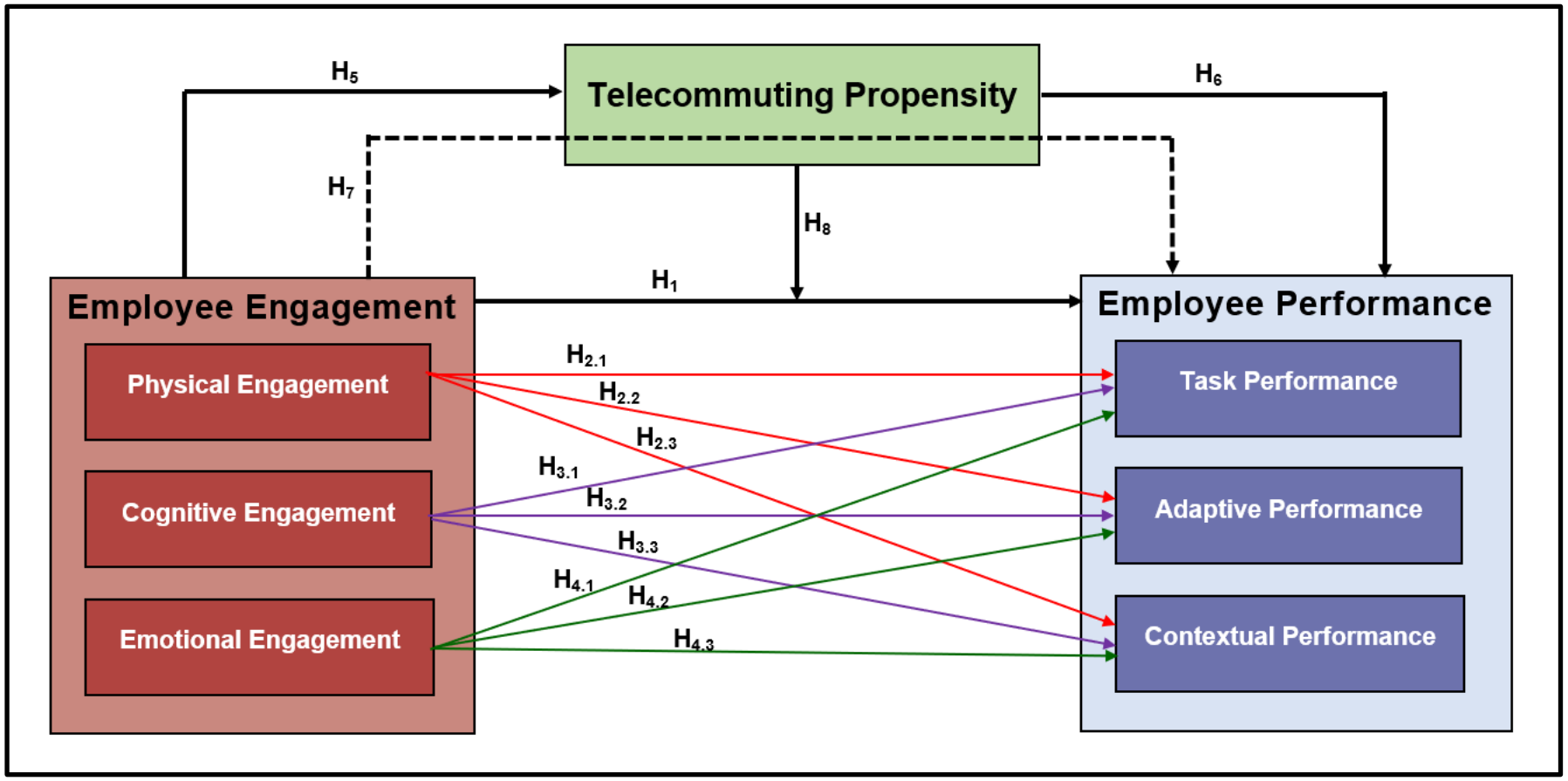

Figure 3.1: Conceptual framework of the research

Source: Author's own compilation

3.10 CHAPTER SUMMARY

This chapter has drawn on literature for the three constructs and presents arguments in a bid to illuminate the nexus of EE, TCP, and EP. The chapter begins with an introduction, setting the stage for the discussion and highlights the significance of TCP, EE, and EP in the modern workplace and by extension for the FoW.

The chapter presents the concept of EE and explains its importance in terms of motivating employees, enhancing their commitment to the organisation, and improving overall job satisfaction. The telecommuting practice is also explored and discussed related to its increasing prevalence in contemporary work environments. In addition, the various aspects of telecommuting are presented, considering its growing relevance in modern work arrangements.

The chapter continues with the concept of EP and various aspects of employees' job-related achievements, productivity, and efficiency. Subsequently, this chapter draws on perspectives from extant literature to present theoretical arguments on the nexus of EE and EP, while elaborating the EE sub-dimensions of PhyEng, CogEng, EmoEng, and how they relate to the EP sub-dimensions of TP, AP, and CP.

This chapter continues to present the nexus of EE and TCP, examining how telecommuting arrangements influence employees' ability to deliver their tasks effectively. The ensuing section presents the nexus of TCP and EP. The final section of this chapter discusses how TCP may act as a mediator/moderator in the relationship between EE and EP and concludes by presenting the conceptual framework for the present study.

CHAPTER 4: RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

This chapter elucidates the research design and methodology, delineating the procedural measures implemented to facilitate empirical enquiry. Fundamentally, this chapter elucidates the research objectives, hypotheses slated for examination, the research design employed, the sampling methodology, measurement instruments utilised, as well as the procedures encompassing data collection and analysis.

Further, the research design utilised to support the empirical evaluation of the interactions between EE, TCP and EP is presented. To fulfil this purpose, this chapter discusses the pivotal elements of the research design and methodology that serve as the foundational framework for this study. Notably, this chapter encapsulates the intricate interplay of research design and methodology, illuminating the roadmap that will lead to the discovery of insights and the expansion of knowledge. Particularly, this chapter underscores the significance of each layer of the research onion in crafting a study that is both academically comprehensive and ethically responsible. In addition, this chapter delineates the data analysis techniques that utilised descriptive statistics, inferential statistics, and tools of Structural Equation Modelling (SEM).

4.2 RESEARCH DESIGN

Research design, akin to an architectural blueprint, defines the overarching study and how different parts of the research will work in unison (Asenahabi, Busula & Ronoh, 2019:348). A study by Sileyew (2019) affirms that a research design determines the type of research to be conducted, the scope of investigation, the data to be collected, and the analytical tools to be employed. Further, a research design encompasses the framework or set of methods and procedures utilised for collecting and analysing data on variables specified in a particular research problem (Ranganathan & Aggarwal, 2018:184). At its core, a research design is concerned with empirical work, content analysis, qualitative work, conceptual work, and quantitative work (Chourasiya, Pandey & Malviya, 2023:625). Accordingly, a research design complements the methodology, and together, they increase the success potential of a study (Asenahabi, 2019:87).

A research design constitutes a structured blueprint designed to direct the progression of the research process by laying out how a study will move from purpose to outcomes and encapsulates the process of collecting as well as analysing data to increase the understanding of a given topic (Abutabenjeh & Jaradat, 2018:238). Furthermore, according to Asenahabi (2019:77), a research design reflects a researcher's ideas and helps prevent frustration by binding the study together through a structured plan that shows how all the major parts work together in pursuit of the research objectives. A fundamental challenge facing researchers is producing studies that are credible, reliable with valid findings utilising empirical insights from diverse contexts, leading to the development and confirmation of reliable theory, necessary for managerial practice in organisations (Knight, Chidlow & Minbaeva, 2022:3).

Cognisant of these views, this study embraced a quantitative methodology, dependent on numerical data collected through a survey in the form of a structured questionnaire. In a quantitative design, the principal purpose is to investigate the relationships between an IV, a DV, or outcome variables within a population (Mehrad & Zangeneh, 2019:2). Consequently, variables are hypothesised to depend on or be caused by other variables (Mohajan, 2020:60). A descriptive study focuses on the distribution of one or more variables, devoid of consideration for any causal or alternative hypotheses (Aggarwal & Ranganathan, 2019:34). Conversely, an experimental study seeks to establish causal relationships between variables to confirm or refine theories (Park, Konge & Artino, 2020:692).

Researchers typically draw upon either experimental or quasi-experimental research designs to determine whether there is a causal relationship between the treatment and the outcome (Rogers & Revesz, 2019:133). This study, however, does not make use of either of these designs but rather relies on a non-experimental design as there was no effort to manipulate the IVs and indeed all study variables were measured as they naturally occur, through the perceptions of respondents.

Cooper and Schindler (2008:282) report eight descriptors and alternatives that should be considered in formulating an appropriate research design. These descriptors outline the options that a researcher selects according to the research paradigm and methodological fit (Shah & Al-Bargi, 2013:260). Table 4.1 presents the research design descriptors, alternatives, and framework adopted for this study, aligned to the philosophical underpinnings driving the study.

Table 4.1: Research design descriptors

Descriptors	Alternatives	Framework for this Study
The Degree to which the Research Question is Crystallised	• Exploratory • Formal Study	• Formal study
Method of Collection	• Monitoring • Communication study	• Communication study
The Power of the Researcher to Produce Effects in the Variables under Study	• Experimental • *Ex post facto*	• *Ex post facto*

The Purpose of the Study	• Reporting
	• Descriptive
	• Causal
	  ○ Explanatory
	  ○ Predictive
		• Causal (Predictive)

The Time Dimension	• Cross-sectional study • Longitudinal study	• Cross-sectional study
The Topical Scope: Breadth and Depth of the Study	• Case study • Statistical analysis	• Statistical analysis
The Research Environment	• Field Setting • Laboratory research • Simulation	• Field setting
Participants' Perception of Research Activity	• Actual Routine • Modified Routine	• Actual routine
Source: Adapted from Cooper and Schindler (2008:282)		

4.3 RESEARCH OBJECTIVES AND HYPOTHESES

The research objectives articulate the specific goals and intentions of the study. Specifically, this study sought to investigate the nexus between EE, TCP, and EP. In doing so, this study explicated the relationships between EE dimensions, TCP, and EP dimensions. Moreover, this study interrogates whether the relationship between EE and EP is influenced by TCP.

4.3.1 Research Objectives

The primary focus of the present study is to analyse the relationships between EE and its dimensions, TCP, EP, and its dimensions within the South African ICT sector context. Table 4.2 re-presents the research objectives set for the study, attempting to delineate a framework that provides strict guidance for the trajectory of the empirical investigation that the study seeks to undertake.

4.3.2 Hypotheses

The proposed hypotheses formulated through a deductive process in Chapter 3 suggested potential relationships between the variables, establishing a foundation for empirically investigating the nexus between theoretical constructs of the study. Instructively, directional hypotheses specify the expected direction of the relationship between variables, while non-directional hypotheses acknowledge a relationship between the variables without predicting the nature of direction (Kaur, 2017:123).

The hypotheses were aligned to the four major objectives set for the study. However, some objectives had more hypotheses associated with them relative to others. As illustrated in Table 4.2, the study's main objectives, the disaggregated forms of the objectives where applicable, and the extant hypotheses formulated in the study are aligned. Invariably, for constructs like EE and EP for whom the existence of sub-dimensions is acknowledged in the study, there were also hypotheses related to each of the identified sub-dimensions.

Table 4.2: Relating research objectives to the study hypotheses

Research Objectives	Disaggregated Research Objectives	Related Hypothesis
1. To explore the relationship between EE and TCP in the ICT sector in South Africa.	To examine the relationship between EE and TCP	***H_5**: There is a statistically significant positive relationship between EE and TCP.*
2. To explore the relationship between EE and EP in the ICT sector in South Africa.	To examine the relationship between EE and EP	***H_1**: EE has a positive relationship with EP.*
	To examine the relationship between EE dimensions and EP dimensions	***$H_{2.1}$**: There is a statistically significant positive relationship between PhyEng and TP*
		***$H_{2.2}$**: There is a statistically significant positive relationship between PhyEng and AP.*
		***$H_{2.3}$**: There is a statistically significant positive relationship between PhyEng and CP.*
		***$H_{3.1}$**: There is a statistically significant positive relationship between CogEng and TP.*
		***$H_{3.2}$**: There is a statistically significant positive relationship between CogEng and AP.*
		***$H_{3.3}$**: There is a statistically significant positive relationship between CogEng and CP.*

		***$H_{4.1}$**: There is a statistically significant positive relationship between EmoEng and TP.*
		***$H_{4.2}$**: There is a statistically significant positive relationship between EmoEng and AP.*
		***$H_{4.3}$**: There is a statistically significant positive relationship between EmoEng and CP.*
3. To explore the relationship between TCP and EP in the ICT sector in South Africa.	To examine the relationship between TCP and EP.	***H_6**: There is a statistically significant positive relationship between TCP and EP.*
4. To explore the mediating role of TCP in the relationship between EE and EP in the ICT sector in South Africa. **5. To explore the mediating role of TCP in the relationship between EE dimensions and EP dimensions in the ICT sector in South Africa.** **6. To explore the moderating role of TCP in the relationship between EE and EP in the ICT sector in South Africa.** **7. To explore the moderating role of TCP in the relationship between EE dimensions and EP dimensions in the ICT sector in South Africa.**	To examine the mediating role of TCP in the relationship between EE and EP.	***H_7**: TCP has a mediating effect on the relationship between EE and EP.*
	To examine the moderating role of TCP in the relationship between EE and EP.	***H_8**: TCP has a moderating effect on the relationship between EE and EP.*

Source: Author's own compilation

4.4 RESEARCH PARADIGM

Researchers face a heightened difficulty in understanding the incoherent classification of research philosophies, such as epistemology, ontology, doxology, and the quantitative-qualitative dichotomy debates, which causes a dilemma in establishing relevance to subject areas and disciplines (Mkansi & Acheampong, 2012:132). It is imperative for researchers to comprehend and eloquently express convictions concerning the essence of reality, the ascertainable knowledge about it, and the methodologies employed in acquiring such knowledge (Rehman & Alharthi, 2016:51). Accordingly, the field of research offers several philosophical paradigms (Shan, 2022:4). More so, a study by Adom, Yeboah and Ankrah (2016) reports that due to the advancement in the human way of thinking, there are diverse ways of explaining occurrence, and implications of the phenomena that exist.

When properly aligned, research methodology principles put an ontology and epistemology in a research project into action, due to the constructed data output that is considered valid and enables the drawing of reasonable conclusions within a given paradigm (Varpio & MacLeod, 2020:688). More so, research paradigms play a pivotal role in shaping the predominant research methodologies, requiring an understanding of the inherent epistemological considerations associated with each paradigm (Khaldi, 2017:23). According to Holden and Lynch (2004:399), a methodological choice should be related to the philosophical position of the researcher and the analysed phenomenon. Similarly, Tuli (2010:105) declares that ontology and epistemology orientations influence the methodology, which in turn guides the research instrument. In particular, the notions of ontology and epistemology, largely dictate the research process (Berryman, 2019:273).

4.4.1 Ontology

Ontology addresses the fundamental nature of reality and existence, particularly in relation to the scientific inquiry (Hayati & Dalimunthe, 2022:172). Notably, ontology describes what can be known (Varela & Silva, 2008:203), explores questions about what is real (Sabou, Lopez & Motta, 2006:99), and is important since it helps researchers recognise how certain they can be about fundamental entities that exist in their study (Moon & Blackman, 2014:1171).

Moreover, ontology reveals how concepts and practices are made sensible, as things that seem reasonable and desirable (Zyphur & Pierides, 2020:4). Likewise, ontological considerations involve reflecting on the nature of the phenomenon being studied (Lawson, 2019:5). In general, researchers must decide whether they believe in an objective, external reality that can be observed and measured, described as objectivism (Coşkun, 2020:5), or whether reality is socially constructed, described as constructivism (Kaminski, 2019:16). There are instances where a more objectivist or constructivist paradigm is appropriate, depending on the context of the research (Vrasidas, 2000:353).

According to Ryan (2018:44), objectivism takes the position that there is a single version of what is real, regardless of the researcher's perspective, since the credible way to find the truth is to collect data with little intervention from the researcher. In the context of quantitative studies, the positivist philosophical paradigm is considered the most suitable, given that its foundations can be clearly identified within this paradigm (Rahi, 2017:4). As such, this study embraced an objectivist ontological philosophy, given its emphasis on an independent reality that transcends the researcher's perspective and can be validated through the collection of factual evidence. The choice is based on the premise that researchers can objectively document observations and establish the truth without interfering. Moreso, the methodological choices of previous studies on either EE, or TCP, as well as EP have revealed that the objectivist ontological paradigm was preferred (see Egwuonwu, 2023; Fang, 2023; Kinnunen, 2021; Rebecca & Jayawardana, 2023).

4.4.2 Epistemology

Epistemology deals with questions of knowledge and how it is acquired (Romero, Pérez-Jara & Camprubí, 2022:8). It explores how people come to know what they know and how knowledge is justified (Thomas *et al.*, 2020:993). Researchers must consider their stance on the sources of knowledge (Maarouf, 2019:9), whether it arises from a positivistic or the interpretivist paradigm which are commonly used by researchers (Alharahsheh & Pius, 2020:43). It is plausible, as noted in a study by Kankam (2019) that the interpretivist paradigm seeks to expose understandings of human behaviour and actions.

Further, interpretivism can penetrate the complexity of social behaviours and generating insights profoundly (Irshaidat, 2022:156). In addition, the interpretivist paradigm enables researchers to gain further depth through seeking experiences and perceptions of a particular social context (Alharahsheh & Pius, 2020:42). Comparably, positivism provides assurance of unambiguous and accurate knowledge of the world (Al-Ababneh, 2020:79). The primary objective of research endeavours aligned with positivism is the generalisation of research findings to a significant extent, notwithstanding the potential risk that individuals whose comprehension and interpretation are connected to the phenomenon might disclose substantial truths about the reality that could be overlooked (Pham, 2018:3).

Within its epistemological framework, positivism perceives knowledge as generated and validated through the utilisation of human senses (Majeed, 2019:122). Remarkably, verified knowledge can be achieved by a researcher or trained observer who has undistorted contact with reality (Panhwar, Ansari & Shah, 2017:255). Instructively, the positivist philosophy is grounded in an alternative epistemological foundation and empirical worldview, prioritising an abstract body of evidence over the immediate personal experiences and intuitions of individuals (Browne, 2018:2541).

The positivist paradigm allows for this study to generate hypotheses, tested through the collation of relevant data, enabling the measurement and examination of possible correlations. Moreso, the methodological selections employed in prior investigations pertaining to either TCP or EP have demonstrated the appropriateness of the positivist paradigm (see Chaudhuri, Arora & Roy, 2020; Ibua, 2021; Kajongwe & Sithole, 2022; Makambe & Moeng, 2020). Consistent with the objectivist ontological disposition, this study outlines the validity and reliability of tools used for measuring the reality being studied, and assents to the positivist epistemological paradigm to access quantifiable knowledge through analytical methods and statistical rigour. Table 4.3 presents the constituents of the research paradigm for this study including guiding questions and the position adopted in this study.

Table 4.3: Constituents of the research paradigm

Research Paradigm	Description	Guiding Questions	Position Adopted in this Study
Ontology	Worldview and social reality	What needs to be known?	Objectivism
Epistemology	Sourcing the knowledge and who sources it	What is the nature of knowledge?	Positivism
Methodology	The scientific methodology to gaining valid knowledge	What is the nature of the methodology to research?	Quantitative
Methods	The method that will be utilised for sourcing information	What methods can be used to gather this information?	Survey instrument for collection of numerical data
Results	The analysis and presentation of results	Can the findings be generalised?	Statistical data analysis
Source: Adapted from Antwi and Hamza (2015:222)			

4.5 RESEARCH METHODOLOGY

According to Moyo (2017:286), at the heart of research is the creation or generation of knowledge which has implications for the research methodology. Accordingly, research methodology refers to a systemic set of procedures to interpret data to achieve research objectives (Chu & Ke, 2017:284). In addition, research methodology embodies strategies that researchers employ to navigate the complexities of their chosen field, enabling them to extract meaningful insights from the information (Budianto, 2020:1339).

A study by Muzari, Shava and Shonhiwa (2022) reports that research methodology is a process used to gather information and data with the intention of making decisions regarding the research. Research methodology is the basis by which the research is directed to the right path, informs the philosophical underpinnings, research strategy, and the choice of data collection and analysis (Malalgoda, Amaratunga & Haigh, 2018:903). Assadpour, Ghalehnoee and Bahramian (2023:4) report that one of the most widely used frameworks used in business studies is the research onion.

Consequently, the research onion has become a comprehensive and useful framework used in research (Mokgohloa *et al.*, 2021:316). Orth and Maçada (2021:743) report that the research onion adds rigour, richness, and relevance to results. According to Abdelhakim (2021:100), the research onion functions as an empirical framework for the development of methodology. The conceptualisation of the research onion by Saunders *et al.* (2019:130) offers a comprehensive delineation of sequential layers that must be systematically considered to develop a robust research methodology. The research onion as depicted in Figure 4.1 has six layers: the researcher's philosophical position, the approach to theory development, research strategies, methodological choices, research time horizon, as well as techniques and procedures (Melnikovas, 2018:33).

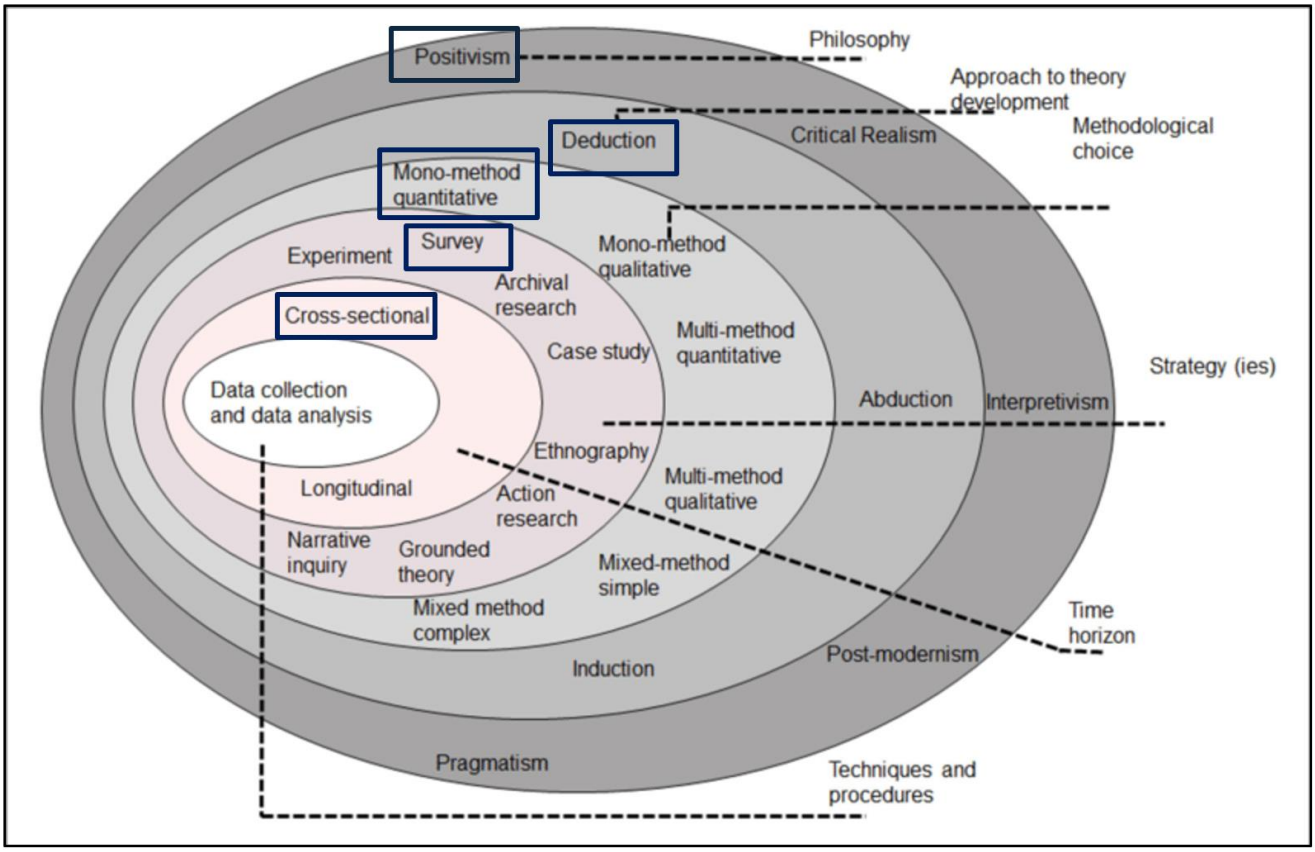

Figure 4.1: The research onion illustrating the methodology choices made in the present study

Source: Saunders *et al.* (2019:130)

4.5.1 Philosophy

Positivism is mostly regarded as a form of empiricism (Hjørland, 2005:130), and it is anchored on the belief that the only valid knowledge is that which can be objectively observed and measured (Ayeni, Saman & Kasimu, 2019:21). The philosophical position within the research onion framework is the first layer (Knox, 2003:122), representing a perspective that emphasises empirical observation, measurement, and the scientific method as the primary means of acquiring knowledge (Rahi, 2017:1).

In the context of research, positivism conventionally signifies the adoption of a quantitative methodology, with a focus on gathering numerical data and employing statistical analysis to elucidate patterns and regularities within the phenomena under scrutiny (Mardiana, 2020:1204). A study by Junjie and Yingxin (2022) reports that the positivism philosophy assumes that there is an objective reality that can be discovered through rigorous and systematic observation. Further positivism values the idea of value-neutrality in research, aiming to minimise subjective biases (Code, 2015:16).

A study by Goldkuhl (2012) asserts that there are differences in epistemological orientations, for example, the key character of interpretive knowledge is understanding, while in pragmatism, constructive knowledge is emphasised. The positivist approach has proven particularly effective in addressing research questions that require precise measurement and statistical validation (Park, Konge & Artino Jr, 2020:692). Since this study attempted to find quantifiable data to answer the research objectives, the positivist philosophy is justified.

4.5.2 Approach to Theory Development

The second layer in the research onion is concerned with the approach to theory development, namely deductive and inductive (Mesek, 2023:4). According to Melnikovas (2018:34), a deductive approach to theory development is applied for existing theory testing, while an inductive approach is commonly used in developing a theory or in fields with little research on the topic. In the deductive context, researchers begin with a broad theoretical perspective at the outer layers of the onion and move progressively inward, refining their focus and hypotheses (Omotayo & Kulatunga, 2017:7).

The decision to select the approach is influenced by whether the researcher seeks to either theory test or theory build (Bianchi, 2021:34). Instructively, research is expected to pursue the principles of scientific rigour and maintain the independence of the observer in a deductive approach (Kulatunga, Amaratunga & Haigh, 2007:483). Adding to this, a study by Pelser-Carstens and Bunt (2023) asserts that the deductive approach starts with a specific hypothesis development based on literature and tests the hypothesis to check if it holds context. In particular, a gap analysis may not be possible where the theory is being developed inductively, rather than deductively (Brunton, Oliver & Thomas, 2020:328).

Consequently, the deductive approach emerges as a valuable and systematic guide for theory development, ensuring a methodologically rigorous journey from broad theoretical frameworks to empirically tested hypotheses (Nowell & Albrecht, 2019:352). The literature review conducted in Chapter 3 is funnel-like, from broad to narrow, signalling some form of deductive intention. This study's hypotheses were subsequently formulated based on due considerations for different scholarly positions in extant literature. These inclinations serve as evidence of the deductive approach to theory development employed in this study. This aligns with positions taken in prior studies (see Hakro, Jhatial & Chandio, 2022; Indika, 2021; Liu, Cui & Nanyangwe, 2023).

4.5.3 Methodological Choice

Methodological choice is the third layer in the research onion. A study by Basias and Pollalis (2018) reports that research methodology provides an inclusive qualitative or quantitative framework that guides the investigation of the phenomenon. The way in which the researcher decides to collect, analyse, and interpret data determines whether the research is qualitative or quantitative (Rutberg & Bouikidis, 2018:209). However, in their study, Goopy and Kassan (2019) contend that while the two research types differ in terms of treatment of data, they are, not mutually exclusive. Researchers of various disciplines often use qualitative and quantitative research methods for their studies (Rahman, 2020:102).

In qualitative research, data is collected, analysed, and interpreted through the examination of verbal as well as behavioural expressions which encompasses both the unspoken and enacted aspects of human conduct, inherently emphasising the subjective meanings ascribed by individuals to various phenomena (Kandel, 2020:662; McInnes *et al.*, 2017:4). Furthermore, qualitative research is subjective, uses methods such as individual, focus group discussions, in-depth interviews with findings that are subjective, context dependent, and have less focus on validity and accuracy (Kalu, 2019:98).

Accordingly, qualitative research includes narrative investigation, phenomenology, historical research, grounded theory, ethnography, content analysis, and case study methodologies (Mohajan, 2018:21). As a result, the nature of qualitative research is open ended (Majid *et al.*, 2017:1077), and researchers can provide insight which is not possible to elucidate with purely quantitative data (Smith, 2018:146). Qualitative data, however, can also be analysed quantitatively through assigning numerical values to the whole or sections of the data, which can then help to identify general patterns or, in some cases, to evaluate specific predictions (Nassaji, 2020:427).

In the opinion of Goertzen (2017:12), quantitative research is controlled and aims at enumerating the variation of certain situations, issues, as well as phenomena. For quantitative methodology, the positivist philosophy and deductive approach align well (Farghaly, 2018:6). Specifically, quantitative studies rely on prediction, control, and objective measurement of observable phenomena (Gunbayi, 2020:46). In addition, quantitative methodology allows for the formulation of hypotheses and the collection of structured data to test hypotheses (Ahmad *et al.*, 2019:2830). Instructively, hypotheses are central to scientific discovery (Wang *et al.*, 2023:51), and are formulated to explain an empirically observed and tested phenomenon (Sondakh, 2019:93). A study by Esperón (2017) reports that the objective of quantitative research is to develop and employ scientific models, theories, and hypotheses. Besides, quantitative research seeks to establish the relationship between variables within a population, employing an objective methodology to test theories (Bauer *et al.*, 2021:7).

Even so, quantitative research entails elucidating a phenomenon through the collection of numerical data, which is subsequently analysed using mathematically based methods (Queirós, Faria & Almeida, 2017:370). Table 4.4 presents the similarities and differences of quantitative and qualitative research methodologies.

Table 4.4: Characteristics of quantitative and qualitative research methodologies

Feature	Quantitative Methodology	Qualitative Methodology
Examined Item	• Phenomena: Fact or situation when the cause or explanation is in question	• Phenomena
Interpretation	• Systematic investigation of phenomena through statistical and mathematical analysis • Processing and analysis of numerical data	• Sequence of interpretative methods that seek to describe, decode, and translate concepts instead of capturing the frequency of certain phenomena
Selection Justification	• Analysis of large data to verify hypothesis and test theory • When there is uncertainty about the conceptions under consideration • Data collected through a questionnaire that includes simple questions and short answers that can be quantified and compared	• When an interpretation is required • Research for relatively new areas • When there is uncertainty about the conceptions under consideration
Context	• Correlation with experiments • Testing of hypothesis related to phenomena • Use of statistical tools	• Related to observation • Uses flexible questionnaires • Investigates phenomena • Uses methods such as interviews for in-depth research
Question Form	• Closed questions	• Open questions
Data Format	• Numerical data	• Usually, text or spoken words that are converted to text
Advantages	• Objective results (fact-based, measurable, and observable) • Processing of large amounts of data • Highlights changes and differences • Comparison of data • Development of quantitative valuation indicators	• Facilitates the understanding of the complexity of the phenomenon under consideration • Facilitates research in new areas • Supports the investigation of a phenomenon in its natural environment • Supports in-depth research
Source: Adapted from Basias and Pollalis (2018:96)		

Patently, quantitative research is suited to the study of general trends across a population and uses numerical methods to ascertain magnitude, amount, or size (Goertzen, 2017:12). The process of measurement is central to quantitative research (Baur, 2019:7), due to its capacity to establish the foundational link between empirical observations and the mathematical expression of quantitative relationships (Basias & Pollalis, 2018:92). Consequently, aligned to the deductive reasoning approach and positivism philosophy, this study employed the quantitative methodology.

4.5.4 Strategy

The fourth layer of the research onion is the research strategy that presents eight options whose choice must be guided by philosophical orientations. As it is evident in the research onion, the options are survey, action research, archival research, ethnography, case study, ethnography, experiment, and grounded theory (Saunders *et al.*, 2019:130). The importance of selecting the most appropriate strategy is to enable the researcher in achieving the research objectives, guided by the amount of time, resources, and existing knowledge available to the researcher (Du Plessis & Pretorius, 2019:7). Table 4.5 outlines the characteristics of the eight research strategies.

Table 4.5: Research strategies

Research Strategy	Characteristic
Experiment	• Involves the process of variable testing where the impact of one variable can be seen with other variables • Used when the researcher examines cause and effect relationships among variables
Survey	• Associated with the deductive research approach • Information is collected from interviews and pre-designed questionnaires
Archival Research	• Reports the incidence and prevalence related to a specific phenomenon • Constrained for use in research areas
Case Study	• A written description of a problem or situation • Presents small group problems or focus on a particular issue
Ethnography	• Primarily uses observations and interviews • Analyses data through the description of themes about the study group
Action Research	• The researcher works with the study group to identify a challenge that requires a solution

	• Uses a practical approach to solve an immediate problem
Grounded Theory	• Involves studying a process, action or interaction involving many individuals • Data is collected primarily through interviews with 20-60 individuals
Narrative Inquiry	• Focuses on the exploration of the life of an individual and tells stories • The researcher learns from participants in a setting through stories told by individuals
Source: Adapted from Creswell and Poth (2016:79); Haydam and Steenkamp (2020:62); Kilonzo and Ojebode (2022:74); Mertova and Webster (2019:12); Rahi (2017:2); Rahi, Alnaser and Abd Ghani (2019:1163)	

In the pursuit of research focused on populations, it often becomes unfeasible to collect data or information from the entire population due to challenges related to individual identification, contact, or the sheer size of the population (Stratton, 2021:373). Given the size of the target population in South Africa's ICT sector, the present study elected to employ the survey research strategy. The other research strategies were not considered because according to Hanlon, Yeung and Zuo (2022:1154), surveys are effective when researchers measure unobservable constructs more directly. Further, quantitative data are usually collected by surveys from large numbers of respondents (Mohajan, 2020:77).

