The Impact of Team Temporal Leadership on Work Engagement, Team Conflict and Team Performance: Examining the Mediating and Moderating Effects of a Multi-Level Model

Buddhika Surakshi Mudannayake
Bachelor of Honours in Business Studies
Master of Business Administration

A thesis submitted in the fulfilment of requirements for the degree of Doctor of Philosophy

School of Management and Marketing
Faculty of Business, Justice and Behavioural Sciences
Charles Sturt University
Australia

August 2019
Dedicated in loving memory to my father,
Don Hemasiri Mudannayaka
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Statement of authorship

I, Buddhika Surakshi Mudannayake, hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Charles Sturt University or any other educational institution, except where due acknowledgement is made in the thesis. Any contribution made to the research by colleagues with whom I have worked at Charles Sturt University or elsewhere during my candidature is fully acknowledged.

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Buddhika Surakshi Mudannayake

Date: 02/08/2019
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Ethical approval

26 August 2016

Mrs Buddhika Mudannayake
School of Management and Marketing
Charles Sturt University
WAGGA WAGGA CAMPUS

Dear Mrs Mudannayake

The Faculty of Business, Justice and Behavioural Sciences Human Research Ethics Committee has approved your proposal “The impact of Team Temporal Leadership on Work engagement and Team Performance” for a twelve month period from 26 August 2016.

The protocol number issued with respect to this project is 200/2016/17. Please be sure to quote this number when responding to any request made by the Committee.

Please note the following conditions of approval:

☐ all Consent Forms and Information Sheets are to be printed on CSU letterhead. Students should liaise with their Supervisor to arrange to have these documents printed;
☐ you must notify the Committee immediately in writing should your research differ in any way from that proposed. Forms are available at, http://www.csu.edu.au/research/ethics_safety/human/ehrc_managing;
☐ you must notify the Committee immediately if any serious and or unexpected adverse events or outcomes occur associated with your research, that might affect the participants and therefore ethical acceptability of the project;
☐ amendments to the research design must be reviewed and approved by the Faculty Human Ethics Committee or if no longer minimal risk by the University Human Research Ethics Committee before commencement. Forms are available at the website above;
☐ if an extension of the approval period is required, a request must be submitted to the Faculty Human Ethics Committee or if no longer minimal risk by the University Human Research Ethics Committee before commencement. Forms are available at the website above;
☐ you are required to complete a Progress Report form, which can be downloaded as above, by 26 August 2017 if your research has not been completed by that date;
☐ you are required to submit a final report, the form is available from the website above.

You are reminded that an approval letter from the Faculty of Business, Justice and Behavioural Sciences Human Research Ethics Committee constitutes ethical approval only.

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CRICOS Provider Numbers for Charles Sturt University are 00005F (NSW), 01947G (VIC) and 02960B (ACT). ABN: 83 878 708 551
If your research involves the use of radiation, biological materials or chemicals separate approval is required from the appropriate University Committee.

The Committee wishes you well in your research. Please do not hesitate to contact me on telephone (02) 6933 2593 or email yalsafggaf@csu.edu.au should you wish to discuss this matter further.

Yours sincerely

[Signature]

Associate Professor Yeslam Al-Saggaf
Deputy Chair
Faculty of Business, Justice and Behavioural Sciences Human Research Ethics Committee
Direct Telephone: (02) 6933 2593
Email: yalsaggaf@csu.edu.au
Publications resulting from this research

Peer-reviewed refereed journal articles


Peer-reviewed conference proceedings


Research symposiums


### Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>AGFI</td>
<td>adjusted goodness-of-fit index</td>
</tr>
<tr>
<td>ANOVA</td>
<td>analysis of variance</td>
</tr>
<tr>
<td>BoI</td>
<td>Board of Investment</td>
</tr>
<tr>
<td>CFA</td>
<td>confirmatory factor analysis</td>
</tr>
<tr>
<td>CFI</td>
<td>comparative fit index</td>
</tr>
<tr>
<td>CMV</td>
<td>common method variance</td>
</tr>
<tr>
<td>CSR</td>
<td>composite scale reliability</td>
</tr>
<tr>
<td>CSU</td>
<td>Charles Sturt University</td>
</tr>
<tr>
<td>$df$</td>
<td>degree of freedom</td>
</tr>
<tr>
<td>EFA</td>
<td>exploratory factor analysis</td>
</tr>
<tr>
<td>GFI</td>
<td>goodness-of-fit index</td>
</tr>
<tr>
<td>ICC</td>
<td>intraclass correlation coefficient</td>
</tr>
<tr>
<td>KMO</td>
<td>Kaiser-Maeyer-Olkin</td>
</tr>
<tr>
<td>MSEM</td>
<td>multi-level structural equation modelling</td>
</tr>
<tr>
<td>NFI</td>
<td>normed fit index</td>
</tr>
<tr>
<td>OLS</td>
<td>ordinary least squares</td>
</tr>
<tr>
<td>RMSEA</td>
<td>root mean square error of approximation</td>
</tr>
<tr>
<td>$r_{wg(J)}$</td>
<td>interrater agreement for a group</td>
</tr>
<tr>
<td>SEM</td>
<td>structural equation modelling</td>
</tr>
<tr>
<td>SPSS</td>
<td>statistical package for social sciences</td>
</tr>
<tr>
<td>SRMR</td>
<td>standardized root mean square residual</td>
</tr>
<tr>
<td>TIP</td>
<td>time, interaction and performance theory</td>
</tr>
<tr>
<td>TLI</td>
<td>Tucker Lewis Index</td>
</tr>
<tr>
<td>$\chi^2$</td>
<td>chi-square value</td>
</tr>
<tr>
<td>$\chi^2/df$</td>
<td>chi-square to degrees of freedom ratio</td>
</tr>
</tbody>
</table>
Abstract

Leadership is an essential function of management that helps to maximise efficiency in achieving organisational goals. A number of leadership styles have been identified and investigated and yet, leadership remains an enigma. The team environment in which employees work today impacts on their ability to perform their job, which can be significantly different from their desired performance. The impact of constructs such as team conflict and work tension may hinder performance. These constructs cause concern because despite their skills and abilities, employees may be unable to complete the tasks required to the level at which they have the talent or desire to perform. The purpose of this research is to examine the relationship of some of the constructs under the team temporal leadership domain.

This thesis first presents a systematic review of extant literature on team temporal leadership and team performance to identify gaps and issues. This thesis then presents a multi-level model that was developed by synthesising the existing literature to explain a number of organisational factors that are closely associated with team temporal leadership. The theoretical model illustrates how team temporal leadership interacts with team performance and shows the interrelationships between organisational factors based on five theoretical perspectives including time, interaction and performance theory, equity theory, broaden-and-build theory, path-goal theory and role theory. The thesis also presents a series of hypotheses developed as a catalyst for the research that has significant effects on individual, team and organisational performance underlying the multi-level model.

A two-wave multi-source survey was conducted, with a final sample of 196 leaders and 873 subordinates from five manufacturing firms from Sri Lanka. The data were analysed through multi-level structural equation modelling using Mplus 8.0.
Results revealed several significant relationships between the variables, indicating the importance of a broad lens under the team temporal leadership domain. First, employee voice behaviour and work tension were found to have a mediating role between team temporal leadership and team performance. Second, task conflict and relationship conflict were found to moderate the relationship between work engagement and career commitment, while role innovation was found to have a mediating effect. Third, team temporal leadership moderated the relationships between task conflict and team performance, and relationship conflict and team performance. Finally, employee proactivity, proficiency and adaptivity were found to have a mediating effect between team temporal leadership and work engagement, while work engagement had a positive relationship with organisational commitment.

This thesis presents theoretical implications and contributions of these findings, along with recommendations for practice. The study had some limitations that future research might address. They include common method variance and generalisation of findings. Additional instrumental constructs should therefore be considered in future research. In conclusion, this study offers a number of contributions and significant implications for theory and leadership practices.
Chapter 1: Introduction

1.1 Chapter overview
This chapter is structured into 11 sections. The following section introduces the key constructs and their key concepts related to this research. Section 1.3 discusses the approach taken in the literature review. Section 1.4 provides the theoretical background to the study by providing an overview of the underpinning theories. The theoretical framework is discussed in Section 1.5. Section 1.6 outlines the research problem and the research objectives is highlighted in Section 1.7. The overall theoretical model is presented in Section 1.8. The final sections of this chapter outline the methodology adopted in the research with a summary of research outcomes and its contribution towards theory and practice.

1.2 Introduction
The past three decades have witnessed an increasing research interest on understanding the nature of leadership, revealing numerous approaches to leadership styles (Currie & Lockett, 2007; Detert & Burris, 2007; Erkutlu, 2008; Judge & Piccolo, 2004; Lee, 2005; Wang & Rode, 2010). McGrath (1991) proposed the time, interaction and performance (TIP) theory, and Mohammed and Nadkarni (2011) developed the concept of team temporal leadership. Team temporal leadership represents the degree to which team leaders schedule deadlines, synchronise team behaviours, and relate to team members’ attitudes, behaviours and performance. Team temporal leadership is defined as “leader behaviours that aid in structuring, coordinating and managing the pacing of task accomplishment in a team” (Mohammed & Nadkarni, 2011, p. 492), capturing the task-oriented behaviours of a team leader. Similarly, the relationship dimension of team temporal leadership concerns the behaviours that support team members resolve temporal conflicts, support the achievement of temporally relevant goals, and seek the
contributions of team members about structuring time (Fisher, Dietz & Antonakis, 2017; Mohammed & Alipour, 2014).

A recent study by Alipour, Mohammed and Martinez (2017, p. 300), highlights that “both implicit theories (implicit leadership theories and implicit followership theories) and time-based individual differences are undiscussed”. They further argue that temporality should be incorporated with implicit leadership theories and implicit followership theories. They outline how past studies have ignored relevant temporal characteristics to implicit theories. Thus, they suggest naming the theories as temporal implicit leadership theories and temporal implicit followership theories to better determine leader–subordinate coordination. This study, therefore, addresses several mediating effects that are more significant for leader–subordinate outcomes, which influence temporal leadership and followership theories.

Team temporal leadership explicitly describes how team leaders facilitate the clear temporal structure of team activities through scheduling, synchronising and allocating temporal resources in a team with regard to “the temporal aspects of a specific group task, such as the importance of meeting the deadline, (sub) task completion times, setting interim milestones, coordinating the team so that work is finished on time, building in time for contingencies and problems and the appropriate timing and pacing of task activities” (Gevers, Rutte & Van Eerde, 2006, p. 54). Team leadership is considered effective and fully operationalised when linked with employee proactivity, proficiency and adaptivity; employee voice behaviour; and organisational commitment (Grant, 1996; Griffin, Neal & Parker 2007; Holtom, Mitchell, Lee & Eberly, 2008; Liao & Chuang, 2004; Van Dyne & LePine, 1998). In addition, scholars have used prominent theories such as TIP theory, broaden-and-build theory, role theory and equity theory to highlight the effectiveness of leader behaviours (Adams, 1965; Fredrickson, 2001; Fredrickson,

While most prior research focuses on a single leader–subordinate relationship, Lord and Dinh (2014) identified a general framework of leadership principles emphasising time as a critical element in understanding leadership effectiveness involving both direct and indirect leadership effects on dyadic, group and organisational levels. This framework was extended by Mohammed and Alipour (2014, p. 178), who state that “the role of time in leadership” includes temporal leadership. They argue that “temporality should be incorporated into the leadership construct itself, in addition to examining effects over time”. However, team temporal leadership remains understudied, despite being practised extensively in large organisations.

Previous studies of the Ohio State identified consideration and initiating structure as two leader behaviours related to leader effectiveness (Fleishman, 1953), explaining the leader’s respect for followers, their welfare, how they define and organise the job roles, goal attainment and communication with followers (Fleishman, 1953; Stogdill, 1950). Though the Ohio State studies looked into the variety of contexts of leader–follower enactment, this current study differs, as it considered temporality as a boundary condition on the effectiveness of leader behaviour. A recent study of the transformational-transactional leadership model and the Ohio State two-factor model outlined “a full range model of leadership should be examined beyond transformational-transactional leadership paradigm including relational aspects” (Piccolo, Bono, Heinitz, Rowold, Duehr & Judge, 2012, p. 580). While Mohammed and Nadkarni (2011) suggest team temporal leadership is a task-oriented leadership style, methodological development in the field is expected to grow. Section 1.4 reviews empirical and theoretical studies that have investigated team temporal leadership in the context of team performance and work
engagement. It describes how team temporal leadership characteristics are related to team performance and work engagement. Moreover, substantial leadership literature reveals work engagement and team performance as important predictors rating leadership effectiveness (Eldor & Harpaz, 2016; Fischer, Dietz & Antonakis, 2017; Fredrickson & Losada, 2005; Judge & Piccolo, 2004; Lee, 2005; Mohammed & Nadkarni, 2011; Santos, Passos, Vitewilligen, & Nubold, 2016). Further to a recent study, effective leaders can allow subordinates’ individualisation, flexibility and balance of both distance and closeness (Zhang, Waldman, Han & Li, 2015). Referring to the extant literature on leader–subordinate dyadic relationships, the proposed theoretical model addresses the role of innovation, employee voice and temporal tension (Zhang, Ou, Tsui & Wang, 2017) at the individual level. At the team level, it describes team conflict (Santos et al., 2016; Zhang, 2009), proactivity, proficiency and adaptivity to understand how employees develop coping tactics to retort on the temporal changes at work (Garcia-Chas, Neira-Fontela & Varela-Neira, 2014). And finally, it describes the role of organisational commitment (Culpepper, 2011) looking at temporality from the organisational level. This is the first systematic exploration of studies conducted at individual, team and organisational levels under team temporal leadership, work engagement and team performance settings, and a key gap in the literature is evident.

Against this burgeoning research landscape, some researchers have suggested identifying another line of research with a focus on the interactive effects of work engagement, team performance and team temporal leadership (Bakker & Bal, 2010; Bakker & Demerouti, 2008; Mohammed & Nadkarni, 2011; Santos et al., 2016; Totterdell, 2000) by directly examining their mediating and moderating roles on temporal tension; employee proactivity, proficiency and adaptivity; role innovation; team conflict; employee voice behaviour; and organisational commitment as this understanding of interacting effects at dyadic and team levels can fill the void in the literature. Furthermore, scholars (Bakker
& Bal, 2010; Erkutlu, 2008; Parker, 1998) have analysed these variables independently while also suggesting that they are interrelated, and should be researched together to understand their temporal orientation.

Thus, responding to calls for further research (Mohammed & Alipour, 2014; Mohammed & Nadkarni, 2011; Santos et al., 2016) and to advance research on team temporal leadership, this chapter explores empirical and theoretical studies, and reports on a systematic literature review to synthesise research at individual, team and organisational levels to advance this agenda.

1.3 The strategy of the literature review

The literature review was inclusive of a wide range of articles as advocated by Tranfield, Denyer and Smart (2003). Inclusion criteria contained search boundaries, search terms and cover period as recommended by Nolan and Garavan (2016). The criteria included journal rankings, primary/secondary subject areas and electronic databases. Finally, journals were listed using ranking, number of articles per journal, relevance and recentness as recommended by Iqbal, Akbar and Budhwar (2015) in their paper on systematic literature reviews.

1.3.1 Review protocol

The review followed the combined methodologies recommended by Tranfield et al. (2003) and Iqbal et al. (2015). However, rather than searching through databases, the study concentrated on quality articles published in the journals listed in the Australian Business Deans Council journal quality list, in line with some recent studies (Nguyen, Leeuw & Dullaert, 2016; Okwir, Nudurupati, Ginies & Angelis, 2018), as well as adhering to the ARC recommendation. Therefore, the review contains journal articles that were highly cited and have a strong impact within the field.
1.3.2 Search boundaries and parameters

The methodology established for the study covered a wide range of articles that contribute to greater consideration of team performance, and the search boundaries and parameters placed limits on the review. Table 1.1 provides a summary of the parameters used to analyse the studies, and Figure 1.1 presents the adopted methodology.
Table 1.1: Search parameters

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Search terms</td>
<td>Team performance, team leadership, team temporal leadership, work engagement, work tension, employee proactivity proficiency adaptivity, role innovation, team conflict, employee voice behaviour, organisational commitment</td>
</tr>
<tr>
<td>Source type</td>
<td>Journals</td>
</tr>
<tr>
<td>Document type</td>
<td>Articles, articles in press, reviews</td>
</tr>
<tr>
<td>Subject area</td>
<td>Business/management/psychology</td>
</tr>
<tr>
<td>Language</td>
<td>English</td>
</tr>
<tr>
<td>Cover period</td>
<td>January 1986 to December 2017</td>
</tr>
<tr>
<td>Search boundaries</td>
<td>Ranked journals from the Australian Business Deans Council journal quality list (2016)</td>
</tr>
<tr>
<td>Exclusion criteria</td>
<td>Filter the most appropriate articles for the study, concentrating on those primarily focused on leadership/team leadership, team performance</td>
</tr>
</tbody>
</table>
1. **Research Objectives**
Understanding the effect of team temporal leadership on employee engagement and team performance.

2.1. **Setting the Inclusion Criteria**
- **Search boundaries**
  Australian Business Deans Council ranked journals
  Electronic database
- **Search terms**
  Team temporal leadership, team leadership, employee engagement, team performance, temporal tension, employee proactivity proficiency & adaptivity, team conflict, role innovation, employee voice behaviour, organisational commitment.
- **Cover period**
  January 1986–December 2017

2.2. **Setting the Exclusion Criteria**
Small and medium enterprise context.

2.3. **Analysing the Articles addressing the Constructs**
- List of journals, ranking, and number of articles
- Year of publishing details (recentness)

4. **Literature on the Relationship between the Constructs and developing the Propositions**
- Relationship between team temporal leadership and employee engagement
- Relationship between team temporal leadership and team performance
- Relationship between employee engagement and team performance
- Relationship of temporal tension, employee proactivity proficiency adaptivity between team temporal leadership and employee engagement
- Relationship of role innovation, team conflict, between the relationship of employee engagement and team performance
- Relationship of employee voice behaviour, organizational commitment between team temporal leadership and team performance
- Relationship between organizational knowledge exchange & combination with team temporal leadership, employee engagement and team performance

3. **Theoretical Background**
- Time, interaction and performance theory
- Equity theory
- Broaden-and-build theory
- Path-goal theory
- Role theory

Figure 1.1: Structure of the systematic literature review
1.3.3 Results and analysis of the systematic literature review

According to Tranfield et al. (2003), transparency in a systematic literature review must facilitate readers to determine its exact scope and boundaries. The study identified 408 articles. After applying the inclusion and exclusion criteria, five theories and 121 articles published in 55 journals were considered to be relevant. Of the 121 articles, 62% were published in 2001 or later. The search results and analysis is presented as follows; Figure 1.2 presents the summary of the systematic literature review, Table 1.2 presents the list of the journals considered for the review and Figure 1.3 shows the year of publishing (recentness). These details will enable the review to be updated and evaluated in the future.
Figure 1.2: Flow diagram of the summary of the literature review

Note: TP = team performance; TL = team leadership; TTL = team temporal leadership; WE = work engagement; TT = temporal tension; EPPA = employee proactivity proficiency adaptivity; RI = role innovation; TC = team conflict; EVB = employee voice behaviour; OC = organisational commitment; ABDC = Australian Business Deans Council
Table 1.2: List of journals used in the systematic literature review

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<tr>
<th>Journal title</th>
<th>Articles as a % of total</th>
<th>Journal ranking (Australian Business Deans Council 2013)</th>
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<td>Academy of Management Annuals</td>
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<td>Journal of Happiness Studies</td>
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<td>Leadership &amp; Organization Development Journal</td>
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<td>Measuring Business Excellence</td>
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<td>African Journal of Business Management</td>
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<td>Creativity and Innovation Management</td>
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<td>European Business Journal</td>
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<td>Journal of Management Development</td>
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<td><strong>Total number of articles</strong></td>
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Figure 1.3: Year of publishing details (recentness)
1.4 Systematic literature review of the key constructs

Considering the number of frequent changes in organisational demands over the last three decades, it has become vital for team leaders to engage in temporal activities to organise team members’ efforts, avoid time-related conflicts and to ensure their performances (Fischer et al., 2017; Santos et al., 2016). The diversity of temporal aspects creates conflict within teams regarding pacing and the scheduling of work activities, which affects both the timeliness and quality of team output (Mohammed & Nadkarni, 2011). Consequently, teams with less empowerment may become passive and tend to seek direction from team leaders on how to address continuous improvement objectives (Kirkman, Rosen, Tesluk & Gibson, 2004). It then becomes the team leader’s responsibility to recognise and predict issues that might occur, analyse information, build plans and make decisions, and evaluate outcomes (Cowsil & Grint, 2008; Gibson, Fiedler, & Barrett, 1993).

Team temporal leadership clearly describes “how team leaders facilitate the clear temporal structure of team activities through scheduling, synchronizing, and allocating temporal resources that are not specified in the existing task-oriented leadership styles” (Mohammed & Nadkarni, 2011, p. 492). Conventional studies identify team leadership as one of the fundamental characteristics that drive effective team performance (Anderson & Sun, 2015; Morgeson, DeRue & Karam, 2010; Zaccaro, Ritteman & Marks, 2001). Different team performance models generally agree that teams must be considered on three levels of analysis: individual, team and organisational. They tend to categorise team functioning as consisting of input considerations (e.g. type of task, equipment and training), throughput (e.g. team processes), and output or team product (Brannick, Sala & Prince, 1997, p. 4; Delarue, Hootegem, Procter & Burridge, 2008). Marks, Mathieu and Zaccaro (2001, p. 357) define team process as “members’ interdependent acts that convert
inputs to outcomes through cognitive, verbal and behavioural activities directed toward organising task work to achieve collective goals”.

1.4.1 Team temporal leadership

Tost, Gino and Larrick (2013) identify the impact of the subjective experience of power on leadership dynamics and team performance, stating that the psychological effect of power on formal leaders spills over to affect team performance. Further, leaders who establish clear timeframes and direct them through schedules, reminders and interim milestones and timeframes tied to project goals are better positioned to maximise team productivity (Halbesleben, Novicevis, Harvey & Buckley, 2003; Mathews & Desmond, 2002). A recent study by Maruping, Venkatesh, Thatcher & Patel (2015) found that team temporal leadership expands team capacity to manage their responsibilities under time pressure, assisting them to succeed in their specific tasks. The study examined how perceived time pressure affects team processes and subsequent performance under weak versus strong team temporal leadership. The study concluded that under strong team temporal leadership, the indirect effect of perceived time pressure on team performance is mostly positive, while under conditions of weak team temporal leadership, the indirect effect is positive at low levels of perceived time pressure and negative at intermediate to high levels.

1.4.2 Team performance

Research into team performance has a long history. According to Hackman (1991), group effectiveness is the degree to which a team’s output meets requirements in terms of quantity, quality and timeliness. Different models of team performances have generally agreed that teams must be considered on three levels of analysis: individual, team and organisational. They tend to categorise team functioning as consisting of input considerations (e.g. type of task, equipment, and training), throughput (e.g. team
processes), and output or team product (Brannick et al., 1997, p. 4). The outcome of a successful team process is successful performance. Marks et al. (2001, p. 357) define team process as “members’ interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioural activities directed toward organizing task work to achieve collective goals”.

Team performance is the end result of a team activity, and organisational performance is the accumulated end results of an organisation’s work processes and activities (Stephen & Mary, 2002). The manager is required to have a clear idea of the factors that contribute to high organisational performance to drive the organisation to achieve the best value. There are many different means to assess team performance (Antony & Bhattacharyya, 2010; Tangen, 2003), through looking at different understandings of what is deemed successful performance and identifying perspectives of organisational performance being maintained as unique. Each organisation has a unique set of circumstances, making performance measurement inherently situational (Cameron & Whetten, 1984). Measuring team performance is vital for researchers and practitioners to evaluate the specific actions of organisations and managers, and how organisations progress over time. Its importance as the ultimate evaluative criterion is reflected in its extensive use as a dependent variable (Letchumanasamy, 2013, p. 11).

1.4.3 Work engagement

According to Fredrickson (2001), employees who engage in positive emotions such as enthusiasm and inspiration in their role, are more likely to think outside the box, and become more innovative and adaptive in their work (Eldor & Harpaz, 2016; Fredrickson & Losada, 2005). Kahn (1990, p. 700) explains work engagement as “the simultaneous employment and expression of a person’s preferred self in task behaviours that promote connections to work, personal presence (physical, cognitive and emotional) and active
full performances”. Work engagement, was later defined by Schaufeli, Salanova, Gonzalez-Roma and Bakker (2002) as a positive, fulfilling, work-related state of mind characterised by vigour, dedication and absorption. Britt (1999) viewed work engagement as feeling responsible for and committed to superior job performance. Kahn (1990) further argues that the psychological conditions of meaningfulness, safety and availability determine levels of work engagement (Crawford, LePine, & Rich, 2010). Kalliannan and Adjovu (2015) describe work engagement as an engine in talent management that attracts effectiveness from numerous environmental factors inside and outside of an organisation.

Engaged employees work vigorously and are dedicated to work both mentally and physically. Yet, there are many organisations with high levels of employee disengagement (Keating & Heslin, 2015). Kahn (1990) identifies three questions employees unconsciously ask themselves in helping them to decide whether to engage or to disengage in work: how meaningful is it for me to bring myself into this performance; how safe is it to do so; how available am I to do so. According to Keating and Heslin (2015), high commitment human resource practices such as job rotation, continuous training, high job security, career management and benefits packages, have helped maintain work engagement.

Further, Keating and Heslin (2015) relate ‘mindsets’ to work engagement stating mindsets are the implicit theories or assumptions that people hold about the plasticity of their abilities. Mindsets are a mental framework that guide employees on how to think, act and feel while accomplishing a task. When an employee holds a fixed mindset they are very reluctant to change and adopt new things that will help them to complete a task effectively. Hence, this leads them to avoid challenges that may result in poor work performances (Hong, Chiu, Dweck, Lin & Wan, 1999).
1.4.4 Employee voice behaviour

When employees feel inequity in relation to their contribution and what they receive, “intense emotions such as frustration, anger, and dissatisfaction often drive employees to speak up” (Grant, 2013, p. 1703). Within an increasingly challenging, competitive and uncertain economy, organisations depend on ideas and suggestions from employees for improvement (Grant, 2013; Morrison, 2011). Van Dyne and LePine (1998) define voice as promotive behaviour that emphasises the expression of constructive challenge intended to improve rather than merely criticise. They further state that voice becomes important when there is a dynamic environment within organisations that requires innovative ideas for improvement (Nemeth & Staw, 1989).

Many scholars have gathered evidence showing that employee voice directs the organisation to learn from their mistakes, make corrections and prevent social and financial errors, obtain innovative insights and creative ideas, influence divergent thinking, and enhance the quality of decisions and solutions made within the organisation (Detert & Burris, 2007; Edmondson, 1999; Grant & Ashford, 2008; Van Dyne & LePine, 1998; Zhou & George, 2001). Scholars have also acknowledged that not all high-voice environments are likely to experience positive outcomes (e.g. managerial inability and unwillingness to respond to voice), which could result in a climate where employees may feel weak and incapable and not valued, hence the employees may no longer be dedicated to work and this could lead to a higher rate of employee turnover (McClean, Burris & Detert, 2013).

1.4.5 Work tension

A previous study on leadership found that (i) the leader’s personal stress mediates the effective operation of intellectual abilities, especially when the leader is under conditions of stress, while (ii) the leader’s intelligence and creativity correlated negatively with team
performance (Gibson et al., 1993). Stressful conditions prevent the leader from delivering all available knowledge and resources to the task. Hence, meaningful work can become unfulfilling and meaningless (Cole, Walter, Bedeian & O’Boyle, 2012).

According to the conservation of resources model, a persistent threat to valued resources ultimately culminates in burnout (Hobfoll, 1989). Excessive tension results in burnout and then it becomes more problematic. According to Maslach and Leiter (1997, 2008) there are three dimensions, which the Maslach Burnout Inventory covers: (i) emotional exhaustion is characterised by feelings of being emotionally overextended and worn out by work – when exhausted, individuals feel physically fatigued, unable to unwind or recover (ii) cynicism or depersonalisation refers to negative, callous or excessively distant attitudes towards co-workers and one’s job, marked by heightened pessimism and a tendency to abandon tasks and (iii) ineffectiveness or inefficacy covers personal feelings of failure, incompetence and lack of achievement in one’s work. Maslach and Leiter (1997) argue that when an employee experiences tension and gradually reaches burnout, energy turns into emotional exhaustion, involvement turns into cynicism, and efficacy turns into inefficacy, affecting team performance.

1.4.6 Role innovation

Nicholson (1984) and Nicholson and West (1988a) argue that work-role transitions may involve two independent adjustment processes: personal development and role development. Personal and role development together create four modes of work adjustment: (i) replication (low personal development, low role development), where one “performs in much the same manner as in previous jobs and also in much the same manner as previous occupants” (ii) absorption (high personal development, low role development), where “the burden of adjustment is borne almost exclusively by the person” (iii) determination (low personal development, high role development), the
opposite of absorption, where the burden of adjustment is borne by the role (iv) exploration (high personal development, high role development), where there is simultaneous change in personal and role attributes (Ashforth & Saks, 1995, p. 162).

Innovation can be explained as the process of creating something new or different from what exists (e.g. ideas, practices, technologies) after learning and precision (Damanpour & Gopalakrishnan, 1998; Landau & Nathan, 1986). Van de Ven (1986) defines innovation as modification and change in behaviour after learning and practices. According to Usman, Danish, Waheed and Tayyeb (2011), most managers desire to see job innovation through their employees as they consider role innovation key to developing new, productive methods utilising current resources.

Aime, Van Dyne and Petrenko (2011) identify three ways in which role innovation can occur. First, role innovation includes personalising a role to suit the agent, including changes in expected work behaviours “ranging from minor initiatives such as variations in work schedules to more dramatic role innovations such as changes in the main goals of the organizational work” (Nicholson & West, 1988a, p. 106). Second, role innovation includes changes in employee cognition. From an interactionist perspective, employees can use their role cognition as proxy for making sense of the relationship between self and the social context (Callero, 1994). Third, role innovation also includes changes in relationships with others (Grant & Hofmann, 2011). This can occur through negotiation of role relationships, and it results in changes in role sets – those an employee interacts with regularly while performing the job (Katz & Kahn, 1978).