4.5.5 Time Horizon

The time horizon which is the fifth layer of the research onion is a key attribute of research that presents two options, namely cross-sectional and longitudinal studies (Sahay, 2016:4). Cross-sectional studies are formulated to examine a variable at a specific moment in time, whereas longitudinal studies are structured to investigate a particular phenomenon over an extended duration (Zolfagharian *et al.*, 2019:5). A cross-sectional time horizon represents a snapshot of data collected at singular time point and is particularly valuable when researchers seek to capture a momentary view of a population or phenomenon (Wang & Cheng, 2020:65). Contrastingly, longitudinal studies involve the collection of data, and observations are carried out at different points in time (Asenahabi, 2019:80). Further, longitudinal studies are mostly used in evaluating changes over time within a subject (Wagner *et al.*, 2018:6). Rindfleisch *et al.* (2008:276) posit that cross-sectional data are more appropriate for studies that examine concrete and externally oriented constructs. Further, cross-sectional studies allow for reverse causality (Koob *et al.*, 2021:14).

A study by Griffin *et al.* (2021) reports that researchers consider cross-sectional studies since they offer an inexpensive and quick data collection method. Consequently, the present study is cross-sectional as the data were collected from diverse sources simultaneously providing a comprehensive snapshot of the variables under investigation. In summary, the present study adopted a positivism philosophy, a deductive approach to theory development, mono-method quantitative, survey, and cross-sectional orientation which entailed the development of hypotheses to address the research problem and objectives. These choices align with prior studies that investigated EE, TCP, or EP (Muchibi, Mutua & Juma, 2022; Rebecca & Jayawardana, 2023; Shah & Hashmi, 2019). This study responds to recommendations for future empirical research which direct a shift from practical to conceptual approaches and is influenced by other studies that employed the quantitative methodology in the investigation of the relationships between EE, TCP, and EP (see Diamantidis & Chatzoglou, 2019; Liang *et al.*, 2023; Ory & Mokhtarian, 2006; Saks, 2006). Notably, this procedure is appropriate due to dramatic changes in the business environment (Kurdi, Alshurideh & Alnaser, 2020:3567).

4.6 SAMPLING

4.6.1 Study Population

The population of persons working in the South African ICT sector is 52 634 employees (ICASA, 2023:16). In circumstances where the entire population cannot participate in a study, sampling is employed to gather data that are presumed to be representative of the target population (Casteel & Bridier, 2021:345). This is important owing to the infeasibility of engaging the entire population of interest in a study and the challenge of identifying all members of the target population. Sampling is employed to gather data that are presumed to be representative of that target population (Pandey & Pandey, 2021:42). Given the constraints of time and resources, researchers employ a sampling method to mitigate the need for analysing the entire population, thereby reducing the number of cases under consideration (Braun & Clarke, 2021:203). Research is typically conducted on samples given the rarity of circumstances where it is both feasible and essential to study the entire population (Andrade, 2021:88). Markedly, the sample is the set of units selected to represent the population of interest (Gravetter *et al.*, 2021:323).

4.6.2 Sampling Design

Sampling design is a method used to select a subset of individuals, cases, or elements from a larger population for the purpose of conducting a study (Lohr, 2021:3). A critical feature in building the sampling design is a uniform sampling framework for the data (Stehman *et al.*, 2012:6976). Sampling entails deliberate decision-making regarding the inclusion of specific individuals and elements in the study, aiming to ensure that the selected sample accurately mirrors the characteristics and diversity inherent in the population under investigation (Moser & Korstjens, 2018:11). Sharma (2017:749) highlights two broad sampling techniques categorised as probability and non-probability sampling. In probability sampling, the chance of selecting a respondent is the same, whereas in non-probability sampling, a purposive sample selection is done by the researcher, or self-selection processes run by respondents (Vehovar, Toepoel & Steinmetz, 2016:327). Non-probability sampling methods encompass quota sampling, purposive sampling, self-selection sampling, and snowball sampling, whereas probability methods encompass simple random sampling, systematic sampling, stratified sampling, and cluster sampling (Bhardwaj, 2019:157), as presented in Table 4.6.

Table 4.6: Characteristics of probability and non-probability sampling

Probability Sampling Method	Non-Probability Sampling Method
Simple Random Sampling • All elements of the population are considered, and each has an equal chance of being selected	**Quota Sampling** • Relevant characteristics are used to segregate the sample to improve its representativeness
Systematic Sampling • Every *n*th element started at random is selected to be in the sample	**Purposive Sampling** • Deliberately selected sample to conform to some criteria
Stratified Sampling • Population divided into groups and stratum selected randomly	**Self-Selection Sampling** • Ease of accessibility to respondents
Cluster Sampling • Random sample of the population divided into clusters and random sample of clusters are selected as a unit	**Snowball Sampling** • Existing study subjects recruit and refer future subjects
Source: Adapted from Sharma (2017:750)	

Prior to examining the various types of sampling methods, along with reasons why researchers are likely to select a sample, researchers must select a broad sampling technique (Taherdoost, 2016:20). In the selection of an appropriate sampling technique, researchers must ensure that the sampling process fits the needs of the study and be clear about the actual process that ensued (Campbell *et al.*, 2020:658). In some instances, the researcher does not have sufficient information about the population to undertake probability sampling (Mweshi & Sakyi, 2020:189). In other instances, non-probability sampling is based on a specific research purpose, the availability of subjects, or a variety of other non-statistical criteria (Khalefa & Selian, 2021:41).

The expectation in probability sampling is that knowledge of the sample can be used and is intended to be used for generalisation (Etikan, Musa & Alkassim, 2016:1). In fact, non-probability sampling cases are selected not necessarily to know more about the population, but to extend and deepen existing knowledge about the sample itself (Uprichard, 2013:3). A study by Andridge *et al.* (2019) posits that researchers have turned to non-probability sampling due to the rising costs of survey data collection and declining response rates.

To examine the interactions between EE, TCP, and EP in South Africa's ICT sector, the present study employed non-probability sampling techniques to select the study sample. Interestingly, non-probability sampling has two main advantages over probability sampling, namely cost and speed of data collection that make this technique particularly valuable (Baker *et al.*, 2013:97; Kalton, 2023:8). In their study, Sandstrom-Mistry *et al.* (2023) posit that while the non-probability sampling technique offers advantages, scholars contend that there may be potential biases that may not be mitigated by balancing samples to reflect the population demographics. Contrastingly, in the context of probability sampling, it is imperative that the sample is representative of the population to ensure generalisability (Rahman *et al.*, 2022:43). Instructively, the debate on the benefits and limitations of the probability and non-probability techniques emphasises the fact that both are equally valid if they fit the purpose for which they are being used (Pace, 2021:11).

Given that the study is based on employees working in the South African ICT sector, purposive non-probability sampling was deemed most appropriate. Barglowski (2018:163) asserts that it is important for researchers to study compelling populations which involves purposive samples in which the population has some special significance. A study by Ginting and Hidayat (2019) affirms that purposive samples are selected based on a predetermined criteria related to the research. Purposive sampling is more applicable to exploratory studies and research that contributes new knowledge (Sharafizad, 2018:96).

According to Lehdonvirta *et al.* (2021:139), forms of self-selection sampling include respondents participating in surveys through links that they discover online. Many online surveys rely on the self-selection sampling technique (Castro-Martín, Rueda & Ferri-García, 2020). Largely due to technological innovations, data from non-probability, self-selection online surveys are accessible to researchers providing near real time responses (Beaumont & Rao, 2021:12). Researchers sometimes use self-selection sampling that allows individuals to opt into participating in research at their own accord, without being approached directly (Sharma, 2017:752).

In a bid to ensure a high response rate, the study also adopted the snowball sampling technique to recruit further participants. Lockyer *et al.* (2021:1161) opine that when researchers are faced with isolated or hidden populations whose members are not likely to be found unless with cooperation from a known individual, snowball sampling is used to recruit further participants. In their study, Sekoni, Jolly and Gale (2022) observe that an effective sampling technique is snowballing, a respondent driven strategy that enables access to further participants through recommendation from current participants. Further, Lee *et al.* (2022:4) assert that the technique most commonly used is snowball sampling. Remarkably, according to Cornesse *et al.* (2020:19) several studies have found no consistent superiority in accuracy of probability or non-probability techniques over one another. In fact, Yeager *et al.* (2011:711) affirm that non-probability samples may yield results that are just as accurate as probability samples. Further, Penn, Petrolia and Fannin (2023:722) declare that non-probability sampling provides results that are equivalent to or better than the probability method.

For the present study, purposive sampling was employed based on specific criteria pertaining to employees within South Africa's ICT sector, aligned with the research objectives. Further, this study employed self-selection sampling as the survey link was distributed online to respondents who had access to technology. Finally, given that there is no single compendium of employees working in the ICT sector of South Africa, the study's recourse was a combination of snowball sampling, purposive sampling, and self-selection. This choice of sampling technique follows precedence by previous studies who either investigated TCP, EE, or EP (see Adisa *et al.*, 2023; Begüm, 2023; Hatos, Cosma & Clipa, 2022; Nguyen, 2021). The adoption of snowball sampling for the present study allowed the adoption of a recruitment technique where respondents were requested to assist the researcher in identifying other potential respondents that can be engaged to participate in the study.

4.6.3 Sample Size

In epidemiological studies, obtaining a statistically representative sample from the population such that inferences and findings represent real associations, is imperative (Majid, 2018:5). In instances where the sample size is insufficient, even a meticulously conducted study may prove inadequate in detecting significant effects or associations may yield imprecise estimations of such impacts or associations (Singh & Masuku, 2014:2).

Similarly, if the sample size is too large, the study can be of relatively little value (Kaplan, Chambers & Glasgow, 2014:342), and would be more complex and may even lead to inaccuracy in results (Funder & Ozer, 2019:163). Consequently, different methods can be utilised before the onset of the study to determine the most suitable sample size for the specific research manually or by using an appropriate software (Serdar *et al.*, 2021:31). The determination of an adequate sample size entails a crucial process of calculating the optimum number of participants required for valid results (Adam, 2020:90). As a result, Table 4.7 highlights some guidelines for the determination of a minimum sample size for survey research.

Table 4.7: Sample size guidelines for survey research

Approaches	General Guidelines	Suggested Minimum Sample Size
Sample to variable(s) ratio	The sample to variable ratio should not be less than 5:1, but a 15:1 or 20:1 ratio is preferred	100 respondents
Sample to item(s) ratio	The first common rule for an item to ratio is that the ratio should be at least 5:1	245 respondents
	Another rule is the ratio should be 20:1	980 respondents
Sample size from the Table of Krejcie and Morgan's	Social science and behavioural researchers widely use the Krejcie and Morgan Table to determine sample sizes. This information can be used without calculations and applies to any specified population.	384 respondents
Sample size for SEM	The sample size for SEM depends on the researcher's model. Over 200 responses are a large sample size	200 respondents
Source: Adapted from Rahman (2023:57)		

In general, according to Bean, Stafford and Brashares (2012:254), a larger sample size affords heightened precision and accuracy compared to a smaller one. This is arguably why in some research studies, the sample size is bigger than it is supposed to be for the sake of reliability (Delice, 2010:2007).

Cognisant of this, a deliberate effort was made in the present study, to target a sample size of 1000 employees working in the South African ICT sector. Indeed, this target was exceeded as the total number of recorded responses in *Qualtrics*, that accessed the survey was 1054. While the researcher personally distributed most of the links for the survey, in accordance with the snowballing technique, initial participants were also requested to extend the invitation to other employees in the ICT sector to participate in the study. In all, the questionnaires directly distributed by the researcher amounted to 1368. Owing to the utilisation of the snowball technique in the present study, it is probable that some potential respondents may have, unbeknown to the researcher, also received the survey link through acquaintances, however, this projection is not definitive.

Nonetheless, it makes it somewhat tricky to determine with absolute accuracy, the conclusive number of potential respondents that may have received the survey link. Consequently, the general response rate for the present study has been calculated based on the total of 1368 questionnaires distributed by the researcher and the total of 1054 responses registered on the *Qualtrics* platform. Resultantly, the general response rate for the present study was 77.05%.

4.7 DATA COLLECTION

Research procedures, which include both data collection and data analysis, are the sixth layer of the research onion (Nguyen *et al.*, 2020:191). Data collection constitutes an essential component within the context of a research endeavour (Gibbs *et al.*, 2007:540). Further, data collection is interactive with data analysis and is an indispensable component of the research process (Rijali, 2019:81). Data collection presents challenges for researchers as it requires much time and effort (Sadan, 2017:58). In support of this assertion, a study by Newman *et al.* (2021) reports that although data collection through online platforms has become popular in recent years, it is faced with challenges, such as sampling concerns, quality concerns and ethical concerns. While this may be the case, online surveys present more benefits to researchers such as cost-effectiveness, ability to pause, restart the survey, and the speed of completion of the research instrument by respondents (Nayak & Narayan, 2019:36).

Employees working in the South African ICT sector were invited to participate in the survey. *Qualtrics*, the online survey system acquired by the University of Pretoria for use by staff members and students, was employed to collect research data. The use of *Qualtrics* ensured the anonymity of all respondents by providing a link or *QR Code* for the survey where the anonymised and data were obtained in an *Excel* format and no identifying information was tracked. Given the diversity of users' experiences and capacities, the online means of data collection enabled the use of dynamic rating scales, faster distribution, the avoidance of input, and data coding errors (Biasio *et al.*, 2021:1304). In addition, an online platform proves to be an adequate tool to collect responses in line with the anticipated large sample size for this study (Usman *et al.*, 2021:5).

The design of the research questionnaire aimed for a completion time of less than 10 minutes, with the intention of enhancing the potential response rate. The survey commenced with a request for respondents to provide their consent by accepting or refusing participation. Only when this condition was met, could the survey be completed. In cases where the respondent replied “no”, they were disqualified from completing the survey and the response was not recorded. All respondents who completed the survey were not allowed to repeat the survey as there was a unique code generated for each response. Respondents were approached individually in their personal capacity, and not through their respective organisations.

Due to this, obtaining organisational permission for respondents to participate in the study was consequently not deemed to be necessary. The survey was hosted on *Qualtrics* where respondents who received the anonymous link through social media platforms such as LinkedIn, Twitter, and WhatsApp could respond. All invitation channels explicitly communicated the researcher's exclusive interest in the perspectives of employees within the South African ICT sector. The survey link was disseminated through the researcher's personal professional network, with a request for respondents to forward the survey link to other potential participants.

4.7.1 Measurement Instruments

Quantitative research is based on measurement conducted in a systematic and controlled manner that enables researchers to perform statistical analysis (Hagan, 2014:431). Further, measurement instruments are the cornerstone of scientific research (Kimberlin & Winterstein, 2008:2283). Conceptually and statistically, the results of a study hinge on how the sample members respond to the instrument (Cypress, 2017:258). Accordingly, measurement instruments must be aligned to the purpose of the research (Sürücü & Maslakci, 2020:2696). For this study, the survey instrument (Appendix C) that was utilised for data collection is a structured questionnaire divided into four sections namely, Section A (TCP), Section B (EE), Section C (EP) and Section D which focused on the respondents’ demographic information.

Table 4.8 summarises the demographic descriptive statistics of the respondents from a pilot study comprising 30 employees in the South African ICT sector.

Table 4.8: Descriptive statistics (*n* = 30) for the pilot study

Demographic Factor	Category	Frequency	Percentage
Gender	Female	11	36.7
	Male	19	63.3
Age	0 – 21 years	0	0
	21 – 30 years	5	16.7
	31 – 40 years	13	43.3
	41 – 50 years	10	33.3
	51 – 60 years	1	3.3
	61+ years	1	3.3
Highest Formal Qualification	No formal qualification		
	Matric/Grade 12	4	13.3
	Certificate or Diploma	10	33.3
	Bachelor's degree	12	40.0
	Master's degree	3	10.0
	Doctorate degree	1	3.3
Organisation Type	Public Organisation	9	30.0
	Private Organisation	21	70.0
Working Experience	0 – 1 year	5	16.7
	1 – 2 years	2	6.7
	3 – 5 years	11	36.7
	6 – 10 years	5	16.7
	10 + years	7	23.3
Managerial Level	Non-managerial	10	33.3
	Junior management	11	36.7
	Senior management	4	13.3
	Executive management	5	16.7
Organisation Size	Small Enterprise - Less than 100 employees	7	23.3
	Medium Enterprise - 100 to 999 employees	10	33.3
	Large Enterprise - Over 1000+ employees	13	43.3
Source: Author's own compilation			

The pilot study was necessary for testing the feasibility and practicality of the research instrument and validating data collection procedures. This enabled the study to identify and mitigate potential problems, as well as generating interest for potential respondents. Data generated from the pilot study demonstrated a relatively fair distribution of male (63.3%) and female (36.7%) respondents. Given the gender inequalities that are predominant in labour markets (Chitiga *et al.*, 2022:1628), this study's finding is consistent with the research conducted by Yerkes *et al.* (2020) which systematically investigated and documented instances of gender inequality. The pilot study data further highlighted a fair distribution of age of the respondents which ranged between 21 years to 65 years (retirement age), highest formal qualification, organisation type, length of time with the organisation, level within the organisation structure, organisational size, and type.

It is noteworthy that this study made use of already established scales to measure EE, its dimensions, TCP, and EP together with its dimensions. This study measured the respondents' perception of EE through a 16-item scale developed by Rich *et al.* (2010) that comprises three dimensions of PhyEng (five items), CogEng (five items), and EmoEng (six items). Further, this study measured the respondents' perception of TCP with a six-item scale developed by Green (2019). Finally, this study measured the respondents' perception of EP through a 22-item scale developed by Pradhan and Jena (2017) that encompasses three dimensions, namely TP (six items), AP (seven items), and CP (nine items).

Measurement levels describe the relationship between numeric values that researchers assign to each level, identifying different relationships between values, including the appropriate corresponding descriptive and inferential statistics (Matthews, 2017:2). In addition, measurement can occur at different levels since the relationship among the values assigned determines the level of measurement, and how they can be treated mathematically (Allanson & Notar, 2020:375). Resultantly, the four hierarchical levels of measurement identified by Berry, Johnston and Mielke Jr (2018:929) are nominal, ordinal, interval, and ratio, depending on the information they provide.

Nominal scales are the lowest level of measurement where numbers or symbols are assigned to objects to distinguish one object from the other for counting purposes (Pandey & Pandey, 2016:122). An ordinal scale is based on ranking, sorted from a higher level to the lowest level or vice versa (Aini, Zuliana & Santoso, 2018:46).

Interval scales are characterised by statistical representation, featuring uniform intervals between consecutive points, and facilitating the systematic allocation of numerical values to objects in such a way that numerically equal distances on the scale represent equal distances between the features/characteristics of the objects being measured (Sung & Wu, 2018:1696). Ratio scales possess numeric attributes with equal intervals between points and an absolute zero point, enabling meaningful ratios and mathematical operations, making them a more sophisticated and versatile measurement framework compared to interval scales (Wu & Leung, 2017:527).

To be sure, the selection of measurement scales in a study dictates the statistical procedures employed for data analysis. Accordingly, within the confines of this study, the questionnaire was structured to incorporate diverse measurement scales corresponding to the array of posed inquiries. The articulation of various questions and their alignment with the respective measurement scales is explicated in Table 4.9. The table outlines the various levels of measurement, a brief description of the features on the data they can generate, the possible method of analysis and research instrument questions related to the measurement levels.

Table 4.9: Details related to measurement for the study

Level of Measurement	Description	Statistical Procedures	Research Instrument Questions related to the Measurement Levels
Nominal (Categorical)	This measurement assigns numerical values arbitrarily to categorise a group, mutually exclusive categories with no logical order or ranking in relation to each other	Calculate frequencies, Mode, Chi-Square test, Logistic regression	Q4.1. Q4.4

Ordinal (Ordered Categorical)	For ordinal scales, characteristics are assigned numerical values, ranking of responses on a continuum, can be measured on an ordinal scale. The categories in ordinal data have a clear order or rank, meaning that one category is considered higher or lower than the other. Ordinal data does not assume equal intervals between categories.	Calculate frequencies, Descriptive statistics, Ranking methods, Central tendency measures, Correlation measures	Q4.3 Q4.6
Interval (Continuous)	This is based on equal intervals between points, mutually exclusive and logically ordered, however, they differ in that they are continuous and the distance between them is assumed to be equal. They do not have a true zero point corresponding to the absence of the quality being measured	Descriptive statistics, Frequency distribution, Correlation and regression, ANOVA, T-test, Chi-Square test, Normality test	Q1.1. Q1.2. Q1.3. Q1.4. Q1.5. Q1.6. Q2.1. Q2.2. Q2.3. Q2.4. Q2.5. Q2.6. Q2.7. Q2.8. Q2.9. Q2.10. Q2.11. Q2.12. Q2.13. Q2.14. Q2.15. Q2.16. Q3.1. Q3.2. Q3.3. Q3.4. Q3.5. Q3.6. Q.3.7. Q3.8. Q3.9. Q3.10. Q3.11. Q3.12. Q3.13. Q3.14. Q3.15. Q3.16. Q3.17. Q3.18. Q3.19. Q3.20. Q3.21. Q3.22.
Ratio	Equal distances between their units, however, they do have an absolute zero point	Descriptive statistics, Frequency distribution, Correlation and regression, T-test, ANOVA, Chi-Square test	Q4.2. Q4.5. Q4.7
Source: Adapted from Jopling (2019:63); Mishra *et al.* (2019:299); Schreiber (2021:1008)			

4.7.1.1 Measurement of employee engagement

Prior studies report that there are various EE scales that measure PhyEng, EmoEng, CogEng and different attributes of engagement, including vigour, dedication, and absorption (Khodakarami, Dirani & Rezaei, 2018:307). According to Motyka (2018:239), more research is required on the measurement of EE as current, well-established scales may have limitations. EE is presented as a reflective (Ahmed *et al.*, 2020:4), multidimensional

construct (Shrotryia & Dhanda, 2020:323). This study measured EE through a 16-item scale developed by Rich *et al.* (2010). The EE scale contained statements that were accompanied by a 5-point Likert scale with answer options ranging from strongly disagree (1) to strongly agree (5).

4.7.1.2 Measurement of telecommuting propensity

In this study, TCP is conceived as a mono construct, examined at an organisational, departmental, and supervisor level (Green, 2019:16). Instructively, at the organisational level telecommuting may be viewed as a common and accepted practice, at the department level TCP is an aspect of work and may further be perceived as a legitimate work practice if the supervisor encourages employees to participate in telecommuting (Gajendran, Harrison & Delaney-Klinger, 2015:364). The present study measured TCP through a six-item scale developed by Green (2019). The TCP scale contained statements that were accompanied by a 5-point Likert scale with answer options ranging from strongly disagree (1) to strongly agree (5).

4.7.1.3 Measurement of employee performance

Assessing EP within the work environment presents a challenging endeavour (Amjad *et al.*, 2021:28197). This is because EP can be measured based on the target achieved or the level of performance (Sitopu *et al.*, 2021:73). Further, the measurement of EP includes variables such as the quantity of work, quality of work, work efficiency, interpersonal impact, and timeliness (Sabuhari *et al.*, 2020:1780). Based on the theory proposed by Sonnentag *et al.* (2008:431), EP is presented in this study as a multi-dimensional construct, with three dimensions of TP, AP, and CP. This study measured EP utilising a 22-item scale developed by Pradhan and Jena (2017) that offers three dimensions, namely TP (six items), AP (seven items) and CP (nine items). The EP scale contained statements that were accompanied by a 5-point Likert scale with answer options ranging from strongly disagree (1) to strongly agree (5).

4.8 DATA ANALYSIS

This study utilised the Saunders *et al.* (2019) research onion for planning and organising the research process by considering methodological aspects systematically, and the issue of data analysis can be found in the sixth layer of the framework. Data analysis plays a pivotal role in a study as it enables the researcher to comprehend the data more profoundly, thereby enhancing judgment and the drawing of appropriate conclusions (Keim *et al.*, 2006:12; Sreejesh, Mohapatra & Anusree, 2014:8).

Data analysis is the basis for interpretation of data and the generation of new knowledge (Göttfert, 2015:25). In particular, the interpretation of data that has been collected using different analytical methods is conducted through statistical tools that are used for decision-making (Anzar, Anshari & Juanda, 2018:117). Data analysis methods may range from simple frequency distribution tables (Gries, 2015:52), to complex multivariate analysis (Borsboom *et al.*, 2021:11). Moreover, the data analysis process enables the explanation of meanings from data, associations between constructs as well as determining patterns (Park *et al.*, 2020:690). Besides, data analysis enables the determination on the acceptance or rejection of hypotheses (Persada, Miraja & Nadlifatin, 2019:26). In the present study, the analysis of data was performed using SPSS version 29, except for the Confirmatory Factor Analysis (CFA), which was executed using AMOS software version 28. Table 4.10 provides an overview of the data analysis phases undertaken in this study. Phase I encompassed assessments for the reliability and validity of scales, Phase II involved descriptive statistical analysis, and Phase III entailed inferential statistical analysis.

Table 4.10: Summary of data analysis phases for this study

Phase I **Reliability and Validity Analysis**	**Phase II** **Descriptive Analysis**	**Phase III** **Inferential Analysis**
• Internal consistency, Composite reliability, Convergent and Discriminant validity • Confirmatory factor analysis	• Frequency, Mean, Median, Standard deviation, Correlation analysis	• Structural model • Goodness-of-fit test • Chi-Square test • Testing mediation effect • Testing moderation effect • Testing moderated-moderation
Source: Author's own compilation		

4.8.1 Validity

Validity is concerned with whether the measures reflect an established model or theory (Larson *et al.*, 2019:566). Almanasreh, Moles and Chen (2019:215) assert that validity tests are used to determine whether a research instrument is a good measure for what a study sets out to measure.

This opinion is echoed by Aithal and Aithal (2020:241) corroborate this viewpoint, contending that within the context of the research instrument, validity refers to the extent to which the instrument accurately assesses the targeted construct or phenomenon. Fundamentally, validity is determined by the meaningful and appropriate interpretation of the data obtained from the measuring instrument based on the analysis (Matthews, Bialocerkowski & Molineux, 2019:2).

With quantitative research, different types of validity could apply (Vu, 2021:6). According to a study conducted by Drost (2011), there are four common types of validity in research, namely construct validity, content validity, face validity, and criterion validity. Table 4.11 presents the types of validity, descriptions, and method of measurement.

Table 4.11: Validity types in research

Type	Description	Method of Measurement
Construct Validity	In construct validity assessment, the factors in the present study had a clear and precise latent implication allowing easier interpretation	• Judgemental • Correlation of the proposed test with the established one • Convergent-discriminant method • Factor analysis • Multi-trait
Content Validity	Content validity pertains to the degree to which the instrument fully assesses or measures the construct of interest	• Judgemental • Panel evaluation with content validity ratio
Face Validity	Face validity assess whether each item represents the construct being studied, based on its face value	• Feedback from respondents to discover how relevant and important each item on the test is, in measuring the desired construct
Criterion Validity	Criterion validity is assessed when one is interested in determining the relationship of scores on a test to a	• Correlation coefficient

	specific highly rated existing standard instrument	

Source: Roy *et al.* (2023:8); Bolarinwa (2015:197)

Construct validity is widely used in research, based on the logical relationships between variables, testing the convergent and discriminant validities after the construct validity test is of great importance for the research to yield beneficial results (Sürücü & Maslakci, 2020:2701). Consequently, to determine validity, average explained variance (AVE) values must be less than the composite reliability (CR), and each AVE value must be greater than 0.5 (Nasution, Fahmi & Prayogi, 2020:3).

For the computation of AVE, the square of the loading for each indicator on a construct is obtained, and the average mean value is calculated which signifies that the construct accounts for a minimum of 50% of the variance among the items (Purwanto, 2021:117). Convergent validity evaluates the extent to which diverse measures of the identical construct exhibit correlation or convergence (Schaufeli, Desart & De Witte, 2020:6).

Convergent validity shows the degree of the relationship between the observed variables that measure the latent variable (Hehman *et al.*, 2019:1032). Resultantly, items measuring a convergent construct should have significant correlations with each other and with measures of the underlying construct (Spuling *et al.*, 2020:447).

Discriminant validity is utilised to ensure that the observed variables used in the measurement model measure the latent variable specifically (Van der Vaart, 2021:8). Discriminant validity testing is essential for preventing over-correlation between related variables and constructs (Tomić, Kalinić & Todorović, 2023:261). Correspondingly, discriminant validity is established when the square root of the AVE for each construct surpasses its correlation coefficients with other constructs (Puriwat & Tripopsakul, 2021:90). For the present study, relevant statistical tools were employed to undertake tests for convergent validity, and discriminant validity; the results of which are reported in Chapter 5.

4.8.2 Reliability

Reliability is an indicator of the stability of the measured values obtained in repeated measurements under the same circumstances, using the same measuring instrument (Sürücü & Maslakci, 2020:2695). Reliability is not only a feature of the measuring instrument, but also a feature of the results (Knapp & Mueller, 2010:341). Where items are confirmed invalid, they are not tested because the measurement instrument reliability is conducted only on items of the research questionnaire that are declared valid (Kuswati, 2020:998).

Different methods are used to determine the reliability of the scales used in empirical research (Taherdoost, 2019:3). Previous studies report that the most frequently applied methods are test-retest reliability, alternative forms, and internal consistency tests (Marcial & Launer, 2021; Sürücü & Maslakci, 2020). Internal consistency tests can be applied in three different ways namely, split-half, item-total correlations, and alpha reliability coefficient (Karahan Okuroglu, Karaçanta Atbaş & Ecevit Alpar, 2020:3).

In quantitative research, the precision of the measurement instrument is paramount, and the study's reliability hinges on the consistent reproducibility of results obtained through the research instrument (Heale & Twycross, 2015:66). When using a data-collection method, data should be stable, precise, reproducible, and the reliability of a research should be considered throughout the data collection process (Ahmed & Ishtiaq, 2021:2404).

Various methods can be used to estimate the reliability of an instrument through common methods, namely the test-retest method, parallel forms method, split-half method, internal consistency, and equation modelling estimation of reliability using structured equation modelling (Danner, 2016:6). The method that is the most suitable depends on which measurement model can be assumed (Flora, 2020:485). To test for reliability, this study employed the Cronbach's alpha test (internal consistency); the results of which are reported in Chapter 5.

4.8.3 Factor Analysis

According to Zeynivandnezhad, Rashed and Kanooni (2019:59), factor analysis is a diagnostic tool for the evaluation of data collected in line with the theoretical model or the expected constructs under study. On its own, factor analysis is not sufficient to establish the validity of the use of an instrument in a researcher's context for the study purpose (Knekta, Runyon & Eddy, 2019:3). Factor analysis, in particular, substantiates the validity of constructs in a study and establishes underlying dimensions between measured factors and latent constructs (Taherdoost, Sahibuddin & Jalaliyoon, 2022:375).

There are two broad classes of factor analytic methods, namely exploratory factor analysis (EFA) and CFA (Bandalos & Finney, 2018:101). EFA is a common way to model observed items and reduce data dimensionality while representing latent constructs (Persson & Khojasteh, 2021:983). In contrast, CFA is the appropriate method for construct validation by considering the relationship between latent factors and observed variables so that it potentially reduces measurement errors and increases statistical accuracy (Atkinson *et al.*, 2011:559).

The present study employed CFA as this is the appropriate method, given that the scales have already been developed and evaluated in previous studies. The choice of this method parallels that employed in a study by Alamer and Marsh (2022) for theory driven research as it yields a more parsimonious measurement model.

4.8.3.1 Confirmatory factor analysis

When the research aim is to test whether a set of observed variables influence responses in accordance with an existing conceptual basis, CFA is performed (Alavi *et al.*, 2020:1888). CFA is a SEM method that aims to confirm a theoretical model using empirical data (De Oliveira Bussiman *et al.*, 2022:2). CFA guards against the confounding of constructs (Marsh *et al.*, 2020:109), significant changes in the measured constructs, and reduces recall of the previous responses (Vispoel *et al.*, 2022:1101). Correspondingly, CFA is most widely used for construct validity evaluation (LaNasa, Cabrera & Trangsrud, 2009:320), by determining the conformity of the constructs (Husain *et al.*, 2014:3).

With CFA, the compatibility of each factor must be tested and verified so that the obtained factors match the constructs (Mustafa, Nordin & Razzaq, 2020:127). Unlike in EFA, CFA requires a strong empirical or conceptual foundation to guide the specification and evaluation of the factor model (Brown & Moore, 2012:363). Moreover, EFA is often used early in the process of scale development and construct validation, whereas CFA is used in the later phases when the underlying structure has been established on prior empirical and theoretical ground (Bordbar *et al.*, 2021:257). Instructively, CFA's primary purpose is to evaluate the constructs in a study and establish their validity and reliability (Janadari *et al.*, 2016:192). In this respect, the reliability of the factors was evaluated using Cronbach α whilst convergent validity was analysed using AVE, and discriminant validity was tested through heterotrait-monotrait ratio of correlations (HTMT).

4.8.4 Descriptive Statistics

Descriptive statistics are employed to condense a set of observations, facilitating the communication of a substantial amount of information in a simplified manner (Mishra *et al.*, 2019:67). Empirical researchers often present descriptive statistics alongside structural estimates that answer policy or counterfactual questions of interest (Andrews, Gentzkow & Shapiro, 2020:2232). Consequently, descriptive statistics summarise the data to reach a simple presentation, categorised into univariate and bivariate analyses (Taherdoost, 2022:3). Univariate analysis is a set of different statistical tools which look for characteristics and general properties of one variable (Dalton-Barron *et al.*, 2020:1164).

Bivariate analysis refers to the analysis of two variables, namely the outcome and explanatory, to determine the relationship between the two variables (Bertani *et al.*, 2018:1133). Descriptive statistical methods are frequency distributions, measures of central tendency, and measures of dispersion (Franzese & Iuliano, 2019:3). Frequency distribution determines all possible values for a specific variable and the number of times or the frequency that each of those values is in the data set (Katsaliaki, Galetsi & Kumar, 2021:971).

The mean, median, and mode are the measures of central tendency methods that are most commonly used to examine the overall average response (Andrade, 2020:409). According to Mukaka (2012:71), correlation analysis is employed to assess the magnitude and direction of linear associations between pairs of variables. Correspondingly, a high correlation denotes a substantial association, whereas a low correlation indicates a weaker relationship between the variables (Dang, King & Inzlicht, 2020:268). A positive correlation between two variables signifies that both variables move in the same direction, while a negative correlation indicates that the variables move in opposite directions (Goodell & Goutte, 2021:14). For this study, a correlation analysis was conducted to ascertain how the variables relate with each other.

4.8.5 Inferential Statistics

Inferential statistics advance data analysis by extrapolating findings from a sample to the broader population (Oh & Pyrczak, 2023:22). Inferential statistical tools can be used to analyse sample data and account for estimation errors that are inherent in samples (Gibbs, Shafer & Miles, 2017:215). One of the main tools in inferential statistics is the hypothesis test, which is aimed at stating the evidence in a sample against a previously denied hypothesis (Sotos *et al.*, 2007:103).

According to Li *et al.* (2021:7) inferential statistics specify if the procedures and patterns that are detected in the sample can apply to the statistical population. A study by Amrhein, Trafimow and Greenland (2019) observed that due to the numerous uncertain and unverified assumptions inherent in inferential statistics, it is advisable for researchers to consider inferential statistics as unstable localised representations of the relationships between assumptions and data. This notwithstanding, Mishra *et al.* (2019:67) contend that inferential statistics primarily involve predictions for the future and generalisations about a population through the examination of a smaller sample.

In statistics, the existence of *p*-values long before the 20th century demonstrates that this method of inference has had an alluring rationale for researchers in a variety of fields (Kennedy-Shaffer, 2019:83). The widely adopted threshold for declaring statistical significance is $p < .05$ (at a 95% confidence level) and the reduction in critical *p*-value is claimed to improve the reproducibility of scientific research.

In their study, Di Leo and Sardanelli (2020) declare that the *p*-value reflects the degree of data compatibility with the null hypothesis. Crucially, given a *p*-value distribution, goodness of fit (GOF) testing as a statistical method is necessary to assess whether data follows a theoretical distribution and whether a certain model is suitable for the data set (Yadav *et al.*, 2019:4).

4.8.5.1 Goodness of fit

A study by Hernández and Solís (2023) posits that GOF measures are used to find the relevance of certain chosen models to explain a variable. GOF can be determined based on absolute fit indices, incremental fit indices (IFI), and parsimony fit indices (Nugraheni, Suyatna & Setiawan, 2022:6). According to Brandenberger (2019:559), GOF statistics are helpful in guiding model term selection and model specification.

With respect to the model of goodness of fit indicator (GFI), Balqis and Giri (2023:1577) proclaim that the use of 4-5 GOF criteria is considered sufficient to assess the feasibility of a model. Notably, a study by Althoff and Rodrigues (2021) observes that GOF criteria includes correlation-based indexes, error messages, and index of agreement among others. Table 4.12 presents the GOF measures, the types, recommended thresholds, and confirmation that they were applied in the current study.

Table 4.12: Goodness of fit indices and measures

GFI	Goodness of Fit Statistical Measures	Recommended Thresholds	Relevance to this Study
Absolute Fit Indices	*p*-value (Sig) Chi-Square (X^2) GFI RMSEA RMR	>0.05 ≤ 3 ≥ 0.90 ≤0.08 ≤ 0.05	**Relevant**
Incremental Fit Indices	AGFI CFI IFI RFI	≥ 0.90 ≥ 0.90 ≥ 0.90 ≥ 0.95	**Relevant**
Parsimony Fit Indices	PNFI PGFI AIC CAIC	Small Approaching 1 <72.000 <229.343	**Relevant**
Source: Adapted from Basyir, Madhakomala and Handaru (2020:1626)			

According to Alzoubi *et al.* (2020:706), the validity of the model relies on establishing satisfactory levels of GOF for the measurement models. As a measure of the GOF in a multiple regression model, the coefficient of determination, known as R^2, is used (Trunfio *et al.*, 2022:3).

4.8.5.2 Regression analysis

Detecting if there is a solution between two variables, and if so, determining the degree of this relation is a common problem in statistical analysis (Demir & Oz, 2019:3336). A study by Rath, Tripathy and Tripathy (2020) reports that regression analysis can manifest in the form of either simple regression or multiple regression analysis (MRA), contingent upon the number of independent variables under consideration. A simple regression is concerned with one IV as well as one DV, while a multiple regression involves one DV and at least two independent variables (Baek & Chung, 2020:18172). Chiefly, MRA is a useful method for developing predictive equations that estimate a DV based on two or more independent variables (García García *et al.*, 2019:2). According to a study by Osborne and Waters (2019), standard multiple regression can accurately estimate the relationship between dependent and independent variables, but only when these relationships exhibit linearity. In the present study, MRA was employed to test the hypotheses through SEM.

4.8.5.3 Structural equation modelling

SEM is a robust statistical technique that integrates a measurement model, such as CFA, with a structural model, allowing for a concurrent statistical assessment (Hoe, 2008:76). The SEM process revolves around two primary steps: first, it validates the measurement model by examining the relationships between hypothesised latent constructs; and second, it validates the clusters of observed variables associated with each construct (De Carvalho & Chima, 2014:7). The second step in SEM centres around fitting the structural model by measuring the significance of the relationship between latent variables (Lacobucci, 2010:91). When implementing SEM analytical procedures, numerous considerations arise, encompassing overall fit indices and the selection of the most suitable procedure (Lei & Wu, 2007:35). Typically, a hypothesised model is tested with a linear equation system through SEM (West, Taylor & Wu, 2012:221).

Essentially, this helps to investigate the degree to which fluctuations in one variable align with variations in one or more variables, as assessed through correlation coefficients (Sha *et al.*, 2017:477). SEM is usually applied since it permits the measurement of several variables and their interrelationships simultaneously (Hamaker *et al.*, 2018:824). Moreover, SEM is more versatile than other multivariate methods because it caters for simultaneous, multiple dependent relationships between variables (Hussain *et al.*, 2018:1421). In contrast to alternative statistical approaches, SEM offers a versatile and robust mechanism for concurrently evaluating measurement accuracy and investigating causal connections among constructs (Wang & Wang, 2019:2). SEM enables researchers to simultaneously model and estimate complex relationships among multiple dependent and independent variables (Legate *et al.*, 2023:92). In estimating the relationships, SEM accounts for measurement errors in observed variables (Savalei, 2019:352). Notably, the SEM method obtains a more precise measurement of the theoretical concepts of interest (Hair *et al.*, 2019:5). Curiously, from a methodological perspective, SEM does not imply causality among the constructs and as a result, the underlying relations must be consolidated with causal evidence (Tangi *et al.*, 2021:8).

Resultantly, the present study employed SEM as it allowed for the evaluation of the hypothesised models and the confirmation of which hypothesised relationships in the study are statistically supported. Subsequently, SEM was also employed for testing of mediation, moderation, and moderated-moderation.

4.8.5.4 Mediation, moderation, and moderated-moderation

In testing hypothesised relationships, a statistical method used to examine the underlying mechanisms that explain the relationship between an IV and DV through one or more variables is often referred to as mediation analysis (Abu-Bader & Jones, 2021:44). Researchers determine whether the effect of the IV on the DV is partially or fully mediated by an intermediate variable (Rasoolimanesh *et al.*, 2021:396). To make causal inference, researchers report that non-instrumental variable regression based on mediation analysis requires strong assumptions (Carter *et al.*, 2021:465), such as the lack of temporal precedence of the exposure, interactions, and linearity (Rijnhart *et al.*, 2021:3). According to Holland, Shore and Cortina (2017:687), a mediator (M) is a third variable that explains how or why two other variables (i.e., X and Y) are related. Further, a mediator variable is causally located between X and Y and is the conduit through which X transmits its effect on Y (Igartua & Hayes, 2021:2). Figure 4.2 presents the mediation framework for relationships between X, M, and Y.

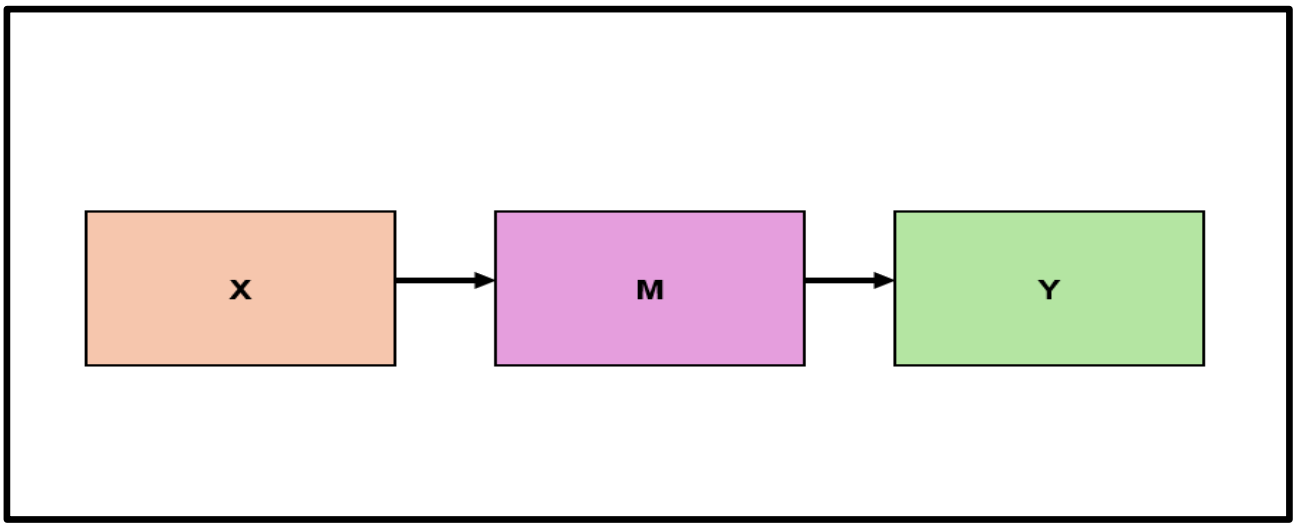

Figure 4.2: Mediation framework

Source: Adapted from Holland *et al.* (2017:687)

This study used a method called the product indicator approach to understand how different factors interact. This method was also used by Singh *et al.* (2022) to study telecommuting among 306 employees during the COVID-19 pandemic. The product indicator approach involves multiplying specific measurements of different factors to see how they influence each other (Fassott, Henseler and Coelho, 2016:1894). Considering that the present study has reflective variables, the product indicator approach is recommended by Henseler and Chin, (2010:107).

According to Cuevas-Vargas, Velázquez-Espinoza and Colín-Salgado (2022:55), this approach can also be used for multi-group analysis when the moderator is categorical. However, it is not appropriate when the independent and/or moderator variables are measured formatively (Jiang & McCabe, 2021:5). One of the weaknesses of this method is that it produces collinearity in the structural model (Schoemann & Jorgensen, 2021:325). To reduce the possibility of high collinearity, the standardised centred estimates were utilised to calculate the moderation (intervening variable, EE*TCP).

Researchers utilise moderator analysis to assist in reducing the heterogeneity of effect sizes (Wisniewski, Zierer & Hattie, 2020:3). According to Memon *et al.* (2019:5), the inclusion of moderating effects in studies must be justified by theory, rather than the statistical significance of the moderating effect. To confirm statistical significance of the hypothesised relationships, the *p*-value must be $p<0.05$ (Wang *et al.*, 2021:9).

This study interrogates the possible moderation effects of TCP following the precedence of other studies involving telecommuting that utilised moderation analysis in some way (see Jamal *et al.*, 2021; Susita *et al.*, 2021; Yan *et al.*, 2020). The present study commissioned moderation analysis procedures, similar to other studies on telecommuting environments, EE, and innovative work behaviour, as well as the impact of leadership on EP, that followed the same procedure (see Dastane, 2020; Jung & Kim, 2020; Pukkeeree, Na-Nan & Wongsuwan, 2020). Figure 4.3 presents the moderation framework for the interaction between independent variable (X), dependent variable (Y), and moderator variable (M).

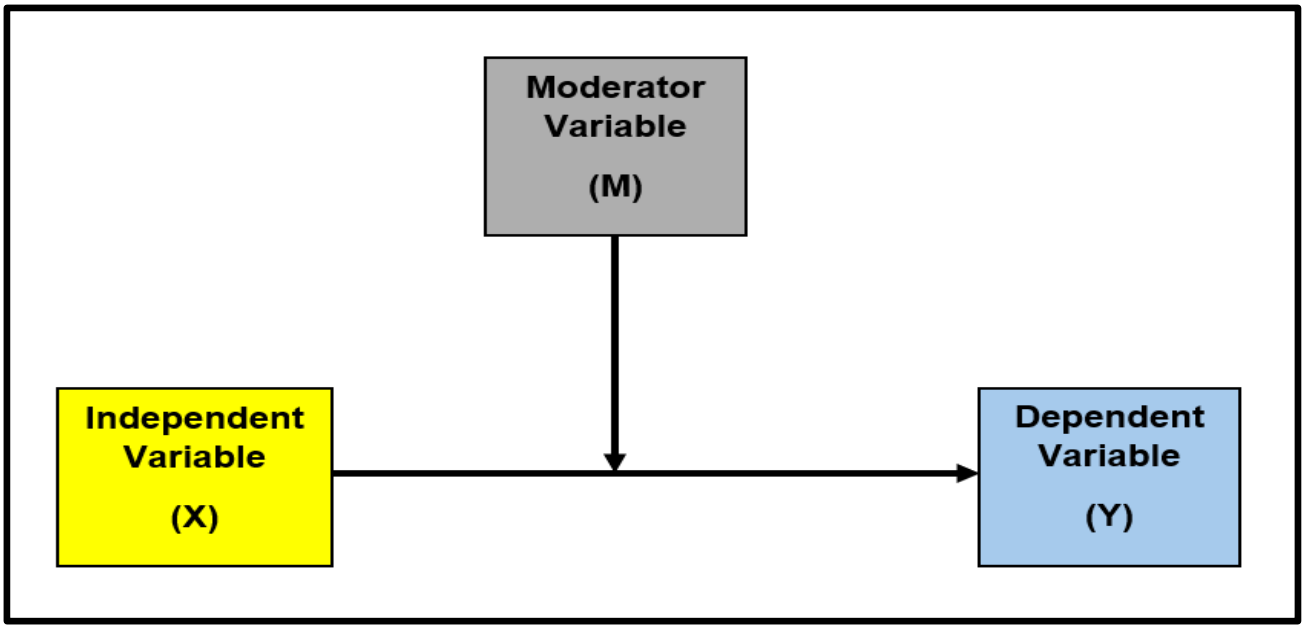

Figure 4.6: Moderation framework

Source: Adapted from Memon *et al.* (2019:2)

In responding to research questions and hypotheses related to the moderated relationships, researchers use the moderated-moderation model (Gil de Zuniga, Barnidge & Diehl, 2018:308). This enables researchers to assess intricate relationships among variables in a given study (Alghamdi & Khan, 2020:94). According to Kundi *et al.* (2021:13), moderated-moderation, involves a three-way interaction. The three-way interaction model includes explanatory variables (Gil de Zúñiga, Barnidge & Diehl, 2018:308) which are the IV and two moderators (Ugural & Giritli, 2021:3). In accordance with preceding research, the present study conducted moderated-moderation analysis to examine the effect of M (first moderator), Z (second moderator), on the association between X (IV) and Y (DV) (see Alghamdi & Khan, 2020; Dawson, 2014; Valenzano *et al.*, 2020).

In three-way interactions, researchers explain how two moderators jointly affect the relationship between X and Y (Lam *et al.*, 2019:4). In particular, Chen, Chang and Yen (2023:131) state that the three-way interaction term is significant in the moderated-moderation model if it indicates an association between the variables.

Notably, findings by Keijser *et al.* (2021) unequivocally affirm that a three-way interaction is significant when the *p*-value is less than 0.5. In their study, Monroe and Haug (2022) argued that age influences TCP since there is an age group that supports telecommuting as attractive employee benefit. Although understanding the age-related differences in telecommuting employees' resilience in the personal as well as work context are important, the scarcity of existing evidence on age of telecommuters working during the pandemic suggests both challenges and benefits for older workers (Scheibe, De Bloom & Modderman, 2022:2). As stated by Gschwind and Vargas (2019:40), in the context of the ICT sector, telecommuting has been particularly prevalent in the private sector. Indeed, as technology advances, telecommuting has been increasingly adopted in the workplace among workforce in the private sector (Ibrahim *et al.*, 2023:260).

In light of the continuous advancement of ICT and the expansion of the knowledge-based economy, employees possessing elevated educational attainment find telecommuting to be a more convenient and efficacious work arrangement (see Bartik *et al.*, 2020; Budnitz *et al.*, 2020; Nayak & Narayan, 2019; Sischka & Steffgen, 2021). This positive correlation between educational attainment and the suitability of telecommuting underscores the potential benefits of this flexible work approach for those with a strong academic background (Simeli *et al.*, 2023:22).

Such individuals are well positioned to leverage the advantages of telecommuting, contributing to enhanced efficiency and effectiveness in their professional endeavours (Pigini & Staffolani, 2019:276). Notably, the propensity to telecommute increases with the level of education and decreases with the increase of household size and age of respondents (Nayak & Narayan, 2019:107). Also, employees with lower levels of education telecommute less frequently and have difficulties in convincing their employers to introduce extended telecommuting (Sischka & Steffgen, 2021:8).

Guided by findings from previous studies on the moderating effect of age, the educational level, and organisation profile in the context of market orientation, organisational performance, and technology use (see Al Idrus, 2020; Garavan *et al.*, 2021; Tripathi, 2018), it was imperative to examine the moderated-moderation effects exerted by these variables in the context of the relationships between EE, TCP, and EP. So, as illustrated in Figure 4.4, this study conducted a moderated-moderation analysis in accordance with related studies on TCP, EE, or EP (see Haldorai *et al.*, 2020; Nagarajan *et al.*, 2022; Shkoler & Kimura, 2020; Silva *et al.*, 2022). To perform moderated-moderation analysis, SPSS Model 4 Process Macro is utilised (Uddin, Azim & Islam, 2023:280) for the following variables:

X = EE, CogEng, EmoEng and PhyEng
Y = EP
M = TCP
Z = Age, Educational level, and organisation profile

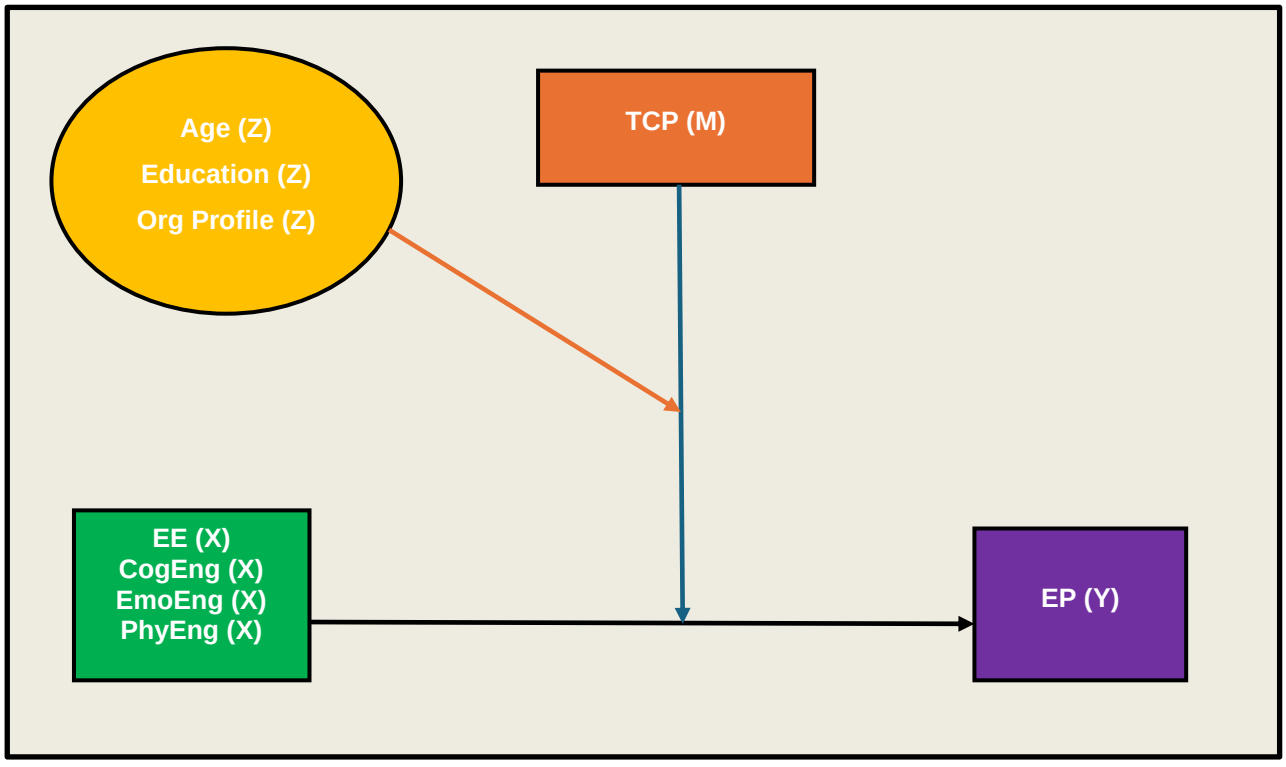

Figure 4.4: Moderated-moderation framework

Source: Adapted from Apenteng, Boakye and Opoku (2022:248)

4.9 ETHICAL CONSIDERATIONS

In the realm of research ethics, there are several deliberations (Fiesler, 2019:5), which focus on the importance of ethical considerations regarding conducting a study (Fleming & Zegwaard, 2018:209). When conducting a study, it is often considered best practice and important for researchers to discuss the consent process with participants, while affording them the opportunity to ask questions or provide comments (Broesch *et al.*, 2020:3).

In addition, confidentiality stands as a core tenet of research ethics, and researchers must secure a confidentiality agreement through an informed consent form (Bos & Bos, 2020:167). In their study, Chawinga and Zinn (2019) state that ethical, and legal obligations limit what researchers can do with the data, apart from the core purpose for which consent was sought and granted by the participants. For this reason, researchers are restricted from sharing such data, since doing so could conflict with their own assurances which translates into serious research misconduct (Fouad *et al.*, 2020:835).

Specifically, understanding these concerns and how to address them in research protocols is a critical step that should occur early in the research process (Arigo *et al.*, 2018:2). Fundamentally, responsible conduct in research strengthens research integrity and is linked to the quality and excellence of a study (Forsberg *et al.*, 2018:1024). Researchers have the responsibility of being principled, abiding by ethical guidelines, compliance standards and obtaining committee approval to conduct research (Yip, Han & Sng, 2016:687).

While there may be considerations beyond the scope of the administrative function of ethics review boards (Head, 2020:76), researchers must be thoughtful, virtuous (Newman, Guta & Black, 2021:3), uphold guiding principles of respect, beneficence, and justice, particularly for online data research (Vitak, Shilton & Ashktorab, 2016:942). The present study conducted research within the guidelines provided by the University of Pretoria, enclosed in the Information Management policy. Further, this study applied ethical practices and existing laws in every possible aspect, from the point of inception to the point of publishing the results. Table 4.13 presents the ethical considerations and steps taken in the study.

Table 4.13: Ethical considerations and steps taken in the study

Ethical Considerations	Steps Taken
Ethics Clearance	Documents submitted to the Ethics Committee through the University of Pretoria's Ethics WorkCenter Portal: Approved Title Registration, Research Proposal, Conceptual Framework, Turnitin Report, Data Collection Instrument, Letter of Informed Consent, and Individual Consent to Participate.
Informed Consent	Consent was sought from the participants though an informed letter of consent presented in Appendix B to advise respondents on the purpose of the study and guidelines for participation. Furthermore, the research instrument presented in Appendix C provided respondents an opportunity to opt in or out of the study.
Confidentiality and Anonymity	Respondents were advised of confidentiality and anonymity that their responses will remain anonymous since they cannot be identified based on the answers they provided. In addition, the settings for the survey in *Qualtrics* were configured to not record respondents' IP address, contact information and location data.
Data Governance	Access to the original research data was limited to the research team, namely the researcher and promoter. Data was stored on the University of Pretoria's research data repository and platform (https://researchdata.up.ac.za/) which is managed, controlled, and maintained by the university. The prescribed data storage guidelines were adhered to, as defined by the University of Pretoria's Information Management policy.
Incentives	The study made no use of any form of incentives to induce responses from participants. No inducement was offered to the respondents.
Research Findings	The participants were appraised that the outcomes of the study would be utilised for academic purposes and could be disclosed upon request.
Source: Author's own compilation	

4.10 CHAPTER SUMMARY

This chapter presented crucial components of the research design and methodology that form the bedrock of the present study. It outlines the research objectives, hypotheses, and the underlying research paradigm, setting the stage for a comprehensive exploration of the study. Subsequently, the research objectives which outline the primary and secondary overarching goals of the study are explicated, providing a clear roadmap for the research endeavour. Further, the formulation and significance of research hypotheses are discussed, emphasising their role in guiding the study's direction. This chapter advances by exploring the core of the research design and its methodology establishing a foundation for the subsequent exploration.

The sampling process was discussed, highlighting aspects of the study population, sample design, and sample size. The significance of the sampling technique was emphasised. The ensuing section on data collection expounds the pivotal phase of data collection by outlining measurement instruments employed to gather data. This chapter traverses the landscape of data analysis, and delineates the approaches utilised in data analysis.

Accordingly, descriptive statistics, factor analysis, and inferential statistics are examined as tools to transform raw data into meaningful insights. Finally, the chapter concludes with the ethical underpinning of the research process that is explored by accentuating ethical principles that guide research conduct, ensuring respect for participants, and upholding the integrity of the study. In particular, the section underscores the ethical considerations that were espoused during the research process.

CHAPTER 5: PRESENTATION OF RESEARCH FINDINGS

5.1 INTRODUCTION

This chapter reports on the results obtained from the analysis of the data collected in this study. The presentation of the findings pivots around the aim of the study which, in broad terms, is to interrogate the nexus between EE, its dimensions, TCP, and EP, along with its dimensions, for the FoW, specifically in the context of South Africa's ICT sector. This chapter elucidates the results obtained from the statistical analysis conducted in pursuit of the study's defined objectives. The chapter commences with the exposition of descriptive statistics delineating the attributes of the study's respondent cohort, encompassing variables such as gender, age, highest formal qualification, tenure, organisation type, and level within the organisation structure. Further, the descriptive details pertaining to the statistical means of the observed and latent variables are documented. In addition, the outcomes concerning the assessment of measurement scales through factor analysis utilising CFA in SEM are delineated. Finally, this chapter presents a synopsis of the study's findings, encompassing pertinent statistical inferences.

5.2 RESPONSE RATE

To examine the interactions between EE, TCP, and EP in the South African ICT sector in the present study, a deliberate effort was made to target a sample size of 1000 employees working in the South African ICT sector. A total of 1368 questionnaires were distributed online with 1054 responses collected, of which 576 responses were unusable due to incomplete responses. Consequently, this study proceeded with 478 complete responses that were considered adequate for the intended descriptive and inferential statistical analysis. This approach adheres to the guidelines provided by Ahmad and Halim (2017:28), suggesting that 382 respondents are appropriate for studies aimed at target population sizes of 75,000 and beyond (N > 75,000). Based on these guidelines, 478 responses of the present study were justifiable because according to ICASA (2023:16), there are approximately 52 634 employees working in the South African ICT sector. Moreover, Purwanto (2021:119) argues that a sample size of at least 200 responses is adequate for SEM. Further, in their study, Al-Rahmi *et al.* (2021) assert that a minimum of 100 samples is necessary for SEM, with a preference for 200 samples.

The 478 responses utilised in the final data analyses represent an effective response rate of 45.4%, based on the 1054 received responses. The response rate of 45.4% is deemed adequate when juxtaposed with previous studies in the South African ICT sector that documented response rates ranging from 16.4% to 42.7%, particularly those that focused on telecommuting among ICT professionals, performance, and employee outcomes in organisations (see Adeniran & Johnston, 2014; Morrison *et al.*, 2019; Urban, Barreria & Nkosi, 2012).

5.3 RESPONDENTS DEMOGRAPHIC PROFILE

The research instrument of the present study contained profile questions that sought information related to the demographics of the respondents as well as certain aspects about the organisation they work for. The profile for variables of interest to this study is classified into gender, age, highest formal qualification, organisation type, length of time with the organisation, level within the organisation, and organisation size. Table 5.1 encapsulates the respondents' demographic profile descriptive statistics.

Table 5.1: Respondents demographic profile descriptive statistics (*n*=478)

Demographic Factor	Classification	Frequency (n)	Percent (%)
Gender	Female	214	44.77
	Male	264	55.23
Age	Less than 21 years	1	0.21
	21 - 30 years	43	9.00
	31 - 40 years	192	40.17
	41 - 50 years	199	41.63
	51 - 60 years	41	8.58
	61+ years	2	0.42
Highest Formal Qualification	No formal qualification	1	0.21
	Matric/Grade 12	17	3.56
	Certificate/Diploma	114	23.85
	Bachelor's degree	123	25.73
	Honours degree	107	22.38
	Master's degree	106	22.18
	Doctorate degree	10	2.09
	Less than one year	53	11.09

Length of Time with the Organisation	1 - 2 years	70	14.64
	3 - 5 years	122	25.52
	6 - 10 years	111	23.22
	10+ years	122	25.52
Managerial Level	Non-Managerial	112	23.43
	Junior Management	124	25.94
	Senior Management	159	33.26
	Executive Management	83	17.36
Source: Author's own compilation			

Note: *% indicates the proportion of the sample in relation to the demographic classification*

5.3.1 Gender

According to the results expressed in Table 5.1, most of this study's respondents were males, accounting for 55.23% (*n* = 264) of the respondent pool compared to female respondents, that accounted for 44.77% (*n* = 214). The demographic profile of the studied cohort of employees working in the South African ICT sector suggests that the sample is predominantly male. These findings are in harmony with those in a study by Hans and Rwelamila (2012) who discovered that generally, more males than females work in the South African ICT sector.

5.3.2 Age

For the age distribution, most of the respondents in the study population were between the ages 41 to 50 years (41.63%, *n* = 199), and 40.17% (*n* = 192) were aged between 31 to 40 years. These age cohorts were, followed by respondents aged 21 to 30 years (9%, *n* = 43), 51 to 60 years (8.58%, *n* = 41), 61+ years (0.42%, *n* = 2) and those that were less than 21 years (0.21% *n* = 1), respectively.

According to the Statistics South Africa (2022) census statistical report, individuals in South Africa within the ages of 15 to 34 are classified as youth, while those over the age of 35 are considered adults. The age distribution results highlight that most of the respondents in the present study are adults. These findings from the studied cohort of employees working in the South African ICT sector are aligned with conclusions drawn by Cant and Wiid (2016) who observed a greater representation of adult respondents in their study.

Moreover, the low level of representation of employees who are youth (9.21%) in this study's respondent group are reflective of the findings by Alao and Brink (2022) who revealed the deficiency of young employees in the South African ICT sector.

5.3.3 Education Level

The highest educational qualifications of the respondents were also of interest to the study, and evidently, all the respondents had some level of education, even though 0.21% (*n* = 1) of the respondents had no formal qualifications. This notwithstanding, 3.56% (*n* = 17) of the respondents had matric/grade 12 as their highest qualification, 23.85% (*n* = 114) conveyed having certificates and diplomas, 48.11% of the respondents indicated that they have degrees (bachelor's degrees, 25.73% and honours degrees, 22.38%). The remainder of the sampled population comprised 24.27% of the respondents who specified that they had postgraduate degrees (master's degree, 22.18% and doctorate degree, 2.09%). The study's results with regards to education levels, show that the highest percentage (72.38%, *n* = 346) of the respondents had tertiary degrees implying that most of the respondents in the study are well educated.

This is understandable, as according to Zöllner and Sulíková (2021:577) employees possessing higher levels of education are more prone to carry out their work activities remotely. Based on this observation, the high levels of education of those in the respondent group of the study should therefore imbue them with the requisite knowledge and exposure to remote work that would enable them to provide insightful responses to questionnaire items related to telecommuting as well as other study constructs.

5.3.4 Organisation Profile

The respondents' organisational profile was of interest to the study based on the type of organisation. As illustrated in Figure 5.1, most of the respondents worked in private sector organisations which accounted for 70% while 30% of the respondents worked in the public sector. The results suggest that the study's respondents' distribution was dominated by employees who work in private sector organisations as opposed to those in public sector entities.

The result is because most ICT-related business activities are in the private sector, which explains why employees in this sector predominate their counterparts from public sector organisations as highlighted in previous studies (see Antoni, Jie & Abareshi, 2020; Kim & Kim, 2020).

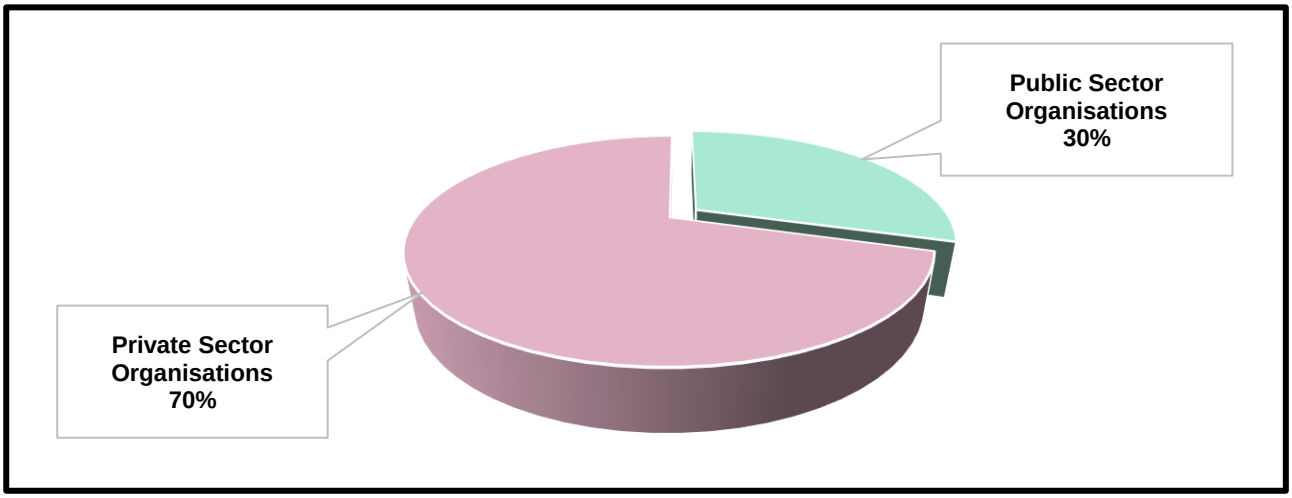

Figure 5.1: Respondents' organisation type (*n* = 478)

Source: Author's own compilation

5.3.5 Tenure in the Organisation

The length of time that a respondent had spent with their organisations was also examined as presented in Table 5.1. The findings highlight that 11.09% of the respondents have less than one year of service, 14.64% of the respondents had 1 to 2 years of service, and 25.52% stated that they have 3 to 5 years' service with their respective organisations. A further 23.22% of the respondents confirmed that they had served their organisations for 6 to 10 years and 25.52% expressed that they have been with their organisations for at least 10 years. These results imply that approximately 74.26% of the respondents had served their organisations for at least three years, which is an indication that the respondents know enough about their respective organisations and are therefore arguably well-equipped to tender relevant opinions related to the issues of TCP, EE, and EP that concern the study.