**1.4.7 Career commitment**

Career commitment is conceptualised as the strength of one’s motivation to work in a chosen career role (Aryee & Tan, 1992; Hall, 1971). Loyal, productive employees who identify with organisational goals and values are characterised as committed employees
(Buchanan, 1974; Porter, Steers, Mowday & Boulian, 1974). Career commitment has been recognised as a form of work commitment that individuals have on a career facet – their attitude towards the career (Morrow, 1993). Blau (1988, p. 284) defines career commitment to “one’s attitude toward one’s vocation, including a profession. Employees with a higher level of career commitment may show a higher degree of expectations and requirements from the organization as well more attachment to their career once their expectations are satisfied by the organization”. Similarly, when employees feel that the organization has failed to fulfil its obligations, the employee becomes unsatisfied, resulting in absenteeism and decreased levels of commitment (Chang, 1999; Robinson, Kratz, & Rousseau, 1994). A previous study by Aryee and Tan (1992) shows individuals who are committed to a career spend more time developing their skills and improving their knowledge, and show less intention to withdraw from their careers to move into a different field.

Research on career commitment is important as commitment to work can strongly affect employee turnover (Blau & Boal, 1987). Employee turnover breaches the relationship of an employee with the organisation. This incurs a loss for both the individual and the organisation. For an organisation, the cost of turnover will result in additional costs such as reselection and retraining, and above all could decrease the motivation and morale of the remaining employees, affecting the organisation’s performance (Chang, 1999).

1.4.8 Team conflict

According to Tajfel and Turner (1985), people tend to classify themselves and others into various social categories (e.g. gender, age cohort, organisational membership, religious affiliation). Teams consist of individuals with varying values and capabilities brought together to produce high levels of performance, but the process has to be carefully
monitored since value differences can create relationship conflict among team members (Jehn, 1994, 1995).

To face challenging economic conditions, teamwork has become an increasing norm in organisations; although, the challenges of working effectively in teams are considerable. One of them is conflict, which occurs between team members due to tension from real or perceived differences (De Dreu & Weingart, 2003). Conflict has been known to interfere with team performance and reduce satisfaction because it produces tension and antagonism, distracting team members from performing tasks (De Dreu & Weingart, 2003). According to Boulding (1963), conflict can be defined as an awareness by the parties involved that there are discrepancies, or incompatible wishes or desires present.

Conflict in teams is related to relationship and task issues. In other words, there are primarily two types of conflict – task conflict and relationship conflict (Amason & Schweiger, 1997; Jehn, 1997; Kabanoff, 1991). A study by Jehn (1994) indicates that emotional conflicts among team members are related to decreased performance, while task associated conflicts are related to an increase in performance. Jehn further explains the importance of the managers’ and leaders’ ability to differentiate between the two types of conflict so that they can resolve relationship conflict while promoting productive task conflicts. Task conflicts can also occur in situations where managers or team leaders have different viewpoints and ideas related to a task (Jehn, 1994).

1.4.9 Employee proactivity, proficiency and adaptivity

Griffin et al. (2007, p.332), define employee task proactivity as “the extent to which individuals engage in self-starting and future-oriented behaviour, to change their individual work situations, their individual work roles, or themselves”, and further categorise proactivity into team-member proactivity and organisation-member proactivity, where an employee engages in self-starting, future-directed behaviour to
change the situation by the way the team/organisation works. Proactive employees tend to motivate themselves, and identify new methods, to improve mechanisms, to accomplish their tasks without relying on directions from leaders (Crant, 2000; Parker 1998). Nevertheless, Van Dyne, Cummings, and McLean (1995) suggest proactive behaviours may be risky, as they challenge the existing status, and have uncertain outcomes (Fay & Frese, 2000). For example, speaking up with new ideas and directing others to improve work methods, can threaten supervisors and cause negative results (Frese & Fay, 2001; Grant, Parker & Collins, 2009; Morrison & Milliken, 2000). Also, a study on ambiguity found that ambiguity is likely to amplify these risks by raising anxiety about the uncertain consequences of proactivity on employees with strong security values (Grant & Rothbard, 2013). Griffin et al., (2007) state that individual task proficiency is where behaviours reflect the degree to which an employee meets the known expectations and requirements of their role as an individual and, further, task proficiency is closely related to the concept of task performance. Also, employee adaptivity has been described as the need for individuals to adapt themselves to the unpredictability of technology change in current working environments. To face contemporary change employees must be able to cope with change by adapting to their working environment (Griffin et al., 2007). They highlight the importance of individual task adaptivity when new technology, work redesign and changes in strategy occurs and requires them to adjust themselves accordingly.

1.4.10 Organisational commitment

Organisational commitment has been defined as the “relative strength of an individual’s identification with, and involvement in a particular organization”, and such commitment can generally be characterised by at least three factors: first, a strong belief in and acceptance of the organisation’s goals and values; then, a willingness to exert
considerable effort on behalf of the organisation; and finally, a definite desire to maintain organisational membership (Porter et al., 1974, p. 604).

According to Meyer and Allen (1997, p. 3), organisational commitment encompasses three dimensions. First, affective commitment, defined as “the degree to which an individual is psychologically attached to an employing organization through feelings such as loyalty, affection, etc.”, explaining the employees’ emotional attachment to the organisation. Second, continuance commitment, resulting from the exchange relationship between the employees and the organisation. Employees become continuously committed to the organisation because of the benefits they accrue from continuing the relationship with the organisation. Third, normative commitment refers to employees’ feeling of obligation or responsibility to remain within the organisation indicating that employees believe it is the right and moral thing to do (Allen & Meyer, 1990; Dunhan, Grube & Castsneda, 1994; Hackett, Bycio & Hausford, 1994).

Managers prefer committed employees because they are assumed to have higher levels of determination and performance, and lower rates of turnover and absenteeism (Mowday, Porter & Steers, 1982). By contributing to organisational economic growth/productivity by being a committed employee, managers have increased opportunities for better rewards/better prospects (Mathieu & Zajac, 1990; Mowday et al., 1982). Organisational commitment can also be affected by individual differences in rewards received from work (Marsden, Kalleberg & Cook, 1993). Also, being too committed to the organisation can bring negative effects such as stress, career stagnation and family strains (Mathieu & Zajac, 1990; Mowday et al., 1982).

Lincoln and Kalleberg (1990) argue that organisational structures promote commitment or loyalty and attachment in four ways: participation (work redesign, provide employees with sense of control and partnership); integration (increase feelings of community and
pride, programs helping to nurture collegial relations); individual mobility and career development (promotions); and legitimacy (by convening a sense of citizenship on workers).

1.5 Theoretical framework

The theoretical framework underlying this study’s constructs draws from five general theories. The first, McGrath’s (1991) TIP theory, is rooted in the team temporal leadership and team performance literature. The second, broaden-and-build theory (Fredrickson, 2001), derives from work engagement, innovation and conflict literature. The third, House’s (1996) path-goal theory, underpins the team performance, motivation and commitment literature. Finally, Biddle’s (1986) role theory derives from the employee engagement literature, which also has an impact on employee proactivity, proficiency and adaptivity behaviours. Each of these theoretical backgrounds provide sufficient rationale for the study constructs.

1.5.1 McGrath’s time, interaction and performance theory

McGrath’s (1991) TIP theory is based on substantial research on temporal factors in individual, group and organisational contexts. The theory explains the nature of groups, and their interaction and performance. TIP theory emphasises the temporal patterning of interaction and performance in groups. He suggests that teams engage in four modes of group activity; inception, technical problem-solving, conflict resolution and execution. McGrath further suggests that all team projects begin with mode I (goal choice) and end with mode IV (goal attainment), while modes II and III may or may not be needed depending on the task and the history of the group’s activities. The modes in full are:

- Mode I: Inception and acceptance of a project; goal choice
- Mode II: Solution of technical issues; means choice
- Mode III: Resolution of conflict, that is, of political issues; policy choice
- Mode IV: Execution of the performance requirements of the project; goal attainment

According to McGrath’s (1991) TIP theory, diversity of temporal orientations generate ambiguity and conflicts within teams regarding pacing and the scheduling of work activities, which could deter both the timeliness and quality of team output (Mohammed & Nadkarni, 2011).

### 1.5.2 Equity theory

Equity theory states that individuals are motivated by fairness; when an individual identifies an inequity between themselves and a peer, they react against it. They try to adjust the work they do to make the situation fair according to what is fair. Adam’s equity theory (1965) mentions that individuals do not just understand equity in isolation, instead they look around and compare themselves to others. If they perceive an inequity, they will adjust their inputs to restore balance. According to Kabanoff (1991, p. 418), in highly power-differentiated relationships, groups or organisations, it is predicted that there is, on average, greater endorsement given to equity as the most appropriate or fair distributive principle. This theory further argues that employees utilise comparisons to decide what behaviours to sustain and what to cease by seeking to reduce any inequity between themselves and their comparator. If an individual identifies equity in how they are rewarded for their efforts and performance when compared with others, they will sustain their behaviour. However, if there is inequity, they are motivated to change something to achieve equity, whether they are more highly or less highly rewarded. Strategies to reduce inequity include changing the level of effort (or input), seeking to change the outcome such as salary increments, bonuses, or changing the comparator group for a more suitable one, or leaving the position.
1.5.3 Broaden-and-build theory

From the perspective of broaden-and-build theory (Fredrickson, 2001, p. 218), engaged employees can be characterised by experiences of positive emotions such as joy, interest, contentment, love and so on; they are not plagued by negative emotions such as anxiety, sadness and despair. Positive emotions stimulate not only positive social and physical behaviour, but also intellectual and artistic behaviour (Ellsworth & Smith, 1998), which broadens the mind of an employee and leads them to explore, be open to new information, pursue a larger range of thoughts, become creative and innovative, welcome new experiences and adopt the new process (Izard, 1977; Ryan & Deci, 2000). Further, broaden-and-build theory argues that individuals who experience positive emotions are able to draw on a wider range of behavioural responses and are more likely to be engaged.

In this study, the broaden and build theory has been used to analyse the employee work engagement. In contrast, negative emotions narrow an individual’s mindset repertoire and lead them to escape, attack or expel, where they view these particular direct and immediate actions as appropriate to overcome the situation (Fredrickson, 2001). For instance, the negative emotion of frustration in a team member can result in inappropriate behavioural effects in teams (attacks, arguments, tension and conflicts among members).

However, previous literature has also shown that the positive emotions are capable of ‘correcting’ or ‘undoing’ the effects of negative emotions (Fredrickson & Levenson, 1998; Fredrickson, et al., 2011). They further show that positive emotions play an indirect role in strengthening an individual’s resources for handling the circumstances that provoke negative emotions (Folkman & Moskowitz, 2000; Fredrickson et al., 2011). These coping strategies could take the form of social, physical or intellectual resources, and speed recovery from negative emotions once the positive emotions are experienced consistently (Fredrickson et al., 2011).
1.5.4 Path-goal theory

According to path-goal theory, leader behaviours can influence subordinates’ motivation and increase their perception towards goal attainment and clarify the paths to these goals (House & Mitchell, 1974). This theory is a dyadic theory of supervision, and “concerns relationship between formally appointed superiors and subordinates in their day-to-day functioning” (House, 1996, p. 325). It addresses the effects of supervisors on subordinates, and how supervisors affect the performance excellence of subordinates. Further House and Mitchell (1975) state that leaders generate follower motivation by increasing the level of rewards the followers can attain in the workplace. Moreover, leaders enhance subordinates’ motivation by making the path-goal clear, removing any obstacles or roadblocks that subordinates might encounter in the process of goal attainment. This enhancement can be achieved by coaching, providing direction to keep the followers on track, and increasing work satisfaction. According to House (1996), the leader’s role is to increase the subordinate’s belief that their effort will lead to accomplishing a goal, which in turn will lead to attaining the rewards. Therefore, the leader’s focus should be on eliciting the subordinates’ goals and expected rewards, increasing the subordinates’ sense of self-efficacy, and helping followers see the connection between their efforts and attaining their desired rewards. Additionally, it is important to note that in the pursuit of goals, the leader should be able to remove any challenges that subordinates may come across, and help the followers meet their goals. Path-goal theory also promotes the idea that leaders can enhance the organisation’s output by affecting followers’ motivation.

1.5.5 Role theory

Role theory describes the most important features, characteristics and roles of social life and behaviour patterns as to why human beings behave differently and predictably, depending on the situation and their respective social identities (Biddle, 1986). It mainly
addresses three key concepts, “patterned and characteristic of social behaviours, parts or identities that are assumed by social participants, and scripts or expectations for behaviour that are understood by all and adhered by performers” (Biddle, 1986, p. 68). Although there are different assumptions built upon these concepts (Allen & Van de Vliert, 1984; Bates & Harvey, 1975; Turner, 1979), the basic concept remains the same, presuming ‘expectations’ as the main generators of roles, which are learned through individual experiences, and being aware of the expectations they hold (Biddle, 1986). Hence, the theory describes a set of duties, responsibilities, expectations, norms and behaviours that an individual has to cope with and fulfil based on social position and other related factors.

1.6 Research problem

Task-oriented activities are drawing more attention in the business world at present (Antonakis & House, 2014). Team leaders can apply and adapt the most suitable temporal behaviour style according to their working environment. To understand the managing process and effects of team temporal leadership in leader–follower relationships, this study examines a number of constructs: team temporal leadership, work engagement, team performance, temporal tension, employee proactivity proficiency and adaptiveness, role innovation, team conflict, career commitment and employee voice behaviour, to fill the current gaps in the existing research and to understand the team temporal leadership to a greater extent.

Researchers have to date maintained that team leadership is considered effective and fully operationalised when linked with employee proactivity proficiency and adaptiveness, career commitment, employee voice behaviour and organisational commitment (Grant, 1996; Griffin et al., 2007; Holtom et al., 2008; Liao & Chuang, 2004; Van Dyne & LePine, 1998). Scholars have recently proposed that team temporal leadership has a significant effect on team performance (Mohammed & Nadkarni, 2011; Santos et al., 2016). Prior research advocated using theoretical frameworks (Griffin et al., 2007; Mohammed & Nadkarni, 2011; Santos et al., 2016) and some other scholars (Adams,
1965; Kahn, 1990; Keating & Heslin, 2015) advocate using prominent theories such as time interaction and performance theory, broaden-and-build theory, role theory, equity theory and so on (Adams, 1965; Fredrickson, 2011; Harnisch, Frank, & Maull, 2011; McGrath, 1991) Thus, responding to calls for research (Santos et al., 2016; Mohammed & Nadkarni, 2011) and to advance theory and research on team temporal leadership theory this study investigates TTL in work engagement (WE) and team performance (TP) context. Thus, responding to calls for research (Mohammed & Nadkarni, 2011; Santos et al., 2016) and to advance theory and research on team temporal leadership theory, this study investigates team temporal leadership in work engagement and team performance context. Mohammed and Nadkarni (2011) suggested team temporal leadership as a task-oriented leadership style. It is expected to grow and to continue as an area of theorising, empirical investigation and methodological development. Some researchers in addition suggest identifying another line of research with a focus on the effect of work engagement, team performance and team temporal leadership (Bakker & Bal, 2010; Bakker & Demerouti, 2008; Mohammed & Nadkarni, 2011; Santos et al., 2016; Totterdell, 2000) to examine the role of team temporal leadership in the relationships and interactions among other variables. This proposed interactions can be found by directly examining the mediating effects and/or moderating effects on temporal tension, employee proactivity proficiency and adaptivity, role innovation, team conflict, career commitment, employee voice behaviour and organisational commitment, as this understanding of interacting effects fill the void in the literature. Scholars have analysed them independently, but have suggested that these variables should be interrelated through identifying this specific relationship when collectively evaluated.

1.7 Research objectives

The research objectives for this thesis included both general and specific objectives as described below.
1.7.1  General objectives

Overall, the aim of this study is to examine the effect of team temporal leadership style on work engagement and team performance, including how team temporal leadership can positively impact employee work engagement, how employees perform under a task-oriented organisational climate, and to analyse the positive relationships of team temporal leadership on the characteristics with employees and team performance. The purpose of the study is to understand the impact of team temporal leadership behaviour on employee work engagement and team performance, as well as to identify the organisational variables that determine the extent of employee career and organisational commitments.

1.7.2  Specific objectives

There are nine specific objectives in this study:

1. To expand the existing knowledge on team temporal leadership by examining the role of the work tension of team temporal leaders through an analysis of the effects aroused by work tension on consistent decision-making processes under time-pressured conditions.

2. To draw attention to employee voice behaviour and its impact on the team under a team temporal leadership style, thereby advancing the importance of leader–subordinate experiences and performance-related behaviours that enable teams to perform more effectively under this leadership style.

3. To further current knowledge on leader–subordinate relationships by testing employee voice behaviour towards team temporal leadership style associated with performance.

4. To invest substantial effort to explain the relationship between work engagement and career commitment to identify the positive impacts of work engagement and triggering mechanisms that prompt employees to reduce their work engagement.
5. To examine the moderating role of team conflict to extend the research agenda by outlining a relational context within which work engagement exerts a detrimental impact.

6. To investigate the direct relationships between task and relationship conflicts in subordinates with team performance, and examine how team temporal leadership behaviours moderate these relationships.

7. To determine the relationship between team conflicts with team temporal leadership to identify the potential for team temporal leadership behaviour to moderate the associations between task and relationship conflict with team performance.

8. To establish the relationships between employee proactivity, employee proficiency and employee adaptivity in the team temporal leadership domain, and extend current understanding about the extent to which team temporal leadership behaviours influence employee work engagement.

9. To consider the conditions under which team temporal leadership is more likely to benefit work engagement in an organisational context by exploring the mediators of the team temporal leadership–work engagement relationship.

1.8 The theoretical model

Based on the systematic review of literature discussed in Section 1.4, a conceptual model for this research is shown in Figure 1.4. By testing this theoretical model, the current research contributes to existing literature and the five theories discussed in Section 1.5. The significant contributions include:

- interconnecting the intervening roles of leaders and subordinates and advancing TIP theory by delineating the roles of the dyadic relationship and the underlying mechanisms in the process of team temporal leadership at individual, team and organisational levels
- advancing equity theory by identifying the two distinct pathways of work tension and employee voice under team temporal leadership behaviour

- addressing the inadequacy of broaden-and-build theory by investigating engaged employees’ influence as well as the underlying process of role innovation to extend the scope of the theory

- extending the application of path-goal theory to incorporate the influence of team-level variables

- incorporating the influences of employee proactivity, proficiency and adaptivity to extend the scope of role theory.
Figure 1.4: Proposed theoretical model
1.9 Methodology

The methodologies of research are the various ways in which data are gathered, organised and analysed (Blake, 2000). This process is divided into two categories, quantitative and qualitative (Walsh, 2001). This research adopted quantitative methodology, which describes various patterns and relationships using numerical data (Walsh, 2001). According to Neuman (2006), one of the most important strengths of quantitative research methodology is that it enables researchers to gather a large amount of specific information on a large number of respondents, allowing the researcher to statistically test the hypothesis of the study and to generalise the results (Wahyuni, 2012; Walsh, 2001). Hence, it was decided to conduct a survey to gather more information, allowing the results to be more generalised.

1.9.1 Sampling framework and strategy

This study conducted a survey with a total of 1500 participants from five export-apparel manufacturing firms. Data were collected from these firms that were registered under the Board of Investment of Sri Lanka (BoI), which is the primary government authority responsible for identifying, promoting and facilitating both foreign and local investments in the country; export-apparel manufacturing is the major industrial category under the BoI. Further, it is compulsory by law that all BoI-registered firms export at least 90% of the manufactured output (Board of Investment Sri Lanka, 2016). Thus, all export-apparel manufacturing firms that come under this study population are homogeneous in nature in terms of business operations; and the firm should have implemented a formal lean production system in the whole manufacturing function (not as a pilot project) and it should have been the standard of operation for at least 5 years with a functional HR department (Wickramasinghe & Wickramasinghe, 2011).

This criterion was set as past researchers (Pirraglia, Saloni, & Van Dyk, 2009) have suggested the importance of distinguishing between firms that have implemented lean
production and firms that are planning to do so. To fulfil the expectations of this study, it was decided to collect data from shop-floor employees, and participants were to be briefed about the aims of the study prior to the questionnaire distribution. Their responses remain anonymous.

1.9.2 Research design

The data were collected in two waves. The first was in July 2016 (Time 1) and the second was in October 2016 (Time 2). At each time point two sets of questionnaires were used: one for the leaders and another for the subordinates (Chen, Lam & Zhong, 2012).

**Time 1:** At the first stage, questionnaire 1 was given to team leaders and questionnaire 2 to team members. The questionnaires included basic demographic data (e.g. age, gender, educational level, work experience).

**Time 2:** At the second stage after a three-month interval, questionnaire 3 was distributed to team leaders and questionnaire 4 to team members. Figure 2 represents the data collection process and the leader–subordinate rating variables.

The researcher first met with the public relations officer at the human resource department in each firm who was appointed to distribute the questionnaire to the employees. The public relations officer briefed the participants on the purpose of the study and the procedures for conducting the survey. The participants received a cover letter explaining the purpose of the study, a questionnaire and an envelope for returning the questionnaire. A box was placed on the shop floor for the return of the questionnaires. To secure accessing the box after hours, a padlock was attached and the key was being held by the researcher. Nevertheless, the premises had 24/7 CCTV coverage. A reminder email was sent to the public relations officer at the beginning of the second week. Participants were given two weeks to complete the survey. At the end of the second week the researcher collected the box with the returned questionnaires. The same procedure was applied at
Time 2 (three months after the first distribution). This study used the above technique as it helps to reduce common method bias and measurement errors (MacKenzie & Podsakoff, 2012).

1.9.3 Research measurement instruments

This study utilised a structured questionnaire to collect data. All measures for this study were adopted from existing literature.

1.9.3.1 Survey language

Sinhala is the official language in Sri Lanka. Therefore, the survey used in this study is bilingual (English and Sinhala). The questions were initially drafted in English. However, to assist participants with limited English language capability, and to avoid misinterpretation, all questionnaires were translated into Sinhala. In order to ensure the accuracy of translation, all English-based measures/items were translated into Sinhala by two bilingual experts. As well as translation, back-translation procedures were followed to ensure the adequacy of the translation (Brislin, 1970).

1.9.3.2 Pilot study

A study by Adams, Kahn, Raeside, and White, 2007, p. 136, states that it is important that all surveys are tested before the actual data collection is conducted. This is done to ensure that the questionnaire is clear to respondents and can be completed in the way expected. It is best to observe respondents filling in the questionnaires to understand what questions are inappropriate or sensitive to them. Then they can be interviewed on their thoughts about the questionnaire, how it could be improved and if anything is missing. This process helps to minimise any associated problems in the questionnaire.

In this study, prior to the actual data collection, a pilot test was performed. This helped to ensure that the length of the questionnaire was practical and sensible, and instructions and the wording were clear. The test was conducted as follows:
1. The questionnaire for leaders (1 and 3), was tested by 10 team leaders in the manufacturing industry.

2. The questionnaire for subordinates (2 and 4), was tested by 10 team members in the manufacturing industry.

Based on their suggestions and comments, the questionnaires were modified by placing the team performance scale at the end of the questionnaire.

1.9.4 Analytical strategies

The study employed several approaches to assess the models. First, structural equation modelling (SEM) using the Mplus 8 package (Muthén & Muthén, 2017) was employed at single and multi-level (MSEM). The SEM approach allows simultaneous estimation of multiple indirect paths and provides model fit indices (James & Brett, 1984; James, Mulaik, & Brett, 2006).

Second, factor analysis was employed to determine the number of underlying dimensions contained in a set of observed variables and to identify the subset of variables that corresponds to each of the underlying dimensions. (Muthén & Muthén, 2017). A series of confirmatory factor analyses (CFAs) were conducted using Mplus 8. The results were evaluated in terms of the following indices suggested by Hair, Black, Babin, Anderson, and Tatham (2006): chi-square value ($\chi^2$) and the associated degree of freedom ($df$), chi-square to degrees of freedom ratio ($\chi^2/df$), comparative fit index (CFI), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), and root mean square error of approximation (RMSEA).

Third, the study conducted a series of aggregation checks to justify the appropriateness of aggregating individual responses to the team level by assessing interrater agreement by computing the interrater agreement for a group $r_{WG(J)}$ (James, Demaree, & Wolf, 1984).
suggesting high level of agreement among individual members regarding the conflict situations within a team.

Finally, where necessary, the study conducted one-way analysis of variance (ANOVA) and calculated the intraclass correlation coefficient (ICC(1)) and the reliability of the group mean (ICC(2)) to test between-group variance and within-group agreement (Bliese, 2000).

1.9.5 Scope and delimitations
A questionnaire-based survey were employed to capture the leader–subordinate dyadic perception. The sampling framework of the study is limited to five export-apparel manufacturing firms based in Sri Lanka targeting 1000 employees. Due to time and resource challenges, this study is delimited to search on 10 areas (team temporal leadership, work engagement, team performance, work tension, employee proactivity proficiency and adaptivity, role innovation, team conflict, career commitment, employee voice behaviour and organisational commitment).

1.10 Research outcomes and contributions
The study focused on the effect of the team temporal leader on work engagement and team effectiveness. First, this research aims to highlight direct dyadic team temporal leadership effects on subordinates and team performance. As previously stated, Mohammed and Nadkarni (2011) suggest that multiple facets of team functioning may be affected by temporal conditions in the task environment, finding that the influence of time urgency and pacing style diversity on team performance was more positive under conditions of stronger team temporal leadership than weaker team temporal leadership. Strong temporal leaders effectively leverage diversity of temporal individual differences and maximize team performance, whereas weak temporal leaders fail to address temporal problems and to exploit the benefits of
temporal diversity, omissions that result in lower levels of team performance (Mohammed & Nadkarni, 2011, p. 493).

The theoretical framework presented here is about the behaviour of teams, and of their interaction and performance. The study examined team temporal leadership, task-oriented patterning of interaction and performance in such groups.

Second, this study sought to understand the relationship of work engagement on the team performance in the team temporal leadership context. The study focused on the positive relationship between team temporal leadership with selected constructs. Thus, this makes an important contribution to theory on the effects of time pressure on performance relating to McGrath’s TIP theory (1991), which explains the nature of groups, their interaction and performance. It identifies the temporal issues in teamwork but it does not discuss how these problems arise or are solved (Mohammed & Nadkarni, 2011). When this degree of regularity occurs, employees may become unsatisfied and pressured in their work; and employee proactivity, proficiency and adaptivity become less, which could drive team conflict among team members, and the innovative behaviour of employees would be affected. This study expanded the path-goal theory by discussing the mediated and moderated roles of the selected constructs and explaining the relationship between leader–team member interaction and performance. According to the broaden-and-build theory (Fredickson, 2001) employees who engage in positive emotions are more likely to think ‘outside of the box’. When employees work under task-oriented leadership towards meeting deadlines, the positive work environment could become less interesting and monotony could arise; hence, this study helps to identify the influencing variables in the theoretical context.

Third, this study advances the knowledge of role theory by adding new insights; the theory describes the nature of the work roles, describing the broader set of responsibilities.
A number of hypotheses is proposed to test the positive relationship of employee proactivity proficiency and adaptivity with team temporal leadership, which enables an extension of the knowledge of role theory on how employee proactivity proficiency and adaptivity vary working in temporal diversity under a task-oriented, time-pressured working environment.

1.11 Organisation of the thesis

This thesis is structured in five chapters as outlined below.

1.11.1 Chapter 1: Introduction

This chapter outlines the background of the research, identifies the research problem and lists the research objectives arising from the gap in the existing theory and literature. It also presents the methodology and analysis strategy. Finally, it outlines the structure of the thesis.

1.11.2 Chapter 2: Review of literature

Chapter 2 offers an extensive review of the literature that is important and related to the study. This chapter describes the main concepts in the literature and identifies the gap in the existing literature related to team temporal leadership, work engagement, team performance, temporal tension, employee proactivity proficiency and adaptivity, role innovation, team conflict, career commitment, employee voice behaviour and organisational commitment. Hypotheses related to the constructs are posited and the theoretical framework is developed.

1.11.3 Chapter 3: Methodology

Chapter 3 describes the methodology used to gather data for analysis, including research methods, sampling design, research instruments and justification of the research paradigm and quantitative methodology. Further, this chapter explains the data-analytic plan, which involves SEM, CFA using Mplus.
1.11.4 Chapter 4: Analysis, results and discussion

This chapter presents the findings and results of the study based on the data collected through quantitative questionnaires. This chapter also presents the tested the hypotheses developed in Chapter 2.

1.11.5 Chapter 5: Contributions to theory and practice, limitations, directions for future research and conclusion

Chapter 5 summarises the major findings of the study and highlights the contribution of this research to both theory and practice, as well as implications, recommendations and suggestions for future research.

1.12 Conclusion

This chapter reviewed 121 articles systematically, and introduced the terms team temporal leadership, work engagement, team performance, temporal tension, employee proactivity proficiency and adaptivity, role innovation, team conflict, career commitment, employee voice behaviour and organisational commitment. It described the interrelationship between variables that could result in better leader–subordinate working relationships and found that several issues related to this topic remain vague. It outlined a theoretical framework based on the systematic literature review to the research problem and defined the research objectives. A summary of the methodology and analysis process were also explained. Finally, the organisation of the thesis was presented. The following chapter provides a review of the literature for this research.
Chapter 2: Review of literature

2.1 Chapter overview

Chapter 2 reviews the literature related to 10 main constructs – team temporal leadership, team performance, work engagement, employee voice behaviour, work tension, role innovation, team conflict, career commitment, employee proactivity, and proficiency, adaptivity and organisational commitment. The purpose of this chapter is to present the theoretical overview of the research on constructs influencing team performance under team temporal leadership behaviour at individual, team and organisational levels. This chapter focuses on the relationship between the constructs of interest to this research, inclusive of hypotheses. Hypotheses are developed based around the respective constructs identified. As this is an empirical research, the discussions are more related to the overall relationship with the constructs rather than the general concepts.

2.2 Review of the literature on the relationships between constructs

This section is presented in four studies, the first offering insight to the relationship between team temporal leadership, team performance, work tension and employee voice behaviour. The second focuses on work engagement, role innovation, team conflict and career commitment. The third study gives attentions to team temporal leadership, team conflict and team performance and the final study focuses on the relationship between team temporal leadership, organisational commitment, work engagement and employee proactivity, and proficiency and adaptivity.

2.2.1 Team temporal leadership, team performance, work tension and employee voice behaviour

Given the increasing challenges associated with hypercompetitive working environments that involve time pressure and resources, the success of team performance largely relies upon the leader–subordinate relationship (Breevaart, Bakker, Demerouti & Derks, 2015;
Day, Gronn, & Salas, 2006; Detert & Burris, 2007), and consequently, this leader subordinate coordination has become an influencing tactic to determine team performance (Fisher et al., 2017; Solberg & Wong, 2016; Xu, Loi & Lam, 2015). Supervising teams towards accomplishing urgent tasks under pressure has introduced the need for a ‘temporal leadership’ style, which combines temporal activities and team leadership (Santos et al., 2016). Team temporal leadership, defined as “the leader behaviours that aid in structuring, coordinating, and managing the pacing of task accomplishment in a team” (Mohammed & Nadkarni, 2011, p. 492), has been found to be an important, newly emerged leadership style for achieving better performances at the team level (Maruping et al., 2015; Mohammed & Nadkarni, 2011; Yuan & Lo, 2018). In line with the practical importance of an organisation’s extensive attention to teams when structuring and assigning work projects to ensure complex tasks are completed on time, it is essential for researchers to investigate team temporal leadership behaviour and the factors that influence subordinates’ willingness to engage for better performance.

As this study elaborates below, it is theoretically plausible that team temporal leadership could be an important predictor of team performance. Many of the teams formed in an organisational context today do specific or repetitive tasks, pursuing production goals during a project cycle. However, to satisfy the increasing organisational demands, teams face temporal challenges and diversities, such as meeting short deadlines and utilising resources, as well as coordination among team members, to complete tasks in line with client expectations. According to McGrath’s (1991) TIP theory, temporal patterns and interaction processes in working environments could cause uncertainty and conflict in individual speed and work agendas among employees towards task accomplishment (Antonakis, Day, & Schyns, 2012). Temporal leadership behaviours include directing teams to meet the high expectations of clients by scheduling, synchronising and allocating temporal resources to ensure teams perform required tasks on time (Mohammed &
Although Alipour et al. (2017) state that leaders can also be affected by temporal resources while trying to redress the issues surrounding increasing time pressure and urgency to accomplish their tasks, the factors that could hinder team temporal leadership behaviours still remain unexplored.

This study is designed to extend previous research (Detert & Burris, 2007; Santos et al., 2016) in two ways. Extant literature on leadership has consistently shown that work tension and leadership are related in many ways, and that tension has been considered as an important factor of leadership functioning (Harms, Crede, Tynan, Leon & Jeung, 2017). A recent meta-analysis of leadership and stress (Harms et al., 2017) found that leader stress influences leader behaviour, and they further argue subordinate stress is a consequence of the leader–subordinate relationship. In order to avoid leader tension over temporal issues arising through temporal activities such as allocating temporal resources, setting up milestones towards deadlines and so on, it has become highly important to manage leaders’ work tension under the time-related diversity (Mohammed & Alipour, 2014). While team leadership has been identified as an important leadership behaviour under time urgency, surprisingly, no prior work has empirically investigated its effect on work tension. Thus, this study first addresses the issues surrounding coordination processes, emphasising work tensions of leaders that could arise as a result of team temporal leadership behaviours.

To the extent that team temporal leadership might predict team performance, no research has investigated the effects of this leadership behaviour on employees’ willingness to work. Furthermore, empirical studies on employee voice have also presented positive effects on ‘voice on leadership’ at team level (Detert & Burris, 2007; Saunders, Sheppard, Knight & Roth, 1992). From a practical perspective, this study investigated team members’ voice behaviour to investigate how this efficient management behaviour
impacts on subordinates. If leaders can use a good way to help all subordinates meet
deadlines, the challenging behaviours (voice) may reduce. Conversely, subordinates may
not like their leaders reminding them of important deadlines; they may argue about the
deadlines or the ways of doing things. Hence, dissatisfaction and disagreement among
team members may induce subordinates to speak up (Milliken, Morrison, & Hewlin,
2003; Skarlicki & Folger, 1997). Existing research on team temporal leadership has yet
to address the behaviours of subordinates under this leadership style, as well as the
fluctuating relationship between leader and subordinate, during task accomplishment.
Figure 2.1 presents the theoretical model for this study.

2.2.1.1 Team temporal leadership and team performance
In the last few decades, teamwork and time management have been studied widely as
important aspects that result in better team performances (Chiniara & Bentein, 2016;
Mohammed & Nadkarni, 2011; Van der Erve, 2004; Yuan & Lo, 2018). Similarly, the
concept of leadership has become more inclusive with time-related activities of an
organization (Gersick, 1988; Kirkman et al., 2004; Maruping et al., 2015). Having
identified the team temporal leadership style under the temporal needs of an organisation,
the construct of team temporal leadership is theoretically distinct from team leadership
(Maruping et al., 2015; Mohammed & Nadkarni, 2011). Although both of these
leadership styles are influenced by social and organisational context, the literature
highlights the need to combine temporal activities with team leadership, and the
underlying characteristics (i.e. pacing style), for team temporal leadership to emerge
(Santos et al., 2016). Based on time-related and/or the temporal needs of the organisation,
team temporal leadership highlights the need for fulfilling the team’s necessities in order
to increase team effectiveness (Zaccaro et al., 2001). The enactment of strong team
temporal leadership behaviour often includes the allocation of temporal resources,
scheduling activities to meet the deadlines, synchronisation of activities and pacing of
task activities (Gevers, et al., 2006; Mohammed & Nadkarni, 2011). In addition, by setting up clear schedules and allocating temporal resources, the likelihood of helping the team to meet deadlines and accomplish tasks successfully are increased (Mohammed & Nadkarni, 2011). Further, by identifying clear schedules and allocating temporal resources, team members can better pace tasks, thus assisting staff to realise how much time they should allocate to each task in order to meet deadlines. Given the importance to team temporal leadership style, this study proposes that there is a positive relationship between team temporal leadership and team performance. Thus:

_Hypothesis 1: Team temporal leadership is positively related to team performance._

2.2.1.2 The mediating role of work tension in the relationship between team temporal leadership and team performance

McGrath’s (1991) TIP theory identifies three temporal problems – temporal ambiguity, conflict of temporal interests and scarcity of temporal resources. Temporal activities during a project cycle has driven the attention of scholars to investigate team temporal leadership behaviour, which addresses leader behaviours under time pressure and urgency (Ancona, Goodman, Lawrence & Tushman, 2011). Mohammed and Nadkarni (2011), advocate that the characteristics of team temporal leadership behaviour include scheduling of activities, coordinating and allocating the temporal resources required towards on-time task accomplishment. While Mohammed and Nadkarni (2011), assert team temporal leadership is a task-oriented leadership style, Myer (2010) and Myer and Mohammed (2012), expanded the literature by incorporating team temporal leadership on both task as well as relationship-oriented leadership style. They further describe task dimension temporal leadership behaviours, including reminding the team member of milestones/deadlines, synchronising the team and allocating temporal resources. Similarly, the relationship dimension describes leader behaviour as aiding staff to solve time-related issues, such as handling conflict situations and drawing suggestions from
team members prior to making decisions on time allocations for each milestone. Empirical studies also show that team temporal leadership has a positive relationship with team performance (Maruping, et al., 2015; Mohammed & Nadkarni, 2011; Yuan & Lo, 2018). Therefore, temporal leaders face temporal challenges while directing subordinates towards effective team performance. Leaders with strong team temporal behaviours are able to identify temporal errors between leaders and subordinates quickly, and deliver more effective solutions, and also be competent in allocating temporal resources on time to meet unexpected events during a project cycle (Mohammed & Alipour, 2014; Mohammed & Nadkarni, 2011).

Much of the literature also identifies that the impact of temporal aspects on teams has not been fully examined (Mohammed & Alipour, 2014; Shamir, 2011; Van der Erve, 2004). To fill that gap in the literature, Mohammed and Alipour (2014) highlight both direct and indirect team temporal leadership effects on individual, dyadic and team performance levels, arguing that temporality should be integrated with the leadership construct itself. The investigation of tension in leaders is also a burgeoning research area (Gibson et al., 1993; Harms et al., 2017; Hunter, Tate, Dzieweczynski, Bedell-Avers, 2011), incorporating a rich literature, where Grandey and Cropanzano (1999) express tension as “a reaction to an environment which there is a threat of a loss, an actual loss, or lack of an expected gain, in resources that includes objects, condition etc” (p. 352). Hunter et al., (2011) argue that temporal leaders have a limited time frame to recognise and anticipate the issues, analyse the data, and to make plans and decisions, and that while trying to manage the issues that may arise under the task-oriented work environment, anxiety and depression may cause work tension among leaders. Consequently, team project cycles need to deal with temporal issues that may arise due to the tension of the leader. Work tension is related to temporal activities caused by task accomplishment of the team, which potentially impacts on the physical and psychological health of temporal leaders (Cohen,
Thus, work tension experienced in a temporal leader could be an obstacle that may hinder team performance, as well as leader–subordinate relationships. However, the reverse causality may also exist, and the relationship between work tension and team temporal leadership may be positive. Leaders may push themselves to adopt an efficient way to finish their jobs (i.e. perform team temporal leadership behaviours) when they perceive high work tension. When leaders have abundant time to finish their team tasks, they are less likely to experience work tension, and they do not then have a high need to frequently adopt team temporal leadership behaviours. While this literature (Gibson et al., 1993; Harms et al., 2017; Hunter et al., 2011) can contribute towards the current understanding of when and why tension occurs in a time-pressured working environment, taking a temporal lens to examine the antecedent of interpersonal tension level can further team temporal leadership research. Thus:

**Hypothesis 2:** Work tension is negatively related to team temporal leadership.

**Hypothesis 3:** Work tension is negatively related to team performance.

**Hypothesis 4:** Work tension mediates the relationship between team temporal leadership and team performance.

2.2.1.3 The mediating role of employee voice behaviour with team temporal leadership and team performance

Employee voice has also been identified as a challenging behaviour that could affect the leader–subordinate dyadic relationship (LePine & Van Dyne, 1998). Employee voice can be viewed as an opportunity for improvement or as a dissatisfaction with current personal or organisational situations (Hirschman, 1974). Adams’ (1965) equity theory also provides support, “when employees perceive an imbalance between what they give and what they receive, they often attempt to restore equity by engaging in counterproductive work behaviours, being absent or underperforming” (McClean et al., 2013, p. 529). Conversely, employee voice can also bring innovative ideas and recommendations for
improvements in an organisation (Van Dyne & LePine, 1998). Scholars have identified that high levels of employee voice can improve organisational routines; as well as learning, better error detections, improved innovation, and change effectiveness as a positive outcome of supporting employee voice (Argyris & Schon, 1978; Edmondson, 2003; McClean et al. 2013; Morrison & Milliken, 2000; Nemeth, 1997). Employee voice is reported as highly important under dynamic working environments, where new ideas are required for continuous improvement; and effective employee voice from proactive employees can establish good employee-leader relationships and enhance team performance (Nemeth & Staw, 1989). However, McClean et al., (2013) note that employee voice is a challenging behaviour that could upset interpersonal relationships, “not all managers are able and motivated to take action on the suggestions made by their employees” (p. 526). For example, when a team member identifies a potentially innovative suggestion to change the current operating system to improve the working environment, other team members, or the team leader, could be negatively impacted (LePine & Van Dyne, 1998). This could lead to subordinates losing faith in their leaders, or even engaging in aberrant behaviours (Milliken et al., 2003; Skarlicki & Folger, 1997). Under these situations, leaders may take the required steps either to remove or transfer the employee to a different unit (Giacalone & Greenberg, 1997; Parilla, Hollinger, & Clark, 1988).

As noted by Saunders et al., (1992), situations exist where employee voice is used to explain the two options an employee uses when responding to a dissatisfactioning relationship with the organisation. Some employees voice dissatisfaction when trying to change work situations, while others withdraw or leave problematic situations. Similarly, Shapiro (1993) supports Hirschman’s (1974) concepts of voice and exit, investigating how employee turnover becomes low when an employee feels their current situation has been improved as a result of their voice having been considered. In the same vein, McClean et
al. (2013) suggest that reduced turnover and better performance result from improvements from voice, and/or from satisfied employees, who feel that managers considered their suggestions seriously; but substantive changes do not always occur. Further, McClean et al. found that three managerial characteristics – willingness to engage in team change orientation, participation in decision-making and manager access to organisational resources – moderate the relationship between employee voice and exit. As described earlier, team temporal leadership characteristics include reminding of milestones and allocating temporal resources, which could create temporal issues among team members. Further, temporal leaders can become inclusive when it comes to the time-related needs of the organisation to ensure employees perform their tasks on-time (Mohammed & Nadkarni, 2011). Under time pressure, team members may experience the requirement of synchronising their actions and manage the given time efficiently. However, within these circumstances, team members may experience high levels of temporal conflict, causing them to speak out, although the conflicts between leaders and subordinates may be constructive or destructive. Voice can seek change or vent emotion, it can be positive or negative (Saunders et al., 1992; Shapiro, 1993). In keeping with these studies, this study builds the following hypotheses based upon several implicit assumptions: (i) employees do not like their leaders reminding them of important deadlines (ii) employees would like to argue about the deadlines or the ways of doing things (iii) employees’ arguments are constructive challenging behaviours. Taken together, this study predicts that subordinates’ perception of team temporal leaders as eliciting inappropriate behaviour among team members drives them to raise their voice. Thus:

*Hypothesis 5: Employee voice has a positive relationship with team temporal leadership.*

*Hypothesis 6: Employee voice has a positive relationship with team performance.*

*Hypothesis 7: Employee voice mediates the relationship between team temporal leadership and team performance.*
2.2.2 Work engagement, role innovation, team conflict and career commitment

The last three decades have witnessed considerable research effort invested in employee work engagement, given its increasing importance in the workplace (Rich, Lepine, & Crawford, 2010; Schaufeli et al., 2002; Vogelgesang, Leory, & Avolio, 2013). Work engagement is defined by Kahn (1990, p. 700) as the full role performance in which a person’s “preferred self” is expressed in task behaviours. This engagement includes a person’s physical, cognitive and emotional presence. Such work engagement influences role performance and fosters positive work-related outcomes (Cambra-Fierro, Melero-Polo, & Vazquez-Carrasco, 2013; Kahn, 1990; Rich et al., 2010; Vogelgesang et al., 2013). Current literature on career commitment identifies work engagement as an influencing factor in career commitment. It has received considerable attention from scholars interested in investigating the beneficial impact of work engagement on job performance (Bono & Judge, 2003; Geldenhuys, Laba, & Venter, 2014; Kaliannan & Adjovu, 2015).

Consistent with past literature, a meta-analysis by Christian, Garza, and Slaughter (2011) found that job characteristics such as autonomy, problem-solving and job complexity increase work engagement, whereas physical demands, conflict and work conditions reduce work engagement. Studies show that the factors that foster work engagement include leader integrity and transparency in communication (Vogelgesang et al., 2013), linking motivational antecedents, performance and strategic implementation (Barrick, Thurgood, Smith, & Courtright, 2015), antecedents and effects on performance (Rich et al., 2010), human resource management practices including training and development, high job security, job rotation and extensive benefits packages (Alfres, Truss, Soane, Rees, & Gatenby, 2013). Past research on conflict has revealed two primary types of team conflict – task conflict and relationship conflict. Task conflict encompasses incompatible
views and ideas, and disagreements about the content and/or outcomes of the task being performed. Relationship conflict refers to interpersonal disagreements, personality differences, and different values or norms that manifest in tension, annoyance and animosity among team members (Jehn, 1992, 1995). Despite this voluminous literature, there have been relatively few studies on the mediating effects of role innovation on individual work engagement, career management and the motivating and demotivating factors affecting the level of engagement, hence does not provide an answer to the perpetual questions of why some employees are more engaged than others, and what prompts them to be more or less engaged at some moments than others (Keating & Heslin, 2015). Figure 2.2 presents the theoretical model for this study.

2.2.2.1 Work engagement and role innovation

Definitions of role innovation vary somewhat across researchers (Bandura, 1977; Brim, 1960; Turner, 1978). Brim (1960) defines role innovation as an individual’s identity expressed through behaviour. He distinguishes two types of role innovation – role assimilation, which involves adapting to a behaviour that is seen as appropriate in the given environment, and role extension, which involves extending behaviour acquired from one situation to another. Bandura (1977) states that innovation patterns can emerge via the modelling process, noting that when exposed to diverse patterns, individuals may combine aspects of various models into a new combination. Each individual adopts different combinations of different characteristics. Role innovation involves forming the task and/or relational boundaries and shaping the job either physically or cognitively (Jain & Juneja, 2010). A high-quality leader–subordinate dyadic relationship also plays an important part in the emergence of role innovation, as it provides subordinates with the autonomy and discretionary power necessary to perform the tasks (Graen & Scandura, 1987). Employees who are personally engaged immerse themselves in a role, rather than shifting from one role to another (Kahn, 1990). The engagement level of employees is
important for an organisation, not just because of the knowledge, resources or influence they bring in, but also because engagement is a key factor that promotes an individual to be innovative (Euchner, 2012). Further, role innovation suggests changes in the current practices used to accomplish a task (LePine & Van Dyne, 1998). In addition, some employees change the nature of their role behaviours by becoming proactive and employing personal initiative (Crant, 2000), engage in role making (Graen, 1976), and revising the current task processes (Staw & Boettger, 1990). Role innovation enables employees to align job tasks with personal knowledge, skills and abilities, which strengthens self-efficacy and satisfaction (Aime et al., 2011). As stated by Nicholson and West (1988b, p. 106), role innovation involves personalising a role to suit each individual, “ranging from minor initiatives such as variations in work schedules to more dramatic role innovations such as changes in the main goals of the organizational work”. This study focused on role innovation and its connection to work engagement. Thus:

Hypothesis 8: Work engagement is positively related to role innovation.

2.2.2.2 Work engagement and career commitment

According to the broaden-and-build theory, nourishing positive emotions at work is much more salient than having to cope with the outcomes of negative emotions. When there are fewer positive emotions, employees lose degrees of behavioural freedom and become more predictable and, similarly, when there is a plenteous supply of positive emotions, they become generative, creative and resilient (Tugade & Fredrickson, 2004). Committed employees who have recognised organisational values and goals are characterised as loyal, productive members of the organisation. An extensive range of previous studies have linked career commitment to team performance, work quantity and quality, and turnover intention (Chang, 1999; London, 1983; Rabinowitz & Hall, 1977; Randall, 1990). According to broaden-and-build theory, maintaining an optimistic state of mind
influences employees to become committed. It also requires additional effort, time and energy because employees have to think, plan, be creative and then articulate in an appropriate manner to become innovative. Innovative employees are highly motivated to accomplish their tasks and take care of the available resources. Role innovation can thus be described using the term ‘creative modelling’ (Bandura, 1971). This study suggests that role innovation is a proactive response by engaged employees to conserve existing resources and become creative. Career commitment is defined as “the strength of one’s motivation to work in a chosen career role” (Hall, 1971, p. 59). Hence, perceived achievements that employees accumulate based on their work experiences increase the strength of their career commitment (Hall, 1976). Role innovation should also have positive implications for career commitment as a result of changes to employees’ work relationships (quality or quantity), which bring psychosocial benefits (recognition, friendship, acceptance, role modelling) that can enhance an employee’s subjective perception of the career (Aime et al., 2011). Following this line of argument, the study proposes role innovation as a proactive factor that would influence the level of career commitment. Thus:

Hypothesis 9: Work engagement is positively related to career commitment.

Hypothesis 10: Role innovation is positively related to career commitment.

Hypothesis 11: Role innovation mediates the positive relationship between work engagement and career commitment.

2.2.2.3 The moderating role of team conflict

Conflict has been defined as the occurrence between or among parties where their goals or interests are contradictory or in opposition (Jehn, 1995; Korsgaard, Jeong, Mahony, & Pitariu, 2008). Further, “it is the process emerging from perceived incompatibilities or differences among group members” (DeWit, Greer, & Jehn, 2012, p. 360). A study by
Pelled (1996) provides two theoretical models explaining why conflict emerges. The first is a structural model of conflict that highlights the contextual factors that cause and shape the conflict. The second is a process model of conflict that outlines the dynamic processes that connect structural sources to manifest a conflict situation (Korsgaard et al., 2008). These two models of conflict together establish a route whereby circumstantial factors lead to incongruity of goals and interests, which, in turn, lead to pessimistic social interactions among team members and eventually result in team conflict (Korsgaard et al., 2008). Previous studies on conflict have identified the different influences of task and relationship conflict that hinder team effectiveness (Blake & Mouton, 1984; Santos et al., 2016). Similarly, the results of a meta-analysis (DeWit et al., 2012) reveal a negative relationship between conflict and more proximal team outcomes. These include team members’ intellectual, motivational and affective states that change dynamically and permanently, effecting the trust, interrelation, unity and work engagement” (Costa, Passos, & Bakker, 2015, p. 213; DeWit et al., 2012).

While work engagement expresses the level of innovative behaviour of an employee, conflict situations in teams can occur at any time during the interaction between leaders and subordinates (Tepper & Henle, 2011), and hence can become a contextual factor that determines the overall leader–subordinate relationship. Work engagement and team conflict can thus co-occur and become different perspectives that can influence role innovation. Thus:

**Hypothesis 12a:** Task conflict moderates the relationship between work engagement and career commitment.

**Hypothesis 12b:** Task conflict moderates the relationship between work engagement and role innovation.
Hypothesis 12: Task conflict moderates the relationship between role innovation and career commitment.

Hypothesis 13a: Relationship conflict moderates the relationship between work engagement and career commitment.

Hypothesis 13b: Relationship conflict moderates the relationship between work engagement and role innovation.

Hypothesis 13c: Relationship conflict moderates the relationship between role innovation and career commitment.

Thus far, this thesis has explained how work engagement leads to subordinates’ career commitment via role innovation, and based on these relationships, the study further proposed a model on the moderating role of team conflict on the work engagement. In the context of a low-level conflict situation, subordinates’ experiences are more likely to be transformed into their innovative behaviour due to increased levels of task and relationship conflicts. However, the association between work engagement and career commitment via role innovation is more apparent in a typically unsupportive relationship (indicated by high task and low relationship conflicts). Thus:

Hypothesis 14a: The indirect relationship between work engagement and career commitment via role innovation is moderated by task conflict, such that when conflict is higher, the indirect effects are stronger.

Hypothesis 14b: The indirect relationship between work engagement and career commitment via role innovation is moderated by relationship conflict, such that when conflict is lower, the indirect effects are stronger.

2.2.3 Team temporal leadership, team conflict and team performance

Over the last three decades, organisations have attempted to identify the challenges that teams face in order to increase their performance. These challenging behaviours can
 include tight deadlines, working at multiple projects at the same time, disagreements over the issues and lower levels of collaboration, which could create tension among team members accumulating into team conflict (Gevers et al., 2006; Mooney, Holahan & Amason, 2007; Puck & Pregernig, 2014; Waller, Conte, Gibson, & Carpenter, 2001). Hence, conflict can distract team members from accomplishing their tasks, which reduces team performances (De Dreu & Weingart, 2003). Team conflict is “the process emerging from perceived incompatibles or differences among group members” (DeWit et al., 2012, p. 360), and has been divided into two broad types – task conflict and relationship conflict (Jehn, 1992). A large body of research has investigated the relationship between team conflict and performance, evidencing that both task and relationship conflict play an interesting role towards team performance. Nijdam (1998) reports a strong positive relationship between task conflict and team performance, whereas Jehn, Northcraft and Neale (1999) found a negative relationship. Further, De Dreu & Weingart (2003) examined a negative relationship between both task and relationship conflict and group performance, while DeWit et al. (2012) found neither a negative or positive relationship between task conflict and group performance. However, a study by Simons and Peterson (2000), identifies task conflict can enrich team performances as it reflects on better decision-making in teams since it encourages greater intellectual understanding of the issues. On the other hand, relationship conflict tends to restrict understanding of the issues, since it focuses on personal or emotional issues rather considering a team’s matters together (Jehn, 1995; Mooney et al., 2007, Simons & Peterson, 2000). Thus, the literature presents mixed results about task and relationship conflict over team performance.

Team leaders play a powerful role in implementing an effective team decision successfully into practice. The literature suggests that team leaders are in the best position to hinder team conflict and, consequently, enhance the effectiveness of group-thinking (Amason, Thompson, Hochwarter & Harrison, 1995; Kotlyar, Karakowsky & Ng, 2011).
The study focuses on task conflict and relationship conflict in a time-effective project environment. Hence, this study investigated team temporal leadership style, and how team temporal leaders manage conflict situations. This study explored how team leader behaviours can ultimately impact team conflict and team performance by examining the impact of team temporal leadership. Team temporal leadership has been defined as “leader behaviours that aid structuring, coordinating and managing the pacing of task accomplishment in a team” (Mohammed & Nadkarni, 2011, p. 492). Perspectives of team temporal leadership style assemble the functional leadership approach, whereas team temporal leaders are responsible for scheduling (i.e. reminding of deadlines, setting milestones), synchronising (i.e. coordinating the team accordingly) and allocating temporal resources (i.e. organising time for unexpected contingencies and problems) in a team (Mohammed & Nadkarni, 2011; Zaccaro et al., 2001). As the literature proves, when team leaders employ strong team temporal leadership behaviours mentioned above, it reduces the problems related to time urgency in teams and transforms pacing the task activities into a productive team experience, avoiding any interruptions towards team performance (Mohammed & Nadkarni, 2011; Santos et al., 2016).

According to path-goal theory, leader behaviours can influence subordinates’ motivation, increase their perception towards goal attainment and clarify the paths to these goals (House & Mitchell, 1974). This theory is a dyadic theory of supervision and “concerns relationship between formally appointed superiors and subordinates in their day-to-day functioning” (House, 1996, p. 325). It addresses the effects of supervisors on subordinates, and how supervisors affect the performance excellence of subordinates. Team temporal leadership behaviour is directed towards the encouragement of subordinates’ current performance by setting goals, allocating temporal resources and reminding of deadlines and so on. Thus, team performance is expected to increase when such leadership is strong (Mohammed & Nadkarni, 2011). Based on the conflict
literature, and drawing from path-goal theory, this study argues that team temporal leadership behaviours are likely to minimise both task and relationship conflicts, thereby increasing the likelihood that subordinates are engaged in tasks to perform well. However, while this proposition is naturally compelling, this study further has good reason to suggest that subordinates’ conflict situations may also provoke strong temporal leadership behaviours that may facilitate excellence team performance. Figure 2.3 presents the theoretical model for this study.

2.2.3.1 Team conflict and team performance

In general, conflict has been conceived to interfere with team performance, create tension and reduce satisfaction, and hence distract team members from performing a task effectively (De Dreu & Weingart, 2003). Based on this general assumption, a number of studies have been carried out by past researchers investigating leaders and subordinates’ work outcomes and psychological state involving team conflict situations occurring at the workplace. Task conflict, “the acuity of disagreements among team members about the content of their decision”, and relationship conflict, “the perception of interpersonal incompatibility and animosities” (Peterson & Behfar, 2003, p. 102) have been tied to different targets focusing on individual level (Baron, 1990; Putnam, Myers, & Gailliard, 2014) as well as team level (Kotlyar et al., 2011; Mooney et al., 2007). The relationship between task conflict and relationship conflict with team performance, varies from positive to negative (DeWit et al., 2012; De Dreu & Weingart, 2003; Jehn et al., 1999; Nijdam, 1998). This study examined the task conflict and relationship conflict that challenges team performance in project management. In line with previous research, task conflict has been identified as a leading characteristic associated with effective decision-making, which then increases satisfaction with team decisions, boosts innovativeness and, overall, leads to positive outcomes (Bai, Han & Harms, 2016, Korsgaard et al., 2008). Even though it is possible that task conflict can impact team performance negatively (De
Dreu & Weingart, 2003; Jehn et al., 1999), there are number of studies outlining otherwise; that is, task conflict increases creativity as well as rigorous decision-making, increases team performance (Bradley, Postlethwaite, Klotz, Hamdani & Brown, 2012) fosters learning and the development of new insights that drive the team to perform effectively (Bradley et al., 2012; De Dreu & West, 2001; Jehn, 1995). The present study examined task conflict situations at time-related project cycles that require an excellent team performance by the deadline. Thus, task conflict under this working environment should promote team performance. Thus:

**Hypothesis 15: Task conflict has a positive relationship with team performance.**

Although task conflict promotes team performance, the relationship conflict literature suggests that relationship conflict can reduce the quality of team decision-making since it involves disagreements and emotional issues (Jehn, 1995; Simon & Peterson, 2000). In such circumstances, it negatively influences job performance and job satisfaction (Wall & Nolan, 1986). Therefore, once relationship conflict occurs, team interaction throughout the project cycle could simultaneously affect the quality of team-generated decisions, and the commitment of the team towards project accomplishment. Nevertheless, relationship conflict limits task-relevant information processing ability, since team members spend more time and strength examining each other rather than focusing on the team’s task-related problems (De Dreu & Weingart, 2003). In line with the past literature, this study predicts:

**Hypothesis 16: Relationship conflict has a negative relationship with team performance.**

### 2.2.3.2 Team temporal leadership and team performance

In addition to positive /negative relationships with task and relationship conflicts, team performance may also relate directly to team temporal leadership. Previous studies investigating the relationship between team leadership and team performance have
established a positive relationship with team performance (Myrtveit, 2016; Nurmi, 1996; Salas, Cooke & Rosen, 2008). Since team temporal leadership behaviours act as an influencing mechanism to ensure the work is done on time by providing the necessary resources towards task completion (Mohammed & Nadkarni, 2011), this study argues that this relationship is likely to parallel what we already know about team leadership effects on team performance. These reasons and empirical findings suggest that it is possible to have a positive relationship between team temporal leadership and team performance. Accordingly, the study predicts:

*Hypothesis 17: Team temporal leadership has a positive relationship with team performance.*

### 2.2.3.3 The moderating role of team temporal leadership

Although leader behaviours may facilitate team conflict, there are a few other aspects to suggest that leadership style itself may not always be sufficient to minimise conflict. Once aroused, team conflict creates tensions and dissatisfaction among team members, affecting team performance. Such situations require leaders to spend considerable time and effort on minimising conflicts among team members. The literature referencing conflict and leadership is inconsistent (Braun & Nieberle, 2017; Gao, Janssen & Shi, 2011; Kotlyar et al., 2011). Team temporal leadership was originally introduced as a task-oriented leadership style (Mohammed & Nadkarni, 2011). It describes team temporal leadership behaviours such as allocating temporal resources and reminding of milestones so that the task is accomplished in time. Task-oriented team temporal leadership behaviours include reminding team members of deadlines, synchronising the team and allocating temporal resources (Mohammed & Nadkarni, 2011). In addition to team temporal leaders’ task-oriented behaviour, they can also impact subordinates through the emotional aspect. Recent studies have outlined team temporal leadership is not only task-
oriented but also relationship-oriented (Myer & Mohammed, 2012; Santos et al., 2015). Relationship-oriented leader behaviours include helping team members solve time-related issues, minimising conflict situations, and welcoming ideas from all team members prior to making a final decision (Myer, 2010; Myer & Mohammed, 2012). Hence team temporal leadership is somewhat different from any other leadership style because, as the literature suggests, this leadership style is both task and relationship-oriented. Further, a team temporal leader can achieve superior team performance from team members when team temporal leadership is stronger (Mohammed & Nadkarni, 2011). Under a team temporal leader, team members’ self-concepts are linked to the leader, the team and task performances (Myer, 2010). Consistent with Santos et al., (2016), while team temporal leaders focus on task-oriented behaviours, they also emphasise the emotional basis of the leader–subordinate relationship, which suggests team temporal leadership is an ideal leadership style to minimise both task and relationship conflict under time-related project management. Nevertheless, the study by Zhang and Bartol (2010) suggests that scarce resources create conflict among team members.