5.3.6 Level within the Organisation Structure

With regards to the respondents' level within the organisation, most of the respondents (76.56%) indicated that they are at a managerial level. A disaggregation of this portion shows that 25.94% were in junior management positions, 33.26% of the respondents occupied senior management positions while 17.36% were in executive management positions within their respective organisations. A total of 23.43% of the respondents revealed that they occupy non-managerial positions. The prevalence of managers in the studied cohort of employees working in the South African ICT sector resembles a previous study by Smith *et al.* (2020) wherein most of the respondents held managerial positions.

5.3.7 Organisation Size

With respect to the size of the organisation, most of the employees were employed by large enterprises (56.07%, *n* = 268), followed by medium enterprises 23.64% (*n* = 113) and small enterprises (20.29%, *n* = 97). Consistent with the official definition by Statistics South Africa (2020), the results presented in Figure 5.2 highlight that most of the study's respondents work in large enterprises (56.07%), followed by medium enterprises (23.64%), and small enterprises (20.29%). The prevalence of respondents from large enterprises from the studied cohort of employees working in the South African ICT sector contrasts with the conclusions drawn in a study conducted by Ross and Ali (2017) on the Australian ICT sector who report that ICT firms tend to be small and medium size enterprises.

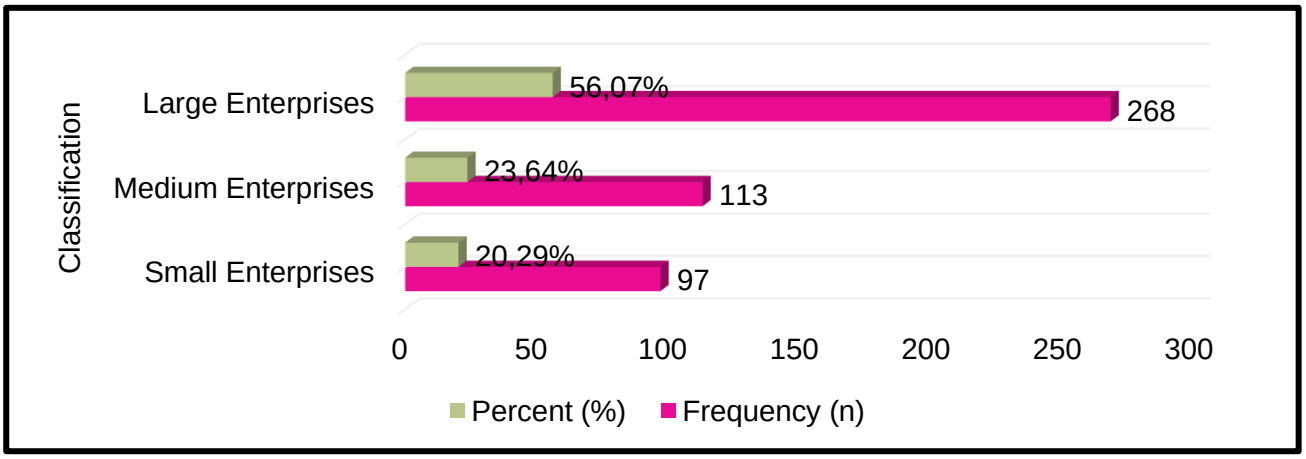

Figure 5.2: Organisation size (*n* = 478)

Source: Author's own compilation

5.4 EVALUATION OF THE MEASUREMENT MODEL

Evaluation of the measurement model entails an assessment of the relationships between constructs and their retained observable items, performed through CFA. CFA assesses the reliability as well as the convergent and discriminant validity of the constructs in the proposed model (Purwanto, 2021:121). The evaluation of CFA which includes a complete GOF test, and separate tests for significance estimates (Alavi *et al.*, 2020:2209) were employed in the present study. Shirvan, Taherian and Yazdanmehr (2022:1461) assert that these tests assess the strength of the significance of parameter estimates and presumed relationships among the variables. Markedly, model fit assessment is an integral part of the CFA of empirical data (McNeish & Wolf, 2023:1).

Moreso, this study was able to establish the factor structures of the constructs in relation to the theoretical relationships between observed and latent variables. Due to practical reasons and difficulties in determining the cut-off value for a particular fit index, it is important to provide some criteria for the evaluation of model fit (Chowdhury & Turin, 2020:3). The key criteria include indicator reliability, internal consistency reliability, convergent validity, and discriminant validity (Hair Jr *et al.*, 2021:76).

The Maximum-likelihood method which encompasses chi-square and standard error (SE) is generally used as the standard estimation method for the parameters of statistical methods (Can, Van de Schoot & Hox, 2015:409). In the present study, CFA was conducted through the Maximum-likelihood method, similar to a study conducted by Sur and Candès (2019). For indicator reliability, an intraclass correlation coefficient threshold of 0.5 or less specifies poor reliability, scores greater than 0.5 but less than 0.75 imply moderate reliability, whereas scores higher than 0.75 but less than 0.9 indicate good reliability, and values above 0.9 signify excellent reliability (Palmieri *et al.*, 2023:5). In the present study, a threshold of 0.6 was deliberately adopted as the cut-off point for weak observable items.

Internal consistency reliability estimates the extent to which items measuring the same construct are associated with each other (Matthews, Pineault & Hong, 2022:663). Consequently, the present study is guided by thresholds established by Koelman *et al.* (2019:10), wherein values below 0.40, values ranging from 0.41 to 0.60, values between 0.61 and 0.74 as well as those from 0.75 upwards, denote categories of poor, moderate, good, and excellent intraclass correlation coefficient estimates respectively.

As for convergent validity, AVE values of 0.5 and higher indicate that there is convergent validity, which implies that the indicator explains more than half of the construct's variance (Nugraha, Yuliawan & Pradana, 2021:20). With regards to discriminant validity, the HTMT threshold of 0.90 lends support to discriminant validity (Rashid, Noranee & Bahtar, 2023:248), especially for structural models that are conceptually very similar such as PhyEng, CogEng, and EmoEng. Guided by the procedure employed in a study conducted by Henseler, Ringle and Sarstedt (2015), this study adopted the HTMT ratio for discriminant validity.

5.4.1 Evaluation of the Employee Engagement Measurement Scale

Prior studies by Shrotryia and Dhanda (2020) as well as Dunlop and Scheepers (2023) report that there are various EE scales that measure PhyEng, EmoEng, and CogEng as well as different attributes of engagement, including vigour, dedication, and absorption. In the present study, EE is presented as a reflective multidimensional construct measured through a 16-item scale developed by Rich *et al.* (2010). The hierarchical structure of the EE construct necessitated the validation of the first-order dimensions of the construct before investigating the viability of the second-order construct. The factor analysis of the first-order constructs of the EE scale consists of:

i. CogEng with five observable items
ii. EmoEng with six observable items
iii. PhyEng with five observable items

Prior to confirming the adequacy of the measurement scales, a review of the item loadings was carried out to determine whether observed variables are loading within the relevant latent variables, in alignment with recommendations by Wang and Rhemtulla (2021:9). This evaluation revealed that some items from the EE scale have low loadings (below the specified 0.6 value). Following the identification of the indicators with low loading items, a conservative methodology was adopted in line with recommendations by Howard (2020:916).

This procedure entails removing the lowest loading items in a stepwise manner to check whether this improves the scale (Decius, Schaper & Seifert, 2019:509). This statistical technique is based on the assessment of a measurement scale, aiming to minimise the disparity between the estimated and observed configurations as comprehensively as possible (Hair Jr, Howard & Nitzl, 2020:103).

The present study went through two iterations of the CFA calculation to ensure that the measurement scales achieved the required item loadings of 0.6 and above, thereby, providing preliminary confirmation for item reliability. As a result, the items that were removed as part of the process to confirm adequate measurement scales consist of two items for the EE scale, namely CogEng2 (Q2.8) and CogEng5 (Q2.14). Figure 5.3 represents the final measurement scale for the EE construct.

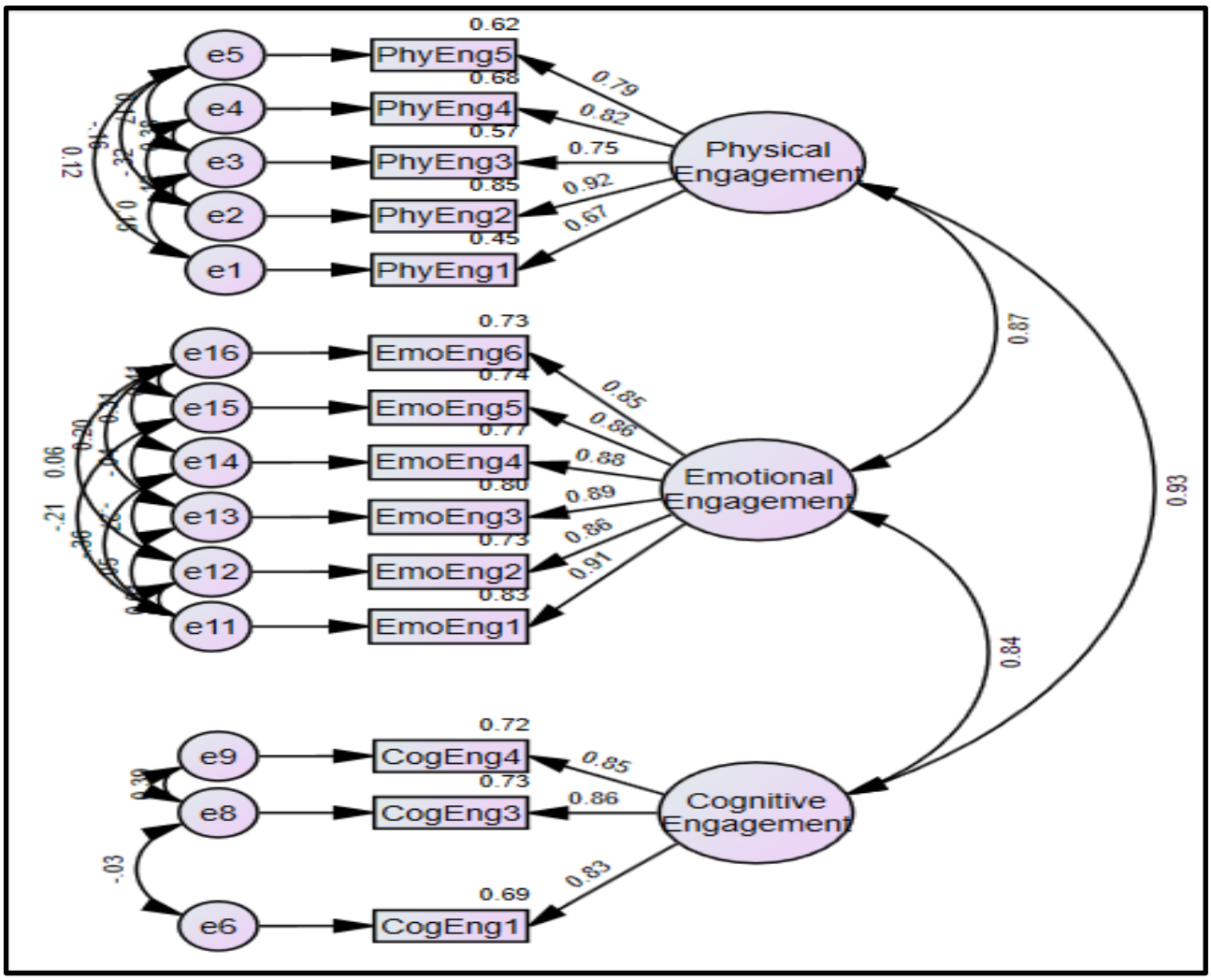

Figure 5.3: EE measurement model

Source: Author's own compilation

The values of the item loadings displayed in Figure 5.3 are above the 0.6 threshold, confirming the indicator reliability of the items. EmoEng (0.91, 0.86, 0.89, 0.88, 0.86, and 0.85), has the highest loading items followed by the items of CogEng (0.83, 0.86, and 0.85) whereas PhyEng (0.67, 0.92, 0.75, 0.82, and 0.79) has a mix of moderate-to-strong loading items. The objective of the measurement model evaluation was to establish whether the observed variables logically belong to the factors they are meant to measure as well as to examine the distinctiveness of these factors. Furthermore, internal consistency reliability, convergent, and discriminant validity for CogEng, EmoEng, and PhyEng were assessed. The results are summarised in Table 5.2.

Table 5.2: EE confirmatory factor analysis results

Constructs and Items	Loading	t-value	SE	Cronbach's α	CR	AVE
CogEng				0.897	0.88	0.710
CogEng1	0.821	-	-			
CogEng3	0.862	21.785	0.044			
CogEng4	0.855	21.513	0.045			
EmoEng				0.947	0.951	0.762
EmoEng1	0.879	-	-			
EmoEng2	0.838	27.328	0.035			
EmoEng3	0.907	29.126	0.033			
EmoEng4	0.86	25.999	0.033			
EmoEng5	0.86	26.027	0.036			
EmoEng6	0.886	27.559	0.037			
PhyEng				0.922	0.89	0.620
PhyEng1	0.694	-	-			
PhyEng2	0.876	17.951	0.068			
PhyEng3	0.77	15.89	0.055			
PhyEng4	0.816	16.788	0.056			
PhyEng5	0.798	16.452	0.066			
	CogEng	**EmoEng**	**PhyEng**			
CogEng						
EmoEng	0.822					
PhyEng	0.858	0.827				
Source: Author's own compilation						

As illustrated in Table 5.2, the value of Cronbach's α, which measures the model variables' reliability, is between 0.897 and 0.947. All the constructs reflect CR values greater than 0.7, confirming EE internal consistency. Additionally, the convergent and discriminant validity results highlighted that all the latent variables, namely CogEng, EmoEng, and PhyEng had AVE's of 0.710, 0.762, and 0.620 respectively, suggesting that the observable items explain more than 50% of the variance in CogEng, EmoEng, and PhyEng. These values are above the 0.5 AVE threshold, confirming convergent validity.

As for discriminant validity, the HTMT ratios were observed to fall below the 0.9 threshold, signifying the successful attainment of discriminant validity. As a result of the factor coefficients surpassing the 0.6 threshold and the fulfilment of criteria related to indicator reliability, internal consistency reliability as well as convergent and discriminant validity, it is established that the measurement scales for CogEng, EmoEng, and PhyEng are deemed acceptable for estimating the structural model.

The significance of the measurement items is explained through the t-values and the SE which assists in affirming indicator reliability. The t-values for EE dimensions measurement items in Table 5.2 ranged between 16.452 and 29.126 which is above the 1.960 threshold suggesting that the measurement items adopted for CogEng, EmoEng, and PhyEng were statistically significant affirming indicator reliability.

5.4.2 Evaluation of the Telecommuting Propensity Measurement Scale

Prior studies by Bélanger (1999) as well as Walls *et al.* (2007) report that there are various scales to measure the individual characteristics of telecommuting, including frequency, propensity, and outcomes at the individual level. In this study, TCP is conceived as a mono construct, examined at an organisational, departmental, and supervisory level through a six-item scale developed by Green (2019). The indicator loadings, Cronbach α test (internal consistency), and CR results for TCP are presented in Table 5.3.

Table 5.3: TCP confirmatory factor analysis results

Constructs & Items	Loading	t-value	SE	Alpha	CR
Telecommuting				0.930	0.935
TCP1	0.805				
TCP2	0.735	19.107	0.051		
TCP3	0.766	20.491	0.047		
TCP4	0.885	22.306	0.05		
TCP5	0.872	21.427	0.054		
TCP6	0.905	22.697	0.051		
Source: Author's own compilation					

From Table 5.3, the indicator loadings for TCP ranged from 0.735 to 0.905, suggesting that the items employed to measure the construct are good indicators for the construct. The factor coefficients surpass the 0.6 threshold and indicate the fulfilment of the criteria related to indicator reliability. In addition, the TCP construct exhibits a Cronbach's α value of 0.930 and a CR value of 0.935, affirming the presence of satisfactory internal consistency and construct reliability for the purpose of estimating the structural model. The t-values for TCP measurement items in Table 5.3 ranged between 19.107 and 22.697 affirming statistical significance.

5.4.3 Evaluation of the Employee Performance Measurement Scale

Prior studies by Demerouti *et al.* (2014), Khan, Raya and Viswanathan (2022) as well as Kaya and Karatepe (2020) report that there are various EP scales that measure TP, AP, CP, and different attributes of EP, including workplace innovation, job performance, and employee innovativeness. EP is presented in this study as a multi-dimensional second order reflective construct, with three dimensions of AP, CP, and TP, measured utilising a 22-item scale developed by Pradhan and Jena (2017). The second-order nature of the EP construct necessitated the validation of its first-order dimensions before assessing the viability of the overarching second-order construct.

The factor analysis of the first-order constructs of the EP scale consists of:

i. AP with seven observable items
ii. CP with nine observable items
iii. TP with six observable items

Prior to confirming the adequacy of the measurement scale, a review of the item loadings was carried out to determine whether observed variables are loading within the relevant latent variables. After performing indicator reliability, the following measurement items were removed, since they had loadings below the 0.6 threshold utilised in the study to determine indicator reliability:

i. For AP: AP5 (Q3.16), AP6 (Q3.19) and AP7 (Q3.21) were removed
ii. For CP: CP8 (Q3.20) was removed
iii. For TP: TP6 (Q3.18) was removed

Consequently, Figure 5.4 illustrates the final measurement model employed by the study to measure EP.

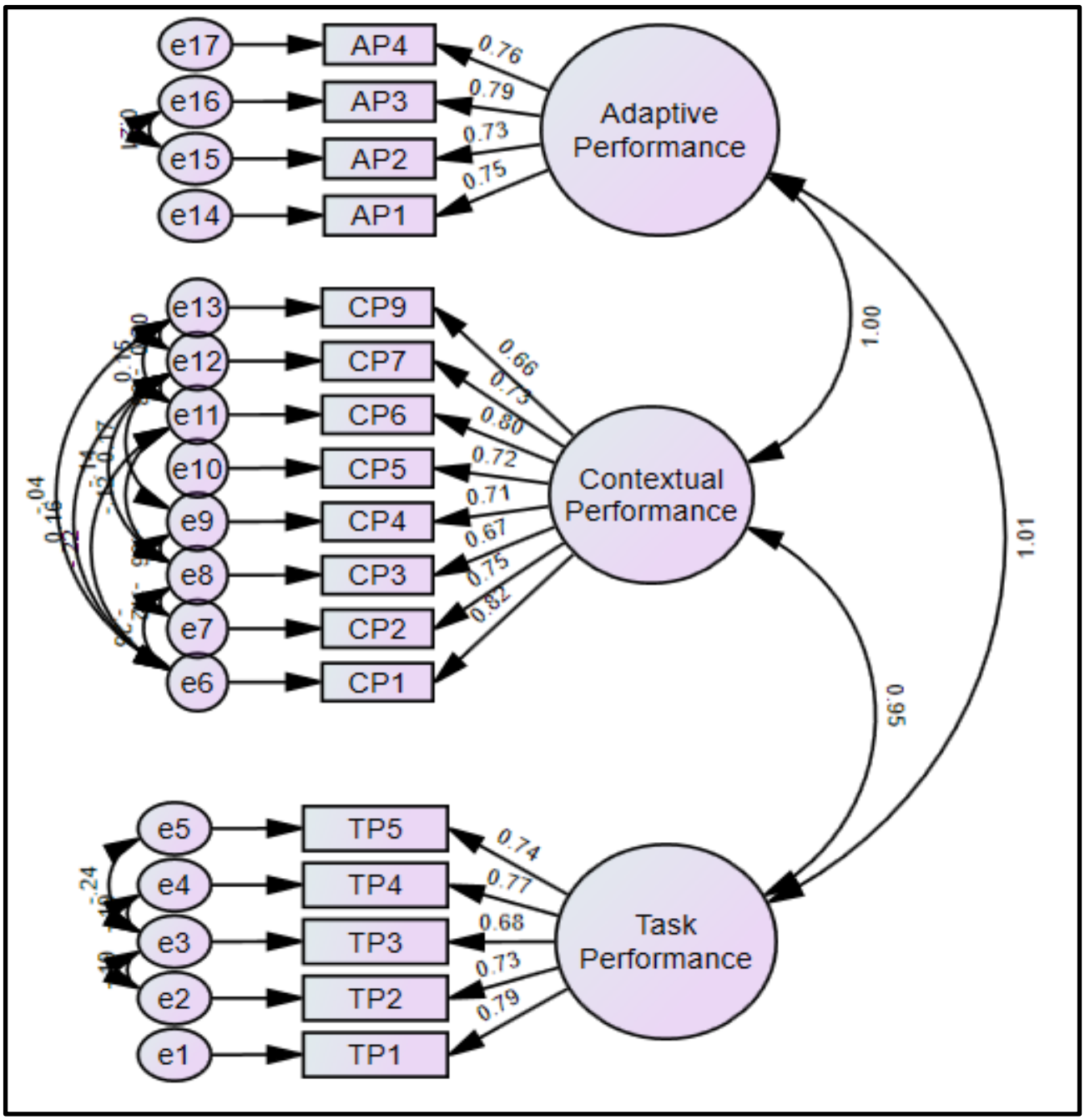

Figure 5.4: EP measurement model

Source: Author's own compilation

The indicator loadings for the component items of dimensions of the EP construct are: AP (0.764, 0.724, 0.807, and 0.768) with the highest loading items, followed by TP (0.779, 0.685, 0.688, 0.746, and 0.722), whereas CP (0.791, 0.724, 0.639, 0.689, 0.716, 0.779, 0.712, and 0.672) has a mix of moderate-to-strong loading items. The aim of the measurement model evaluation was to ascertain the logical alignment of observed variables with the factors they intend to measure, and to investigate the distinctiveness of these factors. Resultantly, convergent and discriminant validity for AP, CP, and TP were assessed, the results of which are summarised in Table 5.4.

Table 5.4: EP confirmatory factor analysis results

Constructs & Items	Loading	t-value	SE	Cronbach's α	CR	AVE
AP						
AP1	0.764	-	-	0.849	0.844	0.575
AP2	0.724	16.822	0.057			
AP3	0.807	18.577	0.055			
AP4	0.768	17.724	0.045			
CP						
CP1	0.791	-	-	0.892	0.903	0.538
CP2	0.724	18.455	0.052			
CP3	0.639	14.293	0.085			
CP4	0.689	17.361	0.056			
CP5	0.716	17.643	0.058			
CP6	0.779	18.574	0.055			
CP7	0.712	19.364	0.047			
CP9	0.672	15.414	0.048			
TP						
TP1	0.779	-	-	0.833	0.860	0.552
TP2	0.685	17.281	0.049			
TP3	0.688	15.685	0.074			
TP4	0.746	18.359	0.056			
TP5	0.722	17.539	0.06			
	AP	**CP**	**TP**			
AP						
CP	0.995					
TP	1.024	0.986				
Source: Author's own compilation						

From Table 5.4, it can be concluded that internal consistency and construct reliability were achieved given that the Cronbach's α coefficient ranged between 0.833 and 0.892 which is above the 0.6 threshold. In addition, the CR values were above the 0.70 threshold. Moreover, the AVE values for AP, CP, and TP were 0.575, 0.538, and 0.552 respectively, detailing that convergent validity was met. The t-values for EP measurement items in Table 5.4 ranged between 14.293 and 19.365 affirming statistical significance.

As for discriminant validity, the HTMT ratios ranged from 0.995 to 1.024 which is above the 0.90 threshold adopted by the present study, following recommendations by Henseler *et al.* (2015:131) and Rashid *et al.* (2023:248). These HTMT results indicate that discriminant validity requirements have not been met for AP, CP, and TP since the associated measurement items correlate highly with each other. This could be happening because according to a study by Charbonnier-Voirin and Roussel (2012), it may be that some behaviours inherent in AP are associated with CP. So, though the constructs of AP, CP, and TP may be conceptually distinct, the examination of the data obtained from the respondents, signals that they are highly interrelated and in essence, empirically indistinct in the context of cohort of employees in South African ICT sector.

To overcome challenges related to discriminant validity, Rönkkö and Cho (2022:21) propose either the development of a higher-order construct or the removal of items demonstrating high inter-item correlations. Consequently, the present study considered merging the latent variables to form a higher-order EP construct as the most suitable solution to address the discriminant validity challenge between AP, CP, and TP. The merging of AP, CP, and TP into one EP construct resulted in restating the hypotheses related to AP, CP and TP. Table 5.5 presents the consolidation of nine hypothesis into three hypotheses relating to EE dimensions (CogEng, EmoEng, and PhyEng) and EP dimensions (TP, AP, and CP).

Moreover, the merged EP construct resulted in the reformulation of hypotheses that led to the emergence of hypotheses aimed at examining the mediating role of TCP on the relationships between EE, its dimensions, and EP (**H_7, $H_{7.1}$, $H_{7.2}$,** and **$H_{7.3}$**) alongside the moderating role of TCP on the relationships between EE, its dimensions, and EP (**H_8. $H_{8.1}$, $H_{8.2}$** and **$H_{8.3}$**). The synthesised hypotheses are delineated in Table 5.5.

Table 5.5: Initial and restated hypotheses related to EP

Initial Hypothesis		Restated Hypothesis	
Hypothesis	**Statement**	**Hypothesis**	**Statement**
$H_{2.1}$	There is a statistically significant positive relationship between PhyEng and TP	**H_2**	**There is a statistically significant positive relationship between PhyEng and EP**
$H_{2.2}$	There is a statistically significant positive relationship between PhyEng and AP		
$H_{2.3}$	There is a statistically significant positive relationship between PhyEng and CP		
$H_{3.1}$	There is a statistically significant positive relationship between CogEng and TP	**H_3**	**There is a statistically significant positive relationship between CogEng and EP**
$H_{3.2}$	There is a statistically significant positive relationship between CogEng and AP		
$H_{3.3}$	There is a statistically significant positive relationship between CogEng and CP		
$H_{4.1}$	There is a statistically significant positive relationship between EmoEng and TP	**H_4**	**There is a statistically significant positive relationship between EmoEng and EP**
$H_{4.2}$	There is a statistically significant positive relationship between EmoEng and AP		
$H_{4.3}$	There is a statistically significant positive relationship between EmoEng and CP		
H_7	TCP has a mediating effect on the relationship between EE and EP	**H_7**	**TCP has a mediating effect on the relationship between EE and EP**

		$H_{7.1}$	**TCP has a mediating effect on the relationship between PhyEng and EP**
		$H_{7.2}$	**TCP has a mediating effect on the relationship between CogEng and EP**
		$H_{7.3}$	**TCP has a mediating effect on the relationship between EmoEng and EP**
H_8	TCP has a moderating effect on the relationship between EE and EP	H_8	**TCP has a moderating effect on the relationship between EE and EP**
		$H_{8.1}$	**TCP has a moderating effect on the relationship between PhyEng and EP**
		$H_{8.2}$	**TCP has a moderating effect on the relationship between CogEng and EP**
		$H_{8.3}$	**TCP has a moderating effect on the relationship between EmoEng and EP**

Source: Author's own compilation

5.4.4 Evaluation of the Employee Engagement, Telecommuting Propensity, and Employee Performance Measurement Model

Following the evaluation of EE, TCP and EP measurement scales through the CFA technique, the study further assessed two measurement models shown in Figures 5.5 and 5.6. Figure 5.5 shows the measurement model for PhyEng, CogEng, EmoEng, TCP, and EP. The item loadings depicted in Figure 5.5 ranged from 0.69 to 0.88 for PhyEng, 0.82 to 0.86 for CogEng, and 0.84 to 0.91 for EmoEng. Similarly, item loadings obtained for TCP were in the range of 0.74 to 0.91 while those associated with EP were between 0.64 to 0.81.

Figure 5.6 presents the measurement model for EE, TCP, and EP. While the factor loadings for TCP and EP constructs shown in Figure 5.5 remain unchanged in Figure 5.6, the factor loadings for the EE construct comprising mainly of PhyEng, CogEng and EmoEng components ranged between 0.88 to 1. Consequently, the measurement models depicted in Figures 5.5 and 5.6 achieved the requisite 0.6 threshold for item reliability, substantiating the model's acceptability.

Based on the item loading values derived from the factor analysis, which are above the 0.6 threshold for EE, TCP, and EP, indicator reliability was confirmed as adequate for the estimation of the structural model. Resultantly, Figure 5.6 presents the final measurement model for EE, TCP, and EP. Moreover, the results indicate that the research instrument achieved reliability, given the depicted value that are above the 0.6 threshold. Subsequently, to assess internal consistency reliability, the examination extended to the evaluation of both convergent and discriminant validity for EE, its dimensions, TCP, and EP with summarised findings presented in Table 5.6. A review of the results in Table 5.6 reveals an AVE of 0.902 for EE, meaning that CogEng, EmoEng, and PhyEng constructs converge to reflect the higher order construct of EE. As for TCP with an AVE of 0.690, and EP with an AVE of 0.939, the results indicate that the observable variables converge to form these constructs. In addition, the HTMT ratios for all the constructs ranging between 0.367 and 0.858. These HTMT correlation ratios fall below the 0.900 discriminant validity criteria, providing confirmation that the factors are discriminant of each other.

Table 5.6: EE, TCP, and EP convergent and discriminant validity results

	EE	TCP	EP	CogEng	EmoEng	PhyEng
AVE	0.902	0.69	0.939	0.710	0.762	0.620
EE						
TCP	0.391					
EP	0.756	0.367				
CogEng		0.353	0.717			
EmoEng		0.394	0.664	0.822		
PhyEng		0.389	0.775	0.858	0.827	
Source: Author's own compilation						

Overall, the assessment of the measurement model provides empirical evidence supporting the evaluation of latent variables (PhyEng, CogEng, EmoEng, TCP, and EP) employed in the current study. The results presented in Table 5.6 confirm adequate item reliability, internal consistency reliability, satisfactory convergent validity, and acceptable discriminant validity. Consequently, there are ample justifications to assert that the data collected in the present study aligns with the proposed theoretical model.