Although task conflict may facilitate team performance (Nijdam, 1998; Simons & Peterson, 2000), there are several theoretical and empirical reasons to suggest that these by themselves may not always be sufficient to promote team performance. First, considering the literature on task conflict research (De Wit et al., 2012), the relationship between task conflict and team performance has been found to be neither negative nor positive. Task conflict has been identified as a distraction that may obstruct team creativity and team effectiveness, as well as decision-making (De Wit et al., 2012). However, under team temporal leadership, task conflict may possibly benefit in several ways. Team members will find temporal resources have already been allocated by their leaders; hence, they may observe team temporal leaders acting in the best interest of team
members. Additionally, team temporal leader characteristics, including pacing the task and reminding of milestones, may well reduce task conflict experiences. As such, it can be suggested that the more temporal team leaders are seen to be, the more team members are likely to be focused and motivated on accomplishing their tasks on time. Thus, high levels of team temporal leadership behaviours may persuade team members to obey and follow their leader without hesitation, hence increasing team performance.

Hypothesis 18: Team temporal leadership moderates the relationship between task conflict and team performance.

Team temporal leadership is related to both task and relationship-oriented leader behaviours (Chen & Lu, 2017; Mohammed & Nadkarni, 2011; Santos et al., 2016). Relationship conflicts have generally been found to have a negative impact on team outcomes, including on team member commitment and turnover intentions (Bayazit & Mannix, 2003; Conlon & Jehn, 2007; Jehn, 1995; Polzer, Milton & Swann, 2002). Despite these negative findings, the research also suggests that the negative outcomes of relationship conflict can be reduced under certain conditions (De Wit, Jehn, & Scheepers, 2011; Rispens, Greer, Jehn & Thatcher, in press). This study proposes that team temporal leadership behaviours can minimise the occurrence of relationship conflict. The clarification for this argument is that there are similarities between team temporal leadership behaviour, especially under relationship-oriented behaviours, and temporal conflict management behaviours, including working with team members to identify the most appropriate working pace, assisting them to allocate time for task performance and managing individual differences, thereby minimising individual conflict responses to temporal issues (Myer, 2010). Nevertheless, leadership behaviours in relationship-oriented team temporal leaders are drawn from the managing conflict literature (Yukl, 1999). This includes team temporal leaders’ ability to recognise individual differences,
and utilise them in a beneficial way to minimise individual differences and promote team performance (Myer, 2010), highlighting team temporal leadership behaviours perceived to minimise relationship conflict. Thus, under high levels of team temporal leadership behaviours, team members may response in a better way to temporal problems and minimise divergence. Accordingly, it is proposed:

_Hypothesis 19: Team temporal leadership moderates the relationship between relationship conflict and team performance._

### 2.2.4 Team temporal leadership, organisational commitment, work engagement, and employee proactivity, proficiency and adaptivity

Many researchers and practitioners have devoted much attention to identify the antecedents of employee work behaviour as it has become crucial for organisational success and competitiveness (Barnes & Griffin, 2013; Franke & Park, 2006; Griffin et al., 2007; Gwinner, Bitner, Brown & Kumar, 2005). Among these studies, employee proactivity, employee proficiency and employee adaptivity have been captured as highly important behavioural approaches for organisational goal attainment (Campbell, McCloy, Oppler & Sager, 1993; Murphy & Jackson, 1999) that require more recognition of the importance associated with individuals and organisations. Traditionally, team performance was evaluated in terms of the engagement with which an employee or a team carried out tasks specified by their job description (Banker, Field, Schroeder & Sinha, 1996; Beersma, Homan, Van, & De Dreu, 2013; Harrison, Price, Gavin & Florey, 2002). However, due to uncertainty and the changing nature of work and organisations, prior research should be expanded by exploring the other positive links towards employee proactivity, efficiency and adaptivity. For example, greater understanding of the effects of leadership, or how these relationships may differ under different leadership styles should be identified. In response to this limitation, this study looked at team temporal leadership behaviours and how they influence employee proactivity, proficiency and
adaptivity in the team towards work engagement and organisational commitment. Figure 2.4 presents the theoretical model for this study.

Team temporal leadership is defined as “leader behaviours that aid structuring, coordinating and managing the pacing of the task accomplishment in a team (Mohammed & Nadkarni, 2011, p. 492). It captures task-oriented, as well as relationship-oriented, behaviours of a team leader (Mohammed & Nadkarni, 2011; Santos et al., 2016). Derived from role theory and its most recent developments (Biddle, 1986; Burkert, Fischer, Hoos & Schuhmacher, 2017), this study suggests that task and relationship-oriented leaders are able to clarify their roles, thus increasing employees’ proactivity, proficiency and adaptivity to the task, and increasing work engagement for better performance.

Previous research has identified that critical thinking can be stimulated through task-related disagreements and hence may improve team decision-making (Jehn, 1995; Nemeth, 1995). In contrast to this finding, this study proposes that team temporal leadership style can be an alternative to minimise the conflict situation, providing time to improve team decision-making while increasing employees’ proactivity, proficiency and adaptivity.

Overall, this study makes the following contributions. First, this is the first study to examine the relationships of employee proactivity, employee proficiency and employee adaptivity in the team temporal leadership domain. By doing so, the findings further current understanding of the extent to which team temporal leadership behaviours influence employee work engagement. Second, the study looks at proactive, proficiency and adaptive work behaviours of employees, and how these variables drive organisational commitment, as current research lacks in this area. Third, by exploring the mediators of the team temporal leadership–work engagement relationship, the study identifies the
conditions under which team temporal leadership is more likely to benefit work engagement in an organisational context.

2.2.4.1 Team temporal leadership, organisational commitment and work engagement

Given its importance to organisational performance, the relationship between the organisation and its employees has become central to many studies (Lok & Crawford, 1999; Marchiori & Henkin, 2003; Yahaya & Ebrahim, 2016). Organisational commitment has been conveyed as an employee’s identification with the organisation (Oztekin, Isci & Karadag, 2015), and that it occurs only when an employee feels that they are a part of the organisation (Marchiori & Henkin, 2003). Recent studies on leadership demonstrate that leadership styles have an impact on the level of subordinates’ organisational commitment (Chen, 2004; Lok & Crawford, 1999; Yahaya & Ebrahim, 2015). The research literature on leadership suggests that leader behaviour is positively related to organisational commitment (Acar, 2012; Avolio, Zhu, Koh & Bhatia, 2004; Barnes, 2011; Chen, 2011; Huang, Shi, Zhang & Cheung, 2006; Kim & Brymer, 2011; Yahaya & Ebrahim, 2016). According to Mohammed and Nadkarni (2011), team temporal leaders direct and motivate the subordinates to meet deadlines and achieve the desired outcomes by reminding of deadlines, setting up milestones and allocating temporal resources, thus contributing towards the accomplishment of the subordinates’ tasks. Further to a study by Yousef (2000), employees are committed and satisfied with their jobs under better leadership behaviours. Since team temporal leadership is consistent with both task and relationship-oriented behaviours, this study argues that team temporal leaders carry ideas and values to inspire subordinates to perform better.

When team members work toward a common goal (e.g. meeting deadlines, or completing a task with maximum performance), disagreements may arise when they have conflicting viewpoints on how to accomplish the task (De Wit, et al., 2011). These diverging
viewpoints incur higher levels of conflict among team members, hence decreasing their
work engagement towards accomplishing a task on time (Xu et al., 2015). According to
Kahn (1990), employee work engagement reflects motivation, intensity and persistence
of employees in their work roles. Engaged employees work hard to perform better with
morale, and are an asset to the organisation. As stated above, team temporal leadership
leaders support subordinates in various ways to ensure the tasks are accomplished on time
(Mohammed & Nadkarni, 2011; Santos et al., 2016). They identify and address the task
challenges subordinates may come across. Through actions such as allocating temporal
resources and scheduling milestones for subordinates to meet their deadlines and perform
better, highlight the team temporal leader’s effort to maintain engaged workers. Thus:

Hypothesis 20: Team temporal leadership has a positive relationship with work
engagement.

More specifically, team temporal leaders are expected to set goals, articulate deadlines
and express their expectations towards task accomplishment (Yuan & Lo, 2018;
Mohamed & Nadkarni, 2011). This study argues that these task-oriented and relationship-
oriented team temporal leaders will be perceived to possess higher leader integrity, which
would foster subordinates’ psychological impact on enhancing organisational
commitment through their work engagement. Further, studies by Geldehuys, Taba and
Venter (2014), Hult (2005) and Schaufeli and Bakker (2004) support this argument,
highlighting some important findings such as when an employee finds their work
meaningful they become more autonomous, hence fostering a positive organisational
commitment. Thus, engaged employees have strategic importance for the business as
their continuous commitment towards the organisation generates higher performance,
productivity, sales, and hence profitability (Chambers, 1998; Rogers, 2001). At the same
time, team temporal leadership behaviours assist subordinates to identify their task
challenges and reinforce their organisational commitment. This study therefore claims that there is a positive relationship between leadership, engagement and commitment. Thus:

*Hypothesis 21: Work engagement has a positive relationship with organisational commitment.*

### 2.2.4.2 The mediating roles of employee proactivity, employee proficiency and employee adaptivity in the relationship between team temporal leadership and work engagement

The study assessed employee proactivity, proficiency and adaptivity in relation to team temporal leadership behaviour, which posits an important role in directing a team’s attention to the need for team processes by managing the multiple tasks for which team members are responsible (Marks et al., 2001; Maruping et al., 2015). The specific focus on employee proactivity, proficiency and adaptivity reflects the level of work engagement under the team temporal leadership domain.

Employee task proactivity has been defined as the “extent to which individuals engage in self-starting, future-oriented behaviour to change their individual work situations, their individual work roles, or themselves” (Griffin et al., 2007, p. 332). Hence, proactive behaviour can be viewed as an individual performance that initiates a change. These individual behaviours can then contribute towards team effectiveness by team members developing and initiating new methods to help the team perform better, and by doing that, increasing the overall efficiency of the organisation (Griffin et al., 2007). This suggests that under task-oriented team temporal leadership, when job tasks are high employees have the ability to initiate new ways to meet task goals with greater confidence. Accordingly, under team temporal leadership, employee proactivity would play a key role in enhancing work engagement. While team temporal leaders remind employees of deadlines, proactive employees will be more willing to identify and invest their efforts to
meet these challenging goals. Consequently, these proactive employees will have higher motivation to meet organisational expectations.

Employee proficiency describes how well the employee knows the task requirements and understands the expectations of their role (Griffin et al., 2007). Employee proficiency is highly important in team processes as team members should be able to demonstrate competency when fulfilling their tasks. The literature highlights a few important similar concepts, such as personal support, helping behaviour and role behaviour (Borman, Penner, Allien, & Motowidlo, 2001; Griffin et al., 2007; Podsakoff, MacKenzie, Paine & Bachrach, 2000; Welbourne, Johnson, & Erez, 1998). Owing to the above-mentioned points, employee proficiency is expected to more adequately account for task varieties. Likewise, continuous directions and feedback from leaders may execute a wider and more proficient role. This study examined employee proficiency under team temporal leadership behaviours, which implies employees pace their tasks by goal setting and goal planning to pursue envisioned outcomes.

Due to rapid changes in organisational contexts and technology, unanticipated changes to job roles can occur quite frequently. Employee adaptivity describes “the extent to which an individual adapts to change in a work system or work roles” (Griffin et al., 2007, p. 329); thus, it can be perceived as an important factor in achieving work goals. Further, under team temporal leadership behaviours, employee adaptivity plays an essential role by adapting to change. Change can occur due to lack of resources, difficulties with pacing task activities and so on. Employees can encourage their own adaptivity to the situation by self-directed learning, and adjusting and committing themselves to the task to contribute towards organisational expectations. In fact, employees are given the opportunity to adjust themselves by team temporal leaders while allocating temporal resources, synchronisation of activities, and pacing the tasks (Santos et al., 2016).
Drawing on role theory (Kahn, Wolfe, Quinn, Snoeck & Rosenthal, 1964) this study discusses team temporal leaders as role senders who transmit role expectations to the role recipient, the subordinate. Due to the task-oriented nature of team temporal leaders, they are well aware of organisational expectations, hence carry role clarity, which can be passed over to subordinates, minimising the unclear, inconsistent and conflicting role expectations they may possess. Thus, this study argues, not only is there a positive relationship between team temporal leadership and employee proactivity, proficiency and adaptivity, but also, employee proactivity, proficiency and adaptivity mediates the relationship between team temporal leadership and work engagement.

Hypothesis 22a: Team temporal leadership has a positive relationship with employee proactivity.

Hypothesis 22b: Employee proactivity has a positive relationship with work engagement.

Hypothesis 22c: Employee proactivity mediates the relationship between team temporal leadership and work engagement.

Hypothesis 23a: Team temporal leadership has a positive relationship with employee proficiency.

Hypothesis 23b: Employee proficiency has a positive relationship with work engagement.

Hypothesis 23c: Employee proficiency mediates the relationship between team temporal leadership and work engagement.

Hypothesis 24a: Team temporal leadership has a positive relationship with employee adaptivity.

Hypothesis 24b: Employee adaptivity has a positive relationship with work engagement.

Hypothesis 24c: Employee adaptivity mediates the relationship between team temporal leadership and work engagement.
2.3 Theoretical models

The hypothesised relationships outlined in this chapter are presented in Figures 2.1–2.5.
Figure 2.1: The mediating roles of work tension and employee voice behaviour in the relationship between team temporal leadership and team performance
Figure 2.2: The mediating effect of role innovation and the moderating role of task and relationship conflict in the relationship between work engagement and career commitment.
Figure 2.3: The moderating roles of team temporal leadership in the relationships between task and relationship conflict and team performance
Figure 2.4: The mediating roles of employee proactivity, proficiency and adaptivity in the relationship between team temporal leadership and work engagement
Figure 2.5: The theoretical model (all models combined)
2.4 Conclusion

This chapter reviewed past literature regarding the relationships between the constructs of team temporal leadership, team performance, work tension, employee voice behaviour, team conflict, work engagement, role innovation, career commitment, employee proactivity, employee proficiency, employee adaptivity and organisational commitment, to examine how these constructs may influence each other. A number of hypotheses were developed to illustrate direct, mediating and moderating effects between the constructs. The following chapter explains the methodology of the study and justifies the procedures undertaken to test these hypotheses.
Chapter 3: Methodology

3.1 Chapter overview

Chapter 3 explains the research methodology employed in this thesis. First, it outlines the research design, including the research objectives and hypotheses. Section 3.3 explains the data collection procedure, and the measures and control variables, Section 3.4 describes the measurement instruments, derived from the existing literature, and data analysis and interpretation, which illustrates the data analysis strategy and structural model assessment via SEM. Section 3.5 explores the ethical issues related to this research.

3.2 Research design and methods

This section outlines the research design and statement of the problem, lists the hypotheses, and presents the research paradigm and research method.

3.2.1 Research design

Research design is a framework of methods, techniques and practical features of the way in which a research project is conducted as chosen by the researcher, and acts as the steps set to link theoretical aspects to the research being undertaken (Kalof, Dan & Dietz, 2008; Wahyuni, 2012). It further highlights the reasoning for how the research is conducted and outlines all aspects of the research, including sampling strategy, data collection and cleaning, analysis and ethical considerations (Oliver, 2004).

3.2.2 Statement of the problem

Task-oriented activities are drawing more attention in the business world at present. Team leaders can apply and adapt the most suitable temporal behaviour style according to their working environment. To understand the managing process and effects of team temporal leadership in leader–follower relationships, this study examined a number of constructs – team temporal leadership, work engagement, team performance, temporal tension,
employee proactivity proficiency and adaptivity, role innovation, team conflict, career commitment, employee voice behaviour and, organisational commitment.

Researchers have to date maintained that team leadership is considered effective and fully operationalised when linked with employee proactivity proficiency and adaptivity, career commitment, employee voice behaviour and organisational commitment (Grant, 1996; Griffin et al., 2007; Holtom et al., 2008; Liao & Chuang, 2004; Van Dyne & LePine, 1998). Recently, scholars have proposed that team temporal leadership has a significant effect on team performance (Mohammed & Nadkarni, 2011; Santos et al., 2016). Prior research advocated using a theoretical framework (Griffin et al., 2007; Mohammed & Nadkarni, 2011; Santos et al., 2016), while other scholars (Adams, 1965; Fredrickson et al., 2011; Harnisch et al., 2011; Kahn, 1990; Keating & Heslin, 2015; McGrath, 1991) advocate using prominent theories such as time interaction and performance theory, broaden-and-build theory, role theory, equity theory and so on. Thus, responding to calls for research (Mohammed & Nadkarni, 2011; Santos et al., 2016) and to advance theory and research on team temporal leadership theory, this study investigated team temporal leadership in the work engagement and team performance context. Mohammed and Nadkarni (2011) suggest that team temporal leadership is a task-oriented leadership style. It is expected to grow and to continue as an area of theorising, empirical investigation and methodological development. Some researchers additionally suggest identifying another line of research with a focus on the effect of work engagement, team performance and team temporal leadership (Bakker & Bal, 2010; Bakker & Demerouti, 2008; Mohammed & Nadkarni, 2011; Santos et al., 2016; Totterdell, 2000) to examine the role of team temporal leadership in the relationships and interactions among other variables. However, that may be possible only by directly examining the direct, mediating and moderating effects on temporal tension, employee proactivity proficiency and adaptivity, role innovation, team conflict, career commitment, employee voice behaviour and
organisational commitment, as this understanding of interacting effects would fill the void in the literature. Scholars have analysed them independently, but suggest that these variables should be interrelated through identifying these specific relationships when collectively evaluated.

### 3.2.3 Hypotheses

Hypotheses were developed based on a review of literature and the theories highlighted in Chapter 2 to meet the research objectives as follows:

**Hypothesis 1**: Team temporal leadership is positively related to team performance.

**Hypothesis 2**: Work tension is negatively related to team temporal leadership.

**Hypothesis 3**: Work tension is negatively related to team performance.

**Hypothesis 4**: Work tension mediates the relationship between team temporal leadership and team performance.

**Hypothesis 5**: Employee voice has a positive relationship with team temporal leadership.

**Hypothesis 6**: Employee voice has a positive relationship with team performance.

**Hypothesis 7**: Employee voice mediates the relationship between team temporal leadership and team performance.

**Hypothesis 8**: Work engagement is positively related to role innovation.

**Hypothesis 9**: Work engagement is positively related to career commitment.

**Hypothesis 10**: Role innovation is positively related to career commitment.

**Hypothesis 11**: Role innovation mediates the positive relationship between work engagement and career commitment.

**Hypothesis 12a**: Task conflict moderates the relationship between work engagement and career commitment.

**Hypothesis 12b**: Task conflict moderates the relationship between work engagement and role innovation.
Hypothesis 12.c: Task conflict moderates the relationship between role innovation and career commitment.

Hypothesis 13.a: Relationship conflict moderates the relationship between work engagement and career commitment.

Hypothesis 13.b: Relationship conflict moderates the relationship between work engagement and role innovation.

Hypothesis 13.c: Relationship conflict moderates the relationship between role innovation and career commitment.

Hypothesis 14.a: The indirect relationship between work engagement and career commitment via role innovation is moderated by task conflict, such that when conflict is higher, the indirect effects are stronger.

Hypothesis 14.b: The indirect relationship between work engagement and career commitment via role innovation is moderated by relationship conflict, such that when conflict is lower, the indirect effects are stronger.

Hypothesis 15: Task conflict has a positive relationship with team performance.

Hypothesis 16: Relationship conflict has a negative relationship with team performance.

Hypothesis 17: Team temporal leadership has a positive relationship with team performance.

Hypothesis 18: Team temporal leadership moderates the relationship between task conflict and team performance.

Hypothesis 19: Team temporal leadership moderates the relationship between relationship conflict and team performance.

Hypothesis 20: Team temporal leadership has a positive relationship with work engagement.

Hypothesis 21: Work engagement has a positive relationship with organisational commitment.
Hypothesis 22a: Team temporal leadership has a positive relationship with employee proactivity.

Hypothesis 22b: Employee proactivity has a positive relationship with work engagement.

Hypothesis 22c: Employee proactivity mediates the relationship between team temporal leadership and work engagement.

Hypothesis 23a: Team temporal leadership has a positive relationship with employee proficiency.

Hypothesis 23b: Employee proficiency has a positive relationship with work engagement.

Hypothesis 23c: Employee proficiency mediates the relationship between team temporal leadership and work engagement.

Hypothesis 24a: Team temporal leadership has a positive relationship with employee adaptivity.

Hypothesis 24b: Employee adaptivity has a positive relationship with work engagement.

Hypothesis 24c: Employee adaptivity mediates the relationship between team temporal leadership and work engagement.

3.2.4 Research paradigm

A research paradigm is a broad perspective that shows how the research has been directed. It includes the basic assumptions and questions to be answered in the methodology of the research, thus is of importance to any research (Creswell & Clark, 2007; Taylor, Kermode & Roberts, 2007). While there is no single dominant paradigm in social science research (Guba & Lincoln, 1994; Neuman, 2006) all have common elements, including ontology and epistemology. When considering epistemology, this study considers how the knowledge is acquired and how the knowledge is experienced or used (Creswell & Clark, 2007; Wahyuni, 2012). Ontology refers to the nature of reality and how it is perceived; assumptions are made as to the reality of the research being in the individual’s
consciousness, or internal or external to the individual participating in the research (Neuman, 2006; Wahyuni, 2012).

According to Creswell and Clark (2007), there are four frameworks for research paradigms – post positivism, constructivism, pragmatism and advocacy, and participatory. In post positivism, researchers apply a particular reality through the acceptance or rejection of hypotheses, and seek to be unbiased and distant in data collection. In contrast, constructivism adopts a manifold of realities to illustrate multiple perspectives. The constructive approach calls for the researcher to actively engage with and share biases with participants through interviews and informal languages. Advocacy and participatory paradigm researchers collaborate and attempt to negotiate with participants about interpretation, and use language that will cause change and advocate for participants. This research paradigm adopts apolitical reality. Finally, the pragmatist adopts a mixed methods approach, and can adopt single or multiple realities. Formal or informal language is used and the researcher’s stance maybe biased or unbiased (Creswell & Clark, 2007, Wahyuni, 2012).

This research utilised a post-positivist research paradigm as it adopted a single reality and quantitative research methodology, is unbiased and used a distant form of data collection methods.

3.2.5  **Quantitative research method**

A quantitative research approach uses numerical data to describe various patterns and relationships that exist within the dataset (Burns, 2000; Walsh, 2001). According to Neuman (2006), one of the most important strengths of quantitative research methodology is that it enables researchers to gather a large amount of specific information from a large number of respondents, allowing the researcher to statistically test the hypothesis of the study and to generalise the results (Walsh, 2001). Hence, surveys can
retrieve large amounts of data; and the application of appropriate data measurement techniques can elicit significant information for the research in order to establish particular knowledge on the matters under question.

While there are certainly important advantages in conducting a survey, some of the disadvantages that must be acknowledged with this methodology include the lack of detail, as follow-up questions and explanations cannot be sought through survey methods. Response rates below 20% are generally considered as low (Heberlian & Baumgartner, 1978). Wilkinson (2000) states that the survey method does not allow participants to collaborate and resolve potential differences in their responses. Finally, common method variance (CMV) refers to the spurious variance that is attributed to the measurement measure rather than to the constructs the measure represents (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). This can also be an issue with the survey method and is difficult to control.

The aim of this study is to research the relationship between a variety of organisational constructs and theories relating to team temporal leadership. As mentioned in the literature, research aims and objectives should determine the selection of methodology for the study (Creswell & Clark, 2007; Neuman, 2006). Walsh (2001) argues studies that use a quantitative method aim to measure “how many … how often … what percentage or proportions … [or] … to what extent is there a connection between X and Y” (p. 7). Since the aim of this study was to investigate the effects of the relationship between the selected constructs and allow the research to test the hypotheses and generalise the results, a quantitative methodology was chosen.

3.3  Sampling and data collection procedure

This section describes the procedures, measures and control variables used during sampling and data collection.
3.3.1 Data collection procedure

Data were collected from five export-apparel manufacturing firms, registered under the BoI, which is the primary government authority responsible for identifying, promoting and facilitating both foreign and local investments in the country. Export-apparel manufacturing is the major industrial category under BoI. Further, it is compulsory by law that all BoI-registered firms export at least 90% of the manufactured output (Board of Investments Sri Lanka, 2016). Thus, all export-apparel manufacturing firms that come under this study population are homogeneous in nature in terms of business operations; and the firm should have implemented a formal lean production system in the whole manufacturing function (not as a pilot project), which highlight these firms consist with improved customer service, easy management, improved quality and fewer defect and reduce waste (Wickramasinghe & Wickramasinghe, 2011) and it should have been the standard of operation for at least five years with a functional human resource department (Wickramasinghe & Wickramasinghe, 2011).

This criterion was set as past researchers (Pirraglia et al., 2009) suggest the importance of distinguishing between firms that have implemented lean production and firms that are planning to do so. To fulfil the expectations of this study, data were collected from shop-floor employees, and participants were briefed about the aims of the study prior to the questionnaire distribution. Their responses remained anonymous.

3.3.1.1 Pilot study

Adams et al., 2007, p.136 state that it is important that all surveys are tested before the actual data collection is conducted. This ensures that the questionnaire is clear to respondents and can be completed in the way expected. It is best to observe respondents filling in the questionnaire to understand what questions are inappropriate or sensitive to them. Then they are interviewed about what they thought about the questionnaire, how it
could be improved and if anything was missing. Hence, a pilot study helps to minimise possible problems in the questionnaire.

In this study, prior to the actual data collection, a pilot test was performed. This helped to ensure the length of the questionnaire was practical and sensible, and the instructions and wording were clear. The pilot study was conducted as follows:

- Questionnaire for leaders (1 and 3), was tested by 10 team leaders
- Questionnaire for subordinates (2 and 4), was tested by 10 team members in the manufacturing industry.

Based on their suggestions and comments, the questionnaires were modified.

3.3.1.2 Survey language

Sinhala is the official language in Sri Lanka. Therefore, the survey used in this study is bilingual (English and Sinhala). The questions were initially drafted in English. However, to assist participants with limited English language capability, and to avoid misinterpretation, all questionnaires were translated into Sinhala. In order to ensure the accuracy of translation, all English-based measures/items were translated into Sinhala by two bilingual experts. As well as translation, back-translation procedures were followed to ensure adequacy (Brislin, 1970).

3.3.1.3 Data collection process

The data were collected in two waves. The first was in July 2016 (Time 1) and the second was in October 2016 (Time 2). At each time point two sets of questionnaires were used in the study – one for the leaders and another for the subordinates. This method was applied to maintain the accuracy of the responses, since each questionnaire contained at least 20 questions or more to be answered at each time point (Chen, Lam & Zhong, 2012). (Chen et al., 2012).
Time 1: At the first stage, questionnaire 1 was given to team leaders and questionnaire 2 to team members. The questionnaire contained basic demographic data (e.g. age, gender, educational level, work experience).

Time 2: At the second stage, three months after the first questionnaire, questionnaire 3 was distributed to team leaders and questionnaire 4 to team members.

3.3.1.4 Distribution of the questionnaires

The researcher first met with the public relations officer at the human resource department in each firm who agreed to distribute the questionnaire to the employees. The public relations officer briefed the participants on the purpose of the study and the procedures for conducting the survey. Every participant received a cover letter explaining the purpose of the study, a questionnaire and an envelope for returning the questionnaire. A box was placed on the shop floor for the return of questionnaires. To secure accessing the box after hours, a padlock was attached and the key was being held by the researcher. Nevertheless, the premises had 24/7 CCTV coverage. A reminder email was sent to the public relations officer at the beginning of the second week. Participants were given two weeks to complete the survey. At the end of the second week the researcher collected the box with the returned questionnaires. The same procedure was applied at Time 2 (three months from the first distribution). This study employed the above technique to reduce common method bias and measurement errors (MacKenzie & Podsakoff, 2012). Figure 3.1 illustrates the process undertaken for this research.
Q – Questionnaire
Q1* and Q2* will contain basic demographic data; age, gender, educational level and work experience.
L – Completed by leaders
S – Completed by subordinates

Figure 3.1: Data collection process
3.3.1.5 Response rate

1500 questionnaires were distributed among the shop-floor employees of which 1224 were completed and returned. After excluding incomplete questionnaires, the final sample consisted of 1069 responses from 196 leaders and 873 subordinates, representing a response rate of 71.3% form both team leaders’ ad tem members.

3.3.2 Measures

As outlined below, the study employed a number of reliable and valid measures derived from the previous studies of related literature, which were chosen based on their proven validity and reliability.

3.3.2.1 Team temporal leadership

Mohammed and Nadkarni’s (2011) 7-item scale on team temporal leadership was employed to measure team temporal leadership (1 = not at all to 7 = a great deal). Sample items include “to what extent does your project leader remind members of important deadlines?” and “to what extent is your project leader effective in coordinating the team to meet client deadlines?” The scale’s reliability was 0.86.

3.3.2.2 Team performance

Maruping et al.’s (2015) four-item scale was adopted. Sample items are “rate the timeline by which this team’s project was completed” and “the team’s overall performance on this project was”. Participants rated this measure based on the 5-point Likert-type scale from 1 (poor) to 5 (exceptional). Cronbach’s alpha was 0.82.

3.3.2.3 Work engagement

A shortened version of the Utrecht work engagement scale-9 developed by Schaufeli, Baker and Salanova (2006) was employed to measure employee work engagement. Sample items include “at my work, I feel bursting with energy” and “I get carried away
when I am working”. Responses ranged from 1 (never) to 7 (always). The scale’s reliability was 0.91.