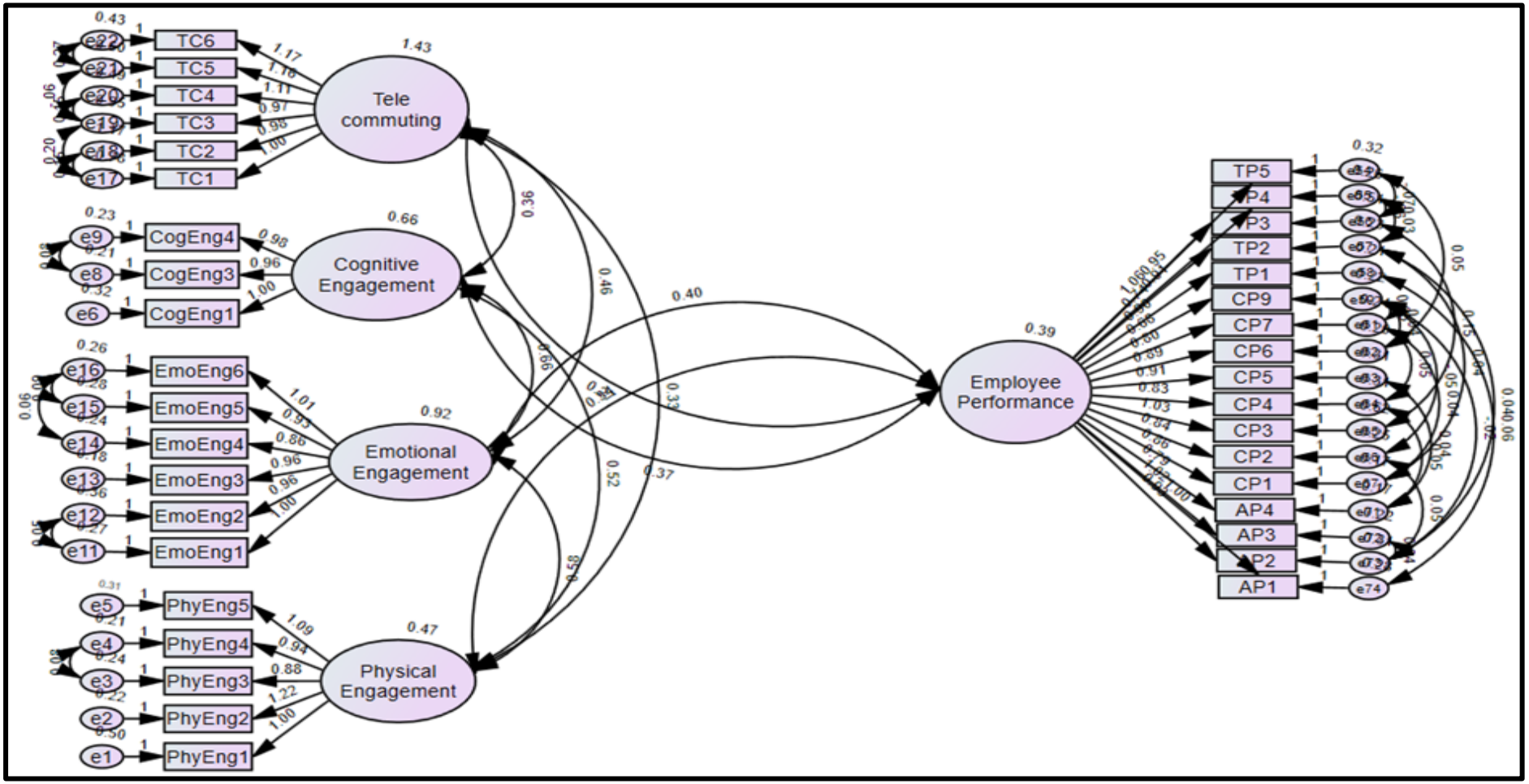

Figure 5.5: Measurement model for PhyEng, CogEng, EmoEng, TCP and EP

Source: Author's own compilation

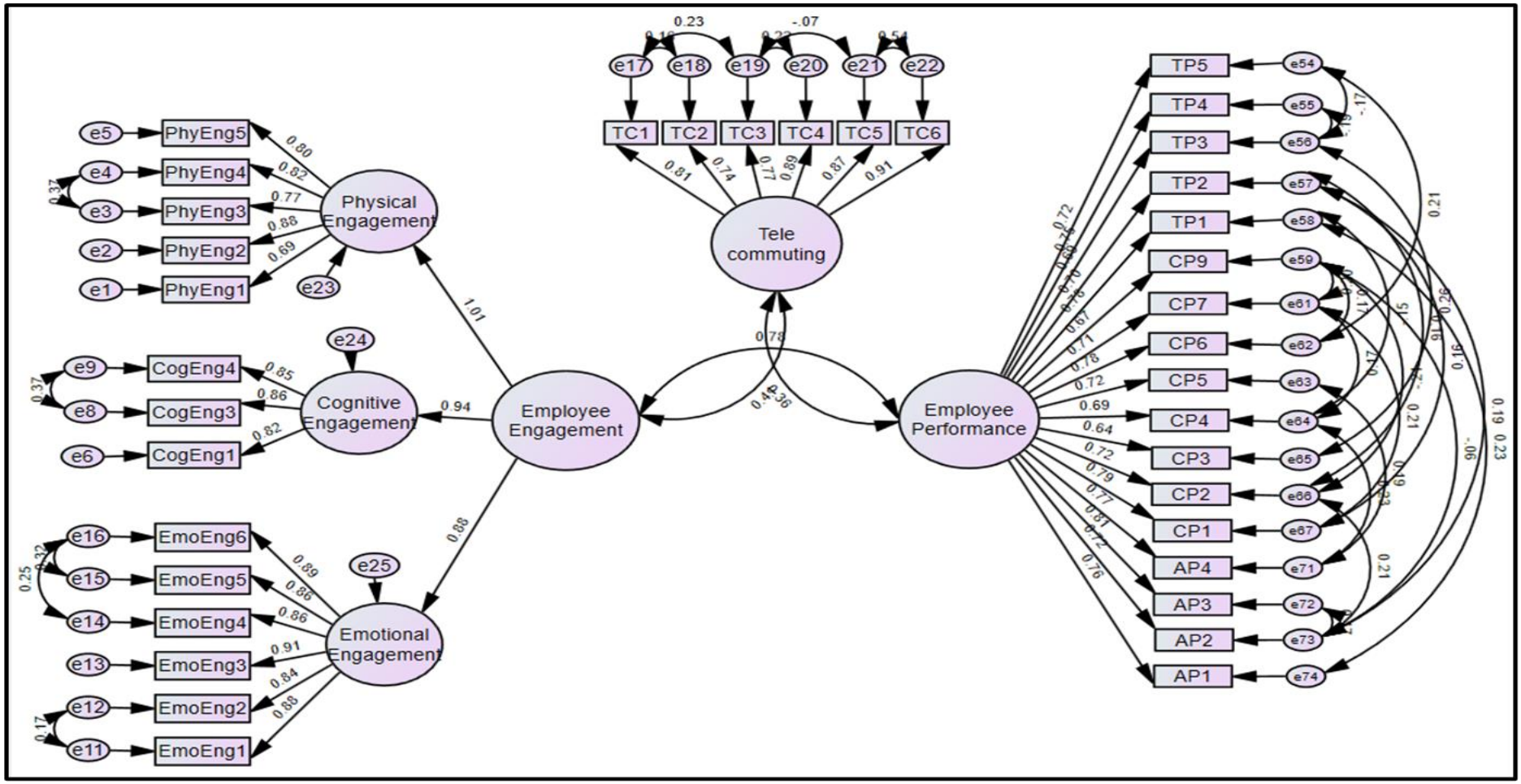

Figure 5.6: Measurement model for EE, TCP and EP

Source: Author's own compilation

5.5 DESCRIPTIVE STATISTICS RELATED TO THE MEASUREMENT SCALES

Following the confirmation of the reliability and validity of the measurement scales, it was important to summarise the data of the main study scales with descriptive statistics. For each measurement scale, the mean, standard deviation (SD), skewness, and kurtosis are presented. The mean, as a measure of central tendency, represents the average response in the data set, while SD measures the spread of data and provides the summary of the extent to which the data values deviate from the mean (Raviadaran *et al.*, 2019:721).

A study by Matore and Khairani (2020) asserts that to establish normality, the value for skewness is expected to be < 2, and that for kurtosis must be < 7; while skewness values above 3 are considered extreme, and values greater than 10 are considered problematic. Skewness measures the asymmetry of the distribution of values. A negative (positive) skewness indicates that the left (right) tail is longer or fatter than the right (left) tail, implying that the data is skewed to the left (right). The skewness and kurtosis values give an indication that the data derived with the measurement scales is normally distributed and will not pose any challenge to the estimation of SEM (Kim & Sim, 2020:4).

In the present study, a five-point Likert scale with extreme options of strongly disagree (1) and strongly agree (5) was employed to collect data from the sampled employees in the ICT sector in South Africa. Li *et al.* (2021:1525) suggest that when analysing agree/disagree five-point Likert scale responses, a mean of between 1.0 to 2.4 indicates disagreement, whereas 2.5 to 3.4 implies a neutral position, while 3.5 to 5.0 denotes agreement with statements in the measurement scale.

5.5.1 Descriptive Statistics Related to Employee Engagement

This study measured the respondents' perceptions of EE within their respective organisations in a bid to determine the degree to which they harness physical, cognitive, and emotional energies in their job roles, which is an inclusive view of the respondent's agentic self.

The results as presented in Table 5.7, show that for the studied cohort of employees working in South Africa's ICT sector, PhyEng is evident in the work they undertake as shown by the mean response score of 4.506 (SD = 0.889) which implies acquiescence by respondents to the projection that they are physically engaged in their work.

More specifically, most of the respondents in study's respondent group strongly agreed (67.52%) whereas 23.64% somewhat agreed that they are physically engaged when they work. Additionally, 3.82% neither agreed nor disagreed, while 3.1% and 1.9%, respectively, strongly disagreed and somewhat disagreed that PhyEng is a feature that characterises the work that they do.

Further, the results outlined in Table 5.7 suggest that, in the main, the respondent pool of employees working in the South African ICT sector are cognitively engaged, as supported by the overall mean response of 4.331 (agree) associated with this dimension of EE. Of the 478 respondents, 54.83% strongly agreed while 32.43% somewhat agreed that they are cognitively engaged at their work. Also, descriptive statistical results show that 6.6% neither agree nor disagree, 3.27% somewhat disagreed, and 2.83% strongly disagreed that they were cognitively engaged at work.

With respect to EmoEng, most of the respondents (58.27%) indicated strong agreement and 24.37% somewhat agreed that they are emotionally engaged at their work. Indeed, the perception communicates that they felt enthusiastic, energetic, interested, proud, positive, and excited about their work. In relation to the same EmoEng dimension of EE, 8.93%, 4.57%, and 3.88% of the respondent pool, respectively, indicated they neither agreed nor disagreed, somewhat disagreed, and strongly disagreed with the suggestion that they were emotionally engaged at work. This notwithstanding the results, the overall mean response for EmoEng was 4.286 (SD = 1.052) and this signals that the respondents agreed that EmoEng is evident with the work they do.

For EE, considered as an aggregated construct, the overall mean obtained was 4.374 (SD = 0.970) indicating a consensus among respondents that EE is evident in the work they undertake in their respective organisations. The descriptive statistics results related to EE further show that 60.84% respondents strongly agreed that EE was characteristic of their work. However, 25.84% somewhat agreed and 6.61% neither agreed nor disagreed that there was EE with respect to their work. Additionally, 3.38% and 3.34% of the effective respondent pool, volunteered that they strongly disagree and somewhat disagreed with the position that EE was evident as it pertains to the work that they do in their organisations.

Table 5.7: Respondents perception of EE (*n* = 478)

Construct	Item	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Mean	SD	Skewness	Kurtosis
PhyEng	**1.** I work with intensity on my job	3.6%	3.1%	6.1%	27.2%	60.0%	4.370	0.986	-1.891	3.315
	15. I exert my full effort to my job	3.6%	2.7%	4.2%	27.4%	62.1%	4.418	0.959	-1.082	4.235
	7. I try my hardest to perform well on my job	2.7%	0.4%	1.7%	16.7%	78.5%	4.678	0.778	-3.293	3.883
	10. I strive as hard as I can to complete my job	2.5%	1.0%	1.7%	17.6%	77.2%	4.659	0.790	-1.112	1.536
	15. I exert a lot of energy on my job	3.1%	2.3%	5.4%	29.3%	59.8%	4.404	0.931	-1.998	4.119
	PhyEng	**3.1%**	**1.9%**	**3.82%**	**23.64%**	**67.52%**	**4.506**	**0.889**	**-1.875**	**3.418**
CogEng	**2.** At work, my mind is focused on my job	2.9%	4.8%	7.7%	32.8%	51.7%	4.255	0.994	-1.547	2.069
	1**1.** At work, I concentrate on my job	2.7%	2.1%	6.9%	33.7%	54.6%	4.354	0.906	-1.811	3.639
	12. At work, I devote a lot of attention to my job	2.9%	2.9%	5.2%	30.8%	58.2%	4.383	0.933	-1.921	3.769
	CogEng	**2.83%**	**3.27%**	**6.6%**	**32.43%**	**54.83%**	**4.331**	**0.944**	**-1.760**	**3.159**
EmoEng	**3.** I am enthusiastic about my job	4.8%	4.2%	8.4%	24.3%	58.4%	4.272	1.094	-1.637	1.95
	5. I feel energetic at my job	4.6%	6.7%	9.4%	34.5%	44.8%	4.082	1.104	-1.287	0.97
	6. I am interested in my job	3.8%	3.1%	7.3%	20.7%	65.1%	4.402	1.014	-1.921	3.17

	9. I am proud of my job	2.5%	3.3%	8.6%	18.6%	66.9%	4.441	0.960	-1.894	3.13
	13. I feel positive about my job	3.8%	4.0%	9.2%	25.5%	57.5%	4.291	1.041	-1.624	2.10
	16. I am excited about my job	3.8%	6.1%	10.7%	22.6%	56.9%	4.228	1.099	-1.422	1.18
	EmoEng	**3.88%**	**4.57%**	**8.93%**	**24.37%**	**58.27%**	**4.286**	**1.052**	**-1.631**	**2.083**
EE		**3.38%**	**3.34%**	**6.61%**	**25.84%**	**60.84%**	**4.374**	**0.970**	**-1.755**	**2.887**
Source: Author's own compilation										

5.5.2 Descriptive Statistics Related to Telecommuting Propensity

This study measured respondents' perceptions of TCP to determine the degree to which telecommuting is a common and accepted practice in their organisations. The results as delineated in Table 5.8 reflect a mean score of 3.908 (SD 1.489), suggesting the presence of TCP in their respective organisations.

Concerning the TCP scale, the overall mean of 3.74 (SD 1.54) suggests acknowledgment among respondents that telecommuting is prevalent, regarded as a viable option, actively implemented, endorsed, and encouraged among employees. Specifically, in the cohort of employees in South Africa's ICT sector who participated in the study, 48.62% strongly agreed, 20% agreed whilst 5.15% neither agreed nor disagreed to statements suggesting the presence of TCP in their respective organisations. However, 17.47% of the respondents strongly disagreed whilst 8.7% disagreed with the assertion that TCP characterises their respective organisations.

In summary, with respect to TCP, the study's findings indicate that in the studied ensemble of employees working within the ICT sector in South Africa, telecommuting is a common practice and is an option for everyone. Additionally, the findings reveal that telecommuting is prevalent and is fully supported within their respective organisations.

Table 5.8: Respondents perception of TCP (*n* = 478)

Item	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Mean	SD	Skewness	Kurtosis
1. Telecommuting is common in my organisation	14.0%	9.4%	3.3%	18.2%	55.0%	3.908	1.489	-1.039	-0.528
2. Telecommuting is an option for everyone in my department	19.7%	12.3%	4.0%	20.3%	43.7%	3.561	1.598	-0.606	-1.294
3. My direct supervisor/ manager telecommutes	16.1%	6.9%	3.3%	20.5%	53.1%	3.877	1.510	-1.040	-0.53
4. My supervisor supports my decision to telecommute	15.7%	7.7%	6.5%	19.2%	50.8%	3.818	1.506	-0.935	-0.696
5. Employees in my organisation are encouraged to make use of flexible work arrangements like telecommuting	21.5%	7.3%	7.1%	21.1%	42.9%	3.565	1.596	-0.654	-1.206
6. My organisation fully supports telecommuting	17.8%	8.6%	6.7%	20.7%	46.2%	3.690	1.543	-0.781	-0.981
TCP	**17.47%**	**8.7%**	**5.15%**	**20.0%**	**48.62%**	**3.74**	**1.54**	**-0.843**	**-0.873**
Source: Author's own compilation									

5.5.3 Descriptive Statistics Related to Employee Performance

This study examined the respondents' perceptions of EP to explore the taxonomies of behavioural, outcome, and the extent to which employees perform in their work roles. The perceptions as represented by scores shown in Table 5.9, are associated with a mean score of 4.546 (SD 0.811), indicating agreement with statements suggesting that employees perform at their respective tasks.

In detailed terms, 66.88% of the respondents strongly agreed and 25.74% somewhat agreed with statements contained in the EP measurement scale. Additionally, 4.19% of the respondents neither agreed nor disagreed with the same statements concerning EP. A proportion that equates to 1.72% of the respondents expressed strong disagreement, whilst 1.47% indicated a disagreement with EP-related statements contained in the scale.

Table 5.9: Respondents perception of EP (*n* = 478)

Construct	Item	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Mean	SD	Skewness	Kurtosis
EP	**1.** I maintain a high standard of work	2.3%	0.0%	1.9%	20.1%	75.7%	4.669	0.732	-1.223	2.397
	4. I am capable of handling my assignments without much supervision	1.5%	0.2%	2.5%	16.9%	78.9%	4.715	0.666	-1.289	3.382
	8. I am very passionate about my work	3.1%	3.3%	6.9%	23.2%	63.4%	4.404	0.979	-1.904	3.263
	11. I know I can handle multiple assignments for achieving organisational goals	1.3%	1.5%	5.2%	30.5%	61.5%	4.496	0.771	-0.971	2.919
	14. I complete my assignments on time	1.5%	2.7%	5.0%	34.9%	55.9%	4.410	0.826	-1.805	3.892
	2. I perform well in mobilising collective intelligence for effective teamwork	2.3%	1.5%	3.1%	30.5%	62.6%	4.496	0.824	-1.294	3.294
	5. I manage change in my job very well whenever the situation demands	1.7%	1.3%	6.5%	29.1%	61.5%	4.475	0.810	-1.372	2.701
	9. I effectively manage my work even in the face of change	1.5%	1.3%	6.3%	29.7%	61.3%	4.481	0.792	-1.445	3.683

	12. I always believe that mutual understanding can lead to a viable solution in my organisation	1.3%	0.4%	1.9%	19.7%	76.8%	4.703	0.650	-1.149	2.829
	3. I usually extend help to my co-workers when asked or needed	1.7%	0.8%	1.0%	15.1%	81.4%	4.736	0.683	-1.608	2.005
	6. I communicate effectively with my work colleagues	1.5%	1.0%	2.3%	27.8%	67.4%	4.586	0.727	-1.505	3.206
	7. I love to handle extra responsibilities	2.9%	5.6%	11.3%	34.5%	45.6%	4.142	1.020	-1.276	1.184
	10. I empathise with my co-workers when they are in trouble	1.3%	1.7%	4.2%	23.8%	69.0%	4.577	0.762	-1.322	2.340
	13. I actively participate in group discussions and work meetings	1.7%	1.3%	5.9%	25.5%	65.7%	4.523	0.803	-1.152	3.432
	15. I maintain good coordination among work colleagues	1.3%	0.8%	3.1%	32.8%	61.9%	4.533	0.717	-1.160	3.719
	17. I praise my co-workers for their good work	1.7%	0.6%	2.1%	20.5%	75.1%	4.667	0.709	-1.029	1.225
	22. I share knowledge and ideas among my work colleagues	0.6%	1.0%	2.1%	23.0%	73.2%	4.672	0.634	-1.579	4.901
	EP	**1.72%**	**1.47%**	**4.19%**	**25.74%**	**66.88%**	**4.546**	**0.771**	**-1.358**	**2.963**
Source: Author's own compilation										

5.6 CORRELATIONS BETWEEN THE KEY CONSTRUCTS OF THE STUDY

Watanabe *et al.* (2020:2) describe correlation analysis as a statistical method used to evaluate the association between two continuous variables measured on an interval or ratio scale. Following the precedence of Tikare, Sreeram and Verlekar (2022) who performed inferential statistics by using Pearson's Correlation technique for testing hypotheses, the present study employed the Pearson Product-Moment correlation coefficient (*r*) procedure for the correlation analysis.

According to a study by Humphreys *et al.* (2019), the use of Pearson's *r* as the classical measure of correlation is widespread and entails manipulative experiments. Pearson coefficient *r*-values are interpreted as follows: when $r < 0.10$, the correlation is deemed negligible; values within the range of 0.10 – 0.39 are characterised as weak correlations, values within the interval of 0.40 – 0.69 are denoted as moderate correlations, values between of 0.70 – 0.89 are considered strong correlations, and when $r \geq 0.90$, it signifies very strong correlations (Schober, Mascha & Vetter, 2021:3). Generally, the information presented in a correlation matrix indicates the strength and the direction of the relationship between two variables (Pandey, 2020:10).

Drawing on the procedures conducted in studies by Sukri and Yusoff (2021) as well as Deegan and Dunne (2022), preliminary analyses were conducted to verify the absence of violations concerning the assumptions of normality, linearity, and homoscedasticity. As presented in Table 5.7, the skewness values for PhyEng, CogEng, and EmoEng range between -1.112 to -1.998, except for PhyEng that reflects -3.293. Considering that PhyEng is the only item above the < 2 normality threshold, this study applied guidance by Doane and Seward (2011:6) that skewness is not a test for symmetry in general. Moreover, the t-test is not necessarily diminished in the absence of normality. In addition, Cain, Zhang and Yuan (2017:1717) assert that it is important for researchers to quantify the non-normality, considering that skewness and kurtosis are an intuitive means to understand normality. Consequently, the present study proceeded with the Pearson Product-Moment correlation analysis considering that the kurtosis values for PhyEng, CogEng, and EmoEng span between 0.97 and 4.235 which are below the < 7 threshold.

Moreover, the skewness values for TCP range presented in Table 5.7 are between -0.606 - 1.039, while the scope of the kurtosis ratios ranges from -0.528 to -1.294. These skewness and kurtosis ratios are below the thresholds of 2 and 7, respectively, which means that the derived data for TCP is normally distributed and can be used for SEM. Moreover, the skewness value for EP is -1.358, which is below the skewness threshold of 2. Further, the kurtosis value for EP is 2.963 which is below the cut-off point of 7. These skewness and kurtosis values as they relate to EP, indicate that the study's data is normally distributed and therefore, the Pearson Product-Moment correlation analysis could be undertaken. The correlation coefficients between the main constructs of the current study are captured in Table 5.10.

Table 5.10: Correlation analysis (Pearson product-moment coefficient) results

	EP	**EE**	**TCP**	**PhyEng**	**CogEng**	**EmoEng**
EP	1.000					
EE	0.722*** (**H_1**)	1.000				
TCP	0.346*** (**H_6**)	0.382*** (**H_5**)	1.000			
PhyEng	0.717*** (**H_2**)	0.925***	0.366***	1.000		
CogEng	0.667*** (**H_3**)	0.889***	0.319***	0.807***	1.000	
EmoEng	0.642*** (**H_4**)	0.950***	0.365***	0.791***	0.760***	1.000
Source: Author's own compilation						

*** *indicates statistical significance at 5% level of significance*

From Table 5.10, the correlation coefficients between PhyEng and CogEng (r = 0.807, p < 0.01); PhyEng and EmoEng (r = 0.791, p < 0.01); and CogEng and EmoEng (r = 0.760, p < 0.01) demonstrate that the EE first-order factors have strong positive correlations between them. This means that based on the data collected from the sampled employees in South Africa's ICT sector, a strong positive relationship exists between PhyEng, CogEng, and EmoEng, suggesting that as one of these factors increases (decreases), for example CogEng, so does EmoEng and PhyEng. Given that these factors are indicators of a second-order reflective construct, the strong positive correlations provide additional confirmation that the constructs highly reflect EE.

The correlations between the independent variables of EE and PhyEng ($r = 0.925$, $p < 0.01$), EE and CogEng ($r = 0.889$, $p < 0.01$); and EE and EmoEng ($r = 0.950$, $p < 0.01$) reveal that the second-order reflective construct has a very strong relationship with the first-order factors suggesting that the factors are related to each other. The results in Table 5.10, however, provide an indication that EmoEng has the strongest relationship with EE, followed by PhyEng, and lastly CogEng which is similar to the results of the EE second-order estimation that confirms EmoEng as the highest contributor to the EE reflective construct.

The results of the present study resonate with the report by Pepra-Mensah and Kyeremeh (2018) that EE is best reflected by PhyEng, CogEng, and EmoEng dimensions. The harmony between the outcomes of the present investigation and those of prior studies (see Kwon & Kim, 2020; Nimon *et al.*, 2016; Weerasooriyan & Chamaru De Alwis, 2017) underscores the persistent pattern of agreement that the EE construct is multifarious, comprising distinct variables that function independently.

Markedly, in the context of employee behaviour, interaction and performance, the present study's findings contradict those of Ghuman (2016) which claimed that employee functional drivers (PhyEng, CogEng, EmoEng) are not a sufficient condition for EE. This notwithstanding, Karamustafa and Kunday (2018:588) insist that the sole plausible means of cultivating engaged employees within the work environment is through fostering physical, cognitive, and emotional engagement.

The results in Table 5.10 reveal that a strong positive correlation exists between EE and EP ($r = 0.722$, $p < 0.01$), indicating an association between EE and EP for the sampled employees working in the South African ICT sector. The results of the present study contradict those of Riyanto *et al.* (2021) conducted on ICT employees in Indonesia which claimed that EE does not directly relate with EP. As for the correlation between EE dimensions and EP, the present study's findings show that a strong positive correlation exists between PhyEng and EP ($r = 0.717$, $p < 0.01$), followed by EmoEng and EP ($r = 0.667$, $p < 0.01$) with a moderate positive correlation, and lastly CogEng and EP ($r = 0.642$, $p < 0.01$) with a moderate positive correlation.

These results suggest that PhyEng has a much stronger relationship with EP than the rest of the EE dimensions. The outcomes of the present study of sampled employees working in the South African ICT sector resonate with those of studies conducted by Kuok and Taormina (2017) as well as Črnjar, Dlačić and Milfelner (2020) that confirmed that EE is a construct with three dimensions that influence an employee's performance at work.

The results related to EE and EP, PhyEng and EP, CogEng and EP, and EmoEng and EP provide preliminary statistical support for hypotheses **H_1, H_2, H_3**, and **H_4** as well as vital information related to the direction of the relationships between these constructs and EP. Essentially, the positive correlations reveal an association between the EE, PhyEng, CogEng, EmoEng, and EP constructs. More so, though the correlation value of 0.382 indicates a weak correlation between EE and TCP, it still provides preliminary statistical support for **H_6**. Markedly, the findings of the present study contradict those of Anguelov and Angelova's (2021) study conducted on employees working in ICT organisations in Bulgaria which found that telecommuting does not significantly impact on the level of employees' motivation and their engagement to the achievement of the organisation's goals.

Notably, the EE dimensions had a weak correlation with TCP as shown by the results obtained with respect to PhyEng and TCP ($r = 0.366$, $p < 0.01$); CogEng and TCP ($r = 0.319$, $p < 0.01$); and EmoEng and TCP ($r = 0.365$, $p < 0.01$). The weak yet positive relationships offer preliminary statistical support for hypotheses **H_7, $H_{7.1}$** to **$H_{7.3}$; H_8** and **$H_{8.1}$** to **$H_{8.3}$**. As for EP and TCP, the constructs had a weak correlation ($r = 0.346$, $p < 0.01$) which relatively affirms that there is preliminary statistical support for hypothesis **H_5**. In reviewing the correlation output presented in Table 5.10, there is an indication of linear positive relationships between the key constructs of the current study which was further investigated through SEM.

5.7 STRUCTURAL EQUATION MODELLING RESULTS

The SEM statistical method was used to test and explicate the direct and indirect relationships between the exogenous (EE, PhyEng, CogEng, and EmoEng), interfering (TCP) and endogenous (EP) variables in the current study. To confirm the interactions that exist between the latent constructs and establish the direction of statistically observed relationships, the SEM method is utilised to estimate the correlations (Martins & Perez, 2020:781).

Further, according to Hair Jr *et al.* (2021:119), researchers often employ SEM as a method for measuring effect size, which bears resemblance to the magnitude of the path coefficients. The use of SEM allowed for the examination of the hypothesised paths to determine which ones are statistically supported and which are not. Maiti and Saikia (2019:1) assert that the assessment of statistical significance relies on a *p*-value, which denotes probability and measures the likelihood that any observed disparity between groups is attributable to chance.

A study by Darling (2021) posits that a *p*-value of less than 0.05 is conventionally regarded as a reliable universal marker indicative of statistical significance in research. Consequently, the present study adopted the 0.05 significance level to ascertain the statistical significance of the obtained results. Moreso, a study by Seok et al. (2016) reports that a good fitting model is accepted if the value of the CMIN/df is < 5, the GFI indices, Tucker Lewis index (TLI), and the Confirmatory fit index (CFI) are each > 0.90.

Further, according to Kumar *et al.* (2021:4) the root mean square error approximation (RMSEA) is < 0.08 and standardised root mean square residual (SRMR) < 0.08, values are considered as acceptable indices of fit. Also, path analysis was used to examine and verify the hypothesised relationships between the study's constructs, following the precedence of prior studies (see Sun & Gao, 2020; Wang *et al.*, 2021:3). To perform SEM, IBM Amos v28 was utilised to conduct a path analysis for investigating the causal structural model guided by the proposed conceptual framework in Chapter 3. The SEM section is presented in three segments, namely the evaluation of direct, mediation, and moderation relationships.

5.7.1 Evaluation of Direct Relationships

To examine the direct relationships between EE, its dimensions, TCP, and EP, four models were developed. The first model examined the direct relationship between PhyEng, CogEng, EmoEng, and EP, whereas the second model examined the relationship between PhyEng, CogEng, EmoEng, and TCP. The third model examined the direct relationship between EE, TCP, and EP whilst the fourth model investigated the interaction between EE and TCP.

5.7.1.1 Evaluation of Direct Relationships Involving Employee Engagement, Telecommuting Propensity, and Employee Performance

To examine the direct relationship between EE, TCP, and EP, a path analysis model was developed as shown in Figure 5.7. The fit indices for the model shown in Figure 5.7 are within the acceptable range: CMIN/df = 2.652; RMSEA = 0.059; SRMR = 0.054; CFI = 0.937; TLI = 0.929; GFI = 0.849; NFI = 0.903 and AGFI = 0.821. From the path analysis model results depicted in Figure 5.7, the path coefficient (rounded off to two decimal places) for the direct relationship between EE and EP is 0.76 whilst that associated with TCP and EP is 0.05. Evidently, the path coefficient for the direct relationship between EE and TCP is 0.41. These coefficients (now rounded off to three decimal places) alongside associated t-values, p-values and hypothesis-related statistical decisions are presented in Table 5.11.

Table 5.11: Structural model results for direct relationships between EE, TCP and EP

Hypothesised Relationship	**Estimate**	**t-value**	***p*-value**	**Decision**
EE, TCP, and EP				
EE ⇾ EP (H_1)	0.755	12.252	< 0.001	**Supported**
TCP ⇾ EP (H_6)	0.050	1.382	0.167	**Not Supported**
R^2 for EP predictive model	0.603			
EE and TCP				
EE ⇾ TCP (H_5)	0.408	7.928	< 0.001	**Supported**
R^2 for TCP predictive model	0.167			

Hypothesised Relationship	Estimate	t-value	*p*-value	Decision
Model Fit				
CMIN/df = 2.652; RMSEA = 0.059, SRMR = 0.054; CFI = 0.937; TLI = 0.929; GFI = 0.849; NFI = 0.903 and AGFI = 0.821.				
Source: Author's own compilation				

The results presented in Table 5.11 indicate that the direct relationship model for EE, TCP with EP has a R^2 value of 0.603 for the predictive model. This suggests that a 60.3% variance in EP is accounted for by EE and TCP. Subsequently, the results entailed that the predictive model for the direct relationship between EE and TCP has an R^2 of 0.167 inferring that 16.7% of the variance in TCP is accounted for by EE for the cohort of employee in the ICT sector in South Africa who participated in the study.

The association between EE and EP was positive and statistically significant (β = 0.755, t = 12.252, $p < 0.001$). As a result, **H_1** which states that EE has a positive relationship with EP, was statistically supported and it is therefore concluded that in the cohort of employees working in the South African ICT sector that participated in the study, EE is positively associated with EP. The research outcomes parallel those observed in a previous study by Markos and Sridevi (2010) who discovered that when engaged employees work on their job assignments more enthusiastically, the result is a higher output.

The study further examined the effect of EE on TCP, and the causal relationship results presented in Table 5.11 show that a positive and significant relationship exists between EE and TCP (β = 0.408, t = 7.928, $p < 0.001$). Accordingly, **H_5** was statistically supported. The study therefore concludes that EE has a positive relationship with TCP in the cohort of employees working in the South African ICT sector that participated in the study. The study's findings resonate with those of Osoian and Petre (2022) who observed a positive correlation between EE and telecommuting.

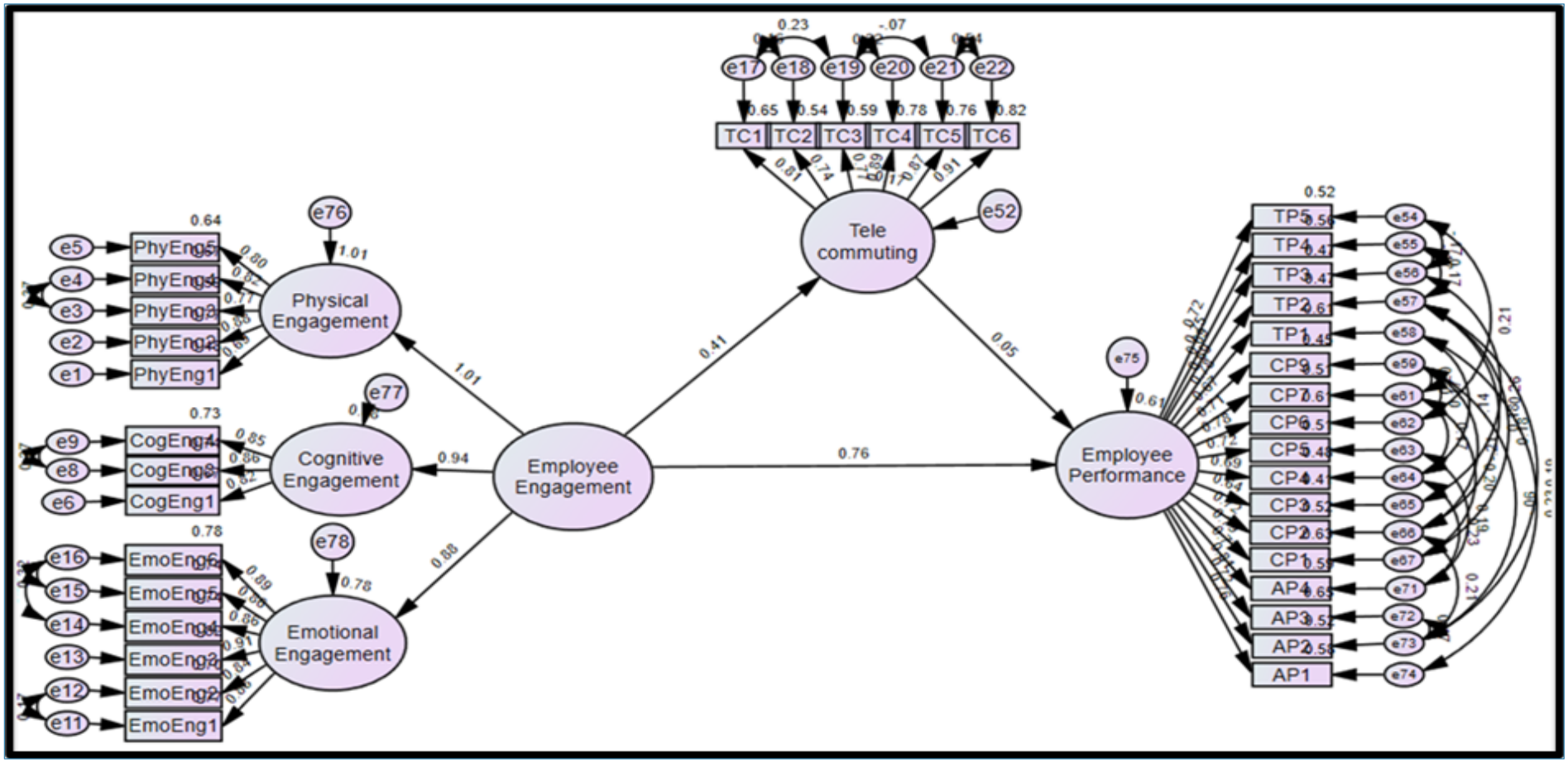

Figure 5.7: Path analysis results for EE, TCP and EP

Source: Author's own compilation

5.7.1.2 Evaluation of Direct Relationships Involving Employee Engagement, Dimensions, Telecommuting Propensity, and Employee Performance

The study examined the direct relationship that exists between each of the constructs of PhyEng, CogEng, EmoEng, TCP, and the dependent variable of EP. The same examination was also conducted for PhyEng, CogEng, and EmoEng with TCP considered as the dependent variable. The fit indices for the model as shown in Figure 5.8 fulfil acceptable requirements given that CMIN/df = 2.691; RMSEA = 0.060; SRMR = 0.052; CFI = 0.936; TLI = 0.927; GFI = 0.849; NFI = 0.902 and AGFI = 0.821. In addition, the path model results as presented in Figure 5.8 show that the path coefficient (rounded off to three decimal places) for the direct relationship between PhyEng and EP is 1.07, whereas it is -0.12 for CogEng and EP whilst that for EmoEng and EP is -0.21. These coefficients (now rounded off to three decimal places) alongside associated t-values, p-values and hypothesis-related statistical decisions are presented in Table 5.12.

Results as presented in Table 5.12 reveal that the direct relationship model for EE dimensions and EP has a squared multiple correlation (R^2) of 0.636 for the predictive model. This implies that a 63.6% variance in EP is accounted for by PhyEng, CogEng, EmoEng, and TCP. Moreover, the results highlight that PhyEng, CogEng, and EmoEng account for 17.3% (R^2 = 0.173) variance in TCP in the predictive model. The correlation between PhyEng and EP was positive and statistically significant (β = 1.065, t = 4.204, $p < 0.001$). In essence, **H_2** which states that PhyEng has a statistically significant positive relationship with EP was statistically supported confirming that in the studied cohort of employees in the South African ICT sector, PhyEng is positively associated with EP. This finding aligns with the conclusions drawn by Makhanu, Mukanzi and Nyikuli (2018) who conducted a study among 258 employees in Kenya and discovered that PhyEng increases job performance.

As for the association between CogEng and EP, the results indicate a negative but statistically insignificant relationship (β = -0.121, t = -0.614, p = 0.539). Consequently, **H_3** which proposed that there is a statistically significant positive relationship between CogEng and EP was not statistically supported.

The findings of the current study align with the conclusion in the study of Ho *et al.* (2011) that revealed that attention, which is partly an expression of CogEng, did not, significantly relate with work performance even though it was later highlighted that this specific finding was unexpected.

Table 5.12: Structural model results for direct relationships involving PhyEng, CogEng, EmoEng, TCP and EP

Hypothesised Relationship	**Estimate**	**t-value**	***p*-value**	**Decision**
PhyEng, CogEng, EmoEng, TCP, and EP				
PhyEng ⇀ EP (H_2)	1.067	4.217	< 0.001	**Supported**
CogEng ⇀ EP (H_3)	-0.121	-0.614	0.539	**Not Supported**
EmoEng ⇀ EP (H_4)	-0.210	-2.022	0.043	**Not Supported**
TCP ⇀ EP (H_6)	0.058	1.443	0.149	**Not Supported**
R^2 for EP predictive model	0.636			
PhyEng, CogEng, EmoEng, and TCP				
PhyEng ⇀ TCP	0.313	1.095	0.273	
CogEng ⇀ TCP	-0.112	-0.473	0.636	
EmoEng ⇀ TCP	0.219	1.733	0.083	
R^2 for TCP predictive model	0.173			
Model Fit				
CMIN/df = 2.691; RMSEA = 0.060, SRMR = 0.052; CFI = 0.936; TLI = 0.927; GFI = 0.849; NFI = 0.902 and AGFI = 0.821.				
Source: Author's own compilation				

The effect of EmoEng on EP was negative and significant (β = -0.210, t = -2.022, *p* = 0.043). In essence, **H_4** which proposed that EmoEng has a statistically significant positive relationship with EP was not statistically supported confirming that in the cohort of studied employees working in South Africa's ICT sector, EmoEng tends to reduce EP. Instructively, this is despite the fact that Sagayadevan and Jeyaraj (2012) claim that evidence for the role of EmoEng in predicting performance is inconclusive. Additionally, the relationship between TCP and EP was positive yet statistically insignificant (β = 0.058, t = 1.443, *p* = 0.149). Consequently, **H_6** was not statistically supported. The findings of the present study contradict those of Malik *et al.* (2017:145) who postulate that telecommuting improves employee outcomes.

The results presented in Table 5.12 further highlight that a positive and insignificant relationship exists between PhyEng and TCP (β = 0.313, t = 1.095, *p* = 0.279). The same conclusions were reached for EmoEng and TCP (β = 0.219, t = 1.733, *p* = 0.083). However, the results highlight that a negative and insignificant relationship exists between CogEng and TCP (β = -0.112, t = -0.473, *p* = 0.636). This means that among the pool of respondents of this study, PhyEng, CogEng and EmoEng do not influence TCP.

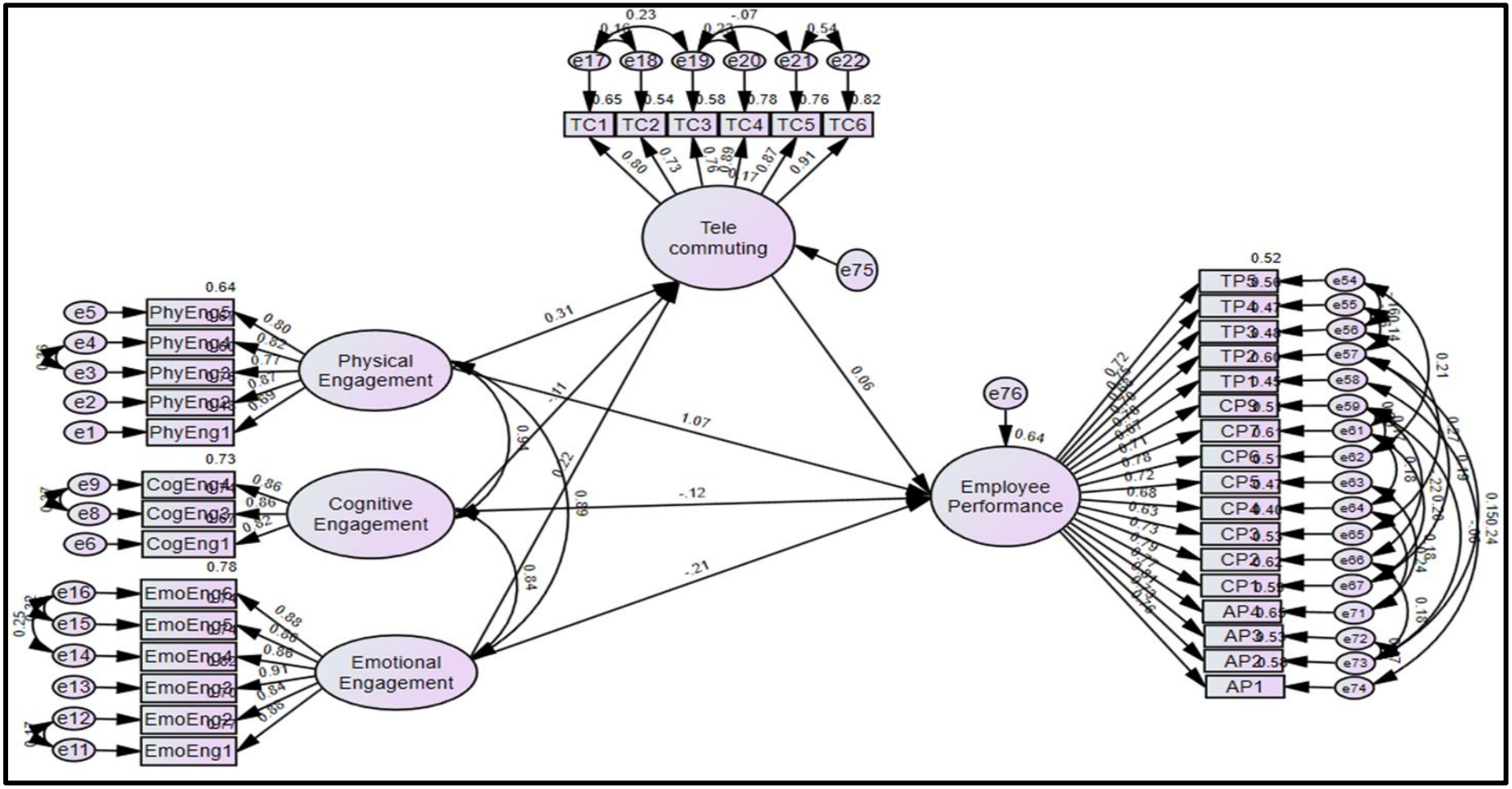

Figure 5.8: Path analysis results for PhyEng, CogEng, EmoEng, TCP and EP

Source: Author's own compilation

5.7.2 Evaluation of the Mediating role of Telecommuting Propensity

Mediation occurs when a third variable, referred to as a mediator variable, intervenes between two related constructs (Sarstedt *et al.*, 2020:289). In evaluating mediation, the present study is guided by the five mediation classifications outlined by Zhao, Lynch Jr and Chen (2010:200) to identify patterns consistent with mediation and non-mediation:

1. **Complementary mediation**: the indirect effect and the direct effect are significant and point in the same direction.
2. **Competitive mediation:** the indirect effect and the direct effect are significant but point in opposite directions.
3. **Indirect-only mediation:** the indirect effect is significant, but not the direct effect.
4. **Direct-only non-mediation:** the direct effect is significant, but not the indirect effect.
5. **No-effect non-mediation:** neither the direct nor the indirect effect is significant.

Resultantly, mediation analysis may show direct-only non-mediation and no-effect non-mediation, or, in the case of a mediation effect, the mediator construct accounts either for some (i.e., complementary, and competitive mediation) or for all the observed relationships between two latent variables (i.e., indirect-only mediation). This study assessed mediating effects of TCP on the relationship between EE, its dimensions, and EP through the SEM bootstrapping procedure. The mediation evaluation results are presented in Table 5.13, outlining the direct effects, indirect effects, and the values of asymptotic confidence intervals, comprising the lower (LLCI) and upper (ULCI) bounds of these asymptotic confidence intervals.

The results presented in Table 5.13 reveal that in the face of TCP as a mediating variable, EE exerts a positive but statistically insignificant indirect effect on EP ($\beta = 0.019$, $p = 0.173$, CI [0.009, 0047]). Collaterally, in the same context, the direct effect of EE on EP was found to be positive and statistically significant ($\beta = 0.755$, $p < 0.001$). These results highlight that in the presence of TCP, a direct only non-mediation relationship exists between EE and EP. Consequently, $\mathbf{H_7}$ which posits that TCP has a mediating effect on the relationship between EE and EP is not statistically supported.

Table 5.13: Mediating effect of TCP on the relationship between EE, PhyEng, CogEng, EmoEng and EP

Relationship	Direct Effect		Indirect Effect		Confidence Interval		Conclusion
	Estimate	*p*-value	Estimate	*p*-value	LLCI	ULCI	
EE ⇢ TCP ⇢ EP (**H_7**)	0.755	< 0.001	0.019	0.173	0.009	0.047	**No mediation**
PhyEng ⇢ TCP ⇢ EP (**$H_{7.1}$**)	1.065	< 0.001	0.017	0.145	-0.010	0.211	**No mediation**
CogEng ⇢ TCP ⇢ EP (**$H_{7.2}$**)	0.119	0.544	0.005	0.406	-0.124	0.015	**No mediation**
EmoEng ⇢ TCP ⇢ EP (**$H_{7.3}$**)	0.210	0.044	0.008	0.155	-0.002	0.054	**No mediation**
Source: Author's own compilation							

Further, the results indicate that in the presence of TCP as a mediating variable, the indirect effect of PhyEng on EP was statistically insignificant (β = 0.017, *p* = 0.145 CI [-0.010, 0.211]), whereas the direct effect was statistically significant (β = 1.065, *p* < 0.001). These results imply that in the face of TCP, a direct only non-mediation relationship exists between PhyEng and EP. Consequently, **$H_{7.1}$** which states that TCP mediates the relationship between PhyEng and EP was not statistically supported.

The results further indicate that CogEng has a statistically insignificant positive indirect effect on EP (β = 0.005, *p* = 0.406), in the presence of TCP as a mediating variable. Therefore, **$H_{7.2}$** which proposed that TCP has a mediating effect on the relationship between CogEng and EP was not statistically supported. Similarly, in comparison, the direct effect of CogEng on EP was also found to be statistically insignificant (β = 0.119, *p* = 0.544, CI [-0.124, 0.015]). Consequently, the results support a no effect non-mediation relationship between CogEng and EP in the face of TCP as a mediating variable.

As the mediating results relate to EmoEng, the findings from the analysis show statistical significance of the direct effect (β = 0.210, *p* = 0.044, CI [-0.002, 0.054]) and statistical insignificance of indirect effect (β = 0.008, *p* = 0.155) with TCP as a mediating variable. These results assert that with the mediating role of TCP, a direct effect non-mediation relationship exists between EmoEng and EP entailing that **$H_{7.3}$** which proposes that TCP mediates the relationship between EmoEng and EP, was not statistically supported. Conclusively, TCP has no mediating effects on the relationship between EE, its dimensions (PhyEng, CogEng, and EmoEng), and EP.

5.7.3 Evaluation of the Moderating Role of Telecommuting Propensity

The objective of moderation analysis is to measure and test the differential effect of the IV on the dependent variable as a function of the moderator (Baron & Kenny, 1986:1174). A study by Memon *et al.* (2019) emphasised that there are three key points to consider in presenting an appropriate conclusion following the conduct of a moderation analysis and these include, to:

1. Ensure that the decision as to whether there is any moderating effect is made based on the existence of a significant relationship between the moderating variable and the dependent variable.
2. Calculate and report the effect size (f^2), and how much it contributes to R^2 as a function of the moderator.
3. Execute and report a simple slope plot for the visual inspection of the direction and strength of the moderating effect.

Therefore, in the course of interrogating the hypothesised moderating effect that TCP would have on the relationship between EE, its dimensions and EP based on the data obtained from the study's cohort of employees working in the South African ICT sector, these three key points were considered. It is worthy to note that Process Macro v4 in SPSS was utilised to undertake the moderation analysis and the consequent results are summarised in Table 5.14.

Table 5.14: Moderating effect of TCP on the relationship between EE and EP

Hypothesis	**Est**	**t-value**	***p*-value**	**f^2**	**Effect Size**	**ΔR^2**	**Conclusion**
EE*TCP ➞ EP (**H_8**)	-0.020	-1.260	0.208	0.011	None	0.002	**No moderation effect**
Source: Author's own compilation							

The moderating effect of TCP on the relationship between EE and EP was negative and statistically insignificant (β = -0.020, t = -1.260, *p* = 0.208). Additionally, based on the results, there was no statistically significant three-way interaction (f^2 = 0.011, no effect) between TCP, EE, and EP, and a minute R^2 change of 0.002. Consequently, **H_8** which proposed that TCP has a moderating effect on the relationship between EE and EP is not statistically supported. This implies that TCP has no moderating effect on the relationship between EE and EP.

The study further examined the moderation effects of TCP on the relationship between EE dimensions (PhyEng, CogEng and EmoEng), and EP. The results for the moderation effect of TCP on the relationship between PhyEng and EP are presented in Table 5.15.

Table 5.15: Moderating effect of TCP on the relationship between PhyEng and EP

Hypothesis	**Est**	**t-value**	***p*-value**	**f^2**	**Effect Size**	**ΔR^2**	**Conclusion**
PhyEng*TCP ➞ EP (**$H_{8.1}$**)	0.010	0.588	0.557	0.011	None	0.000	**No moderation effect**
Source: Author's own compilation							

The moderating effect of TCP on the relationship between PhyEng and EP was positive though it was statistically insignificant (β = 0.010, t = 0.588, *p* = 0.557). Further, there was no statistically significant three-way interaction since TCP had no effect (f^2 = 0.011) on the relationship between PhyEng and EP with no change on R^2 (ΔR2 = 0.000). As a result, **$H_{8.1}$** which states that TCP has a moderating effect on the relationship between PhyEng and EP, is not statistically supported.

As for the hypothesised moderating effect that TCP was thought to have on the relationship between CogEng and EP, the findings of the present study highlight that the effect is negative and statistically significant (β = -0.041, t = -2.675, *p* = 0.008). The three-way interaction between TCP, CogEng, and EP was statistically significant (f^2 = 0.044), with a change in R^2 value of 0.008 (ΔR^2 = 0.008) as summarised in Table 5.16. Consequently, **$H_{8.2}$** which proposed that TCP has a moderating effect on the relationship between CogEng and EP, is statistically supported. It can be concluded that TCP has a weakening moderating effect on the relationship between CogEng and EP.

Table 5.16: Moderating effect of TCP on the relationship between CogEng and EP

Hypothesis	**Est**	**t-value**	***p*-value**	**f^2**	**Effect Size**	**ΔR^2**	**Conclusion**
CogEng*TCP ➞ EP (**$H_{8.2}$**)	-0.041	-2.675	0.008	0.044	Small	0.008	**Moderation effect**
Conditional effects of CogEng on EP based on the level of TCP							
TCP Level	**Effect**	**t-value**	***p*-value**	**Confidence Interval**		**Conclusion**	
				LLCI	**ULCI**		
Low TCP	0.428	17.354	0.000	0.380	0.477	**TCP dampening moderating effect on the relationship between CogEng and EP is stronger with low TCP as opposed to high TCP situations**	
High TCP	0.320	7.585	0.000	0.237	0.403		
Source: Author's own compilation							

The study further examined the conditional effects of CogEng on EP for both low and high TCP for the cohort employees working in the ICT sector in South Africa that participated in the study. Notably, values of TCP below the mean were considered as low levels of TCP, whereas TCP values above the mean were termed high TCP levels. The same criteria for categorising TCP were also employed for low and High CogEng levels. Importantly, however, for situations of low and high CogEng, the TCP moderating effect is the same.

The study results presented in Table 5.16 revealed that for low TCP, the moderating effect of TCP on the relationship between CogEng and EP was 0.428, whereas for high TCP, the moderating effect of TCP on the relationship between CogEng and EP was 0.320. This means that the dampening moderating effect of TCP on the relationship between CogEng and EP is much stronger for low TCP as compared to high TCP situations. The study findings further reveal that as TCP increases, the dampening moderating effect of TCP on the relationship between CogEng and EP becomes weaker, whereas as TCP decreases, the negative moderating effect of TCP on the relationship between CogEng and EP strengthens.

According to Dawson and Richter (2006:918), the depiction of the relationship between variables (X and Y) at high and low levels for a moderator (e.g., M) can be graphically represented. This method serves as a valuable tool for illustrative purposes and so, the moderating effect of TCP on the relationship between CogEng and EP is further presented through a simple slope graph in Figure 5.9.

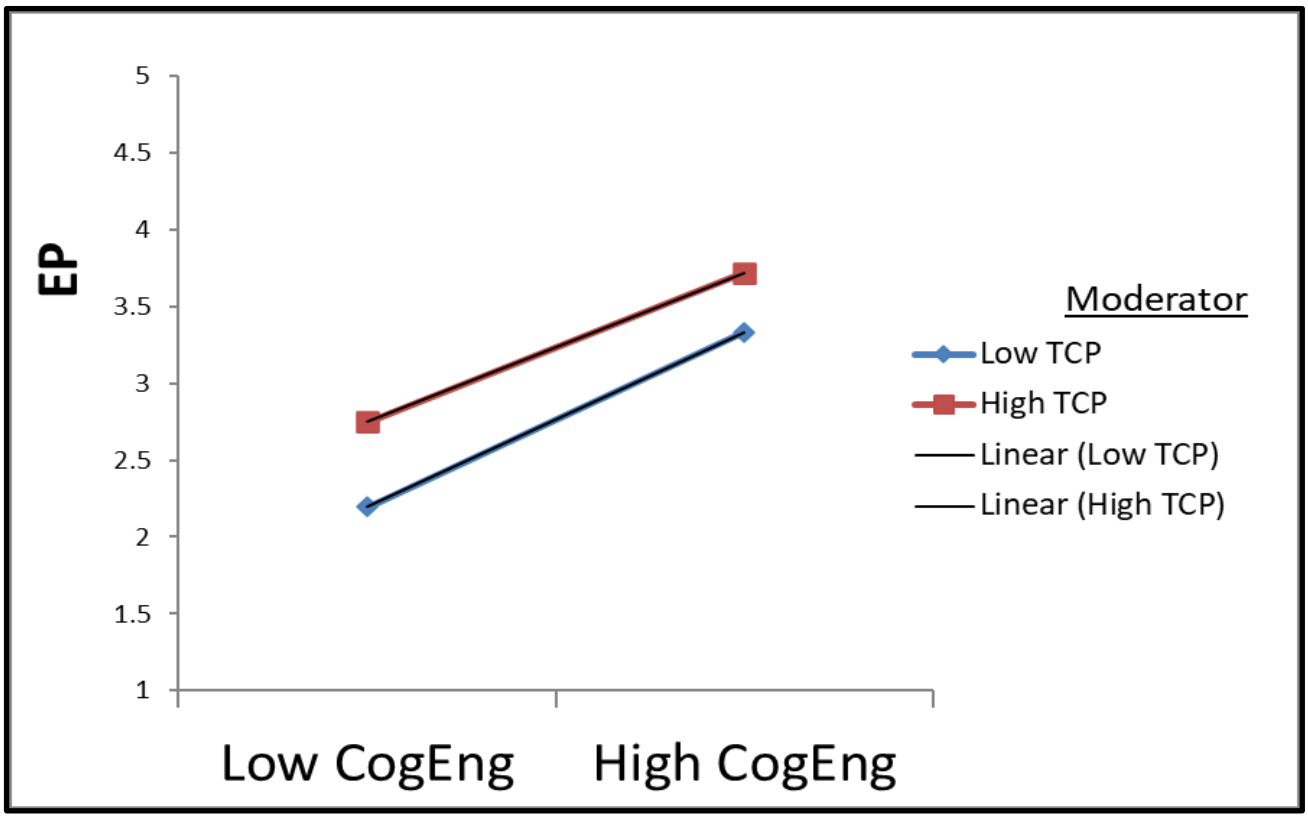

Figure 5.9: Simple slope graph of TCP moderating effect on CogEng and EP relationship
Source: Author's own compilation

The results pertaining to TCP's moderating effect on the relationship between EmoEng and EP are summarised in Table 5.17. The study findings highlight that the moderating effect of TCP on the relationship between EmoEng and EP is negative and statistically significant (β = -0.051, t = -3.467, *p* = 0.001). The three-way interaction was statistically significant, because of TCP having a small effect size (f^2 = 0.045) on the relationship between EmoEng and EP with a change in R^2 value of 0.015 (ΔR^2 = 0.015). These results imply that TCP dampens the relationship between EmoEng and EP. Consequently, **$H_{8.3}$** which proposed that TCP has a moderating effect on the relationship between EmoEng and EP, is statistically supported.

Table 5.17: Moderating effect of TCP on the relationship between EmoEng and EP

Hypothesis	Est	t-value	*p*-value	f^2	Effect Size	ΔR^2	Conclusion
EmoEng*TCP ⇢ EP (**$H_{8.3}$**)	-0.051	-3.467	0.001	0.045	Small	0.015	**Moderation effect**
Conditional effects of EmoEng on EP based on the level of TCP							
TCP Level	**Effect**	**t-value**	***p*-value**	**Confidence Interval**		**Conclusion**	
				LLCI	**ULCI**		
Low TCP	0.384	16.049	0.000	0.337	0.431	**The dampening moderating effect of TCP on the relationship between EmoEng and EP is stronger in low TCP as opposed to high TCP situations**	
High TCP	0.251	6.463	0.000	0.175	0.327		
Source: Author's own compilation							

In situations of low or high EmoEng, the TCP moderating effect remains unchanged. The results shown in Table 5.17 highlight that for high TCP, the dampening moderating effect of TCP on the relationship between EmoEng and EP is 0.251, whereas for low TCP, it is 0.384. The results suggest that the dampening moderating effect of TCP on the relationship between EmoEng and EP is stronger for low TCP as opposed to high TCP situations. Therefore, as TCP increases, the dampening moderating effect of TCP on the relationship between EmoEng and EP weakens, however, as TCP decreases, the dampening moderating effect of TCP on the relationship between EmoEng and EP strengthens. The moderating effect of TCP on the relationship between EmoEng and EP is further presented through a simple slope graph in Figure 5.10.

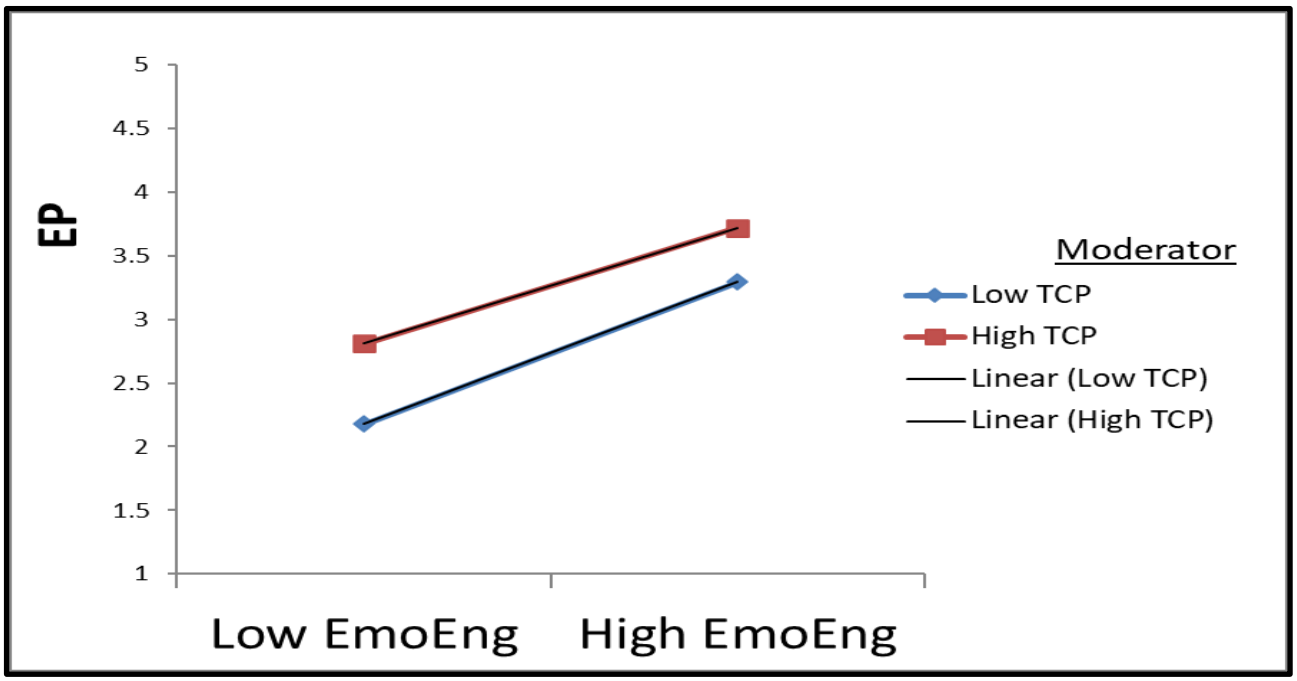

Figure 5.10: Simple slope graph of TCP moderating effect on EmoEng and EP relationship
Source: Author's own compilation

5.7.4 Evaluation of the Moderated-Moderation Relationships

The study further analysed the moderated-moderation effects of demographic variables on the TCP moderated relationship between EE, its dimensions, and EP. Age was a variable of interest because according to Ivasciuc *et al.* (2022:16), an employee's age is an important consideration for organisations in designing a telecommuting plan to ensure their employees reach their potential. Additionally, in the context of the ICT sector, the extent of telecommuting depends on education levels (López-Igual & Rodríguez-Modroño, 2020:9). Interestingly, a study by Shabanpour *et al.* (2018:569) reports that education level impacts TCP. Furthermore, according to Gschwind and Vargas (2019:40), telecommuting has been particularly prevalent in the private sector. Indeed, as technology advances, telecommuting has been increasingly adopted in the workplace by employees in the private sector (Ibrahim *et al.*, 2023:260). Accordingly, the moderated-moderation effects of the age, educational levels, and the organisational profiles of the studied cohort of employees in South Africa's ICT sector was assessed. Table 5.18 presents the results of the moderated-moderation analysis undertaken in the study.

Table 5.18: Moderated-moderation effect of age, education level and organisation profile on the moderated relationships of EE, EE dimensions, and EP

Construct	Relationship	Est	t-value	*p*-value	f^2	Effect Size	ΔR^2	Conclusion
EE	EE*TCP*Age ⟿ EP	0.063	3.151	0.002	0.026	Small	0.010	**Moderation**
	EE*TCP*EducationLevel ⟿ EP	-0.016	-1.387	0.166	0.009	None	0.002	**No moderation**
	EE*TCP*OrganisationProfile ⟿ EP	-0.047	-1.371	0.171	0.017	None	0.002	**No Moderation**
PhyEng	PhyEng*TCP*Age ⟿ EP	0.049	2.238	0.026	0.020	None	0.005	**Moderation**
	PhyEng*TCP*EducationLevel ⟿ EP	-0.010	-0.852	0.394	0.004	None	0.001	**No moderation**
	PhyEng*TCP*OrganisationProfile ⟿ EP	-0.033	-0.903	0.367	0.015	None	0.001	**No moderation**
CogEng	CogEng*TCP*Age ⟿ EP)	0.046	2.372	0.018	0.017	None	0.006	**Moderation**
	CogEng*TCP*EducationLevel ⟿ EP	-0.008	-0.689	0.491	0.036	Small	0.001	**No moderation**
	CogEng*TCP*OrganisationProfile ⟿ EP	-0.052	-1.564	0.118	0.038	Small	0.003	**No moderation**
EmoEng	EmoEng*TCP*Age ⟿ EP	0.048	2.547	0.011	0.018	None	0.008	**Moderation**
	EmoEng*TCP*Education ⟿ EP	-0.018	-1.072	0.089	0.009	None	0.004	**No moderation**
	EmoEng*TCP*OrganisationProfile ⟿ EP	-0.051	-1.587	0.113	0.011	None	0.003	**No moderation**

Source: Author's own computation

5.7.4.1 Moderated-moderation effect of age on the relationships between study constructs

The results in Table 5.18 indicate that the moderating effect of age on the moderated relationship between TCP, EE and EP is positive and statistically significant (β = 0.063, t = 3.151, *p* = 0.002). The results also reveal that age had a small effect size (f^2 = 0.026, small) with an effect of 0.010 on the R^2 implying that age improves the moderated relationship between TCP, EE, and EP by 1%. In essence, age strengthens the effects of TCP on the relationship between EE and EP.

Furthermore, the moderating effect of age on the moderated relationship between TCP, PhyEng and EP is positive and significant (β = 0.049, t = 2.238, *p* = 0.026). The results also reveal that age had no effect size (f^2 = 0.020, none) with an effect of 0.005 on the R^2 implying that age improves the moderating effect of TCP on the relationship between PhyEng and EP by 0.5%. Therefore, age strengthens the moderating effects of TCP on the relationship between PhyEng and EP.

From the results in Table 5.18, it can be noted that age effect on the moderating effect of TCP on the relationship between CogEng and EP is positive and significant (β = 0.046, t = 2.372, *p* = 0.038). The results also reveal that age had no effect size (f^2 = 0.036, none) with an effect of 0.006 on the R^2 implying that age improves the moderated relationship between TCP, CogEng and EP by 0.6%. Therefore, age strengthens the moderating effects of TCP on the relationship between CogEng and EP.

Additionally, the moderating effect of age on the moderated relationship between TCP, EmoEng, and EP is positive and significant (β = 0.048, t = 2.547, *p* = 0.011). The results also reveal that age had no effect size (f^2 = 0.018, none) with an effect of 0.008 on the R^2 implying that age improves the moderated relationship between TCP, EmoEng and EP by 0.8%. Therefore, age strengthens the moderating effects of TCP on the relationship between EmoEng and EP.

5.7.4.2 Moderated-moderation effect of education level on the relationships between study constructs

The study's findings reveal that the level of education moderating effect on moderated relationship between TCP, EE, and EP is negative and insignificant (β = -0.016, t = -1.387, *p* = 0.166). The effect size findings show that the level of education basically had no effect size (f^2 = 0.009, none) with an impact of 0.002 on the R^2 of the moderated relationship between TCP, EE, and EP. The results signal that the level of education does not strengthen or weaken the moderating effects of TCP on the relationship between EE and EP.

Also, the level of education moderating effect on the moderated relationship between TCP, PhyEng and EP is negative and insignificant (β = -0.010, t = -0.852, *p* = 0.394). The effect size findings show that the level of education had no effect size (f^2 = 0.004, none) with an impact of 0.001 on the R^2 of the moderated relationship between TCP, PhyEng, and EP. This means that the level of education neither strengthens nor weakens the moderating effects of TCP on the relationship between PhyEng and EP.

Furthermore, the findings signal that the level of education moderating effect on the TCP moderated relationship between CogEng and EP is negative and insignificant (β = -0.008, t = -0.689, *p* = 0.491). The effect size findings show that level of education had a small effect size (f^2 = 0.036, small) with an impact of 0.001 on the R^2 of the TCP moderated relationship between CogEng and EP. This implies that level of education does not strengthen nor dampen the TCP moderated relationship between CogEng and EP for the studied cohort of employees in the ICT sector in South Africa.

Additionally, from the findings of the present study, the same conclusion was reached for the moderating effect of level of education on the TCP moderated relationship between EmoEng and EP (β = -0.018, t = -1.072, *p* = 0.089). The effect size findings show that level of education had no effect size (f^2 = 0.009, none) with an impact of 0.004 on the R^2 of the TCP moderated relationship between EmoEng and EP. Resultantly, it is concluded that the level of education does not moderate the TCP moderated relationship between EmoEng and EP.

5.7.4.3 Moderated-moderation effect of organisation profile on the relationships between study constructs

The results obtained from examining whether organisation profile moderates the TCP moderated relationship between EE and EP was negative and insignificant (β = -0.047, t = -1.371, *p* = 0.171). The inclusion of organisation profile on the TCP moderated relationship between EE and EP improved the R^2 by 0.2% which translated into no effect (f^2 = 0.017, no effect). Conclusively, organisational profile does not moderate the TCP moderated relationship between EE and EP.