3.3.2.4 Employee voice behaviour

Employee voice behaviour was assessed using Van Dyne and LePine’s (1998) 6-item scale. Sample questions are “this particular co-worker develops and makes recommendations concerning issues that affect this work group” and “this particular subordinate gets involved in issues that affect the quality of work life here in this group”. Participants rated this measure based on a 7-point scale (1 = strongly disagree to 7 = strongly agree). The alpha coefficient was 0.84.

3.3.2.5 Work tension

Work tension was measured using House and Rizzo’s (1972) 7-item work tension scale. Sample items are “my job tends to directly affect my health” and “I often take my job home with me in the sense that I think about it when doing other things”. Participants coded the frequency that they have such feelings as 1 (false) or 2 (true). Cronbach’s alpha was 0.90.

3.3.2.6 Role innovation

Role innovation was measured using West’s (1987) 6-item role innovation scale. Sample items are “deciding the methods used to achieve work targets/objectives” and “initiating new procedures or information systems”. Respondents rated this measure based on a 4-point Likert-type scale from 1 (I do the job much the same as other people have done) to 4 (I do the job completely differently than the others have done it). Cronbach’s alpha was 0.84.

3.3.2.7 Career commitment

Blau’s (1988) 7-item scale was adopted to measure career commitment. Sample items are “I like this career too well to give up” and “if I could do it all over again, I would not
choose to work in this profession”. Respondents rated this measure based on a 5-point Likert-type scale from 1 (strongly agree) to 5 (strongly disagree). Cronbach’s alpha was 0.81.

3.3.2.8 Task conflict
This study measured task conflict using Pearson, Ensley and Amason’s (2002) 3-item task conflict scale. Team members indicated how frequently each statement fitted to their work (1 = none, to 5 = a great deal). Sample items are “how many disagreements over different ideas were there?” and “how many differences about the content of decisions did the group have to work through?” Cronbach’s alphas for the scale was 0.87.

3.3.2.9 Relationship conflict
The 3-item relationship conflict questionnaire validated by Pearson et al., (2002) was used to measure relationship conflict. Team members indicated how frequently each statement fitted their own team behaviour. The response scale ranged from 1 (none) to 5 (a great deal). Sample items are “how much anger was there among the members of the group?” and “how much personal friction was there in the group during decisions?” Cronbach’s alpha for this scale was 0.94.

3.3.2.10 Organisational commitment
The study measured organisational commitment with the 6-item scale developed by Lincoln and Kalleberg (1990). Sample items include “I find that my values and the organisations are very similar” and “I would turn down another job for more pay in order to stay with this organisation”. Responses ranged from 1 (strongly disagree) to 4 (strongly agree). The scale’s reliability was 0.78.

3.3.2.11 Employee proactivity
The study used the 3-item subscale from the work-role performance model by Griffin et al. (2011) to measure employee proactivity. A sample item is “made changes to the way
your core tasks are done”. Responses ranged from 1 (very little) to 5 (a great deal). The scale’s reliability was 0.76.

3.3.2.12 Employee proficiency
Employee proficiency was measured with a 3-item subscale from Griffin et al. (2007). A sample item is “completed your core tasks well using the standard procedure”. Responses ranged from 1 (very little) to 5 (a great deal). The scale’s reliability was 0.79.

3.3.2.13 Employee adaptivity
The remaining 3-items from Griffin et al. (2007) from the work-role performance model was used to measure employee adaptivity. A sample item is “coped with changes to the way you have to do your core tasks”. Responses ranged from 1 (very little) to 5 (a great deal). The scale’s reliability was 0.81.

3.3.3 Control variables
The study collected data for control variables likely to influence team temporal leadership performance, team performance, work tension, employee voice behaviour, work engagement, career commitment, employee proactivity, employee proficiency, employee adaptivity, role innovation, task conflict, relationship conflict and organisational commitment.

A number of demographic characteristics could have potentially influenced the results of the study. In line with standard analytical processes and to test the relationships among the variables above, a number of controlled demographic variables were collected. These included gender (1 = male, 2 = female), age (1 = 18–21 years old, 2 = 22–25 years old, 3 = 26–30 years old, 4 = 31–35 years old, 5 = 36–45 years old, 6 = 46–55 years old, 7 = over 55 years old), organisational tenure (1 = 1 month to less than a year, 2 = 1 year to less than 3 years, 3 = 3 years to less than 5 years, 4 = 5 years to less than 10 years, 5 = more than 10 years), education level (1 = junior high school, 2 = high school, 3 =
technical/trade qualification, 4 = certificate or diploma, 5 = bachelor degree, 6 = master degree, 7 = doctorate degree, 8 = other) and job category (1 = production, 2 = line, 3 = quality, 4 = ironing, 5 = packing).

The final questionnaire is in Appendix 1.

3.4 Data analysis and interpretation

The study employed the two-stage approach recommended by Anderson and Gerbing (1988) to assess the models. First, exploratory factor analysis (EFA) was conducted to test the measurement (outer) model through examining the factor structure of the items, which enables the model to be tested for validity and reliability. Second, MSEM was employed to test the theoretical (inner) model using Mplus8.0 (Muthén & Muthén, 2017). While testing the model, a series of CFAs were conducted.

3.4.1 Data preparation

The collected data were checked and lodged to the appropriate software, ensuring accuracy for analysis to commence.

3.4.1.1 Data coding an entry

Data coding is the process of converting individual responses to numbers and then classifying them (Hennink et al., 2010). Data were entered manually from the completed questionnaires by the researcher. For easy computer identification, a coding scheme for all survey questions was developed using statistical package for social sciences (SPSS) 20.0, in which variable descriptions and code names were identified. For instance, 1 = males and 2 = females; and 1 = strongly disagree, 5 = strongly agree. All data were first entered into SPSS 25 and the dataset was saved as a common separated values file.
3.4.1.2 Data cleansing

The quality of data is essential for successful data analysis and processing (Hennink et al., 2010). Data cleansing is the process of filling missing or incomplete values, and detecting and removing data containing errors or outliers. Missing values and outliers were thoroughly checked by employing SPSS 25. No missing values or outliers were found.

3.4.1.3 Reverse coding

The questionnaires contained six reverse-coded items and these were all reversed as part of the data screening procedure to ensure that all variables that constituted the subset were in the appropriate direction. Where necessary, reverse coding was done with accuracy.

3.4.2 Preliminary analysis of data validity and error

A number of steps and statistical tests were undertaken to ensure the validity and the reliability of the data collected prior to conducting hypotheses testing.

3.4.2.1 Common method variance

The study data include leaders’ self-assessment of their behaviour and assessments of subordinates’ behaviour, as well as subordinates’ assessments of their leaders’ behaviour. Thus, all variables applied in the theoretical model were collected through self-reported employee surveys in order to obtain a large number of observations. Previous literature suggests self-reported surveys could result in common method bias (Audenaert, Vanderstraeten, Buyens, 2017; Podsakoff, MacKenzie, Podsakoff, 2012; Podsakoff, et al., 2003; Shih & Chuang, 2013). Hence, a number of procedural remedies suggested by Podsakoff et al. (2012) to control and address common method bias were included.

First, the study data were collected from both leaders and subordinates to control common method bias (Podsakoff et al., 2003; Shih & Chuang, 2013). Second, data were collected with a temporal separation, that is, two sets of questionnaires were distributed with a
three-month time lag (Audenaert et al., 2017; Podsakoff et al., 2012). Third, the study obtained responses from leaders and subordinates working in a diversity of organisational departments – stores, bundling, cutting, fabric, sampling, production, quality and packing – as this has been suggested as a good strategy to collect data to avoid common method bias (Lopez-Cabrales, Bornay-Barrachina, Diaz-Fernandez, 2017). Fourth, the questionnaires consisted of reverse-coded questions and different scales (Podsakoff et al., 2012). Fifth, the researcher assured participants of the confidentiality of the returned questionnaires and that they would not be shared within their firms (Podsakoff et al., 2012). Finally, CFA was conducted on all underlying items taken together from the constructs, to test whether items loaded on the same factor, that is, a single-factor model (Podsakoff et al., 2012). The goodness-of-fit statistic was found to be highly unsatisfactory for a single-factor model, suggesting that the data do not suffer from common method bias.

### 3.4.2.2 Nesting effect

The study data included 196 leaders, who provided ratings of employee voice for 873 subordinates. When a leader provides behavioural ratings for multiple employees, the data may have a non-independence problem, which may cause a nesting effect. To address the issue of a leader’s rating of one subordinate influencing the rating of another (Li, Wu, Liu, Kwan & Liu, 2014), a one-way ANOVA was conducted. Further, ICC(1) and ICC(2) were calculated to statistically justify the aggregation (Bliese, 2000; DeShon, Kozlowski, Schmidt, Milner, & Wiechmann, 2004).

### 3.4.2.3 Response bias

In addition to CFA, an ANOVA test of non-response bias was conducted by comparing the responses of early and late responses for each independent variable and dependent variables (Oppenheim, 1992; Su & Baird, 2017). No significant differences were detected, indicating non-response bias was not an issue in this study.
3.4.2.4 Endogeneity

This study employed a non-experimental design. Therefore, the threat of endogeneity could be a concern and may arise from measurement error; and simultaneity (Antonakis, Bendaham, Jacquart & Lalive, 2014). The study addressed this concern in two ways. First, the data were collected from multiple participants to minimise the measurement error that might threaten the validity of the relationship between the measures. The collected data matched leaders and subordinates with an independent variable from the subordinates’ aspect and dependent variable from the leaders’ aspect. According to Rindfleisch, Malter, Ganesan and Moorman (2008), separation between independent and dependent variables is a useful strategy to reduce common method bias. The study therefore reduced the potential threat of endogeneity that may occur through measurement error. Second, the issue of simultaneity was addressed. When two variables simultaneously affect each other, simultaneity occurs (Antonakis et al., 2014). Based on prior literature, the study highlighted team temporal leadership influence on team performance (Maruping et al., 2015; Mohammed & Nadkarni, 2011; Santos et al., 2016; Yuan & Lo, 2018), that is, the path of the relationship goes from team temporal leadership to team performance. In other words, team temporal leadership is a necessary condition for team performance to occur. There can therefore be confidence that the trajectory of the link is not reciprocal at the same time and, theoretical simultaneity is not an issue in this study.

3.4.3 Statistical analysis

A number of data analysis techniques were employed in this study.

3.4.3.1 Descriptive statistics

Descriptive statistics enable presentation of the data in a more meaningful way. Hence, descriptive statistics were conducted to describe and summarise the data, which allows
for a simpler interpretation of the data that describes the basic features and correlations including individual demographic and organisational characteristics.

3.4.3.1 Skewness and kurtosis

A measure of skewness is a numeric metric to concisely summarise the degree of asymmetry of a unimodal distribution (due to a flat left tail or right tail), that can be compared with other similar numbers (Shanmugam & Chattamveli, 2015, p. 89). There are number of skewness measures available that can be applied to the population or sample. Sample skewness is more important for data analysts and assumes that the sample size \( n \) is sufficiently large for the expressions involved to be meaningful. The accepted scores for skewness range from \(-1.0\) to \(+1.0\) with values outside \(-0.2\) to \(+0.2\) indicating greatly skewed data, which highlights a large deviation from normal distribution (Hildebrand, 1986; Wuensch, 2013).

The concept of kurtosis originated in data analysis. Some data distributions are more peaked than the standard normal law, whereas others are less peaked (Shanmugam & Chattamveli, 2015). Pearson (1905) classifies distributions as leptokurtic, mesokurtic and platykurtic. Kurtosis was originally defined using the standard normal law as a yardstick. A data distribution that has the same kurtosis as \( N(0, 1) \) is called mesokurtic. Those with higher kurtosis are called leptokurtic and those with lower values are called platykurtic (Shanmugam & Chattamveli, 2015). Pearson’s definition of kurtosis confines itself to unimodal distributions. It emphasises the overall frequency at or around the central part of a distribution.

Kurtosis measures are used to numerically evaluate the relative peakedness or flatness of data. The standard normal distribution can be used as a yardstick for bell-shaped data. It is applicable to both the sample and the population. Most of the popular statistical techniques are devised for the symmetric bell-shaped data (normal data). The skewness
captures the lack of symmetry in the data trend and kurtosis captures the tail thickness in the data trend. This study employed Pearson’s measure of kurtosis; further it used SPSS 25.0 to assess skewness and kurtosis.

3.4.3.2 Exploratory factor analysis

EFA is designed to use mathematical procedures for the simplification of interrelated measures to discover patterns in a set of variables (Child, 2006). In this study, EFA was conducted to establish the scale measurements used to not only establish the factor structure of the items, but also to evaluate the model for validity and reliability. Principle component analysis was employed with promax rotation to extract factors in SPSS 25.0. Items were kept based on two criteria – factors should have more than 50% of the total variance accounted for, and items should load on their respective factors with loadings greater than 0.50 (Hair et al., 2006). Three indices, Kaiser-Maeyer-Olkin (KMO) criterion, Bartlett’s test of sphericity and composite scale reliability (CSR), were used to determine the appropriateness of applying EFA. Factor analyses were considered to be appropriate if they met the requirement against the following criteria: KMO is more than 0.60 and chosen as the minimum requirement for the eigenvalue greater than one; Bartlett’s test should be significant at $p < 0.05$ level; and CSR is more than 0.70 (Hair et al., 2006). Finally, Cronbach’s alpha was used to assess the overall level of internal reliability of the scales, with a minimum value of 0.7 accepted (Nunnally, 1978). The results from EFA demonstrated that all items adopted in this study had an acceptable factor loading value, hence no items were dropped.

3.4.3.3 Structural equation modelling

SEM was employed using Mplus 8.0 to test both the measurement model and structure model. SEM is a powerful analytical technique for organisational behaviour, management information systems and marketing research, allowing researchers to test established measurement models and structural models (Shook, Ketchen, Hult, & Kacmar, 2004). As
suggested by numerous scholars of SEM, multiple indices were used to provide convergent evidence in the model fit test (Chan & Schmitt, 1997; Wheaton, 1987). In particular, $\chi^2/df$, which indicates how closely the model’s fit compares with a perfect fit, the NFI (Bentler & Bonnet, 1980), which is an incremental fit index that compares the hypothesised model to a baseline model, the CFI (Bentler, 1990), which is a measure of a model’s goodness-of-fit, and RMSEA (Steiger, 1990) were utilised. The NFI and CFI values range from 0 to 1 with values approaching 0.95 indicating good fit (Hu & Bentler, 1999). Finally, the RMSEA with index values ranging from 0.08 to 0.10 indicate mediocre fit and those under 0.06 are indicative of good fit (Hu & Bentler, 1999; MacCallum et al. 1996).

3.4.3.4 Multi-level analysis

Multi-level analysis was conducted using Mplus 8.0 as the study data were derived from respondents who are nested within groups. Multi-level analysis can be regarded as a generalisation of ordinary least squares (OLS) regression analysis that accommodates the additional complexities involved in estimating regression models with two or more levels. Further, Mplus estimates a random coefficient model and the ‘between’ component intercept and growth coefficients are representing variation across clusters in the coefficients defined for ‘within’, just as in HLM analysis ((Muthén & Muthén, 2017). This analysis allows the researcher to study effects that vary by groups and estimate group level averages (Goldstein, 1995).

3.4.4 Mediation and moderation

Hypotheses that involve mediation and moderation have been central to management research. Mediation identifies an intervening variable or mechanism that transmits the effect of an antecedent variable on an outcome. Conversely, moderation denotes the idea that the level of the effect of an antecedent on an outcome depends on contingency factors
(Mathieu, DeShon, & Bergh, 2008; Ndofor, Sirmon, & He, 2011). Investigations of this kind of relationships are valuable for this research, especially as data may present several mediation and moderation relations.

3.4.4.1 Review of the mediation model

In mediation, an intermediate variable called the mediator (M), is considered. The mediation model offers an explanation of how or why two variables are related, where an intervening variable M, is predicted to have an impact in the relationship between an independent variable, X, and a dependent variable, Y. In other words, identifying the causal effect of a predictor X on a variable Y through a mediator M (Muthén, Muthén & Asparouhov, 2016). Baron and Kenny (1986) developed causal step methods to test for mediation; however, more recent research has supported tests for statistical mediation based on coefficients from two or more regression equations (MacKinnon & Dwyer, 1993; Muthén et al., 2016).

3.4.4.2 Review of the moderation model

The moderation model tests whether the prediction of a dependent variable, Y, from an independent variable, X, differs across levels of a third variable, Z. It influences the magnitude and/or direction of the effect of an antecedent on an outcome – enhancing, reducing or changing the influence of the predictor. Moderation effects are typically discussed as an interaction between factors or variables, where the effects of one variable depend on levels of the other variable in analysis. When the moderator variable is categorical, the traditional data-analytic approach is subgrouping analysis, which consists of comparing correlation or regression coefficients across the various subgroups or categories (Boyd, Haynes, Hitt, Bergh, & Ketchen, 2012). When the moderating effect is continuous, it relies on moderated multiple regression (Aiken & West, 1991; Cohen, 1980), which predicts the outcome based on a predictor X, a second predictor Z hypothesised to be a moderator, and the product term between X and Z, which carries
information on the moderating effect of Z on the X-Y relation. Thus, this study has followed statistical mediation procedures based on coefficients from the regression equations.

3.5 Ethical considerations

Ethics approval was obtained from the Faculty of Business, Justice and Behavioural Sciences Human Research Ethics Committee at Charles Sturt University (CSU) (protocol number: 200/2016/17). This allowed the questionnaire to be distributed through the five export-apparel manufacturing firms, registered under the BoI, which is the primary government authority responsible for identifying, promoting and facilitating both foreign and local investments in the country. As this study was considered to be low risk there were few ethical issues that arose. However, four ethical considerations were considered when deciding the appropriate means of conducting this study – voluntary participation, informed consent, anonymity and confidentiality, and access and security of data storage.

To address these ethical considerations, each participant who agreed to fill out the questionnaire was given an information sheet containing the purpose of the research. First, the information sheet explained the aims of the research and how the data collected would be used. Second, it indicated that their participation was voluntary and they could withdraw from the survey at any time should they wish to due to any reason. The contact details of the researcher were given to the participants to notify if they wished to withdraw at any point. Third, it assured participants that the data collected for this study will not be distributed or shared with their organisations or any other organisation and will be used solely for academic purposes. The survey questionnaires shall be stored in the CSU dedicated research data repository, managed by the CSU Technology Department, and the collected information will be stored for five years after the completion of the study as recommended by CSU Research Data Management Policy.
By providing the relevant information, the study ensured that the participants were in no way obligated to participate and faced no negative consequences should they choose not to take part in the survey. The completion of the questionnaire was then taken as an indication that participants were taking part with knowledge of the purpose of the research and under their own free will. It was considered that participants would be more likely to be honest when completing the questionnaire if they were able to maintain their anonymity, and it was decided that the questionnaire would be distributed in a way that hid participant identity. It was determined that the research being conducted held minimum risk, with no physical danger or negative consequences to participants.

3.6 Conclusion

This chapter outlined and justified the research methodology used in this research. It described the research design and explained why the quantitative research approach was found to be the most appropriate method for this study. Potential issues related to this methodology, such as common method bias, non-response bias and endogeneity, were addressed. Sampling strategy and data cleansing were also addressed along with the data analysis procedures and interpretation procedures, which outlined acceptable values of indices. Finally, this chapter discussed the ethical issues of this research study.
Chapter 4: Analysis, results and discussion

4.1 Chapter overview

Chapter 4 presents the data analysis, results and discussion drawn from the findings of this study. The first section of this chapter presents the demographic profile of the respondents. Section 4.3 presents the examination of the constructs, which consisted of an EFA to explore the component structure of the factors and Cronbach’s alpha to test the reliability of the measurement instruments. Section 4.4 – 4.7 presents the results of the study models outlined in Chapter 2. Each section present the analyses conducted to test the hypotheses. These analyses include CFA results for each study using SEM, which confirmed the components of each construct, MSEM, path analysis and bootstrapping with Monte Carlo simulation techniques. A final model is then presented in Section 4.8 illustrating the framework developed by this research.

4.2 Demographic and experience profile of respondents

A total of 1069 employees containing 196 leaders and 873 subordinates completed the full questionnaire for this research, representing a larger organisational populations.

The leader (n = 196) demographics were as follows: the majority were female (n = 115, 58.7%) with 41.3% male (n = 81). Age was dispersed across seven age range categories: 18–21 years at 9.2% (n = 18), 22–25 years at 29.1% (n = 57), 26–30 years at 21.9% (n = 43), 31–35 years at 25.5% (n = 50), 36–45 years at 13.3% (n = 26), 46–55 years at 0.5% (n = 1), and more than 55 years at 0.5% (n = 1). The highest level of formal education attained by respondents were: junior high (year 10 or equivalent) at 41.8% (n = 82); senior high school (year 12 or equivalent) at 37.2% (n = 72); technical or trade equivalent qualification at 7.1% (n = 14); diploma qualification at 6.1% (n = 12); bachelor degree at 5.1% (n = 10); master degree at 1.0% (n = 2); and any other qualification at 1.5% (n = 3). The job category was: production at 41.8% (n = 82); quality at 17.3%
stores at 12.8% \((n = 25)\), cutting at 9.2% \((n = 18)\), packing at 7.1% \((n = 14)\), sampling at 5.1% \((n = 10)\), bundling at 3.6% \((n = 7)\), and fabric at 3.1% \((n = 6)\). Respondent duration of employment with their current organisation was divided into five categories: 1 month to 1 year at 28.6% \((n = 56)\), 1–3 years at 31.1% \((n = 61)\), 3–5 years at 20.9% \((n = 41)\), 5–10 years at 11.2% \((n = 22)\), and more than 10 years at 8.2% \((n = 16)\).

With regard to subordinate demographics \((n = 873)\), the vast majority were female \((n = 665, 76.2\%)\) with 23.8% male \((n = 208)\). Age was dispersed across seven age range categories: 18–21 years at 23.1% \((n = 202)\); 22–25 years at 27% \((n = 236)\); 26–30 years at 17% \((n = 148)\); 31–35 years at 13.1% \((n = 114)\); 36–45 years at 15.6% \((n = 136)\); 46–55 years at 4.1% \((n = 36)\); and more than 55 years at 0.1% \((n = 1)\). The highest level of formal education attained by respondents was: junior high (year 10 or equivalent) at 63.3% \((n = 553)\); senior high school (year 12 or equivalent) at 27% \((n = 236)\); technical or trade equivalent qualification at 3.6% \((n = 31)\); diploma qualification at 2.1% \((n = 18)\); bachelor degree at 1.1% \((n = 10)\); and any other qualification at 2.9% \((n = 25)\). Job category was: production at 64.3% \((n = 561)\); quality at 6% \((n = 52)\); stores at 7% \((n = 61)\); cutting at 5.4% \((n = 47)\); packing at 7.1% \((n = 62)\); sampling at 4% \((n = 35)\); bundling at 3.7% \((n = 32)\); and fabric at 2.6% \((n = 23)\). Respondent duration of employment with their current organisation was divided into five categories: 1 month to 1 year at 36% \((n = 314)\); 1–3 years at 25.5% \((n = 223)\); 3–5 years at 20.4% \((n = 178)\); 5–10 years at 14.3% \((n = 125)\); and more than 10 years at 3.8% \((n = 33)\).

Table 4.1 presents the demographic data.
Table 4.1: Demographics

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Leaders</th>
<th></th>
<th>Subordinates</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>115</td>
<td>58.7</td>
<td>665</td>
<td>76.2</td>
</tr>
<tr>
<td>Male</td>
<td>81</td>
<td>41.3</td>
<td>208</td>
<td>23.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>196</strong></td>
<td><strong>100.0</strong></td>
<td><strong>873</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18–21</td>
<td>18</td>
<td>9.2</td>
<td>202</td>
<td>23.1</td>
</tr>
<tr>
<td>22–25</td>
<td>57</td>
<td>29.1</td>
<td>236</td>
<td>27.0</td>
</tr>
<tr>
<td>26–30</td>
<td>43</td>
<td>21.9</td>
<td>148</td>
<td>17.0</td>
</tr>
<tr>
<td>31–35</td>
<td>50</td>
<td>25.5</td>
<td>114</td>
<td>13.1</td>
</tr>
<tr>
<td>36–45</td>
<td>26</td>
<td>13.3</td>
<td>136</td>
<td>15.6</td>
</tr>
<tr>
<td>46–55</td>
<td>1</td>
<td>0.5</td>
<td>36</td>
<td>4.1</td>
</tr>
<tr>
<td>Over 55</td>
<td>1</td>
<td>0.5</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>196</strong></td>
<td><strong>100.0</strong></td>
<td><strong>873</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>Highest level of education attained</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior high (year 10 or equivalent)</td>
<td>82</td>
<td>41.8</td>
<td>553</td>
<td>63.3</td>
</tr>
<tr>
<td>Senior high (year 12 or equivalent)</td>
<td>72</td>
<td>37.2</td>
<td>236</td>
<td>27.0</td>
</tr>
<tr>
<td>Technical/trade qualification</td>
<td>14</td>
<td>7.1</td>
<td>31</td>
<td>3.6</td>
</tr>
<tr>
<td>Diploma qualification</td>
<td>12</td>
<td>6.1</td>
<td>18</td>
<td>2.1</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>10</td>
<td>5.1</td>
<td>10</td>
<td>1.1</td>
</tr>
<tr>
<td>Master degree</td>
<td>2</td>
<td>1.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>1.5</td>
<td>25</td>
<td>2.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>196</strong></td>
<td><strong>100.0</strong></td>
<td><strong>873</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>Job category</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>82</td>
<td>41.8</td>
<td>561</td>
<td>64.3</td>
</tr>
<tr>
<td>Quality</td>
<td>34</td>
<td>17.3</td>
<td>52</td>
<td>6.0</td>
</tr>
<tr>
<td>Stores</td>
<td>25</td>
<td>12.8</td>
<td>61</td>
<td>7.0</td>
</tr>
<tr>
<td>Cutting</td>
<td>18</td>
<td>9.2</td>
<td>47</td>
<td>5.4</td>
</tr>
<tr>
<td>Packing</td>
<td>14</td>
<td>7.1</td>
<td>62</td>
<td>7.1</td>
</tr>
<tr>
<td>Sampling</td>
<td>10</td>
<td>5.1</td>
<td>35</td>
<td>4.0</td>
</tr>
<tr>
<td>Bundling</td>
<td>7</td>
<td>3.6</td>
<td>32</td>
<td>3.7</td>
</tr>
<tr>
<td>Fabric</td>
<td>6</td>
<td>3.1</td>
<td>23</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>196</strong></td>
<td><strong>100.0</strong></td>
<td><strong>873</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>Tenure with current organisation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 month to 1 year</td>
<td>56</td>
<td>28.6</td>
<td>314</td>
<td>36.0</td>
</tr>
<tr>
<td>1–3 years</td>
<td>61</td>
<td>31.1</td>
<td>223</td>
<td>25.5</td>
</tr>
<tr>
<td>3–5 years</td>
<td>41</td>
<td>20.9</td>
<td>178</td>
<td>20.4</td>
</tr>
<tr>
<td>5–10 years</td>
<td>22</td>
<td>11.2</td>
<td>125</td>
<td>14.3</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>16</td>
<td>8.2</td>
<td>33</td>
<td>3.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>196</strong></td>
<td><strong>100.0</strong></td>
<td><strong>873</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
4.3 Exploratory factor analysis