When the moderating effect of organisation profile on the TCP moderated relationship between PhyEng and EP was examined, the result obtained shows that it is negative and insignificant (β = -0.033, t = -0.903, *p* = 0.367). The effects size results indicate that organisational profile has no effect on the TCP moderated relationship between PhyEng and EP with an effect of 0.1% on the R^2 (ΔR^2 = 0.001). Based on this finding, it is the study's position that organisational profile does not moderate the TCP moderated relationship between PhyEng and EP.

The same conclusions were also reached on the moderating effect of organisational profile on the TCP moderated relationship between CogEng and EP (β = -0.052, t = -1.564, *p* = 0.118). The effects size results show that organisational profile has small effect sizes (f^2 = 0.038, small) on the TCP moderated relationship between CogEng and EP with an effect of 0.3% on the R^2 (ΔR^2 = 0.003). These results show that organisational profile does not moderate the TCP moderated relationship between CogEng and EP.

In addition, the results for the moderating effect of organisation profile on the TCP moderated relationship between EmoEng and EP is negative and insignificant (β = -0.051, t = -1.587, *p* = 0.113). The effects size results indicate that organisational profile has no effect on the TCP moderated relationship between EmoEng and EP with an effect of 0.3% on the R^2 (ΔR^2 = 0.003). This suggests that organisation profile neither strengthens nor weakens the TCP moderated relationship between EmoEng and EP in the study's cohort of employees in the ICT sector in South Africa.

5.8 SYNOPSIS OF THE STUDY'S FINDINGS

The study was guided by fourteen hypotheses which sought to investigate the direct relationships between EE and its dimensions, TCP, and EP. Furthermore, the mediating and moderating role of TCP was also investigated. Table 5.19 presents the hypotheses evaluation results and statistical inferences. This study tested six direct hypotheses, four mediating and four moderating relationships between EE, its dimensions, TCP, and EP. Table 5.19 outlines the results and statistical conclusions made with respect to the study's hypotheses.

Out of the six direct hypotheses, the relationships hypothesised in **H_1**, **H_2**, and **H_5** were statistically significant, whereas those expressed in **H_3**, **H_4**, and **H_6** were statistically insignificant. In terms of the mediating hypotheses, the present study discovered that there was no mediating effect of TCP as anticipated and expressed in **H_7**, **$H_{7.1}$**, **$H_{7.2}$**, and **$H_{7.3}$**. This means that TCP does not mediate the relationships between EE, its dimensions, and EP. As for the moderation hypotheses, results show that TCP did not moderate the relationships between EmoEng and EP (**H_8**) as well as the relationship between PhyEng and EP (**$H_{8.1}$**). As it concerns the relationship between CogEng and EP (**$H_{8.2}$**) as well as the relationship between EmoEng and EP (**$H_{8.3}$**), TCP moderated the two relationships. Table 5.19 outlines the results and statistical conclusions made with respect to the study's hypotheses.

Table 5.19: Results and statistical conclusions related to the study's hypotheses

	Hypothesis	**Label**	**Estimate**	***p*-value**	**Hypothesis Supported/ Not Supported**
Direct	EE has a positive relationship with EP	**H_1**	0.755	< 0.001	**Supported**
	There is a statistically significant positive relationship between PhyEng and EP	**H_2**	1.067	< 0.001	**Supported**
	There is a statistically significant positive relationship between CogEng and EP	**H_3**	-0.121	0.539	**Not Supported**

	There is a statistically significant positive relationship between EmoEng and EP	**H_4**	-0.210	0.043	**Not Supported**
	There is a statistically significant positive relationship between TCP and EP	**H_6**	0.050	0.167	**Not Supported**
	There is a statistically significant positive relationship between EE and TCP	**H_5**	0.408	<0.001	**Supported**
Mediation	TCP has a mediating effect on the relationship between EE and EP	**H_7**	0.019	0.173	**Not Supported**
	TCP has a mediating effect on the relationship between PhyEng and EP	**$H_{7.1}$**	0.017	0.145	**Not Supported**
	TCP has a mediating effect on the relationship between CogEng and EP	**$H_{7.2}$**	0.005	0.406	**Not Supported**
	TCP has a mediating effect on the relationship between EmoEng and EP	**$H_{7.3}$**	0.008	0.155	**Not Supported**
Moderation	TCP has a moderating effect on the relationship between EE and EP	**H_8**	-0.020	0.208	**Not Supported**
	TCP has a moderating effect on the relationship between PhyEng and EP	**$H_{8.1}$**	0.010	0.557	**Not Supported**
	TCP has a moderating effect on the relationship between CogEng and EP	**$H_{8.2}$**	-0.041	0.008	**Supported**
	TCP has a moderating effect on the relationship between EmoEng and EP	**$H_{8.3}$**	-0.051	0.001	**Supported**
Source: Author's own compilation					

5.9 CHAPTER SUMMARY

The emphasis of this chapter was on presenting the results derived from the analysis of data collected from a sample of employees working in the South African ICT sector. The results presentation in this chapter commenced with exploring the respondents' demographic profile and proceeded to the evaluation of the measurement model. Subsequently descriptive statistics related to the measurement scales were presented. Additionally, results of the analyses and the SEM of the study's constructs were also discussed.

A profile of the study participants was presented through descriptive statistics linked to key demographic variables, such as gender, age, highest formal qualification, organisation type, length of time with the organisation, level within the organisation structure, and organisation size. The evaluation of the measurement model entailed the assessment of the relationships between constructs and their observable items. Subsequently, the descriptive statistics related to the measurement scales were presented. Results of the correlation analysis undertaken to examine the bivariate relationships between the study's constructs were explicated. Further, SEM results to illustrate the complex connections between EE, its dimensions, and EP and to test the study's hypothesised relationships were discussed.

Finally, the mediating and moderating effects of TCP on the relationships between EE, its dimensions, and EP were expounded and similarly, the moderated-moderation effects of age, education level, and the organisation profile on the moderated relationships between TCP, EE, its dimensions, as well as EP were also explained.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

Given the escalating prevalence of telecommuting, which is swiftly establishing itself as a standard practice that was encouraged by the COVID-10 pandemic, it became appealing to investigate its potential ramifications for organisations and employees. Duly mindful of this, the study set out to examine EE and EP, in the context of the ICT sector in South Africa, post the COVID-19 pandemic. The primary objective of the study, as delineated in Chapter 1, is to clarify the interconnections between EE, TCP, and EP for the FoW. The present study also investigated how TCP affects the connection between EE and EP, both as a mediator and a moderator. Furthermore, the moderated-moderation effects of selected demographic variables on the moderated relationships of EE, EE dimensions, and EP were examined.

From the literature review, it became evident that there was in fact a gap in current literature as it relates to the interactions of the concepts of EE, TCP, and EP, particularly pronounced within the ICT sector, especially in the context of a developing economy such as South Africa. Leveraging this reality, seven research objectives were delineated with a conviction that realising them would help fill gaps within the existing body of literature.

This chapter encapsulates, among others, the findings, conclusions, contributions, considerations for future research, and recommendations arising from the study. It delineates the novel contributions of the research across theoretical, methodological, and practical domains, emphasising their relevance to the FoW. Finally, it also sets the stage for future research endeavours within the dynamic and evolving landscape of literary work, especially from a developing economy perspective.

6.2 OVERVIEW OF THE LITERATURE STUDY

As an integral component of the present study, a review of extant literature was conducted primarily in Chapters 2 and 3, although a high-level appraisal of crucial literature commenced from Chapter 1 of the study.

Chapter 1 addressed the study's key variables and presented the conceptual framework that shaped the literary trajectory of the study. The problem was highlighted, including the change in routine working arrangements, pivoting on telecommuting. The discussion in Chapter 1 outlined that the COVID-19 pandemic forced organisations and employees to prepare for the future, compelling employees to telecommute due to social distancing requirements.

The chapter provided an overview of how organisations were ill-prepared for telecommuting which was enforced by the COVID-19 pandemic. Subsequently, the importance of understanding the effects of telecommuting EE and EP was highlighted. In Chapter 1, a foundational exposition was provided to establish a comprehensive understanding of EE, TCP, and EP, the core concepts in the study. The discussions accentuated the theoretical relevance of these concepts while hinting at the possible nexus between them. Additionally, the possible interfering effects of TCP in the relationships between EE, its dimensions, EP, and its dimensions were postulated.

Chapter 2 presented the theoretical framework of the study. It was utilised to explicate the study's key variables and to illuminate the context of the study within the broader body of knowledge. Among others, this exploration drew upon the academic contributions of scholars such as, De-la-Calle-Durán and Rodríguez-Sánchez (2021); Steidelmüller, Meyer and Müller (2020); Zhang *et al.* (2019), Patnaik (2020) and Weston (2016) that highlighted EE and EP as evolving constructs.

In the context of the ICT sector, Chapter 2 allowed for a discussion of the COVID-19 pandemic and how it accelerated the adoption of telecommuting due to lockdowns and social distancing measures. The chapter highlighted that telecommuting presented itself as the only viable solution to keep organisations operational while preventing COVID-19 infections among employees. It was shown, in Chapter 2 that owing to an increase in telecommuting in the workplace, employees' psychological connection with their work has received attention in the information economy of the twenty-first century.

Beyond this, the chapter presented three theories to explicate EE, TCP, and EP respectively. The EE theory which postulates that engaged employees are optimistic, self-efficacious, exercise influence over events that affect their lives and believe they are important for the organisation, was used to foster a better comprehension of EE. Subsequently, the SET which proposes that trust, particularly in terms of employees being able to count on others to meet their obligations and the basis for most relationships in the business environment, was discussed. Accordingly, TCP was assimilated as part of SET. Further, the Triarchy Model of EP encompassing TP, AP, and CP served as the theoretical framework for EP.

Subsequently, the chapter discussed the disaggregated dimensions of EE which are PhyEng, CogEng, and EmoEng while also presenting a discourse of TP, AP, and CP as components of EP. The evolution of the concepts, their emergence, development, conceptualisation, and operationalisation were detailed in the chapter. Chapter 2 also covered the emerging global behavioural norms that compelled both organisations and employees to anticipate the FoW. The chapter highlighted the increased availability of technology that catalysed a transformative effect on the work environment by facilitating telecommuting for employees, in contrast to the conventional approach of commuting to a centralised workplace. In addition, the chapter outlined how the FoW is undergoing substantial transformations, and what this could mean for industries that offer flexible working arrangements.

Chapter 3 was focused on the nexus between EE, its dimensions, TCP, EP, and its dimensions. This review relied on academic contributions provided by amongst others, Palenzuela *et al.* (2019); Van Iddekinge *et al.* (2018); Yoon *et al.* (2021). A discussion of varied research contexts and theoretical justification pertaining to the potential links among the variables examined in the present study, was offered. The discourse was shaped by academic contributions gleaned from previous research, spanning a diverse array of pertinent literature. The literature review in Chapter 3 communicated arguments that telecommuting can be seen as a moderating variable as it can affect how other variables interact.

Moreover, Chapter 3 highlighted how the changing work environment based on telecommuting, impacts engagement as it involves physical changes to how employees carry out their jobs. In relation to the EE dimensions, Chapter 3 outlined that PhyEng in the workplace provides employees with more face-to-face interactions with their colleagues and managers. It was also suggested that cognitively engaged employees pay attention to details and are attuned to potential areas for improvement within the organisation. Furthermore, Chapter 3 highlighted that EmoEng enhances an employee's capacity for concentration on their work tasks and that a limited adoption of EmoEng is likely to result in a missed opportunity for employees to leverage their potential.

The discussion in Chapter 3 provided theoretical evidence relating to EP and its dimensions, establishing that organisations have the responsibility of enabling AP. Further, the discourse outlined that specifically in resource-constraint environments, CP is impacted negatively which disadvantages employees and affects the organisation’s capacity to attain a competitive advantage. In addition, the chapter also provided a discussion on TP, essentially portraying its pivotal role in influencing the effectiveness and efficiency of employees as they execute assigned responsibilities in the workplace. Fundamentally, Chapter 3 explicated the three hypothesised models. Firstly, direct paths between EE, its dimensions, and EP. Secondly, the mediating effects of TCP on the relationship between EE and EP, and thirdly, the moderating effects of TCP on the relationship between EE and EP.

6.3 DISCUSSION OF FINDINGS

The descriptive statistical information presented in the present study is based on a sample comprising 478 employees working in the South African ICT sector. The descriptive statistical analysis undertaken enabled a recognition of crucial characteristics of the studied cohort, that informed the findings and conclusions for the present study. The attributes of interest to the present study, categorised by gender, age, education level, tenure, level within the organisation, organisation type, and size were presented using numerical data.

The present study's findings revealed that in its respondent population, 90.8% were adults, while males and females were approximately equally represented. From an educational perspective, 72.38% of the respondents had tertiary degrees, highlighting the overall well-educated status of the study's respondents. Further, most of the respondents (70%) were from private sector organisations and had over three years' experience within the ICT sector. Of the sample, 76.56% were at managerial level in their respective organisations while most of the respondents (56.07%) were employed by large enterprises.

The research findings demonstrate that PhyEng exists in the work performed by the surveyed cohort of employees within South Africa's ICT sector, given the 4.506 mean score associated with the construct. Similarly, the mean score of 4.331 for CogEng implies an engagement in cognitive processes among the studied South African ICT sector employees. Furthermore, the mean score of 4.286 for EmoEng indicates an agreement among respondents that EmoEng is a feature of their work.

When considering EE as a holistic construct, the overall mean of 4.374 suggests an acknowledgment among respondents that there is EE within their organisational contexts. Regarding the TCP scale, the mean score of 3.74 suggests that respondents acknowledge telecommuting as an accepted, and advocated practice. Additionally, the collective average score of 4.405 in the EP category signifies a conviction among the study participants regarding their proficiency in undertaking their designated responsibilities.

The correlational analysis revealed that there is a significant positive correlation ($r = 0.722$, $p < 0.01$) between EE and EP. In as much as the components of EE are concerned, a significant positive correlation exists between PhyEng and EP ($r = 0.717$, $p < 0.01$), between EmoEng and EP ($r = 0.667$, $p < 0.01$), as well as CogEng and EP ($r = 0.642$, $p < 0.01$). Similarly, the study revealed a significant positive correlation between EE and TCP ($r = 0.382$, $p < 0.01$). The correlation between PhyEng and TCP was significant and positive ($r = 0.366$, $p < 0.01$) which was also the case for CogEng and TCP ($r = 0.319$ $p < 0.01$) as well as EmoEng and TCP ($r = 0.365$ $p < 0.01$).

The study further revealed a positive correlation between EP and TCP ($r = 0.346$, $p < 0.01$). Curiously, the present study's findings indicate a lack of discriminant validity in relation to TP, AP, and CP. Consequently, the hypotheses regarding the association between EE dimensions and EP dimensions were restated in consideration of this observation.

6.4 THEORETICAL ANCHORS FOR EMPLOYEE ENGAGEMENT, EMPLOYEE ENGAGEMENT DIMENSIONS, TELECOMMUTING PROPENSITY, AND EMPLOYEE PERFORMANCE

In the present study, EE was illuminated through the EE theory as conceptualised by Kahn (1990). The EE theory asserts that engaged employees manifest themselves physically, cognitively, and emotionally. This study tested the theoretical model to validate EE, PhyEng, CogEng, and EmoEng and acknowledges that EE is a multifaceted construct that consists of independently functioning variables. The findings derived from the studied cohort of employees within the South African ICT sector substantiate that EE is indeed explained by PhyEng, CogEng, and EmoEng. This factor is important considering that engaged employees contribute to organisational competitiveness, profitability, and sustainability.

Further, the investigation of TCP was explicated within the framework of the SET as conceived by Blau (1968). The SET suggests that individuals engage in social interactions and relationships based on the perceived costs and rewards associated with those interactions. Accordingly, employees may perceive the flexibility of telecommuting as a positive exchange for their commitment. Due to the trust emanating from EE, employees are permitted to telecommute, and by so doing, enjoy a measure of flexibility. Consequently, employees will perceive a sense of appreciation from their employers stemming from the autonomy granted to them in making decisions regarding their tasks. As the SET relates to perceived costs in social interactions and relationships, distinct employee challenges include issues such as social isolation and blurred work-life balance boundaries. Nonetheless, employees are inclined to view telecommuting as a positive opportunity to balance work and personal life.

In addition, the illumination of EP is situated within the Triarchy Model of EP as conceptualised by Pradhan and Jena (2017) which measures EP along three axes: TP, AP, and CP. The empirical findings of the present study diverge from the Triarchy Model of EP by interpreting EP as a unidimensional construct. This finding highlights the contextual nuances that may influence the interpretation of the EP construct since the everyday employee may not consciously differentiate between AP, CP, and TP. This may be encouraged by the fact that when performance appraisals are conducted by managers, there is typically no effort to distinguish between AP, CP, and TP. So, employees have therefore, been conditioned by this, to view EP as a mono-construct for all intents and purposes.

The present study's findings as presented in two theoretical models in Figure 6.1 (direct relationships) and Figure 6.2 (moderation effects of TCP) which epitomise the outcome of this study's quest to explore the interactions of EE, TCP, and EP. Figure 6.1 illustrates that this study found empirical support for the direct relationships between EE and EP, EE, and TCP, as well as PhyEng and EP. However, no statistical support was found for the relationships between CogEng and EP, EmoEng and EP, TCP and EP.

The study's finding of a positive correlation between EE (IV) and EP (DV) highlights the significance of fostering a motivated and satisfied workforce for organisational success in FoW. Also, recognising the link between EE (IV) and TCP (DV) draws attention to the need to reinforce engagement of employees as a means for encouraging uptake of telecommuting that may have cost-saving implications for the organisation. Simultaneously, the association between PhyEng (IV) and EP (DV) emphasises the importance of in-person interactions, especially in roles that require teamwork or hands-on activities.

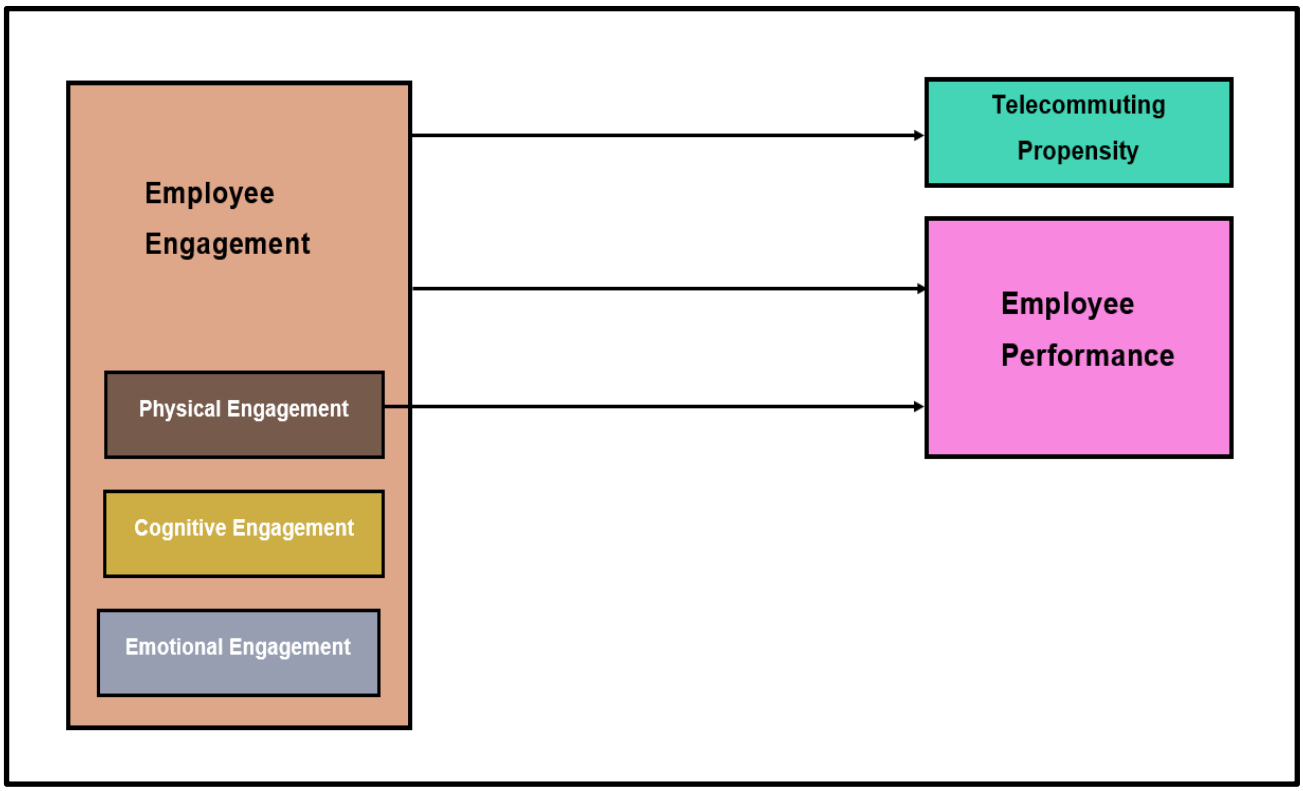

Figure 6.1: Theoretical model depicting the validated links between EE, EE dimensions, TCP, and EP

Source: Author's own compilation

The theoretical model presented in Figure 6.2 demonstrates that the present study found empirical support for the moderation effects of TCP on the correlation between CogEng and EmoEng as independent variables and EP as a DV. The significance of TCP as a moderator in the relationships between CogEng and EP as well as EmoEng and EP highlights the evolving nature of work; characterised by the diminishing value of the physical workplace and increased interactions across the globe, riding on technology as an enabler for work. Essentially, the impact of CogEng (related to mental involvement and focus) and EmoEng (related to feelings of connection and commitment) on EP is influenced by employees' TCP that leverages technology. However, no moderating effect of TCP on the relationships between EE and EP as well as PhyEng and EP were discovered. This may be attributable to the fact that the ramifications of EE for EP, and collaterally the effect of PhyEng on EP do not require any technology platforms that allow for remote work as would ordinarily be utilised by employees who telecommute.

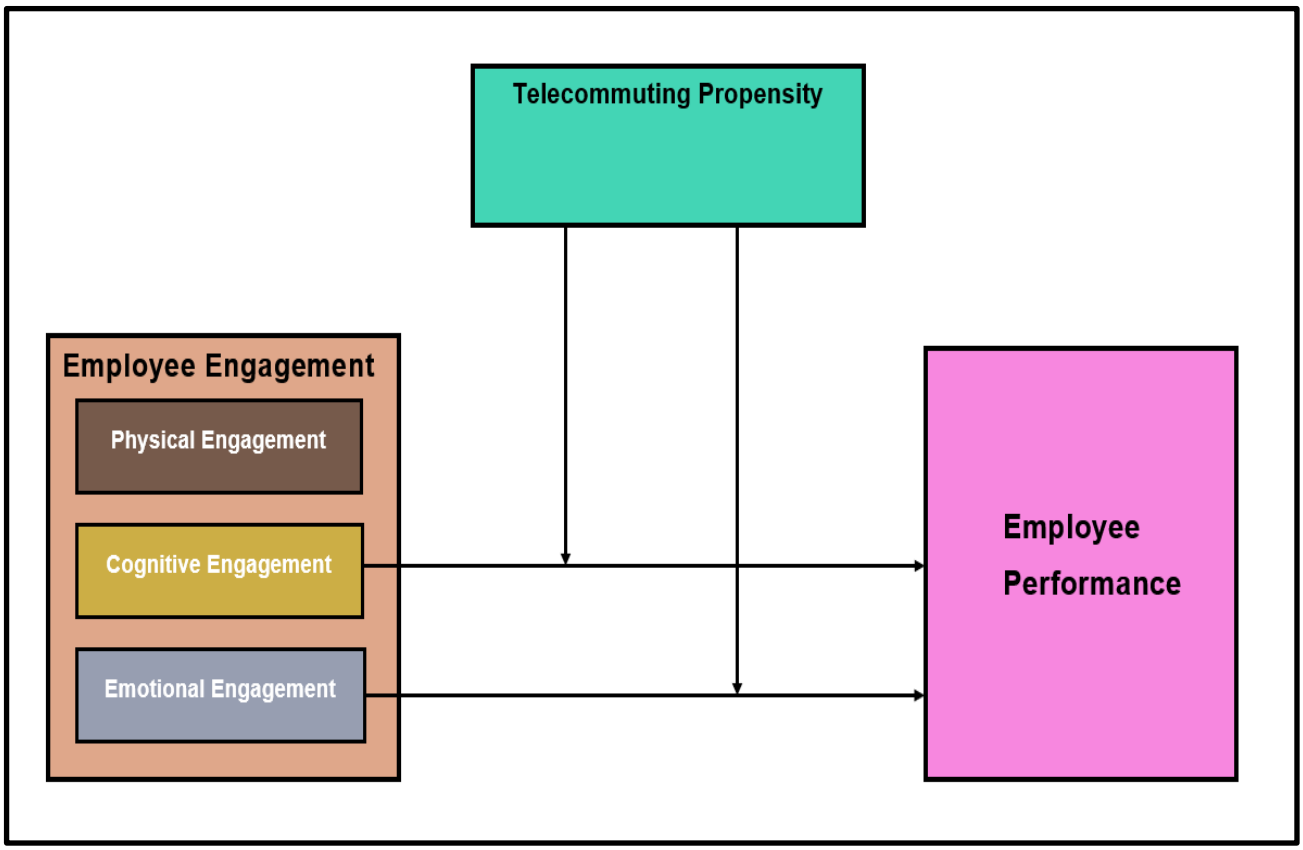

Figure 6.2: Theoretical model depicting TCP as a moderator on the relationships between CogEng, EmoEng and EP

Source: Author's own compilation

6.5 RESEARCH OBJECTIVES, HYPOTHESES, AND CONCLUSIONS

To ascertain the extent to which this study's objectives were accomplished, the related hypotheses proposed in Chapter 3 and restated in Chapter 5 were revisited. In the main, the study entailed the investigation of the direct relationships between EE and its dimensions, TCP, and EP. Additionally, it was the aim of the study to examine the mediating effects of TCP on the relationship between EE, its dimensions, and EP. Furthermore, the study also sought to interrogate the moderating effects of TCP on the relationship between EE, its dimensions, and EP.

Table 6.1 presents a matrix of the research objectives, type of hypothesised relationships, hypotheses, and conclusions drawn from the results of the statistical analysis undertaken during the study.

Table 6.1: Research objectives, hypotheses, and conclusions

Research Objective	Type of Hypothesised Relationship	Hypothesis	Conclusions
Primary Objectives			
(i) To explore the relationship between EE and TCP in the ICT sector in South Africa.	**Direct**	**H_5**: There is a statistically significant positive relationship between EE and TCP	A positive and statistically significant relationship was established. The hypothesis is **statistically supported**.
(ii) To explore the relationship between EE and EP in the ICT sector in South Africa	**Direct**	**H_1**: EE has a positive relationship with EP	A positive and statistically significant relationship was established. The hypothesis is **statistically supported**.
		H_2: There is a statistically significant positive relationship between PhyEng and EP	A statistically significant positive relationship was established. The hypothesis is **statistically supported**.
		H_3: There is a statistically significant positive relationship between CogEng and EP	A statistically insignificant and negative association was identified. The hypothesis is **not statistically supported**.
		H_4: There is a statistically significant positive relationship between EmoEng and EP	A statistically significant, albeit negative, relationship was established. The hypothesis is **not statistically supported**.
(iii) To explore the relationship between TCP and EP in the ICT sector in South Africa.	**Direct**	**H_6**: There is a statistically significant positive relationship between TCP and EP	A statistically insignificant relationship was established. The hypothesis is **not statistically supported**.
(iv) To explore the mediating role of TCP in the relationship between EE and EP in the ICT sector in South Africa. (v) To explore the mediating role of TCP in the relationship	**Mediating**	**H_7**: TCP has a mediating effect on the relationship between EE and EP	No mediation effect of TCP in the relationship between EE and EP was observed. The hypothesis is **not statistically supported**.
		$H_{7.1}$: TCP has a mediating effect on the relationship between PhyEng and EP	TCP did not mediate the relationship between PhyEng and EP. The hypothesis is **not statistically supported**.

between EE dimensions and EP dimensions in the ICT sector in South Africa.		**$H_{7.2}$**: TCP has a mediating effect on the relationship between CogEng and EP	TCP did not mediate the relationship between CogEng and EP. The hypothesis is **not statistically supported**.
		$H_{7.3}$: TCP has a mediating effect on the relationship between EmoEng and EP	TCP did not serve as a mediating factor in the relationship between EmoEng and EP. The hypothesis is **not statistically supported**.
(vi) To explore the moderating role of TCP in the relationship between EE and EP in the ICT sector in South Africa. (vii) To explore the moderating role of TCP in the relationship between EE dimensions and EP dimensions in the ICT sector in South Africa.	**Moderating**	**H_{8}**: TCP has a moderating effect on the relationship between EE and EP	A statistically significant moderating effect of TCP on the relationship between EE and EP was not established. The hypothesis is **not statistically supported**.
		$H_{8.1}$: TCP has a moderating effect on the relationship between PhyEng and EP	A statistically significant moderating effect of TCP on the association between PhyEng and EP was not found. The hypothesis is **not statistically supported**.
		$H_{8.2}$: TCP has a moderating effect on the relationship between CogEng and EP	TCP displayed a statistically significant moderating effect on the relationship between CogEng and EP. The hypothesis is **statistically supported**.
		$H_{8.3}$: TCP has a moderating effect on the relationship between EmoEng and EP	A statistically significant moderating effect of TCP on the relationship between EmoEng and EP was established. The hypothesis is **statistically supported**.
Source: Author's own compilation			

Drawing from the data presented in Table 6.1, only three of the six direct hypotheses formulated in the study were statistically supported. None of the four mediation-related hypotheses formulated in the study were statistically supported. In the context of moderation analysis, four hypotheses were formulated, with statistical significance observed for only two of them.

6.5.1 Research Objective I: To Examine the Nexus Between Employee Engagement and Telecommuting Propensity

In this study, the impact of EE on TCP was shown to be positive and statistically significant. On this score, the hypothesis (**H_5**) that suggested the existence of a positive relationship between EE and TCP was statistically supported. The statistically significant relationship between EE and TCP implies that as EE increases, there is a corresponding increase in employees' propensity to telecommute. This discovery highlights a fundamental shift in work paradigms. Specifically, the pivotal transition in work paradigms towards increased flexibility in telecommuting presents notable benefits for engaged employees who prioritise remote work arrangements. With the convenience and comfort inherent in telecommuting, engaged employees tend to exhibit a preference for this mode of work. Essentially, due to the pronounced levels of EE, the essence of the physical location of work becomes diminished.

The finding points to the importance of aligning employees' well-being and commitment to telecommuting practices, allowing organisations to cultivate a work environment that optimally balances flexibility and EE. For example, the ICT sector services other organisations, and this is largely done remotely as they are typically in the mould of software and applications support. For such employees to continue conducting their roles, albeit remotely, the importance of EE that helps employees to 'keep their eyes on the ball' cannot be over emphasised. Invariably, as may be the case in organisations requiring a lot of physical interaction, with organisations where telecommuting is favoured, EE remains an enabler. Against the backdrop of this discourse, the findings and inferred conclusions attest that research objective I has been met.

6.5.2 Research Objective II: To Examine the Nexus Between Employee Engagement and Employee Performance

The SEM findings showed that the impact of EE on EP was positive and statistically significant ($\beta = 0.755$, $t = 12.252$, $p < 0.001$). In consideration of **H_1**, the hypothesis was statistically supported, and it was concluded that EE positively affects EP in the cohort of employees in the South African ICT sector, that participated in the study.

Typically, engaged employees tend to be more committed to the ideals and aspirations of the organisation, arguably as a natural response to the fact that they feel valued by the organisation. In such instances, the extent of connectedness to the organisation, buoyed by favourable EE practices in the organisation, heightens employees' resolve to discharge their work-related responsibilities creditably.

In essence, engaged employees feel empowered to contribute more productively to the pursuit of the objectives of the organisation, which customarily translates to improved EP. In simple terms, the position of the study is that relative to an employee that is disengaged, an engaged employee would achieve better performance. This assertion is empirically supported by the findings of the present study that contends that EE lends itself to EP.

Therefore, as EE levels rise, the position of the present study is that a collateral improvement in EP would manifest. This is crucial for the FoW as the confirmation of the link between EE and EP implies that creating a work culture that encourages EE, particularly of the respondent population of employees, improves EP. This finding, therefore, accentuates the importance of engaged employees in achieving higher EP outcomes and the need for organisations to address employee well-being and implementing continuous feedback mechanisms that enhance the engagement levels of employees.

Moreso, as it concerns **H_2** that projected an association between PhyEng and EP, the impact of PhyEng on EP was positive and statistically significant ($\beta = 1.065$, $t = 4.204$, $p < 0.001$). This finding implies that a one SD in EE results in a 1.065 deviation in EP, inferring that PhyEng strengthens EP. Consequently, **H_2** was statistically supported, highlighting that promoting employees' PhyEng in the work environment can lead to a workforce characterised by enhanced productivity, ultimately benefiting both the employees and the organisation. The positive association between PhyEng and EP suggests that engaging in physical activity promotes better physical health, reducing absenteeism, and boosting employee energy levels. In addition, PhyEng enhances mental health by reducing stress and improving the mood.

This could emanate from face-to-face interactions with colleagues that eliminates the burdens associated with social isolation. Basically, encouraging PhyEng among employees leads to a healthier and more collaborative workforce, ultimately improving organisational performance. This factor is important since employees who are exposed to PhyEng tend to demonstrate higher levels of energy, resilience, and focus.

This finding reinforces the pivotal role of PhyEng in fostering a productive workforce. Recognising and integrating the positive relationship between PhyEng and EP can thus serve as a cornerstone for fostering a thriving organisational culture. This is important since it counteracts the findings of Yao *et al.* (2022) that indicate the negative effects that PhyEng has on employees, such as energy exhaustion, anxiety, and fatigue which lead to EP degradation and unprofessional behaviours.