EFA was used to explore all variables as presented in Table 4.2, which illustrates the factor structure, loadings, Cronbach’s alpha and average for all constructs used in this study.
Table 4.2: Exploratory factor analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor</th>
<th>Variable description</th>
<th>Mean</th>
<th>SD</th>
<th>Loading</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td></td>
<td>To what extent does your project leader remind members of important deadlines?</td>
<td>4.25</td>
<td>0.997</td>
<td>0.734</td>
<td>0.92</td>
</tr>
<tr>
<td>Q2</td>
<td></td>
<td>To what extent does your project leader prioritise tasks and allocate time to each task?</td>
<td>4.09</td>
<td>0.904</td>
<td>0.723</td>
<td></td>
</tr>
<tr>
<td>Q3</td>
<td></td>
<td>To what extent does your project leader prepare and build in time for contingencies, problems and emerging issues?</td>
<td>3.42</td>
<td>1.225</td>
<td>0.514</td>
<td></td>
</tr>
<tr>
<td>Q4</td>
<td>Team temporal leadership</td>
<td>To what extent does your project leader pace the team so that work is finished on time?</td>
<td>4.30</td>
<td>0.882</td>
<td>0.766</td>
<td></td>
</tr>
<tr>
<td>Q5</td>
<td></td>
<td>To what extent does your project leader urge members to finish subtasks on time?</td>
<td>4.42</td>
<td>0.845</td>
<td>0.720</td>
<td></td>
</tr>
<tr>
<td>Q6</td>
<td></td>
<td>To what extent does your project leader set milestones to measure progress on the project?</td>
<td>4.06</td>
<td>0.997</td>
<td>0.675</td>
<td></td>
</tr>
<tr>
<td>Q7</td>
<td></td>
<td>To what extent is your project leader effective in coordinating the team to meet client deadlines?</td>
<td>4.49</td>
<td>0.783</td>
<td>0.728</td>
<td></td>
</tr>
<tr>
<td>Q8</td>
<td></td>
<td>Please rate the timeline by which this team’s project was completed</td>
<td>5.06</td>
<td>1.309</td>
<td>0.798</td>
<td>0.86</td>
</tr>
<tr>
<td>Q9</td>
<td>Team performance</td>
<td>The team’s timeliness in meeting project milestones and bi-weekly deadline was</td>
<td>5.12</td>
<td>1.283</td>
<td>0.788</td>
<td></td>
</tr>
<tr>
<td>Q10</td>
<td></td>
<td>The client’s satisfaction with the team’s performance on this project was</td>
<td>4.99</td>
<td>1.263</td>
<td>0.794</td>
<td></td>
</tr>
<tr>
<td>Q11</td>
<td></td>
<td>Your evaluation of the team’s overall performance on this project was</td>
<td>5.20</td>
<td>1.285</td>
<td>0.793</td>
<td></td>
</tr>
<tr>
<td>Q12</td>
<td>Work tension</td>
<td>I work under a great deal of tension</td>
<td>2.82</td>
<td>1.180</td>
<td>0.523</td>
<td>0.88</td>
</tr>
<tr>
<td>Q13</td>
<td></td>
<td>I have felt fidgety or nervous as a result of my job</td>
<td>3.32</td>
<td>1.138</td>
<td>0.758</td>
<td></td>
</tr>
<tr>
<td>Q14</td>
<td></td>
<td>My job tends to directly affect my health</td>
<td>3.31</td>
<td>1.086</td>
<td>0.754</td>
<td></td>
</tr>
<tr>
<td>Q15</td>
<td></td>
<td>If I had a different job, my health would probably improve</td>
<td>3.43</td>
<td>1.023</td>
<td>0.803</td>
<td></td>
</tr>
<tr>
<td>Q16</td>
<td></td>
<td>Problems associated with my job have kept me awake at night</td>
<td>3.29</td>
<td>1.151</td>
<td>0.791</td>
<td></td>
</tr>
<tr>
<td>Q17</td>
<td></td>
<td>I have felt nervous before attending meetings in the company</td>
<td>3.54</td>
<td>1.111</td>
<td>0.761</td>
<td></td>
</tr>
<tr>
<td>Q18</td>
<td></td>
<td>I often ‘take my job home with me’ in the sense that I think about it when doing other things</td>
<td>3.32</td>
<td>1.187</td>
<td>0.644</td>
<td></td>
</tr>
<tr>
<td>Q19</td>
<td>Employee voice behaviour</td>
<td>Subordinates develop and make recommendations concerning issues that affect this workgroup</td>
<td>4.51</td>
<td>1.863</td>
<td>0.718</td>
<td>0.85</td>
</tr>
<tr>
<td>Q20</td>
<td></td>
<td>Subordinates speak up and encourage others in this group to get involved in issues that affect the group</td>
<td>4.39</td>
<td>1.615</td>
<td>0.646</td>
<td></td>
</tr>
<tr>
<td>Q21</td>
<td></td>
<td>Subordinates communicate their opinions about work issues even if their opinion is different and others might disagree</td>
<td>4.55</td>
<td>1.500</td>
<td>0.729</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.97</td>
<td>1.432</td>
<td>0.842</td>
<td></td>
</tr>
<tr>
<td>Variable</td>
<td>Factor</td>
<td>Variable description</td>
<td>Mean</td>
<td>SD</td>
<td>Loading</td>
<td>α</td>
</tr>
<tr>
<td>----------</td>
<td>--------</td>
<td>----------------------</td>
<td>--------</td>
<td>-------</td>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>Q22</td>
<td></td>
<td>Subordinates keep well informed about issues where his/her opinion might be useful to this work group</td>
<td>5.02</td>
<td>1.421</td>
<td>0.726</td>
<td></td>
</tr>
<tr>
<td>Q23</td>
<td></td>
<td>Subordinates get involved in issues that affect the quality of worklife here in this group</td>
<td>5.07</td>
<td>1.394</td>
<td>0.668</td>
<td></td>
</tr>
<tr>
<td>Q24</td>
<td></td>
<td>Subordinates speak up in this group with ideas for new projects or changes in procedure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q25</td>
<td></td>
<td>At my work, I feel bursting with energy</td>
<td>5.79</td>
<td>1.397</td>
<td>0.739</td>
<td>0.91</td>
</tr>
<tr>
<td>Q26</td>
<td></td>
<td>At my job, I feel strong and vigorous</td>
<td>6.13</td>
<td>1.132</td>
<td>0.720</td>
<td></td>
</tr>
<tr>
<td>Q27</td>
<td></td>
<td>I am enthusiastic about my job</td>
<td>5.87</td>
<td>1.380</td>
<td>0.770</td>
<td></td>
</tr>
<tr>
<td>Q28</td>
<td></td>
<td>My job inspires me</td>
<td>6.08</td>
<td>1.218</td>
<td>0.765</td>
<td></td>
</tr>
<tr>
<td>Q29</td>
<td></td>
<td>When I get up in the morning, I feel like going to work</td>
<td>6.09</td>
<td>1.279</td>
<td>0.781</td>
<td></td>
</tr>
<tr>
<td>Q30</td>
<td></td>
<td>I feel happy when I am working intensely</td>
<td>5.81</td>
<td>1.330</td>
<td>0.721</td>
<td></td>
</tr>
<tr>
<td>Q31</td>
<td></td>
<td>I am proud of the work that I do</td>
<td>6.17</td>
<td>1.248</td>
<td>0.727</td>
<td></td>
</tr>
<tr>
<td>Q32</td>
<td></td>
<td>I am immersed in my work</td>
<td>6.38</td>
<td>.969</td>
<td>0.684</td>
<td></td>
</tr>
<tr>
<td>Q33</td>
<td></td>
<td>I get carried away when I am working</td>
<td>6.05</td>
<td>1.354</td>
<td>0.540</td>
<td></td>
</tr>
<tr>
<td>Q34</td>
<td></td>
<td>How much anger was there among the members of the group?</td>
<td>3.75</td>
<td>1.014</td>
<td>0.774</td>
<td>0.90</td>
</tr>
<tr>
<td>Q35</td>
<td></td>
<td>How much personal friction was there in the group during decisions?</td>
<td>3.87</td>
<td>1.073</td>
<td>0.804</td>
<td></td>
</tr>
<tr>
<td>Q36</td>
<td></td>
<td>How much tension was there in the group during decisions?</td>
<td>3.68</td>
<td>1.005</td>
<td>0.712</td>
<td></td>
</tr>
<tr>
<td>Q37</td>
<td></td>
<td>How many disagreements over different ideas were there?</td>
<td>3.68</td>
<td>1.076</td>
<td>0.727</td>
<td></td>
</tr>
<tr>
<td>Q38</td>
<td></td>
<td>How many differences about the content of decisions did the group have to work through?</td>
<td>2.24</td>
<td>1.100</td>
<td>0.985</td>
<td></td>
</tr>
<tr>
<td>Q39</td>
<td></td>
<td>How many differences of opinion were there within the group?</td>
<td>3.24</td>
<td>1.211</td>
<td>0.648</td>
<td></td>
</tr>
<tr>
<td>Q40</td>
<td></td>
<td>Setting work targets/ objects</td>
<td>2.73</td>
<td>1.039</td>
<td>0.653</td>
<td>0.87</td>
</tr>
<tr>
<td>Q41</td>
<td></td>
<td>Deciding the methods used to achieve work targets/ objectives</td>
<td>2.52</td>
<td>.997</td>
<td>0.704</td>
<td></td>
</tr>
<tr>
<td>Q42</td>
<td></td>
<td>Deciding the order in which different parts of the job are done</td>
<td>2.44</td>
<td>1.075</td>
<td>0.705</td>
<td></td>
</tr>
<tr>
<td>Q43</td>
<td></td>
<td>Choosing who you deal with in order to carry out your work duties</td>
<td>2.56</td>
<td>.965</td>
<td>0.660</td>
<td></td>
</tr>
<tr>
<td>Q44</td>
<td></td>
<td>Initiating new procedures or information systems</td>
<td>2.85</td>
<td>1.001</td>
<td>0.728</td>
<td></td>
</tr>
<tr>
<td>Q45</td>
<td></td>
<td>Developing innovative ways of accomplishing targets/ objectives</td>
<td>2.79</td>
<td>1.048</td>
<td>0.643</td>
<td></td>
</tr>
<tr>
<td>Q46</td>
<td></td>
<td>I like this career too well to give up</td>
<td>3.47</td>
<td>1.165</td>
<td>0.594</td>
<td>0.88</td>
</tr>
<tr>
<td>Q47</td>
<td></td>
<td>If I could go into a different profession which paid the same, I would probably like it (R)</td>
<td>3.46</td>
<td>1.015</td>
<td>0.565</td>
<td></td>
</tr>
<tr>
<td>Variable</td>
<td>Factor</td>
<td>Variable description</td>
<td>Mean</td>
<td>SD</td>
<td>Loading</td>
<td>α</td>
</tr>
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<td>----------</td>
<td>--------</td>
<td>--------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Q48</td>
<td></td>
<td>If I could do it all over again, I would not choose to work in this profession (R)</td>
<td>3.51</td>
<td>.974</td>
<td>0.658</td>
<td></td>
</tr>
<tr>
<td>Q49</td>
<td></td>
<td>I definitely want a career for myself in this profession</td>
<td>3.44</td>
<td>1.013</td>
<td>0.718</td>
<td></td>
</tr>
<tr>
<td>Q50</td>
<td></td>
<td>If I had all the money I needed without working, I would probably still continue to work in this profession</td>
<td>3.31</td>
<td>1.080</td>
<td>0.636</td>
<td></td>
</tr>
<tr>
<td>Q51</td>
<td></td>
<td>I am disappointed that I ever entered this profession (R)</td>
<td>3.72</td>
<td>1.032</td>
<td>0.667</td>
<td></td>
</tr>
<tr>
<td>Q52</td>
<td></td>
<td>This is the ideal profession for a life’s work</td>
<td>3.17</td>
<td>1.041</td>
<td>0.659</td>
<td></td>
</tr>
<tr>
<td>Q53</td>
<td>Employee proactivity</td>
<td>Carried out the core parts of your job well</td>
<td>2.90</td>
<td>1.211</td>
<td>0.709</td>
<td>0.81</td>
</tr>
<tr>
<td>Q54</td>
<td></td>
<td>Completed your core tasks well using the standard procedures</td>
<td>3.11</td>
<td>1.004</td>
<td>0.651</td>
<td></td>
</tr>
<tr>
<td>Q55</td>
<td></td>
<td>Ensured your tasks were completed properly</td>
<td>3.03</td>
<td>1.027</td>
<td>0.792</td>
<td></td>
</tr>
<tr>
<td>Q56</td>
<td>Employee proficiency</td>
<td>Initiated better ways of doing your core tasks</td>
<td>2.97</td>
<td>.997</td>
<td>0.743</td>
<td>0.81</td>
</tr>
<tr>
<td>Q57</td>
<td></td>
<td>Come up with ideas to improve the way in which your core tasks are done</td>
<td>3.04</td>
<td>.973</td>
<td>0.799</td>
<td></td>
</tr>
<tr>
<td>Q58</td>
<td></td>
<td>Made changes to the way your core tasks are done</td>
<td>2.97</td>
<td>1.062</td>
<td>0.704</td>
<td></td>
</tr>
<tr>
<td>Q59</td>
<td>Employee adaptivity</td>
<td>Adapted well to changes in core tasks</td>
<td>3.36</td>
<td>1.031</td>
<td>0.757</td>
<td>0.82</td>
</tr>
<tr>
<td>Q60</td>
<td></td>
<td>Coped with changes to the way you have to do your core tasks</td>
<td>3.49</td>
<td>1.084</td>
<td>0.699</td>
<td></td>
</tr>
<tr>
<td>Q61</td>
<td></td>
<td>Learned new skills to help you adapt to changes in your core tasks</td>
<td>3.11</td>
<td>1.184</td>
<td>0.730</td>
<td></td>
</tr>
<tr>
<td>Q62</td>
<td>Organisational commitment</td>
<td>I am willing to work harder than I have to in order to help this organisation success</td>
<td>3.95</td>
<td>1.092</td>
<td>0.683</td>
<td>0.94</td>
</tr>
<tr>
<td>Q63</td>
<td></td>
<td>I feel very little loyalty to this organisation (R)</td>
<td>3.45</td>
<td>1.120</td>
<td>0.827</td>
<td></td>
</tr>
<tr>
<td>Q64</td>
<td></td>
<td>I would take almost any job to keep working for this organisation</td>
<td>3.50</td>
<td>1.065</td>
<td>0.741</td>
<td></td>
</tr>
<tr>
<td>Q65</td>
<td></td>
<td>I find that my values and the organisations’ are very similar</td>
<td>3.34</td>
<td>.934</td>
<td>0.680</td>
<td></td>
</tr>
<tr>
<td>Q66</td>
<td></td>
<td>I am proud to be working for this organisation</td>
<td>3.70</td>
<td>1.097</td>
<td>0.855</td>
<td></td>
</tr>
<tr>
<td>Q67</td>
<td></td>
<td>I would turn down another job for more pay in order to stay with this organisation</td>
<td>3.37</td>
<td>1.118</td>
<td>0.705</td>
<td></td>
</tr>
</tbody>
</table>

Note: SD = standard deviation
4.4 The mediating effects of work tension and employee voice behaviour on the relationship between team temporal leadership and team performance

In the course of analyses, the following seven hypotheses were tested.

Hypothesis 1: Team temporal leadership is positively related to team performance.

Hypothesis 2: Work tension is negatively related to team temporal leadership.

Hypothesis 3: Work tension is negatively related to team performance.

Hypothesis 4: Work tension mediates the relationship between team temporal leadership and team performance.

Hypothesis 5: Employee voice has a positive relationship with team temporal leadership.

Hypothesis 6: Employee voice has a positive relationship with team performance.

Hypothesis 7: Employee voice mediates the relationship between team temporal leadership and team performance.

This study included 196 leaders who provided ratings of employee voice for 873 subordinates. When a leader provides behavioural ratings for multiple employees, the data may have a non-independence problem, which may cause a nesting effect. To address the issue, a one-way ANOVA using leader job category as the independent variable and employee voice as the dependent variable was undertaken (Li et al., 2014). The one-way ANOVA was not significant for employee voice, indicating that leader ratings were relatively independent, and did not significantly influence the results of the study. Further, intraclass correlations, both ICC(1) and ICC(2), were calculated to statistically justify the aggregation (Bliese, 2000; DeShon, et al., 2004). ICC(1) values were between the recommended values between 0.04 and 0.19 (DeShon et al., 2004), and ICC(2) values were higher than ICC(1) values. Therefore, the team members’ responses were aggregated both at item level as well as the variable level using the mean of the team members’ responses.
In addition, all hypotheses in the measurement model, were tested through a single-level SEM using Mplus 8 (Muthén & Muthén, 2017). The SEM approach allows simultaneous estimation of multiple indirect paths and provides model fit indices (James & Brett, 1984; James, et al., 2006). The analyses were run using the single-level option implemented in the software and maximum likelihood estimation with robust standard errors. A comparison of the model fit between the proposed model and 10 alternative models (Anderson & Gerbing, 1988) was then conducted. Next, the path estimates for testing each hypothesis were obtained in the theoretical model. Finally, the indirect effects using Monte Carlo simulation replications (Preacher, Zyphur, & Zhang, 2010) were undertaken.

Table 4.3 summarises the means, standard deviation and correlation matrices for the variables related to these hypotheses. As presented in Table 4.3, correlations between team temporal leadership and team performance are consist with the past literature (Maruping et al., 2015; Mohammed & Nadkarni, 2011; Yuan & Lo, 2018).

A CFA was conducted on the measurement model to determine the discriminant validity of the constructs with the default setting (Muthén & Muthén, 2017). The results of the CFA are presented in Table 4.4. The proposed 4-factor model yielded a significantly better fit: $\chi^2 (246) = 528.04, p < 0.001, \chi^2/df = 2.15; CFI = 0.94, Tucker Lewis Index (TLI) = 0.93, RMSEA = 0.05, Standardized Root Mean Square Residual (SRMR) = 0.06$, than the single-factor model ($\chi^2(df) = [1670.9 (252)], \chi^2/df = 6.63, CFI = 0.33, TLI = 0.27, RMSEA = 0.14, SRMR = 0.15$). Hence, it is believed that common method bias did not have a significant effect on the data. All surveyed items had significant loadings on their respective latent factors. Further, the study conducted five 3-factor models and four 2-factor models to assess more parsimonious models. All indexes from the parsimonious models indicate that each model had a significantly worse fit to the data than to the proposed model.
Table 4.3: Descriptive statistics and correlations

<table>
<thead>
<tr>
<th>Control variables</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (^L)</td>
<td>3.08</td>
<td>1.25</td>
<td>-0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender (^L)</td>
<td>1.41</td>
<td>0.50</td>
<td>-0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highest Education Level (^L)</td>
<td>2.06</td>
<td>1.38</td>
<td>0.03</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job category (^L)</td>
<td>5.15</td>
<td>2.13</td>
<td>0.08</td>
<td>-0.22(^**)</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organisational Tenure (^L)</td>
<td>2.39</td>
<td>1.24</td>
<td>0.44(^**)</td>
<td>-0.17(^*)</td>
<td>-0.10</td>
<td>-0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work tension (^L)</td>
<td>3.29</td>
<td>0.81</td>
<td>-0.01</td>
<td>-0.05</td>
<td>-0.08</td>
<td>0.01</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee voice (^L)</td>
<td>4.75</td>
<td>1.11</td>
<td>0.07</td>
<td>-0.19(^**)</td>
<td>-0.01</td>
<td>0.21(^**)</td>
<td>-0.02</td>
<td>-0.17(^*)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team temporal leadership (^S)</td>
<td>4.15</td>
<td>0.65</td>
<td>-0.14</td>
<td>-0.09</td>
<td>0.01</td>
<td>-0.05</td>
<td>-0.10</td>
<td>-0.12(^*)</td>
<td>0.22(^**)</td>
<td></td>
</tr>
<tr>
<td>Team performance (^L)</td>
<td>5.09</td>
<td>1.02</td>
<td>-0.16(^*)</td>
<td>-0.05</td>
<td>-0.10</td>
<td>-0.06</td>
<td>0.03</td>
<td>-0.11(^*)</td>
<td>0.37(^**)</td>
<td>0.36(^**)</td>
</tr>
</tbody>
</table>

Note: \(n\) (leaders) = 196; \(n\) (subordinates) = 873
SD = standard deviation
For the correlation analysis, employees’ ratings of team temporal leadership were disaggregated to each respective leader.

\(^*\) Indicates variables rated by leaders
\(^S\) Indicates variables rated by subordinates

* \(p < 0.05\)
** \(p < 0.01\)
Table 4.4: Results of confirmatory factor analysis of the measurement models

<table>
<thead>
<tr>
<th>Measurement models</th>
<th>$\chi^2(df)$</th>
<th>$\chi^2/df$</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypothesised four-factor model</strong></td>
<td>528.04 (246)</td>
<td>2.15</td>
<td>0.94</td>
<td>0.93</td>
<td>0.05</td>
<td>0.06</td>
</tr>
<tr>
<td><strong>Three-factor models</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work tension and team performance combined</td>
<td>818.2 (249)</td>
<td>3.29</td>
<td>0.73</td>
<td>0.70</td>
<td>0.06</td>
<td>0.07</td>
</tr>
<tr>
<td>Work tension and employee voice combined</td>
<td>932.8 (249)</td>
<td>3.75</td>
<td>0.68</td>
<td>0.64</td>
<td>0.08</td>
<td>0.09</td>
</tr>
<tr>
<td>Employee voice and temporal leadership combined</td>
<td>949.7 (249)</td>
<td>3.81</td>
<td>0.67</td>
<td>0.63</td>
<td>0.09</td>
<td>0.09</td>
</tr>
<tr>
<td>Temporal leadership and team performance combined</td>
<td>812.8 (249)</td>
<td>3.26</td>
<td>0.73</td>
<td>0.71</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td>Temporal leadership and work tension combined</td>
<td>982.1 (249)</td>
<td>3.94</td>
<td>0.65</td>
<td>0.62</td>
<td>0.09</td>
<td>0.10</td>
</tr>
<tr>
<td><strong>Two-factor models:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work tension, temporal leadership &amp; employee voice combined</td>
<td>1386.9 (251)</td>
<td>5.53</td>
<td>0.46</td>
<td>0.41</td>
<td>0.12</td>
<td>0.13</td>
</tr>
<tr>
<td>Work tension, team performance &amp; employee voice combined</td>
<td>1220.4 (251)</td>
<td>4.86</td>
<td>0.54</td>
<td>0.49</td>
<td>0.11</td>
<td>0.11</td>
</tr>
<tr>
<td>Work tension temporal leadership &amp; performance combined</td>
<td>1269.2 (251)</td>
<td>5.06</td>
<td>0.52</td>
<td>0.47</td>
<td>0.11</td>
<td>0.12</td>
</tr>
<tr>
<td>Temporal leadership, team performance &amp; employee voice combined</td>
<td>1232.2 (252)</td>
<td>4.90</td>
<td>0.53</td>
<td>0.48</td>
<td>0.11</td>
<td>0.11</td>
</tr>
<tr>
<td><strong>One-factor model</strong></td>
<td>1670.9 (252)</td>
<td>6.63</td>
<td>0.33</td>
<td>0.27</td>
<td>0.14</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Note: $\chi^2(df)$ = chi-square to degrees of freedom ratio; CFI = comparative fit index; TLI = Tucker Lewis Index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual
4.4.1 Test of hypotheses

Table 4.3 presents initial support for the hypotheses. For instance, team temporal leadership is positively related to team performance \( (r = 0.36, p < 0.01) \) supporting Hypothesis 1. As expected, work tension related negatively to team temporal leadership \( (r = -0.12, p < 0.05) \) and team performance \( (r = -0.11, p < 0.05) \) supporting Hypothesis 2 and Hypothesis 3 respectively. Further, significant associations were observed between employee voice behaviour with team temporal leadership \( (r = 0.22, p < 0.01) \) and team performance \( (r = 0.37, p < 0.01) \) supporting Hypotheses 5 and 6. Hypotheses 4 and 7, the mediation effects of work tension and employee voice behaviour between team temporal leadership and team performance, are discussed at the end of this section.

The study employed Mplus 8.0 to test the mediation analysis on the hypothesised model. As shown in Figure 4.1, the test results for mediation indicate that work tension has a negative relationship with team temporal leadership \( (\beta = -0.12, p < 0.05) \) and team performance \( (\beta = -0.11, p < 0.05) \), further supporting Hypotheses 2 and 3. To directly examine the mediating effects of work tension and employee voice in the proposed model, the study performed bootstrapping procedures using Monte Carlo simulation techniques (Preacher & Hayes, 2008; Preacher et al., 2010). With 10,000 replications, the study found that the indirect effect of team temporal leadership on team performance through work tension was 0.03, with a 95% bias-corrected bootstrap confidence interval of [0.0003, 0.07], which did not contain zero. Thus, the mediating effect of work tension posed in Hypothesis 4 is supported. The test results of the mediation (Figure 4.1) also highlight that employee voice has a positive relationship with team temporal leadership \( (\beta = 0.21, p < 0.001) \), and team performance \( (\beta = 0.27, p < 0.001) \), further supporting Hypotheses 5 and 6. Further, the 10,000 replications showed that the indirect effect of team temporal leadership on team performance through employee voice behaviour was
0.05, with a 95% bias-corrected bootstrap confidence interval of [0.0002, 0.06], which again did not contain zero, supporting Hypothesis 7.

In addition, with the presence of tension and employee voice, the path between team temporal leadership and team performance became insignificant ($\beta = 0.06$), indicating mediation effects supporting Hypotheses 4 and 7.
Note: *p < 0.05; ** p < 0.01; *** p < 0.001.
Significant relationships are presented by
Control variables are age, gender, education level, job category, and organisational tenure

Figure 4.1: Mediating results of work tension and employee voice behaviour using Mplus
4.5 The moderating effects of task and relationship conflicts between work engagement, career commitment and role innovation

In the course of the analyses, the following seven hypotheses were tested.

*Hypothesis 8:* Work engagement is positively related to role innovation.

*Hypothesis 9:* Work engagement is positively related to career commitment.

*Hypothesis 10:* Role innovation is positively related to career commitment.

*Hypothesis 11:* Role innovation mediates the positive relationship between work engagement and career commitment.

*Hypothesis 12a:* Task conflict moderates the relationship between work engagement and career commitment.

*Hypothesis 12b:* Task conflict moderates the relationship between work engagement and role innovation.

*Hypothesis 12c:* Task conflict moderates the relationship between role innovation and career commitment.

*Hypothesis 13a:* Relationship conflict moderates the relationship between work engagement and career commitment.

*Hypothesis 13b:* Relationship conflict moderates the relationship between work engagement and role innovation.

*Hypothesis 13c:* Relationship conflict moderates the relationship between role innovation and career commitment.

*Hypothesis 14a:* The indirect relationship between work engagement and career commitment via role innovation is moderated by task conflict, such that when conflict is higher, the indirect effects are stronger.

*Hypothesis 14b:* The indirect relationship between work engagement and career commitment via role innovation is moderated by relationship conflict, such that when conflict is lower, the indirect effects are stronger.
Table 4.5 presents the means, standard deviations and correlations for the study variables. As the analyses were conducted at the team level (n = 196 leaders representing 196 teams), task and relationship conflicts are team-level constructs that measure the shared perception among team members in relation to the degree to which the team comes across conflict situations. The study justified the appropriateness of aggregating individual responses at the team level by assessing interrater agreement by computing $r_{wg(J)}$. The mean $r_{wg(J)}$ values of 0.76 and 0.79 respectively were well above the conventionally acceptable value of 0.70 (James et al., 1984), suggesting a high level of agreement among individual team members regarding conflict situations within a team. Furthermore, the test results of one-way ANOVA showed that a significant between-group variance resided in the ratings of task and relationship conflict ratings ($F = 1.83, p < 0.001$, $F = 1.96, p < 0.001$). ICC(1) and ICC(2) to test between-group variance and within-group agreement (Bliese, 2000) were calculated next. Table 4.5 also contains the ICC test results, indicating that the task and relationship conflicts at the team level were revealed to be appropriate.

In addition, all hypotheses in the measurement model were tested through MSEM using the Mplus 8.0 package (Muthén & Muthén, 2017). The SEM approach allows simultaneous estimation of multiple indirect paths and provides model fit indices (James & Brett, 1984; James et al., 2006). A comparison of the model fit between the proposed model and four alternative models (Anderson & Gerbing, 1988) was then conducted. Next, the path estimates for testing each hypothesis were obtained in the theoretical model. Finally, the indirect effects were measured using Monte Carlo simulation replications (Preacher et al., 2010).
Table 4.5: Descriptive statistics and correlations

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>ICC(1)</th>
<th>ICC(2)</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<td>Tenure</td>
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<td>*</td>
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<td></td>
<td>0.09</td>
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<td>-</td>
<td>0.02</td>
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<td>0.11</td>
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<td>0.11</td>
<td>0.24</td>
<td></td>
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<td></td>
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<td>0.68</td>
<td>-</td>
<td>-</td>
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<td>0.20</td>
<td>0.06</td>
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<tr>
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<td>-0.12</td>
<td>**</td>
<td>0.11</td>
<td>0.09</td>
<td></td>
<td>0.17</td>
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<td>Role innovation</td>
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<td>**</td>
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<td>**</td>
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<td>**</td>
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<tr>
<td>Career commitment</td>
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<td>0.01</td>
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<td>*</td>
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<td>0.21</td>
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<td>-0.40</td>
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<td>0.26</td>
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<td>Task conflict</td>
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<td>0.55</td>
<td>0.07</td>
<td>0.05</td>
<td>-0.07</td>
<td></td>
<td>0.04</td>
<td>-0.06</td>
<td>0.23</td>
<td>**</td>
<td>0.19</td>
<td>0.21</td>
<td>0.23</td>
<td>**</td>
</tr>
<tr>
<td>Relationship conflict</td>
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<td>0.46</td>
<td>-0.01</td>
<td>-0.09</td>
<td>-0.12</td>
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<td>-0.07</td>
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</tr>
</tbody>
</table>

Note: n (leaders) = 196; n (subordinates) = 873

M = mean; SD = standard deviation; ICC = intraclass correlation coefficient

\*p < 0.05; \**p < 0.01; \***p < 0.001 (two-tailed tests)
To examine whether the measurement model captured distinctive constructs as expected, the study first conducted CFAs using Mplus 8 with the default setting (Muthén & Muthén, 2017). Results of the CFAs are presented in Table 4.6. As expected, the five-factor measurement model (i.e. work engagement, relationship conflict, task conflict, role innovation and career commitment) had a good model fit, with chi-square of 1087.358 ($df = 340$, $p < 0.01$), CFI = 0.92, TLI = 0.91, RMSEA = 0.06 and SRMR = 0.04. The study further compared the measurement model with several alternative measurement models. As shown in Table 4.6, the five-factor model fits better than the other models, indicating that the measures used in this study captured distinct constructs as anticipated.
Table 4.6: Results of confirmatory factor analysis of the measurement models

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>$df$</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
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<tr>
<td>Hypothesised model</td>
<td>1087.36</td>
<td>340</td>
<td>0.94</td>
<td>0.94</td>
<td>0.06</td>
<td>0.04</td>
</tr>
<tr>
<td>Alternative model 1 (combined work engagement and relationship conflict)</td>
<td>1236.09</td>
<td>345</td>
<td>0.87</td>
<td>0.84</td>
<td>0.11</td>
<td>0.08</td>
</tr>
<tr>
<td>Alternative model 2 (combined role innovation and career commitment)</td>
<td>1917.21</td>
<td>345</td>
<td>0.89</td>
<td>0.88</td>
<td>0.10</td>
<td>0.09</td>
</tr>
<tr>
<td>Alternative model 3 (combined engagement and task conflict, and combined role innovation and career commitment)</td>
<td>1635.15</td>
<td>345</td>
<td>0.88</td>
<td>0.86</td>
<td>0.08</td>
<td>0.06</td>
</tr>
<tr>
<td>Alternative model 4 (combined all items into one factor)</td>
<td>2195.88</td>
<td>345</td>
<td>0.84</td>
<td>0.83</td>
<td>0.09</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Note: $\chi^2 =$ chi-square; $df =$ degree of freedom; CFI = comparative fit index; TLI = Tucker Lewis Index; RMSEA = root mean square error of approximation; SRMR = standardised root mean square residual
4.5.1 Test of hypotheses

Figure 4.2 presents the test results of the measurement model undertaken using Mplus 8.0. As expected, work engagement was positively related to role innovation (β = 0.40, \(p < 0.01\)) and career commitment (β = 0.26, \(p < 0.01\)), supporting Hypothesis 8 and Hypothesis 9 respectively. Hypothesis 10 is supported, indicating a positive relationship between role innovation and career commitment (β = 0.21, \(p < 0.001\)). Hypothesis 11, the mediation role of role innovation between work engagement and career commitment was tested under the mediated and moderated indirect paths section.
Figure 4.2: Results of the mediating effect of role innovation and moderating effects of task and relationship conflict using Mplus
4.5.1.1 The role of task conflict

Hypothesis 12a proposed that task conflict moderates the relationship between work engagement and career commitment. In line with the results of the measurement model presented in Figure 4.2, first, the interaction effect of task conflict and work engagement on career commitment was significant ($\beta = 0.24, p < 0.01$). Hence, initial support for Hypothesis 12a was received. The study then followed the procedures recommended by Cohen, Cohen, West and Aiken (2003) by estimating the model at two values of task conflict, 1 standard deviation above and below the mean, to further the interaction. Figure 4.3 shows the interaction plot. As shown, when task conflict was higher, the relationship between work engagement and role innovation was stronger. Following the same procedure, Hypothesis 12b (task conflict strengthens the positive relationship between work engagement and role innovation) was tested. As predicted, the interaction effect was significant ($\beta = 0.31, p < 0.01$) supporting Hypothesis 12b. Figure 4.4 shows the interaction plot (Cohen et al., 2003). Considering Hypothesis 12c, when the interaction was entered in the model, role innovation continued to be a predictor of career commitment, but the interaction was not significant ($\beta = 0.11, p = 0.352$). Thus, Hypothesis 12c is not supported.
Figure 4.3: The moderating effect of task conflict between work engagement and career commitment
Figure 4.4: The moderating effect of task conflict between work engagement and role innovation
4.5.1.2 The role of relationship conflict

The role of relationship conflict was tested in the same way as task conflict. The study examined whether direct paths between work engagement and (a) career commitment and (b) role innovation are moderated by relationship conflict. The results show that the moderating effects of relationship conflict were non-significant, with $\beta = 0.06$, $p = 0.047$ for career commitment and $\beta = -0.04$, $p = 0.039$ for role innovation. Therefore, Hypothesis 13a and Hypothesis 13b are not supported. Hypothesis 13c, the moderation role of the relationship between role innovation and career commitment, was tested next. When an interaction was entered into the model, role innovation continued to be a significant predictor of career commitment, and the interaction effect was significant and negative ($\beta = -0.17$, $p < 0.01$). As shown in Figure 4.5 (Cohen et al., 2003), role innovation is positively related to career commitment and this relationship is stronger when teams have low levels of relationship conflict, supporting Hypothesis 13c. Table 4.7, presents the path analytic test results of the hypotheses.
Figure 4.5: The moderating effect of relationship conflict between role innovation and career commitment
4.5.1.3 The mediated and moderated indirect paths

Hypotheses 11, 14a, and 14b were tested next. The test results of the indirect paths are presented in Table 4.7. The study first obtained 95% confidence intervals for the unstandardised indirect effects using 10,000 Monte Carlo replications (Muthén & Muthén, 2017; Preacher et al., 2010). An indirect effect is significant when the confidence intervals do not contain zero. The study results show that the indirect effects from work engagement to career commitment via role innovation were significant: 0.19 (95% CI: 0.03, 0.07), supporting Hypothesis 11. Further, indirect effects under both high and low task and relationship conflict conditions were obtained. The results are presented in Table 4.8. The indirect effect of work engagement → role innovation → career commitment, was significantly greater when task conflict was high rather than when it was low. Similarly, the indirect effect of work engagement → role innovation → career commitment, was greater when relationship conflict was low rather than high. The results support Hypotheses 14a and 14b.
Table 4.7: Path analytic modelling results

<table>
<thead>
<tr>
<th>Path</th>
<th>Mode 1</th>
<th>Mode 2</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>β (SE)</td>
<td>β (SE)</td>
</tr>
<tr>
<td>Work engagement → Role innovation</td>
<td>0.18*</td>
<td>0.40**</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Work engagement → Career commitment</td>
<td>0.16**</td>
<td>0.26**</td>
</tr>
<tr>
<td></td>
<td>(0.13)</td>
<td>(0.12)</td>
</tr>
<tr>
<td>Role innovation → Career commitment</td>
<td>0.18***</td>
<td>0.21***</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Task conflict → Role innovation</td>
<td>0.26*</td>
<td>0.27*</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td>(0.11)</td>
</tr>
<tr>
<td>Work engagement × Task conflict → Role innovation</td>
<td></td>
<td>0.31**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.08)</td>
</tr>
<tr>
<td>Relationship conflict → Career commitment</td>
<td>−0.12*</td>
<td>−0.19*</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Role innovation × Relationship conflict → Career commitment</td>
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<td>−0.17**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.05)</td>
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<tr>
<td>Task conflict → Career commitment</td>
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<td>0.20</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.06)</td>
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<tr>
<td>Work engagement × Task conflict → Career commitment</td>
<td>0.24**</td>
<td>0.24**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.09)</td>
</tr>
<tr>
<td>$R^2$ Role Innovation</td>
<td>0.24**</td>
<td>0.31***</td>
</tr>
<tr>
<td>$R^2$ Career Commitment</td>
<td>0.72***</td>
<td>0.73***</td>
</tr>
</tbody>
</table>

Note: Reported values are standardised path estimates. Model 1 is the main-effect only model. Model 2 is the hypothesised moderated mediation model (final model). Both models are fully saturated.

SE = standard error

*p < 0.05  **p < 0.01  ***p < 0.001
Table 4.8: Summary of moderated indirect effects

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Indirect paths</th>
<th>Indirect effects</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(95% confidence interval)</td>
</tr>
<tr>
<td>Hypothesis 11</td>
<td>Work engagement → role innovation → career commitment</td>
<td>0.19 (95% CI; 0.03, 0.07)</td>
</tr>
</tbody>
</table>
| Hypothesis 14a | When relationship conflict is high  
                   Work engagement → role innovation → career commitment | 0.03 (95% CI; 0.01, 0.05)      |
|              | When relationship conflict is low  
                   Work engagement → role innovation → career commitment | 0.04 (95% CI; 0.03, 0.08)      |
|              | Difference between indirect effects at low vs high relationship conflict | 0.02 (95% CI; 0.01, 0.04)      |
| Hypothesis 14b | When task conflict is high  
                   Work engagement → role innovation → career commitment | 0.06 (95% CI; 0.01, 0.10)      |
|              | When task conflict is low  
                   Work engagement → role innovation → career commitment | 0.03 (95% CI; 0.001, 0.05)     |
|              | Difference between indirect effects at low vs high task conflict             | (95% CI; 0.003, 0.07)          |
4.6 The effects of task and relationship conflict on team performance: The moderating role of team temporal leadership

In the course of the analyses, the following seven hypotheses were tested.

*Hypothesis 15:* Task conflict has a positive relationship with team performance.

*Hypothesis 16:* Relationship conflict has a negative relationship with team performance.

*Hypothesis 17:* Team temporal leadership has a positive relationship with team performance.

*Hypothesis 18:* Team temporal leadership moderates the relationship between task conflict and team performance.

*Hypothesis 19:* Team temporal leadership moderates the relationship between relationship conflict and team performance.

Given that task conflict, relationship conflict and team temporal leadership were aggregated from multiple team members’ responses, the study calculated the values of the within-group agreement, $r_{wg(J)}$, and ICC(1) and ICC(2). For task conflict, the $r_{wg(J)}$ was 0.88; the ICC(1) value was 0.22; the ICC(2) value was 0.48. For relationship conflict, the $r_{wg(J)}$ was 0.97; the ICC(1) value was 0.67; the ICC(2) value was 0.82. For team temporal leadership the $r_{wg(J)}$ was 0.91; the ICC(1) value was 0.17; the ICC(2) value was 0.38. These results indicate the aggregation of the three variables was adequate (Chen & Bliese, 2002).

The study further employed MSEM to accommodate the nested nature of the study (Preacher et al., 2010). Table 4.9 shows the summary statistics and correlations of all variables. Participant demographic characteristics (gender, age, organisational tenure, education level and job category) were not related to the substantive variables in the model. Those variables were excluded from subsequent analyses since inclusion of unnecessary controls may yield biased estimates, hence, reduce power (Becker, 2005).
Further, a series of CFAs were conducted to examine the distinctiveness of the constructs. The analyses revealed that the hypothesised four-factor model showed a better fit to the data than either the single-factor model or the best fitting three-factor model. Table 4.10 presents the results of the factor analyses.
Table 4. 9: Descriptive statistics and correlations

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<th>Variable</th>
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</tr>
<tr>
<td>Task conflict</td>
<td>3.52</td>
<td>0.70</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
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<tr>
<td>Relationship conflict</td>
<td>3.75</td>
<td>0.87</td>
<td>0.79**</td>
<td>-</td>
<td>-</td>
<td>0.09**</td>
<td>-0.12**</td>
<td>-0.17**</td>
<td>-0.28**</td>
<td>-0.54**</td>
<td>-0.10**</td>
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<tr>
<td>TTL</td>
<td>3.97</td>
<td>0.88</td>
<td>0.78**</td>
<td>0.15</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Member job role</td>
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<td>-</td>
<td>0.09**</td>
<td>-0.02</td>
<td>0.09**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Member tenure</td>
<td>-</td>
<td>-</td>
<td>-0.03</td>
<td>0.01</td>
<td>0.06</td>
<td>0.09**</td>
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<tr>
<td>Member gender</td>
<td>-</td>
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<td>-0.09**</td>
<td>-0.12**</td>
<td>-0.17**</td>
<td>-0.28**</td>
<td>-0.08**</td>
<td>-</td>
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<td>Member age</td>
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<td>0.06</td>
<td>0.08**</td>
<td>0.03</td>
<td>0.09**</td>
<td>0.37**</td>
<td>-0.10**</td>
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<tr>
<td>Member education</td>
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<td>-</td>
<td>-0.11**</td>
<td>-0.10**</td>
<td>-0.05</td>
<td>-0.05</td>
<td>0.01</td>
<td>0.02</td>
<td>0.07**</td>
<td>-</td>
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<tr>
<td>Team level</td>
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<tr>
<td>Task conflict</td>
<td>3.56</td>
<td>0.50</td>
<td>0.55**</td>
<td>0.08</td>
<td>0.09</td>
<td>0.11</td>
<td>0.08</td>
<td>0.05</td>
<td>0.03</td>
<td>0.13</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Relationship conflict</td>
<td>3.77</td>
<td>0.55</td>
<td>0.03</td>
<td>0.15</td>
<td>-0.14**</td>
<td>0.09</td>
<td>-0.05</td>
<td>-0.02</td>
<td>0.10</td>
<td>0.03</td>
<td>0.11</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Team performance</td>
<td>4.14</td>
<td>0.52</td>
<td>0.016</td>
<td>0.26</td>
<td>0.20**</td>
<td>-0.03</td>
<td>0.04</td>
<td>0.06</td>
<td>0.30</td>
<td>0.19**</td>
<td>-0.30</td>
<td>0.19**</td>
<td>-</td>
</tr>
<tr>
<td>TTL</td>
<td>3.99</td>
<td>0.51</td>
<td>0.72**</td>
<td>0.16</td>
<td>0.10</td>
<td>0.04</td>
<td>0.56**</td>
<td>-0.05</td>
<td>-0.13</td>
<td>0.21</td>
<td>0.54**</td>
<td>0.78**</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Note: TTL = team temporal leadership; SD = standard deviation
*p < 0.05; **p < 0.01; ***p < 0.001 (two-tailed tests).
Table 4.10: Results of confirmatory factor analysis of the measurement models

<table>
<thead>
<tr>
<th>Model</th>
<th>( \chi^2 )</th>
<th>df</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesised model</td>
<td>2687.36</td>
<td>1049</td>
<td>0.94</td>
<td>0.91</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td>Alternative model 1</td>
<td>2436.09</td>
<td>1023</td>
<td>0.81</td>
<td>0.77</td>
<td>0.10</td>
<td>0.08</td>
</tr>
<tr>
<td>(combined team temporal leadership and task conflict)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative model 2</td>
<td>2117.21</td>
<td>924</td>
<td>0.80</td>
<td>0.72</td>
<td>0.08</td>
<td>0.09</td>
</tr>
<tr>
<td>(combined team temporal leadership and relationship conflict)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative model 3</td>
<td>2635.15</td>
<td>989</td>
<td>0.69</td>
<td>0.70</td>
<td>0.08</td>
<td>0.06</td>
</tr>
<tr>
<td>(combined team temporal leadership, task conflict and relationship conflict)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative model 4</td>
<td>4195.88</td>
<td>962</td>
<td>0.64</td>
<td>0.61</td>
<td>0.09</td>
<td>0.11</td>
</tr>
<tr>
<td>(combined all items into one factor)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: \( \chi^2 \) = chi-square; df = degrees of freedom; CFI = comparative fit index; TLI = Tucker Lewis Index; RMSEA = root mean square error of approximation; SRMR = standardised root mean square residual
4.6.1 Test of hypotheses

Table 4.11 shows the results of the hypothesised model testing. Hypothesis 15 proposed that task conflict is positively related to team performance. In support of Hypothesis 15, results revealed that task conflict was positively associated with team performance, as indicated by a significant unstandardised coefficient ($b = 0.91$, $p < 0.01$). Hypothesis 16 predicted a negative relationship between relationship conflict and team performance. Results showed that relationship conflict is negatively associated with team performance ($b = -1.32$, $p < 0.05$). Thus, Hypothesis 16 is supported. In supporting Hypothesis 17, the results revealed positive relationship between team temporal leadership and team performance ($b = 1.21$, $p < 0.05$).
Table 4.11: Tests of direct, indirect and interaction effects

<table>
<thead>
<tr>
<th>Path</th>
<th>Estimate</th>
<th>SE</th>
<th>Lower &amp; upper 95% CI limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test of direct relationships</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task conflict $\rightarrow$ team performance (Hypothesis 15)</td>
<td>0.91**</td>
<td>0.08</td>
<td>(0.72, 1.09)</td>
</tr>
<tr>
<td>Relationship conflict $\rightarrow$ team performance (Hypothesis 16)</td>
<td>-1.32’</td>
<td>0.54</td>
<td>(0.29, 2.33)</td>
</tr>
<tr>
<td>Team temporal leadership $\rightarrow$ team performance (Hypothesis 17)</td>
<td>1.21’</td>
<td>0.48</td>
<td>(0.17, 2.01)</td>
</tr>
<tr>
<td>Test of interaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task conflict x Team temporal leadership $\rightarrow$ team performance (Hypothesis 18)</td>
<td>0.48”</td>
<td>0.11</td>
<td>(0.29, 0.68)</td>
</tr>
<tr>
<td>Relationship conflict x Team temporal leadership $\rightarrow$ team performance (Hypothesis 19)</td>
<td>-0.21</td>
<td>0.09</td>
<td>(0.28, 1.18)</td>
</tr>
</tbody>
</table>

Note: SE. = standard error; CI = confidence interval
To examine Hypothesis 18, whether team temporal leadership moderates the positive relationship between task conflict and team performance, the study followed the procedures recommended by Cohen et al. (2003) by estimating the model at two values of task conflict, 1 standard deviation above and below the mean, to further the interaction. Figure 2 shows the interaction plot. As shown, when team temporal leadership was higher, the relationship between task conflict and team performance was stronger. As predicted, the interaction effect was significant ($\beta = 0.48$, $p < 0.01$), supporting Hypothesis 18. Considering Hypothesis 19, when the interaction was entered in the model, relationship conflict continued to be a predictor of team performance, but the interaction was not significant ($\beta = -0.21$, $p = 0.28$). Thus, Hypothesis 19 is not supported.

### 4.7 The mediating roles of employee proactivity, proficiency and adaptivity on work engagement and organisational commitment

In the course of the analyses, the following seven hypotheses were tested.

*Hypothesis 20*: Team temporal leadership has a positive relationship with work engagement.

*Hypothesis 21*: Work engagement has a positive relationship with organisational commitment.

*Hypothesis 22a*: Team temporal leadership has a positive relationship with employee proactivity.

*Hypothesis 22b*: Employee proactivity has a positive relationship with work engagement.

*Hypothesis 22c*: Employee proactivity mediates the relationship between team temporal leadership and work engagement.

*Hypothesis 23a*: Team temporal leadership has a positive relationship with employee proficiency.

*Hypothesis 23b*: Employee proficiency has a positive relationship with work engagement.
Hypothesis 23: Employee proficiency mediates the relationship between team temporal leadership and work engagement.

Hypothesis 24a: Team temporal leadership has a positive relationship with employee adaptivity.

Hypothesis 24b: Employee adaptivity has a positive relationship with work engagement.

Hypothesis 24c: Employee adaptivity mediates the relationship between team temporal leadership and work engagement.

Team temporal leadership and work engagement were rated by team members, while team leaders measured employee proactivity, employee proficiency, employee adaptivity and organisational commitment. Given that team temporal leadership and work engagement were aggregated from multiple team members’ responses, the study calculated the values of the within-group agreement, $r_{wg(J)}$, and ICC(1) and ICC(2). For team temporal leadership the $r_{wg(J)}$ was 0.90; the ICC(1) value was 0.19; and the ICC(2) value was 0.39. For work engagement, the $r_{wg(J)}$ was 0.87; the ICC(1) value was 0.21; and the ICC(2) value was 0.46. The $r_{wg(J)}$ values were above 0.70, indicating a high level of agreement among team members within the organisation (Bliese, 2000; Chen & Bliese, 2002). Likewise, ICC(1) and ICC(2) values were under the recommended benchmarks (Bryk & Raudenbush, 1982; James, 1982; James, et al., 1984), indicating the aggregation of the two variables was adequate.

SEM was employed to test the hypothesised model (Preacher et al., 2010). Table 4.12 presents the means, standard deviations and correlations among study variables.

A CFA was carried out with Mplus version 8.1 (Muthén & Muthén, 2010) in order to assess the distinctiveness of the variables used in this study. The CFA results indicated that the hypothesised 6-factor model yielded a better fit to the data: $\chi^2$ (380) = 531.04, $p < 0.001$, $\chi^2/df = 1.58$; CFI = 0.91, TLI = 0.90, RMSEA = 0.06, SRMR = 0.07, than the
single-factor model ($\chi^2(df) = [1150.62 (402)], \chi^2/df = 2.86, CFI = 0.55, TLI = 0.42, RMSEA = 0.13, SRMR = 0.12$), or any other alternative models. This results further suggests the discriminant validity of the measures.
Table 4.12: Descriptive statistics and correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
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<tbody>
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<td>Job role</td>
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<td>2.1</td>
<td>-</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Tenure</td>
<td>2.42</td>
<td>1.3</td>
<td>-0.06</td>
<td>-</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Gender</td>
<td>1.40</td>
<td>0.50</td>
<td>-0.21*</td>
<td>-0.18**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>3.10</td>
<td>1.3</td>
<td>0.007*</td>
<td>0.44**</td>
<td>-0.06</td>
<td>-</td>
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<tr>
<td>Education</td>
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<td>-0.11**</td>
<td>0.09**</td>
<td>0.03</td>
<td>-</td>
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<tr>
<td>Work engagement</td>
<td>4.31</td>
<td>0.66</td>
<td>-0.04*</td>
<td>0.05</td>
<td>0.02</td>
<td>0.11**</td>
<td>-0.01</td>
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<tr>
<td>OC</td>
<td>4.21</td>
<td>0.70</td>
<td>0.07*</td>
<td>0.15**</td>
<td>-0.05</td>
<td>0.18**</td>
<td>0.13**</td>
<td>0.20</td>
<td>-</td>
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<tr>
<td>TLL</td>
<td>4.15</td>
<td>0.65</td>
<td>-0.12*</td>
<td>0.02</td>
<td>0.01</td>
<td>0.05</td>
<td>-0.01</td>
<td>0.52**</td>
<td>0.14**</td>
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<td>Employee proactivity</td>
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<td>0.68</td>
<td>-0.08*</td>
<td>-0.01</td>
<td>-0.02</td>
<td>-0.08*</td>
<td>0.02</td>
<td>0.11</td>
<td>-0.13*</td>
<td>0.24**</td>
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<td>Employee proficiency</td>
<td>3.27</td>
<td>0.73</td>
<td>0.04</td>
<td>0.11**</td>
<td>-0.02</td>
<td>0.01</td>
<td>-0.08*</td>
<td>0.19</td>
<td>0.10**</td>
<td>0.21**</td>
<td>0.50**</td>
<td></td>
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<tr>
<td>Employee adaptivity</td>
<td>3.48</td>
<td>0.80</td>
<td>-0.07*</td>
<td>-0.06</td>
<td>0.05</td>
<td>-0.02</td>
<td>0.06</td>
<td>0.12*</td>
<td>0.09</td>
<td>0.26**</td>
<td>0.51**</td>
<td>0.48**</td>
</tr>
</tbody>
</table>

Note: OC = organisational commitment; TLL = team temporal leadership; SD = standard deviation
* p < 0.05; ** p < 0.01 (two-tailed tests)
4.7.1 Test of hypotheses

As presented in Table 4.12, the correlations between team temporal leadership and work engagement are consistent with the past literature (Maruping et al., 2015; Mohammed & Nadkarni, 2011; Yuan & Lo, 2018). For instance, team temporal leadership is positively related to work engagement ($r = 0.52, p < 0.01$), supporting Hypothesis 20. Further, as expected, work engagement is related positively to organisational commitment ($r = 0.20, p < 0.05$), supporting Hypothesis 21.

The study employed Mplus 8.0 to test the mediation analysis on the hypothesised model. Figure 4.6 presents the results of the measurement model. As expected, team temporal leadership has a positive relationship with employee proactivity ($\beta = 0.42, p < 0.01$), and employee proactivity has a positive relationship with work engagement ($\beta = 0.20, p < 0.01$), supporting Hypotheses 22a and 22b. The results also support Hypothesis 23a, indicating a positive relationship between team temporal leadership and employee proficiency ($\beta = 0.40, p < 0.01$), and Hypothesis 23b, with a positive relationship between employee proficiency and work engagement ($\beta = 0.15, p < 0.01$). Further, team temporal leadership has a positive relationship with employee adaptivity ($\beta = 0.32, p < 0.01$), and employee adaptivity has a positive relationship with work engagement ($\beta = 0.19, p < 0.05$) supporting Hypothesis 24a and Hypothesis 24b respectively.

The mediated indirect pathways in Hypotheses 22c, 23c and 24c were tested next. The study obtained 95% confidence intervals for the unstandardised indirect effects using 10,000 Monte Carlo replications (Muthén & Muthén, 2017; Preacher et al., 2010). An indirect effect is significant when the confidence intervals do not contain zero. The study results show that the indirect effects from team temporal leadership to work engagement; via employee proactivity ($0.11, 95\% \text{ CI} [0.02, 0.08]$), employee proficiency ($0.12, 95\%$...
CI [0.02, 0.07]), and employee adaptivity (0.08, 95% CI [0.03, 0.06]) were significant, supporting Hypothesis 22c, Hypothesis 23c and Hypothesis 24c respectively.

In addition, with the presence of employee proactivity, employee proficiency and employee adaptivity, the path between team temporal leadership and work engagement became insignificant (β = 0.08), further supporting the mediation effects of Hypotheses 22c, 23c and 24c.
Figure 4.6: Mediating results of employee proactivity, proficiency and adaptivity between team temporal leadership and work engagement using Mplus

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed tests)
4.8 The final model

The purposes of the present study were to understand the conceptualization of work engagement, team performance, employee voice behaviour, work tension, role innovation, team conflict, career commitment, employee proactivity, employee proficiency, employee adaptivity and organisational commitment, under team temporal leadership domain. This research sought to apply different theoretical lenses to determine the matrix of individual, team and organisational constructs that significantly influence team performance, career commitment and organisational commitment, either alone or in combination. Specifically, the findings indicate that employee voice plays an important role under the temporal work environment. This finding highlights the importance of considering the outcomes of leader responsiveness to voice among team members. Both work tension and employee voice were found to mediate the relationship between team temporal leadership and team performance, which suggests that the performance will be less significant and not lead to an increase an individual’s ability to perform well.

Work engagement has been identified as an important organisational factor that requires continued investigation (Barrick et al., 2015; James, McKechnie, & Swanberg, 2011). While previous studies have investigated work engagement with autonomy, organisational commitment and career commitment (Geldenhuys et al., 2014; James et al., 2011), the underlying effects of role innovation, task and relationship conflicts remain untested. This study linked these constructs with work engagement and career commitment behaviours within the team. Using data collected at two different time points, the study found that work engagement led to employee role innovation, which then led to the decision to be committed to their career. Further, the results reveal that low team conflict decreased the impact of work engagement on employee role innovation and career commitment. Hence the findings extend work engagement research and further
understanding of employee role innovation, task and relationship conflicts, and career commitment.

This study further examined if team-level task and relationship conflicts are related to team performance. Further, it examined whether the team-level relationship between team conflict (task conflict and relationship conflict) and team performance depends on the degree to which team temporal leadership impacts on team members’ work. In line with the hypotheses, the study found a positive relationship between task conflict and team performance and a negative relationship between relationship conflict and team performance. The analyses reveal that team temporal leadership moderates the task conflict–team performance relationship: a high level of team temporal leadership behaviour showed a stronger positive relationship between task conflict and team performance compared with lower level of team temporal leadership behaviours. Therefore, the diversity of temporal aspects creates conflict within teams regarding pacing and the scheduling of work activities, have affected both the timeliness and quality of team output.

Finally, this study sought to explain the link between team temporal leadership, and employee proactivity, proficiency, adaptivity and work engagement towards organisational commitment. The study results highlight that the presence of team temporal leadership enhances team members’ proactivity, proficiency and adaptivity to deal with and accomplish their tasks. These three variables – employee proactivity, employee proficiency and employee adaptivity – play a crucial role in the link between team temporal leadership and work engagement. Researchers and practitioners consider many underlying factors to improve work engagement (Attridge, 2009; Rich et al., 2010; Xu & Thomas, 2011), yet the evidence for this under team leadership has been inconsistent (Avolio, Gardner, Walumbwa, Luthans & May, 2004; Leroy, Palanski &
Simons, 2012; Vogelgesang et al., 2013). To shed more light, this study examined the relationship between team temporal leadership and work engagement. Further, the research investigated how employee proactivity, proficiency and adaptivity affect the link between team temporal leadership and work engagement, and found that employees’ proactive behaviour, proficiency and adaptivity mediates the relationship between team temporal leadership and work engagement. These findings add to the body of literature that highlights how employee proactivity, proficiency and adaptivity relate to important organisational outcomes. In addition, the study also found that work engagement has a significant positive relationship with organisational commitment. The reliance on work engagement, which is earned through employee proactivity, employee proficiency and employee adaptivity, can give team members the confidence in their work to become more committed to the organisation.

Figure 4.7 illustrates the results of all the relationships found in this study, and Table 4.13 provides the summary of results of the hypotheses tested.
Figure 4.7: The final model
<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 1: Team temporal leadership is positively related to team performance.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 2: Work tension is related to team temporal leadership.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 3: Work tension is related to team performance.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 4: Work tension mediates the relationship between team temporal leadership and team performance.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 5: Employee voice has a positive relationship with team temporal leadership.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 6: Employee voice has a positive relationship with team performance.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 7: Employee voice mediates the relationship between team temporal leadership and team performance.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 8: Work engagement is positively related to role innovation.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 9: Work engagement is positively related to career commitment.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 10: Role innovation is positively related to career commitment.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 11: Role innovation mediates the positive relationship between work engagement and career commitment.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 12a: Task conflict moderates the relationship between work engagement and career commitment.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 12b: Task conflict moderates the relationship between work engagement and role innovation.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 12c: Task conflict moderates the relationship between role innovation and career commitment. Such relationships are stronger when task conflict is higher.</td>
<td>Not Supported</td>
</tr>
<tr>
<td>Hypothesis 13a: Relationship conflict moderates the relationship between work engagement and career commitment.</td>
<td>Not Supported</td>
</tr>
<tr>
<td>Hypothesis 13b: Relationship conflict moderates the relationship between work engagement and role innovation.</td>
<td>Not Supported</td>
</tr>
<tr>
<td>Hypothesis 13c: Relationship conflict moderates the relationship between role innovation and career commitment.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 14a: The indirect relationship between work engagement and career commitment via role innovation is moderated by task conflict, such that when conflict is higher, the indirect effects are stronger.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 14b: The indirect relationship between work engagement and career commitment via role innovation is moderated by relationship conflict, such that when conflict is lower, the indirect effects are stronger.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 15: Task conflict has a positive relationship with team performance.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 16: Relationship conflict has a negative relationship with team performance.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 17: Team temporal leadership has a positive relationship with team performance.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>Result</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Hypothesis 18: Team temporal leadership moderates the relationship between task conflict and team performance.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 19: Team temporal leadership moderates the relationship between relationship conflict and team performance.</td>
<td>Not Supported</td>
</tr>
<tr>
<td>Hypothesis 20: Team temporal leadership has a positive relationship with work engagement.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 21: Work engagement has a positive relationship with organisational commitment.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 22a: Team temporal leadership has a positive relationship with employee proactivity.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 22b: Employee proactivity has a positive relationship with work engagement.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 22c: Employee proactivity mediates the relationship between team temporal leadership and work engagement.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 23a: Team temporal leadership has a positive relationship with employee proficiency.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 23b: Employee proficiency has a positive relationship with work engagement.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 23c: Employee proficiency mediates the relationship between team temporal leadership and work engagement.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 24a: Team temporal leadership has a positive relationship with employee adaptivity.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 24b: Employee adaptivity has a positive relationship with work engagement.</td>
<td>Supported</td>
</tr>
<tr>
<td>Hypothesis 24c: Employee adaptivity mediates the relationship between team temporal leadership and work engagement.</td>
<td>Supported</td>
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</tbody>
</table>
4.9 Conclusion

This chapter examined each of the constructs put forward to determine factor structure and their relationships between variables. As outlined previously, reliability based on Cronbach’s alpha was reviewed and determined to reveal high reliability. The results from EFA demonstrated all items adopted in this study had an acceptable factor loading value. CFA was used to confirm the factor structure, and the relationships between all the variables were examined using SEM. The results were analysed and discussed in relation to the current literature and industry practice in relation to human resource management and the organisational behaviour context. The final chapter in this thesis discusses the theoretical contributions and practical applications, as well as limitations and directions for future research.
Chapter 5: Contributions to theory and practice, limitations, directions for future research and conclusion

5.1 Chapter overview
Chapter 5 presents both the theoretical and practical implications drawn from the findings about the relationships between team temporal leadership, work tension, employee voice behaviour, team performance, work engagement, team conflict, career commitment, role innovation, employee proactivity, proficiency, adaptivity and organisational commitment. In addition, this chapter identifies the limitations of the study and suggests possible directions for future research. Finally, this chapter provides a comprehensive conclusion of the present study.

5.2 Contributions to theory and literature
The results of the present study provide several theoretical contributions to assist both scholars and practitioners to fully understand the relationship between the study constructs in team temporal leadership, team performance and work engagement domains. This section discusses the study’s implications to the theories applied in this research.