As for the association between CogEng and EP, the study's results indicate a negative and statistically insignificant relationship (β = -0.121, t = -0.614, p = 0.539). Consequently, **H_3** was not supported, and this suggests that the relationship between CogEng and EP may be nuanced or contingent on other factors. The absence of a significant and positive relationship between CogEng and EP indicates that the amount of mental engagement or cognitive effort that employees put into their work does not impact EP in a meaningful way. Possibly, encouraged by the context in which the present study was conducted, this finding suggests that EP is not necessarily dictated by intense cognitive involvement. Tasks such as repetitive administrative duties may prioritise efficiency and adherence to procedures over cognitive stimulation which may lead to varying impacts on EP. This means that some employees may excel in tasks that may not require CogEng.

Moreover, workplace distractions, inadequate resources, or a lack of support can hinder employees from effectively channelling their cognitive efforts into productive work as well as overshadow the influence of CogEng on EP. While CogEng remains a critical aspect of EE, it may not be necessary for organisations to prioritise interventions or strategies aimed at enhancing CogEng as a direct means to improve EP. Therefore, it is this study's position that factors influencing CogEng may not play a decisive role in shaping EP.

In relation to **H_4** which proposed that EmoEng has a statistically significant positive relationship with EP, the effect of EmoEng on EP was negative although statistically significant. Consequently, the hypothesis was not supported. This statistically significant, yet negative relationship implies that a higher level of EmoEng may be linked to a lower EP.

Within the framework of ICT sector, which requires a heightened degree of technical proficiency, increased EmoEng may amplify employees' emotional investment in the work that they do. In many ICT related situations, progress is often nor clear-cut as situations may be fraught with many complications, and this can trigger frustration which would inevitably interfere negatively with EP. In view of the discussions related to **H_1, H_2, H_3,** and **H_4**, the results and drawn implications, the fulfilment of research objective II is substantiated.

6.5.3 Research Objective III: To Examine the Nexus Between Telecommuting Propensity and Employee Performance

The impact of TCP on EP was positive although statistically insignificant. Consequently, **H_6** was not statistically supported, implying that in the studied cohort of employees working in the South African ICT sector, TCP exhibits no discernible impact on EP. This finding suggests that employees did not perceive TCP to be directly responsible for their performance.

The lack of a significant relationship between TCP and EP in the context of the ICT sector in South Africa indicates that TCP is not a direct determinant of EP. Rather, TCP tends to be an enabler, facilitating a more substantial contribution of different factors to EP. These factors may include, the technical skills of employees, the availability of resources, a conducive work environment, and an engaged workforce. TCP may, in the presence of these prove efficacious for EP. Contrarily, in the absence of factors that have a direct bearing on EP, the intensity of telecommuting may have scant implications for productivity in the FoW.

This is important since Newman and Ford (2021:8) assert that performance outcomes can be achieved in both traditional and telecommuting settings. This assertion rests on the assumption that requisite resources and skills for undertaking the ICT related work are available. Crucially, to facilitate a hybrid work model encompassing both in-person and remote work options to suit the different needs of employees and the nature of their roles, it is essential to understand the diverse FoW and additionally, the difference between direct determinants of EP and facilitators of EP.

Based on the present study's results, it is clear that TCP appears to be a facilitator. More so, in their study, Wang *et al.* (2022) aver that the performance of telecommuting employees is highly variable in the post-pandemic era. This variability may be explained by the mix of ICT capabilities that attends to any given work situation. Within the context of this discourse, the outcomes and interpretations derived from hypotheses **H_6** affirm the attainment of research objective III within the scope of this study.

6.5.4 Research Objective IV: To Examine the Mediating Role of Telecommuting Propensity on the Relationship Between Employee Engagement and Employee Performance

Hypotheses **H_7** to **$H_{7.3}$** involved the introduction of TCP as a mediator in the relationships between EE and EP, as well as EE dimensions and EP. The present study drew on existing literature to explain how TCP mediates the relationships between EE, its dimensions, and EP, however, the findings and conclusions that were obtained and interpreted did not confirm the expected mediation effects of TCP. Conclusively, **H_7**, **$H_{7.1}$**, **$H_{7.2}$**, and **$H_{7.3}$** were not statistically supported confirming that TCP has no mediating effects on the relationship between EE, its dimensions, and EP.

Given the distinctive nature of work in the South African ICT sector, irrespective of employees, TCP, as shown earlier in this study, EE and one of the dimensions of EE (PhyEng) continue to exert influence on EP, independent of whether employees telecommute or work in a traditional office environment.

Moreover, the technical nature of ICT work may require a level of collaboration and hands-on interaction that is not easily facilitated through remote arrangements, potentially diluting the anticipated positive effects of telecommuting on EE, its dimensions, and subsequently EP. With organisations progressively re-integrating employees into office environments, the culture in some organisations in the South African ICT sector that values face-to-face collaboration makes telecommuting less effective in fostering EE and influencing EP outcomes. More so, the technology-reliant nature of telecommuting, organisational culture and policies, employee preferences, and chances for social interaction all add to the complexity of this relationship. Additionally, the limitations of virtual communication platforms in conveying the complexity of emotional expressions and the potential challenges in creating and maintaining emotional bonds remotely, pose a diminishing mediating role of telecommuting.

Essentially, the intricate relationship between EE, its dimensions, and EP in South Africa's ICT sector may be influenced by external factors other than TCP, such as economic conditions, regulatory frameworks, and technological infrastructure. To be sure, based on this study's results, telecommuting is not an intermediary in the workplace, but rather a form of employee behaviour that could strengthen or weaken existing relationships in the workplace. To encapsulate, the results and conclusions related to $\mathbf{H_7}$, $\mathbf{H_{7.1}}$, $\mathbf{H_{7.2}}$, and $\mathbf{H_{7.3}}$ affirm the achievement of research objective IV within the scope of this study.

6.5.5 Research Objective V: To Examine the Moderating Role of Telecommuting Propensity on the Relationship Between Employee Engagement and Employee Performance

In consideration of $\mathbf{H_8}$ to $\mathbf{H_{8.3}}$, this study investigated the role of TCP as a moderator in the relationship between EE and EP, as well as a moderator in the relationship between EE dimensions and EP. The moderating effect of TCP on the relationship between EE and EP was negative and statistically insignificant, highlighting that there was no statistically significant three-way interaction between TCP, EE, and EP. Consequently, $\mathbf{H_8}$ which proposed that TCP has a moderating effect on the relationship between EE and EP, was not statistically supported.

The absence of moderation by TCP in the relationship between EE and EP can be attributed to the diversity in telecommuting experiences among employees, variations in job roles, their compatibility for telecommuting, and difficulties related to technology and infrastructure. Consequently, engaged employees, irrespective of their TCP, may continue to exhibit high levels of commitment, motivation, and performance. Moreover, individual preferences and their adaptability to telecommuting might vary, contributing to the absence of a consistent moderation effect. This outcome implies that less focus should be placed on TCP since it does not influence the relationship between EE and EP. The organisational quest for EP should be energised by investment in higher levels of EE rather than TCP, given that a direct relationship as established in the present study already exists between EE and EP.

As the present study's results relate to **$H_{8.1}$**, the moderating effect of TCP on the relationship between PhyEng and EP was positive, though it was statistically insignificant. Further, there was no statistically significant three-way interaction because TCP had no effect on the relationship between PhyEng and EP. As a result, **$H_{8.1}$** which states that TCP has a moderating effect on the relationship between PhyEng and EP is not statistically supported. This implies that the connection between PhyEng (such as active involvement in tasks or activities) and EP remains consistent, regardless of employees' TCP.

In essence, the impact of PhyEng on EP may not be substantially altered by the presence of TCP, since the core of PhyEng transcends the work location. In some instances, the need for physical presence and direct interaction may supersede the advantages offered by telecommuting, rendering TCP being less influential in shaping PhyEng and the subsequent performance of employees. In the framework of the ICT sector in South Africa where employees often engage in sedentary work tasks involving extensive computer use, promoting physical activity becomes relevant.

As for the hypothesised moderating effect that TCP was thought to have on the relationship between CogEng and EP, the findings of the present study highlight that the effect is negative and statistically significant, yet the three-way interaction between TCP, CogEng, and EP was statistically significant. Consequently, **$H_{8.2}$** was statistically supported.

The moderating role of TCP between CogEng and EP suggests that TCP weakens the relationship between CogEng and EP. This means that the effect on their performance might not be as significant, if they are telecommuting, even if an employee is highly cognitively engaged in their work. This could be due to various factors related to telecommuting, such as distractions at home, lack of direct supervision, or challenges in communication and collaboration with colleagues. Given that effective communication and collaboration are essential for employees working remotely, language differences and time zone gaps that are common in the ICT sector could worsen communication problems, making it hard for workers to keep in touch and involved with their work tasks.

Moreover, the weakening relationship between CogEng and EP in telecommuting scenarios can be attributed to factors such as unreliable internet connectivity and power outages which have become uncomfortably prevalent in South Africa. These incidents disrupt workflow and hinder CogEng. More so, technological barriers such as limited access to necessary tools or equipment impede employees' ability to fully engage in their work tasks when operating, remotely, especially, in the context of a developing economy such as South Africa. In addition, the absence of workplace cues and prompts that are typically present in a work environment, technostress as well as individual differences in preferences for telecommuting may dampen the strength of the association between CogEng and EP. Additionally, the negative moderating role of telecommuting may be explained by the fact that work-life balance struggles may arise as telecommuting blurs the boundaries between work and personal life.

As for the results for TCP's moderating effect on the relationship between EmoEng and EP, the three-way interaction was statistically significant due to TCP having a small effect size on the relationship between EmoEng and EP. These results imply that TCP dampens the relationship between EmoEng and EP. Consequently, $\mathbf{H_{8.3}}$ which proposed that TCP has a moderating effect on the relationship between EmoEng and EP is statistically supported.

The dampening effect implies that the benefits of EmoEng on EP may be reduced when employees telecommute. The attenuation of the relationship between EmoEng and EP due to TCP can be ascribed to the constraints imposed by remote work, potentially restricting face-to-face interactions among employees and colleagues. This limitation may consequently erode employees' emotional attachment to the organisation which would inevitably affect the work that they do.

Furthermore, the feelings of isolation from the workplace culture, necessitated by telecommuting may reduce the extent to which the level of EmoEng among specific employees contributes to their performance in the workplace. This could also be because the intensity with which ideas are shared tends to become diluted when employees work remotely, as working from different locations lowers the extent to which emotional energy arising from physical co-locations can be leveraged for improving work performance.

Moreover, in the absence of organisational cultures that are conducive to telecommuting which may be the case in some organisations that are not agile enough for the FoW, employees who are telecommuting may encounter difficulties in fostering emotional attachment to their tasks and interpersonal relationships with colleagues, ultimately impacting their performance.

The results and conclusions drawn from hypotheses **H_8**, **$H_{8.1}$**, **$H_{8.2}$**, and **$H_{8.3}$** serve as confirmation that research objective V has been accomplished within the purview of this study.

6.6 CONTRIBUTIONS OF THE STUDY

This study offers theoretical and methodological contributions to the existing body of knowledge in the domains of business management, human resources, and business strategy. Additionally, it also bears practical contributions relevant to practitioners such as managers, human resource experts, and policymakers.

6.6.1 Theoretical Contribution

This study advances existing literature theoretically, by explicating the complex and dynamic interactions among EE, its dimensions (PhyEng, CogEng, and EmoEng), TCP, and EP. To the best of the researcher's knowledge, this study blazes the trail of scientific exploration of the interconnectedness of EE, its dimensions, TCP, and EP within the context of the ICT sector in South Africa, following the COVID-19 pandemic. While some studies were previously conducted on the effects of telecommuting on individual outcomes (Gajendran & Harrison, 2007:1528), generally they have generated limited empirical evidence and inconsistent findings (Allen *et al.*, 2015:46).

Moreover, most of the studies conducted on EE, TCP, and EP are predominantly in the western part of the world and this profusely tints the discourse related to the concepts with the colours of a developed economy as opposed to those of Africa's developing economies. Consequently, conducting this study in the context of South Africa, a developing country, enriches the understanding of the study constructs despite the existence of literature predominated by western narratives. Invariably, this study challenges some of the conventional assumptions and findings about the effects of TCP on either EE or EP by offering new insights and its value is emphasised by the position of Henke *et al.* (2016) as well as Martin and MacDonnell (2012) who aver that previous studies could not determine the immediate effect of telecommuting, stemming from the implementation of telecommuting by some employers in prior years.

This study deepens the knowledge of TCP as an employee self-motivated capability in various situations. Moreover, the EE theoretical model was tested, and the results contribute to the domain of EE through discriminant validity findings of the present study that confirmed EE as a multifarious construct with dimensions of PhyEng, CogEng, and EmoEng. The demonstration of discriminant validity indicates that each dimension within the model uniquely captures distinct facets of EE, confirming that EE is explained by PhyEng, CogEng, and EmoEng. This outcome affirms the reliability of the study's measurement tools and reinforces the understanding that PhyEng, CogEng, and EmoEng are distinct yet interconnected dimensions.

The present study adds a new perspective to the research on the SET by showing that no direct relationship exists between TCP and EP, which implies a complex dynamic in the telecommuting situation. Contrary to the SET's expectation of reciprocal benefits driving social exchanges, it appears that the anticipated positive impact of TCP on EP may not materialise. The present study's findings highlight the complex nature of telecommuting, indicating that the factors that could dictate its relationship with EP are intricate and multifaceted. The SET's emphasis on contextual considerations becomes crucial, implying that the anticipated reciprocity between TCP and EP may be influenced by industry-specific nuances, organisational culture, and the intricate interplay of various factors. Consequently, the importance of the present study is justified.

Additionally, the present study's findings diverge from the Triarchy Model of EP because of the absence of discriminant validity among its sub-dimensions. Consequently, the study's position, inspired by its results, is that the AP, CP, and TP dimensions of EP are homogenous. In doing so, this study highlighted, empirically, that those in the studied cohort of individuals employed in South Africa's ICT sector, could not really differentiate the EP dimensions of AP, CP, and TP. While the separation has been touted in extant literature, in executing their work, employees in a practical setting do not necessarily, think about their performance by using different prisms of AP, CP, and TP. What is always paramount in the minds of the employee is to execute assigned tasks wholistically and achieve a desired performance that would lend itself to career growth, as opposed to focusing on the pedantry of distinguishing between literary-propelled concepts of AP, CP, and TP.

The unidimensional perspective revealed in the study may be specific to the ICT context, highlighting the importance of acknowledging the unique features of the studied cohort of employees in the ICT sector in South Africa. In essence, the present study triggers a reconsideration of how organisations define and approach EP, based on the observed unidimensional nature of EP in this context.

6.6.2 Methodological Contribution

This study developed a set of hypotheses and undertook several statistical tests to affirm the relationships among the study's constructs. The application of SEM further provides scientific confirmation on correlations which adds, in a unique way, methodologically to existing research on EE, its dimensions, TCP, and EP.

The multilevel methodologies employed in the present study to tap into the causal relationships between EE, TCP, and EP, contribute to methodological quality. In contributing to the research design, the non-probability sampling technique utilised in the present study which encompassed a mix of snowball, purposive, and self-selection sampling differs from probability sampling techniques utilised in previous studies (see Ahakwa *et al.*, 2021; Obeid *et al.*, 2024; Sulistyawati & Sufriadi, 2020) on either EE, telecommuting, or EP that utilised cluster and random sampling.

Moreover, the augmented merit of this study is in the construction of reflective higher order constructs of EE and EP which contributed to a comprehensive approach to clarifying and measuring these intricate phenomena. Through the integration of multiple dimensions, this study contributes to a more nuanced comprehension of EE and EP, highlighting methodological significance.

An additional methodological advancement of this study lies in the application of Process Macro V4, drawing inspiration from Uddin *et al.* (2023:280) who recommended that to perform mediation, moderation, and moderated-moderation analysis, Process Macro v4 is an appropriate statistical technique. The use of Process Macro V4 in the present study advances research by offering a sophisticated and multifaceted approach to analysing complex relationships. This procedure is noteworthy for its advanced statistical techniques and comprehensive examination of complex relationships within a dataset. Furthermore, the importance of the present study is elevated through the utilisation of bootstrapping techniques, consequently augmenting the reliability of estimates and confidence intervals.

Finally, the acknowledgement of age as a moderator, that strengthens TCP's moderating effects on the associations between EE and EP as well as EE dimensions and EP constitutes a methodological contribution. Methodologically, this emphasises the importance of integrating demographic factors, such as age, in research designs. Additionally, by identifying age as a moderator, researchers can refine their analytical approaches to account for the variability introduced by demographic variables, thereby enhancing the robustness and validity of their findings.

6.6.3 Practical Contribution

This study offers practical knowledge beneficial for practitioners such as managers, human resource specialists, and policymakers. It outlines specific practical contributions derived from its findings.

Firstly, the present study's findings present a novel contribution to the academic discourse by elucidating the dynamics of EE within the South African ICT sector. Specifically, this study provides insights essential for managers and human resource practitioners operating within this sector, offering them a nuanced understanding of how EE initiatives can be strategically leveraged to enhance EP. Amidst the aftermath of the COVID-19 pandemic, organisations worldwide have been compelled to reassess their approaches to employee management. Consequently, navigating the post-pandemic landscape presents a formidable challenge for managers, compounded by the looming threat of future pandemics reminiscent of COVID-19. Against this backdrop, the present study underscores the imperative of effective EE implementation as a means of fortifying organisational resilience and agility in the face of such uncertainties.

Secondly, the present study's findings will assist policymakers in understanding telecommuting's role in the organisation and how it is impacted by employee outcomes. As telecommuting becomes more common for employees, it is imperative for them to remain engaged and operate in a unique way to enhance their efficiency, expertise, competencies, and capabilities, consequently enabling them to differentiate themselves in the competitive market.

In particular, the understanding of how TCP moderates the relationship between CogEng and EP, as well as the association between EmoEng and EP, should be of interest to practitioners in the sector. In addition, the relationship between EE and TCP has practical implications for the FoW. The study's implications for the FoW in relation to the cohort of employees working in the South African ICT sector mirror those of Bentley *et al.* (2021) who opine that FoW factors could potentially exert adverse effects on worker well-being, performance, and the perception of decent work. This is important because poor implementation of telecommuting conditions may be demotivating and discouraging for employees.

Thirdly, the outcomes of this study will help organisations and professionals in South Africa's ICT sector in understanding how the level of EE affects EP as well as how PhyEng impacts EP. This is because professionals and organisations looking to enhance EE and PhyEng levels will benefit from improved organisational performance. As a result, organisations and professionals should understand the mechanisms that can increase key employee outcomes, especially since according to Pawirosumarto *et al.* (2017:1353), organisations continue to expect more from their employees in pursuit of sustainability within the competitive market landscape. The repercussions of organisations not acknowledging how TCP moderates the between CogEng and EP, as well as EmoEng and EP may have negative implications for employees.

More so since prior studies (see Adamovic, 2022; Ansong & Boateng, 2018; Dugguh & Dennis, 2014; Jung, Jung & Yoon, 2021; Lee & Kim, 2018; Rasool *et al.*, 2021) assert that consequences encompass diminished productivity and innovation, heightened employee turnover rates, diminished customer satisfaction, as well as an escalation in employee stress, social isolation, and interpersonal conflicts.

6.7 LIMITATIONS OF THE STUDY

Consistent with prevalent trends in empirical research, the present study is not exempt from inherent limitations. As a result, this study encountered some difficulties during the research phase, however, these limitations are considered beneficial since they provide a baseline for prospective researchers aiming to undertake a study within a comparable context.

Research examining EE, TCP, and EP in developing economies within Sub-Saharan Africa is notably sparse. So, the scarcity of relevant literature specific to the research context represented a limitation for the study. Inevitably, this necessitated reliance on literature derived from alternative contexts.

The quantitative method adopted in the present study relied on respondents self-reported data. This constitutes a limitation since it could potentially introduce biases and inaccuracies into the gathered responses. More so, because respondents' accounts may have exhibited either overestimation or underestimation of their levels of EE, TCP, and/or EP. Moreover, the influence of social desirability or acquiescence biases may have prompted some respondents to provide responses they perceived as anticipated or agreeable to the researcher. In addition, the constraints associated with time, cost, and data access may have imposed restrictions on the depth and breadth of the study. Consequently, this could have limited the thorough investigation of certain aspects and constrained both the breadth of data collection and the overall scale of this study.

Moreover, the unique socio-economic, political, and cultural factors prevalent in the South African context can significantly influence the experiences and perceptions of ICT workers. Given that this study employed non-probability sampling techniques, the distinctive attributes of the ICT sector, such as its flexibility and adaptability to telecommuting, may not be directly applicable to other sectors. This restricts the broader applicability of the study as the findings cannot be generalised in divergent settings or the entire population of the ICT sector in South Africa. Nevertheless, it is anticipated that other emerging economies exhibiting similarities to South Africa may glean valuable insights from this study.

6.8 CONSIDERATIONS FOR FUTURE RESEARCH

As organisations continue to adapt and innovate in the FoW, this study serves as a stepping stone for further research, offering a foundation for deeper exploration on the multifaceted relationships between EE, TCP, and EP. Future research is essential to explore the nuances of these interactions and to offer guidance for organisations navigating the FoW.

Regarding theoretical considerations for future studies, the dimensions of EE were found to present notable findings. In review of the literature, this study revealed that researchers often examine EE, TCP, and EP from universalistic perspectives. In particular, the role of EE as a mechanism that links telecommuting to EP has not been examined (Masuda, Holtschlag & Nicklin, 2017:201). More so, previous studies have utilised telecommuting as an independent variable (Onyemaechi *et al.*, 2018:57) and have focused on EP with one dimension of TP without incorporating in-role performance (Afzal *et al.*, 2019:378).

Consequently, further investigation is warranted to explore the mechanisms through which EE impacts the intricate relationship between TCP and EP dimensions. For example, future studies should examine if EE impacts motivation, creativity, or collaboration among telecommuters as this would offer useful knowledge regarding the factors involved. Furthermore, future research should broaden the theoretical model of TCP by adding other relevant concepts, such as work-life balance, organisational commitment, or job satisfaction.

Given the gender imbalance that exists in the South African ICT sector, future studies could examine, the complex interactions related to gender within the sector more closely. Such investigations are imperative, as emphasised by Musetsho, Isac and Dobrin (2021:79), highlighting the need for continued efforts by the South African government to address gender equality in the workplace.

As the future considerations relate to methodological considerations, using a more extensive and varied sample encompassing diverse sectors and countries could offer a more comprehensive and nuanced portrayal of TCP.

Furthermore, using longitudinal studies to measure the changing and time-related factors of TCP, EE, and EP could be beneficial for future studies. Employing longitudinal studies to assess the evolving dynamics of TCP, EE, and EP could prove advantageous for future research endeavours in tracking fluctuations and trends over time.

Finally, future research catalysed by this study on the moderated-moderation role of demographics (age, race, gender, education, and organisation type) should aim to uncover underlying mechanisms through qualitative methods as well as conduct mediation analysis. Moreover, contextual factors such as technological advancements, should be considered to provide a thorough understanding of how demographic variables shape telecommuting experiences and employee outcomes in the FoW.

6.9 RECOMMENDATIONS FOR ORGANISATIONS AND MANAGERS

As telecommuting is a change that is referred to as the new normal, the uncertain and complex FoW requires employees to embrace change, learn new skills, and adopt innovation practices. Organisations and managers have the responsibility of ensuring that the work environment in the FoW is inclusive, collaborative, sustainable, and human centred. Markedly, amidst uncertain times such as the COVID-19 pandemic, organisations are persistently striving for survival and continuity, confronting their essential obligation of upholding EE and maintaining EP. This study recommends that regularly measuring EE through surveys, could help strengthen the understanding of factors that enable EP. This is because employees who have a clear purpose, a sense of direction, worth, and belonging in their roles are more likely to be more loyal to their work and contribute significantly to organisation's success.

Additionally, since PhyEng is related to EP, managers should promote the use of collaborative workspaces in the organisation and create an environment that supports face-to-face interactions and team collaboration. This will improve team bonding, knowledge sharing, and innovation, which can affect EP positively. Furthermore, organisations can consider arranging regular team-building activities and events that make employees meet physically, which will strengthen their relationships and encourage a feeling of attachment.

Moreover, since EE and TCP are positively related, organisations should focus on EE initiatives to boost TCP. This could include creating a work culture where employees feel respected, assisted, and engaged which will increase their readiness to adopt telecommuting. By highlighting and improving EE, organisations will see increased TCP, thus matching the changing trends in the FoW.

Finally, the study's finding that TCP moderates the link between CogEng and EP as well as EmoEng and EP emphasised the need for organisations to adapt their workplace practices that will foster both CogEng and EmoEng in a telecommuting context. This may involve ensuring that employees feel appreciated and involved even in telecommuting settings.

6.10 CHAPTER SUMMARY

This chapter serves as the final chapter of this thesis, and it attempts to weave together the diverse threads of research exploration. This chapter not only revisits the core objectives and hypotheses related to EE, TCP, and EP, it also presents two theoretical models that underpin the intricate relationships among this study's variables.

The study offers contributions across theoretical, methodological, and practical dimensions. The theoretical dimension enhances the understanding of the conceptual frameworks governing EE, TCP, and EP. Methodological innovations, highlighted as a distinct contribution, underscore the study's commitment to pioneering research in the business management, business strategy, and human resource management domains. The findings have practical implications, not just for academic research, but also for the changing world of work, providing useful knowledge that can inform decision-making.

This study does not recede from acknowledging its limitations and provides a reflection on the constraints and boundaries that shaped the study. From this acknowledgment, the chapter transitions to recommendations for future research which span theoretical refinements, methodological innovations, and contextual considerations, charting a course for future scholars to build upon as well as to expand on the foundations laid by this study.

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APPENDIX A

Research Ethics Committee Approval

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

RESEARCH ETHICS COMMITTEE

Faculty of Economic and Management Sciences

Approval Certificate

14 June 2023

Department: Business Management

Dear Mr HR Ravhudzulo

The application for ethical clearance for the research project described below served before this committee on: 2023-06-09

Protocol No:	EMS019/23
Principal researcher:	Mr HR Ravhudzulo
Research title:	The interactions of employee engagement, telecommuting and performance for the future of work
Student/Staff No:	23158019
Degree:	Doctoral
Supervisor/Promoter:	Prof CE Eresia Eke
Department:	Business Management

The decision by the committee is reflected below:

Decision:	Approved
Conditions (if applicable):	
Period of approval:	2023-06-30 - 2024-12-31

The approval is subject to the researcher abiding by the principles and parameters set out in the application and research proposal in the actual execution of the research. The approval does not imply that the researcher is relieved of any accountability in terms of the Codes of Research Ethics of the University of Pretoria if action is taken beyond the approved proposal. If during the course of the research it becomes apparent that the nature and/or extent of the research deviates significantly from the original proposal, a new application for ethics clearance must be submitted for review.

We wish you success with the project.

Sincerely

pp PROF JA NEL
CHAIR: COMMITTEE FOR RESEARCH ETHICS

Fakulteit Ekonomiese en Bestuurswetenskappe
Lefapha la Disaense tša Ekonomi le Taolo

APPENDIX B

Informed Consent

Faculty of Economic and Management Sciences

Combined Letter of Introduction and Informed Consent

Department of Business Management

Title of the study
The Interactions of employee engagement, telecommuting and performance for the future of work

Research conducted by:
Mr. H.R. Ravhudzulo, Student Number: 23158019, Mobile: 0827112554

Dear Participant

You are invited to participate in an academic research study conducted Hangwani Raymond Ravhudzulo, a Doctoral student from the Department of Business Management at the University of Pretoria.

The purpose of the study is to investigate the connection between employee engagement, telecommuting and employee performance.

Please note the following:

- This is an anonymous study and your personal information will not appear on any transcript. The responses you give will be treated as strictly confidential as you cannot be identified in person based on the answers you give.
- You have the opportunity to ask questions about the research before signing consent.
- Your participation in this study is very important to us. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- I understand that all data collected for this study will be stored on a safe and secure platform as governed by the University of Pretoria's Research Data Management Policy.
- Please answer the questions in the online questionnaire as completely and honestly as possible. This should not take more than 5 minutes of your time.
- The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.
- Please contact my study leader, Prof CE. Eresia-Eke, email: chuks.eresia-eke@up.ac.za if you have any questions or comments regarding the study.

In research of this nature the study leader may wish to contact respondents to verify the authenticity of data gathered by the researcher. It is understood that any personal contact details that you may provide will be used only for this purpose, and will not compromise your anonymity or the confidentiality of your participation.

Please accept electronically that:

- You have read and understand the information provided above.
- You give your consent to participate in the study on a voluntary basis and there will be no penalty or loss of benefit if you decide not to take part.

_____ _____

Participant's signature **Date**

APPENDIX C

Research Instrument

THE INTERACTIONS OF EMPLOYEE ENGAGEMENT, TELECOMMUTING AND PERFORMANCE FOR THE FUTURE OF WORK

Academic Research Questionnaire

Consent to Participate in Research

Dear Participant,

You are invited to participate in an academic research study conducted by Hangwani Raymond Ravhudzulo, a Doctoral student from the Department of Business Management at the University of Pretoria.

The purpose of the study is to investigate the relationships between employee engagement, telecommuting and employee performance.

Please note the following:

- This is an **anonymous study**, and your personal information will not appear on any transcript. The responses you give will be treated as strictly **confidential** as you cannot be identified in person based on the answers you give.
- You have the opportunity to ask questions about the research before signing consent.
- Your participation in this study is very important to us. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- I understand that all data collected for this study will be stored on a safe and secure platform as governed by the University of Pretoria's Research Data Management Policy.
- Please answer the questions in the online questionnaire as completely and honestly as possible. This should not take more than 10 minutes of your time.
- The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.
- Please contact my study leader, Prof CE. Eresia-Eke, email: chuks.eresia-eke@up.ac.za if you have any questions or comments regarding the study.

I have read the above information and understand the research project and procedures. I agree to participate in this study and provide my consent.

Consent	I agree to participate in the research study.	
	I do not agree to participate in the research study.	

1. Section A: Telecommuting

Please indicate the extent to which you agree/disagree with each of the following statements as they relate to Telecommuting (1= strongly disagree; 5=strongly agree)		1	2	3	4	5
1.1	Telecommuting is common in my organisation					
1.2	Telecommuting is an option for everyone in my department					
1.3	My direct supervisor/ manager telecommutes					
1.4	My supervisor supports my decision to telecommute					
1.5	Employees in my organisation are encouraged to make use of flexible work arrangements like telecommuting					
1.6	My organisation fully supports telecommuting					

2. Section B: Employee Engagement

Please indicate the extent to which you agree with each of the following statements as they relate to Employee Engagement (1= strongly disagree; 5=strongly agree)		1	2	3	4	5
2.1	I work with intensity on my job					
2.2	At work, my mind is focused on my job					
2.3	I am enthusiastic about my job					
2.4	I exert my full effort to my job					
2.5	I feel energetic at my job					
2.6	I am interested in my job					
2.7	I try my hardest to perform well on my job					
2.8	At work, I am absorbed by my job					
2.9	I am proud of my job					
2.10	I strive as hard as I can to complete my job					
2.11	At work, I concentrate on my job					
2.12	At work, I focus a great deal of attention on my job					
2.13	I feel positive about my job					
2.14	At work, I devote a lot of attention to my job					
2.15	I exert a lot of energy on my job					
2.16	I am excited about my job					

3. Section C: Employee Performance

Please indicate the extent to which you agree/disagree with each of the following statements as they relate to Employee Performance (1= strongly disagree; 5=strongly agree)		1	2	3	4	5
3.1	I maintain a high standard of work					
3.2	I perform well in mobilising collective intelligence for effective teamwork					
3.3	I usually extend help to my co-workers when asked or needed					
3.4	I am capable of handling my assignments without much supervision					
3.5	I manage change in my job very well whenever the situation demands					
3.6	I communicate effectively with my work colleagues					
3.7	I love to handle extra responsibilities					
3.8	I am very passionate about my work					
3.9	I effectively manage my work even in the face of change					
3.10	I empathise with my co-workers when they are in trouble					
3.11	I know I can handle multiple assignments for achieving organisational goals					
3.12	I always believe that mutual understanding can lead to a viable solution in my organisation					
3.13	I actively participate in group discussions and work meetings					
3.14	I complete my assignments on time					
3.15	I maintain good coordination among work colleagues					
3.16	I lose my temper when faced with criticism from my work colleagues					
3.17	I praise my co-workers for their good work					
3.18	My work colleagues believe I am a high performer in my organisation					
3.19	I am very comfortable with job flexibility					
3.20	I derive lot of satisfaction from nurturing others in the organisation					
3.21	I cope well with organisational changes from time to time					
3.22	I share knowledge and ideas among my work colleagues					

4. Section D: Respondent Profile

4.1. Gender	Female	
	Male	
	Non-binary	
	Other	
	Prefer not to answer	
4.2. Age	Less than 21 years	
	21-30 years	
	31-40 years	
	41- 50 years	
	51-60 years	
	61+ years	
4.3. Highest Formal Qualification	No Formal Qualification	
	Matric/Grade 12	
	Certificate/Diploma	
	Bachelor's degree	
	Honours degree	
	Master's degree	
	Doctorate degree	
4.4 Organisation Type	Public Organisation	
	Private Organisation	
4.5 Length of Time with the organisation	Less than 1 year	
	1-2 years	
	3-5 years	
	6-10 years	
	10+ years	
4.6. Level within the organisation structure	Non-Managerial	
	Junior Management	
	Senior Management	
	Executive Management	
4.7. Organisation Size	Small Enterprise – Less than 100 employees	
	Midsize Enterprise – 100 to 999 employees	
	Large Enterprise - Over 1000+ employees	

APPENDIX D

Declaration of Professional Language Editing

JANINE ELLIS

LANGUAGE EDITING / TRANSCRIPTION / TYPING

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Client

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27 March 2024

DECLARATION

To whom it may concern,

I hereby declare that I language edited and proofread the thesis authored by **Hangwani Raymond Ravhudzulo**, titled: ***The interactions of employee engagement, telecommuting, and performance for the future of work***

All aspects of this thesis were carefully looked at, corrections made, and suggestions given with regards to certain wording and sentence structure, grammar, spelling, and punctuation, however, the academic content was not influenced in any way. Final acceptance of all proposed corrections/changes/comments is at the discretion of the author.

Kind regards

Janine Ellis

APPENDIX E

Turnitin Report