5.2.1 Contributions to time, interaction and performance theory and equity theory
The previous literature on leadership is inconsistent with perspectives on the effects of the leader–subordinate dyadic relationship, and the underlying issues of temporal characteristics on team performance (Chiniara & Bentein, 2016; Day et al., 2006; Hannah, Sumanth, Lester, Cavarretta, 2014; Hunter et al., 2011; Kleef, Homan, Beersma, Knippenberg, Knippenberg, Damen, 2009; Van der Erve, 2004; Zaccaro et al., 2001). The findings of this study shed light on the importance of managing the temporal characteristics that could arise under team temporal leadership, and how to comprehend
those problems in a better way. Thus, the study offers new perspectives and several implications for leadership research relating to time, interaction and performance theory.

First, the study used a six-month project cycle to examine the role of team temporal leadership in understanding team performance. Although prior research has found that team temporal leadership is significantly related to time diversity, temporal conflict, competency, followership and team performance (Mohammed & Nadkarni, 2011; Santos et al., 2016; Yuan & Lo, 2018), investigation of its effect on leaders’ work tension and employees’ voice behaviour is surprisingly scarce. Team performance is a result of the prosocial behaviours of all team members, including leaders, who are involved in the project cycle, implying team member effort. The finding of the study demonstrates that work tension and employee voice could significantly foster the relationship between team temporal leadership towards team performance.

Second, while most past research on team temporal leadership holds the theoretical perspectives of TIP theory (Mohammed & Nadkarni, 2011; Yuan & Lo, 2018) to explain the effects of team temporal leadership, this thesis suggests that leader and subordinate behaviours depend on an organisation’s time-pressured work environment. Similarly, the results of this study bridge the gap in recent literature appealing to incorporate temporal elements to support temporal implicit followership theory (Alipour et al., 2017; Bluedorn & Jaussi, 2008; Halbesleben et al., 2003). Therefore, this study has responded to the call for further research on theoretical conceptualisation of temporal implicit leadership theories and temporal implicit followership theories (Alipour et al., 2017), demonstrating that temporality should be incorporated into the leadership context itself.

Third, the empirical findings of this study broadly support the proposed theoretical model. To the extent of the researcher’s knowledge, no previous study has investigated the work tension of team temporal leaders using time, interaction and performance theory. The
study results indicate that temporal leaders were more successful in driving team members to achieve better team performance, but only under low work tension, reflecting work tension as a disrupting mechanism on temporal leaders’ planning and decision-making processes. This finding sheds light on how leader cognitive abilities correlate with team performance (Fielder, 1986), and that leaders must concentrate on the task, come up with effective plans and then implement them. In doing so, the proposed model and empirical findings provide evidence that confirms the theoretical conceptualisation of team temporal leadership with the time, interaction and performance theory framework. The study contributes to the current leadership literature by demonstrating a strong relationship between work tension, team temporal leadership and team performance, which highlights the importance of a leader being able to manage work tension while driving subordinates to accomplish tasks on time.

Fourth, the study sought to examine the voice of followers under a time-pressured working environment. The results support equity theory (Adams, 1965) regarding the effect of employee voice under team temporal leadership. They corroborate that employee voice mediates the relationship between team temporal leadership on team performance, which describes the interaction required to align between leader–follower dyadic relationships under temporal characteristics. Temporal leaders enhance time-based communication agendas throughout the project cycle by setting goals, adjusting tasks and conducting evaluations (Gevers, Van Eerde, Rutte, 2009; Mohammed & Alipour, 2014). As stated in Adams’ (1965) equity theory, inequity can be rectified through both behavioural and psychological aspects. The study findings augment current knowledge by promoting a time-pressured working environment and extend the range of organisational phenomena to which equity theory is related within the team temporal leadership domain.
Fifth, team temporal leadership research has focused mainly on the direct relationship between temporal leadership and outcomes (Mohammed & Nadkarni, 2011; Yuan & Lo, 2018). This study identified some important perspectives on team temporal leadership, which fit well with recent needs regarding the team temporal leadership literature on possibilities, rather than the main effects of temporal leadership behaviour on leader–subordinate dyadic outcomes. In addition, the study also looked into leaders’ and subordinates’ actual behaviours by infusing time-pressured characteristics, discussing time-based individual differences, and specifying the consequences of destructive of leader–follower coordination on multi-level phenomena. Nevertheless, evidence was found to substantiate the main argument connecting to team temporal leadership, work tension, employee voice and team performance interactions, which provides insight to the dynamics involved in this context.

5.2.2 Contributions to broaden-and-build theory

The study findings contribute towards the growing research on work engagement and its impact on employee career commitment in several ways. First, it contributes to the current research investigating ways to increase work engagement with the finding that engaged employees choose to become more innovative, thus conserving available resources, and, by implementing new methods, achieving targets in a more productive manner and minimising the usual time frame.

Second, the study reveals that the type and level of team conflict (task/relationship) impact on a relationship in different ways. The study found that task conflict moderates the paths between work engagement and career commitment as well as work engagement and role innovation, whereas relationship conflict was found to be non-significant.

Third, the study extends past research drawing on broaden-and-build theory (Fredrickson, 2001) to link work engagement and task conflict to organisational outcome (i.e. career
commitment) and individual outcome (i.e. role innovation), indicating that the intensity of task conflict among team members corresponds to the extent of interaction between them.

Fourth, the study findings also further the work of Loi, Ngo, Zhang and Lau (2011), by inferring that high work engagement may not always deliver positive outcomes. This study extends this research stream by identifying the underling mechanisms of work engagement and their impact on employees’ innovative behaviour.

Fifth, the results on the moderating role of team conflict further the existing role innovation literature by adding new insights to the understanding of the boundary conditions of the relationship between work engagement and role innovation. The findings indicate that the innovative ability of employees with low team conflict, in comparison to those with high team conflict, is at a higher level when they are occupied at high levels of engagement. Work engagement in situations with high levels of team conflict is more detrimental to employees’ aptitude towards being innovative in the workplace. This supports Gould’s (2012) argument that the roles of power and conflict affect employees’ innovation processes. Furthermore, the results are consistent with a recent study by Costa et al., (2015), which found that the interaction between work engagement and high team conflict affects employees’ satisfaction and hinders organisational performance.

Last, but not least, the study contributes towards the existing literature on the antecedents of career commitment. In particular, the results highlight the role that work engagement plays in nurturing an employee’s commitment towards their career in the context of high team conflict. By testing the mediating effect of role innovation, it shows that engaged employees use the existing resources to implement something new. Hence, this study not only addresses the influence of task and relationship conflicts to employee career
commitment, but also reveals inspiring procedures, such as how these conflict situations influence employee role innovation.

5.2.3 Contributions to path-goal theory

This study contributes to path-goal theory in several ways. First, it contributes to team temporal leadership research by establishing the importance of team temporal leadership behaviours in affecting team performance, and the degree to which team members face conflict at work. This focus on team temporal leadership behaviours can further understanding of task and relationship conflict.

Second, by elevating individual level task and relationship conflict to the team level, the study was able to examine cross-level relationships between task conflict and relationship conflict with team performance. Interestingly, the results reveal that team-level team temporal leadership behaviours have an impact on the positive relationship between task conflict and team performance. This finding demonstrates that team members who find their task too difficult to complete may have found that team temporal leadership behaviours are more helpful. Hence team members are more likely to rely on their leaders for navigating the team towards task accomplishment (i.e. by allocating resources, reminding of milestones).

Finally, although team temporal leadership is a relationship-oriented leadership style, the study results indicate a non-significant result for the moderating role of team temporal leadership behaviours. Thus, this study furthers path-goal theory by highlighting that a leader’s behaviours can not only influence their team members’ motivation, but also reduce task conflict by clarifying the situation and directing team members towards better team performance.
5.2.4 Contributions to time, interaction and performance theory and role theory

The study also found that both direct and indirect relationships between the study variables – team temporal leadership behaviour with team member work engagement – was fully mediated through employee proactivity, proficiency and adaptivity. Although there are a number of theories on leadership, TIP theory (McGrath, 1991) has been an influential framework for understanding team temporal leadership behaviours and their effect on team members. Thus, TIP theory is distinct with its core precept that describes group activity patterns, changes in tasks and types of tasks, as well as the level of tasks that have important consequences for team member outcomes. However, the theory suggests, and the literature highlights, that the early evaluation of group activities and temporal processes in team interaction can improve the quality of team performance (McGrath, 1991). In line with this literature, the study examined employee proactivity, proficiency and adaptivity to take a more comprehensive look at employee work engagement under team temporal leadership behaviours. Specifically, the results of this study show that employees become more engaged with their work through higher levels of proactive, proficient and adaptive behaviours under team temporal leadership, highlighting some important employee behaviours to expand the role theory. Given role theory’s perception about the individual role concept towards work engagement (Kahn, 1990), the study posited that team members’ proactive, proficient and adaptive behaviours would be more important in predicting work engagement. This also leads to speculation that team temporal leadership behaviours are associated with higher levels of employee proactivity, proficiency and adaptivity. Regardless of the frequent use of the role theory (Kahn, 1990) to further current knowledge about a variety of workplace processes, different role identities, role needs and desires and goals need to be carefully monitored by team temporal leaders as described by TIP theory (McGrath, 1991). Which in the other hand suggest that the role theory should incorporate the timely manner in to
its discussion to broaden the role concept towards work engagement. The two theories in combination explain how the relationship between team temporal leaders and higher levels of employee proactivity, proficiency and adaptivity enhance employee work engagement, leading to successful accomplishment of tasks.

5.3 Implications for leadership practice

In addition to theoretical contributions, the present study built a concrete contribution to how to effectively managed teams are engaged in time-based, time-pressured tasks (Antonakis, 2017). Similarly, the study will benefit leadership development in several ways. The findings indicate the importance of training team leaders to manage the temporal characteristics that could arise under a time-pressured working environment, and further outline how to achieve strong team temporal leadership skills by overcoming the issues that teams face under a temporal environment. Specifically, by considering employee voice, the results provide insight for temporal leaders to create an environment that welcomes and supports subordinates’ suggestions and ideas. Listening to their voice for a better understanding of the work environment could also develop a strong interpersonal relationship between leaders and subordinates. Further, temporal leaders could promote voice by sharing information with subordinates to create open communication pathways at the workplace, and encourage subordinates to share their thoughts. This means addressing the concerns and taking active steps to ensure a strong working environment is in place. Moreover, leaders’ attention and support may facilitate improved team performance. In contrast, the effect of work tension can disrupt many aspects of team functioning. Leaders’ reactions to ongoing tension situations can impact subordinate performance, which could damage direct leader–subordinate interactions. This emphasises the importance of organisations investing in training for leaders to become more capable in how to handle these stressful situations wisely.
Thus, it has become very important for organisations to encourage team leaders to utilise more team temporal leadership skills, and train them to improve their understanding of subordinates’ attitudes and behaviours towards task accomplishment under team temporal leadership. Drawing from the results, the study advocates that both team leaders and subordinates could be held responsible for minimising the level of work tension and enhancing team performance. Therefore, it would be highly beneficial for organisations to offer team leaders and team members the necessary training to improve their temporal behaviours.

Further, the study results have several important implications for organisations. First, organisations should pay more attention to the constraining factors that hinder work engagement, as well as higher levels of task and relationship conflict, considering their harmful consequences to the business. Organisations should inform management about the negative results caused by high levels of team conflict. Organisations should also consider incorporating policies and regulations to penalise conflicting behaviours. Specifically, by acknowledging that employees’ innovative behaviours are impacted by task conflict, it is crucial for management to create a friendly working environment and speak out about anything that would lead to unhealthy team member relationships.

Second, the underlying mechanism of role innovation further directs the organisations’ attention to the importance of establishing a happy workforce (Curral & Marques-Quinteiro, 2009). It is vital for organisations to provide additional resources and support to enhance employees’ innovative skills. For example, organisations could establish employee wellbeing programs and detect any stress factors that may arise due to either task or relationship conflict situations at work.

Finally, the study’s results on the exacerbating effects of employee work engagement in the context of high task conflict underline the critical impact on employees’ role
innovation and career commitment. Managers should not underestimate low levels of conflict situations, as low conflict in general still has a detrimental effect and can gradually become worse. These employees will soon become more sensitive to any depressing feedback from managers and subsequently act more negatively towards the organisation. Hence, managers should behave positively and consistently lead the team. Management training programs should be implemented to caution leaders in terms of the consequences of team conflict as well as the importance of maintaining a healthy work environment to enhance the innovation skills of the employees and to increase their level of commitment.

At a practical level, the research provides important information to enable organisations to improve. A positive working environment must be established in the relationship between team leaders and subordinates. Team temporal leaders support subordinates’ performance excellence through various means (Mohammed & Nadkarni, 2011; Santos et al., 2016). They can foster employees’ proactive, proficient and adaptive behaviours by applying their strengths in setting up milestones, reminding about deadlines, allocating temporal resources and so on. The study results confirm that proactive, proficient and adaptive employee behaviours play a major role in the relationship between team temporal leadership and work engagement. From a practical point of view, the results can be applied to strengthen the dyadic relationship between leaders and subordinates to improve their role performance. More importantly, such improvement not only results in better work engagement, but also in team members’ commitment towards the organisation. In this sense, the study highlights that training team leaders with team temporal leadership behaviours is essential for maintaining an engaged and committed workforce, and enabling an organisation’s future sustainability.
5.4 Limitations

Despite these strengths that bolster confidence in the findings, the study is not without limitations. This section outlines the limitations of this research.

5.4.1 Population

The data were collected from Sri Lanka, which is collectivistic with a high power distance (Kirkman, Chen, Farh, Chen, & Lowe, 2009). These cultural characteristics may influence leader-based team structures. However, the pilot test results show reliable alpha values for each variable, thus, no questionnaires were modified. The study findings show organisations and leader–subordinate dyadic relationships about the implications of leadership behaviour in a time-pressured work environment in western contexts.

5.4.2 Generalisability

The study samples consisted of leaders and subordinates from manufacturing firms. Most of this population was female with relatively low tenure. This could have introduced gender and tenure biases into the findings. For example, male employees (leaders/subordinates) with longer tenure in the job may have affected the hypothesised dyadic relationships, as the study failed to include an equal number of long-tenured males (leaders/subordinates). Hence, the findings could have been different if there had been more long-tenured male participation in this study. In addition, while the sample was drawn from employees at different manufacturing firms, they all fell under the same industry (apparel), and this might also have affected the generalisability of the findings, hence limiting representativeness. Therefore, future researchers are encouraged to examine a more representative sample from firms across different industries.

5.4.3 Common method variance

Given the data collection design, the potential for CMV to impact on the results of this study is acknowledged. As outlined in Section 3.4.2.1, the study took steps to minimise
common method bias. Thus, it is not believed CMV is an issue in this research, and every measure was taken to ensure it was eliminated. However, due to the nature of the study design involving the use of self-reported questionnaires, it still must be considered.

5.4.4 Additional data collection

Data on work tension were only collected from leaders, not from subordinates. To understand the role of work tension under team temporal leadership behaviour, future research should gather more information on work tension from both leaders and subordinates to increase the effect size for relationship testing.

5.4.5 Project cycle

This study only investigated one project cycle, which was a 6-month targeted manufacturing line, to measure the study constructs. Some constructs were measured during the middle of the target line, and some at the end of the product cycle. Hence prior team performance in previous product cycles could have influenced team leaders while assessing team performance.

5.4.6 Additional study variables

Finally, this study leaves some unanswered questions relevant to the findings. Some of the relationships established in this research have not been commonly seen in the leadership literature, and thus it is a new way of looking at team temporal leadership. Having said that, there may be other intervening instrumental variables that provide a greater insight or have a stronger influence on the relationships between variables presented in this study.

5.4.7 Lack of recent literature

Team temporal leadership style is a comparatively newly emerged leadership style. With limited empirical studies to offer comparisons it is difficult to be certain that the principles of these theories can in fact be applied in this way. While every effort was made to be
thorough in establishing this framework with replications of this approach, such as conducting a systematic review of literature with inclusion and exclusion criteria, a firm model for it to be used in this way cannot be established.

5.5 Directions for future research

To address the issue with study generalisability, future studies could look at the broader Asian context to explore how the relationships established here can also be applied in a cross-cultural context. In the same way, studies carried out in private and public entities in varied industries would offer comparative data for a richer analysis. Considering this, future studies should be carried out with a more balanced sample of gender and tenure to improve the clarity and generalisability of the findings. Future research should investigate cultural variables such as power distance and collectivism (Tse, Huang, & Lam, 2013) that could potentially influence the leader–subordinate relationship. By doing so, future research may test the hypotheses in other cultural contexts to increase the generalisability of the current findings or the variance of the proposed model. Moreover, future longitudinal studies could also be conducted to test the relationships with longer project cycles to analyse the causal effects among the study variables.

The study outlined several promising directions for future research. First, the increasingly harmful impact of team conflict revealed in this study provides useful directions for future research on conflict. In order to fully understand task and relationship conflict, researchers are encouraged to consider both leader behaviours and the overall leader–subordinate relationship.

Second, the mediating effect of role innovation suggests that there are other explanatory study variables linking work engagement to career commitment. Future research could expand existing knowledge by investigating other possible mediators.
Third, researchers on commitment have outlined the multi-faceted nature of commitment. It would be fruitful for future research to extend the theoretical model with various forms of commitment to investigate the triggering factors and instrumental variables by conducting longitudinal studies at multiple organisational levels.

Fourth, the increasingly harmful impact of team conflict revealed in this study provides useful directions for future research. In order to fully understand task and relationship conflict, researchers are encouraged to consider both leader behaviours and the overall leader–subordinate relationship.

Fifth, the moderating effect of relationship conflict suggests that there are other explanatory study variables linking relationship conflict and team performance. Hence, future research could expand existing knowledge by investigating other possible mediators.

Sixth, an avenue for future research would be to extend the model with various forms of performances (i.e. team, task) to investigate the triggering factors and instrumental variables by conducting longitudinal studies at multiple organisational levels.

Seventh, this study makes an important contribution to scholarly inquiry into team temporal leadership practices and team conflict management within the framework of path-goal theory and calls upon team conflict researchers to look into individual, team and organisational level variation in a cross-cultural context.

Eighth, this study focused on the team temporal leadership dimension, hence only investigated the proactive, proficient and adaptivity behaviours and how these variables interact with the relationship between team temporal leadership and work engagement. Despite these mediating effects, future research should also identify other mediating and/or moderating variables that could enhance engagement.
Ninth, it is important to further investigate the relationship between team temporal leadership and organisational commitment via employee proactivity, proficiency and adaptivity based on the results from the final model. It is further proposed that future research should enlarge the sample size to cross-validate the research findings. In addition, future studies should investigate other temporal characteristics, such as performance of innovation, team dynamics and different temporal behaviours, depending on the characteristics of team members (Santos et al., 2016; Yuan & Lo, 2018) focusing on longitudinal studies, which could impact on team temporal leadership. In addition, the future research could also look into the global operational networks of multinational enterprises (MNEs) and the variation in leadership style from one context to another.

5.6 Conclusion

Team temporal leadership is in the early stages of theoretical development. There is a growing body of theoretical evidence that this form of leadership has the potential to improve follower outcomes. This study focused on the assumption that temporal leaders influence employee attitudes and behaviour. Conducting a thorough review of the literature, the study described the interrelationship between variables that could result in better leader–subordinate working relationships, finding that several issues related to this topic remain unattended. The theoretical model in this paper has practical value for leadership; a process that inherently involves time and organisation. It points out that there are multiple constructs that generally enhance team performance. In this attempt to identify the boundary conditions on the need for, and effects of, team temporal leadership, the study concludes that team temporal leadership is stronger when there is temporal diversity within the team. To determine the impact of team temporal leadership on work engagement and team performance, the cohesion of these constructs implies that it is important that researchers pay more attention to the interactions between the constructs as well as to their combined effects. This then, encourages further research into the nature
and impact of team temporal leadership so that the knowledge about temporal implicit leadership and followership theories can expand and move forward in new directions. By further addressing the temporal leader–follower perceptions, processes and performance outcomes, further research could reveal important implications for organisational leaders as well as for those interested in advancing research on the topic of team temporal leadership effectiveness.

In summary, the study confirms and extends current understanding of the time-pressured organisational context, where team leaders should provide strong team temporal leadership skills driving their teams towards task accomplishment within strict deadlines. Of particular importance, this research extends understanding regarding unfavourable outcomes that affect team leaders and team members, as well as the interacting relationship between team leaders and team members in a time-pressured working environment. Hence this research represents the first attempt to explore the interactions among team temporal leadership, work tension, employee voice, team performance, work engagement, team conflict, role innovation, career commitment, employee proactivity, employee proficiency and employee adaptivity, contributing to this research stream by expanding its theoretical tenets. Finally, it is hoped that the findings and future directions inspire researchers to explore other instrumental variables and important outcomes underlying team temporal leadership behaviours. The research further highlights that organisations should encourage team leaders to engage in behaviour characteristic of both task-oriented temporal leadership and relationship-oriented temporal leadership, allowing the organisational influence found in this research to extend theory and models and help improve the overall team performance of employees. The application of the final model can help scholarly researchers and practitioners to understand the importance of developing team temporal leadership behaviours.
References


Avolio, B.J., Zhu, W., Koh, W., & Bhatia, P. (2004). Transformational leadership and organizational commitment: mediating role of psychological empowerment and


Letchumanasamy, R. S. (2013). The impact of transformational leadership on organisational climate for innovation, innovative work behaviour and organisational performance in government-linked companies. (Doctoral thesis), Charles Sturt University, Australia.


Appendix 1: Survey questionnaire for leaders

Participant Information Sheet – Leaders
(Quantitative Study)

Introduction
You are invited to participate in a study on “The impact of team temporal leadership on work engagement and team performance”. It will be approximately 30 minutes – 01 hour to complete the questionnaire.

The study is being conducted by Mrs. Buddhika Surakshi Mudannayake from the School of Management and Marketing at the Charles Sturt University as part of Doctor of Philosophy program during 2016-2018.

Here is a brief overview of the study, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish.

What is the purpose of this study?
The contribution of this research will help the organizations in understanding the employee attitudes, role innovation, adaptivity, team conflict, monotony for dealing with team temporal diversity within the team it will help to utilise strong temporal leadership to maximise team performance. If the team leader has no skills or competencies to drive the team to finish the tasks on time to meet the deadline due to lack of temporal leadership behaviors, this will lead to result in poor team performances. And if an organization failed to understand the importance of these relationships, it can unknowingly limit such leadership style to perform in teams. Therefore given the importance of temporal leadership, the research will emphasize the value for organizations to invest in developing team leaders to improve their temporal leadership performance.

What are the possible disadvantages, risks or side effects of taking part?
There is no possible risks involved.

What are the possible benefits of taking part?
Your input can add value in examining the team temporal leadership and identify its impact on employee engagement from your experience. This topic also possess limited knowledge in the academic world. With your participation, you will be contributing to fill in the gap of the literature by sharing your views and experiences and representing your opinions. Findings of the research are aimed to be published in journals and will be presented in conferences during the next two year.
How will my taking part in this study be kept confidential?
The study does not request your names. The age or any other personal details will not be disclosed in any report. The data collected will not be distributed for any commercial reasons and will be used solely for academic purpose.

What is next from here?
Consent form is attached next to this information sheet. Please sign it and return it back to public relations officer from whom the researcher will collect the information sheets. You will be contacted soon with timeline and other details about data collection.

Although I hope it is not the case, if you have any complaints or concerns about any aspects of the way you have been approached or treated during the course of this study, please feel free to contact me on 0420338511 or 0770303152. Or you can email to bmudannayake@csu.edu.au.

Thank you very much for reading this information and giving consideration to taking part in this study.
Participation Consent Form – Leaders’
(Quantitative Study)

Thank you for participating in this study. Please be aware that Charles Sturt University’s Faculty of Business Human Research Ethics Committee has approved this project [Protocol number 200/2016/17]. Please read the statements below, circle and sign where indicated. Thank you for your time and contribution.

I, the undersigned……………………………………… … as…………………………………… of……………………………………… hereby freely agree to take part in the study entitled “The impact of team temporal leadership on work engagement and team performance”.

1. I confirm that I have been given a Participant Information Sheet which indicates the purpose of the study, the names and contact details of key people and, the risks, potential and benefits. I have been given details of my involvement in the study. I have been told that in the event of any significant change to the aim(s) or design of the study I will be informed.

2. I have been assured that I may withdraw from the study at any time without being disadvantaged or having to give a reason.

3. I have been told how information relating to me (data obtained, and data provided by me about myself) will be handled: how it will be kept secure, who will have access to it, and how it will or may be used.

4. I have been told that I may at some time in the future be contacted again in connection with this or another study.

Signature of participant……………………………Date………………

Name of Researcher ……………………………………………

Signature of Researcher…………………………………………...Date………………

NOTE: If you have any complaints or reservations about the ethical conduct of this project, you may contact the Committee through the Executive Officer:

The Executive Officer
Human Research Ethics Committee
Tel: (02) 6338 4628
Email: ethics@csu.edu.au

Any issues you raise will be treated in confidence and investigated fully and you will be informed of the outcome.
Part A
Complete your response by placing an ‘X’ on the corresponding square.

1. Please indicate your current role.
   a) Stores
   b) Fabric inspection
   c) Cutting
   d) Pad printing
   e) Sewing/ Production
   f) Ironing
   g) Mechanical
   h) Maintenance
   i) Stain
   j) Packing
   k) Quality
   l) Work study

2. How long have you been employed with this organization?
   a) 1 month to less than 1 year
   b) 1 year to less than 3 years
   c) 3 years to less than 5 years
   d) 5 years to less than 10 years
   e) More than 10 years

3. What is your gender?
   a) Male
   b) Female

4. What is your age range?
   a) 18 – 21 years
   b) 22 – 25 years
   c) 26 – 30 years
   d) 31 – 35 years
   e) 36 – 45 years
   f) 46 – 55 years
   g) Over 55 years

5. What is the highest level of formal education attained?
Part B
Instructions: Please circle the answer based on your personal experience. Don’t try to think how other people might answer the questions, or what might be happening in other parts of the organisation.

1. Team Performance

a) Please rate the timeline by which this team’s project was completed:

1--2--3--4--5--6--7

Completed far in advance of the deadline

b) The team’s timeliness in meeting project milestones and biweekly deadlines was:

1--2--3--4--5--6--7

Poor Mediocre Exceptional
c) The client’s satisfaction with the team’s performance on this project was:

1--2--3--4--5--6--7

Poor Mediocre Exceptional
d) Your evaluation of the team’s overall performance on this project was:

1--2--3--4--5--6--7

Poor Mediocre Exceptional
2. Employee Voice Behaviour

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>Unsure</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) This particular subordinate develops and makes recommendations concerning issues that affect this workgroup</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>b) This particular subordinate speaks up and encourages others in this group to get involved in issues that affect the group</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>c) This particular subordinate communicates his/her opinions about work issues to others in this group even if his/her opinion is different and others in this group disagree with him/her</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>d) This particular subordinate keeps well informed about issues where his/her opinion might be useful to this work group</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>e) This particular subordinate gets involved in issues that affect the quality of work life here in this group</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>f) This particular subordinate speaks up in this group with ideas for new projects or changes in procedure</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
### 3. Work Tension

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Unsure</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>My job tends to directly affect my health</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b)</td>
<td>I work under a great deal of tensions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c)</td>
<td>I have felt fidgety or nervous as a result of my job</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>d)</td>
<td>If I had a different job, my health would probably improve</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>e)</td>
<td>Problems associated with my job have kept me awake at night</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>f)</td>
<td>I have felt nervous before attending meetings in the company</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>g)</td>
<td>I often ‘take my job home with me’ in the sense that I think about it when doing other things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
# LEADER

**Survey questionnaire**  
**Time 2**

### 1. Employee Proficiency, Proactivity & Adaptivity

*Does the subordinate;*

<table>
<thead>
<tr>
<th></th>
<th>Very little</th>
<th>Fair</th>
<th>Good</th>
<th>Very good</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Carried out the core parts of your job well</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b) Completed your core tasks well using the standard procedures</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c) Ensured your tasks were completed properly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>d) Initiated better ways of doing your core tasks</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>e) Come up with ideas to improve the way in which your core tasks are done</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>f) Made changes to the way your core tasks are done</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>g) Adapted well to changes in core tasks</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>h) Coped with changes to the way you have to do your core tasks</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>i) Learned new skills to help you adapt to changes in your core tasks</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### 2. Organisational Commitment

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) I am willing to work harder than I have to in order to help this organization succeed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b) I feel very little loyalty to this organization – (R)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c) I would take almost any job to keep working for this organization</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>d) I find that my values and the organization’s are very similar</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>e) I am proud to be working for this organisation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>f) I would turn down another job for more pay in order to stay with this organization</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
3. Career Commitment

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Unsure</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) I like this career too well to give up</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>b) If I could go into a different profession which paid the same, I would probably like it – (R)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>c) If I could do it all over again, I would not choose to work in this profession – (R)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>d) I definitely want a career for myself in this profession</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>e) If I had all the money I needed without working, I would probably still continue to work in this profession</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>f) I am disappointed that I ever entered this profession – (R)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>g) This is the ideal profession for a life’s work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Thank for taking the time to complete this questionnaire, your contribution is very much appreciated
Appendix 2: Survey questionnaire for subordinates

Participant Information Sheet – Subordinates’
(Quantitative Study)

Introduction
You are invited to participate in a study on “The impact of team temporal leadership on work engagement and team performance”. It will be approximately 30 minutes – 01 hour to complete the questionnaire.

The study is being conducted by Mrs. Buddhika Surakshi Mudannayake from the School of Management and Marketing at the Charles Sturt University as part of Doctor of Philosophy program during 2016-2018.

Here is a brief overview of the study, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish.

What is the purpose of this study?
The contribution of this research will help the organizations in understanding the employee attitudes, role innovation, adaptivity, team conflict, monotony for dealing with team temporal diversity within the team it will help to utilise strong temporal leadership to maximise team performance. If the team leader has no skills or competencies to drive the team to finish the tasks on time to meet the deadline due to lack of temporal leadership behaviors, this will lead to result in poor team performances. And if an organization failed to understand the importance of these relationships, it can unknowingly limit such leadership style to perform in teams. Therefore given the importance of temporal leadership, the research will emphasize the value for organizations to invest in developing team leaders to improve their temporal leadership performance.

What are the possible disadvantages, risks or side effects of taking part?
There is no possible risks involved.

What are the possible benefits of taking part?
Your input can add value in examining the team temporal leadership and identify its impact on work engagement from your experience. This topic also possess limited knowledge in the academic world. With your participation, you will be contributing to fill in the gap of the literature by sharing your views and experiences and representing your opinions. Findings of the research are aimed to be published in journals and will be presented in conferences during the next two year.

How will my taking part in this study be kept confidential?
The study does not request your names. The age or any other personal details will not be disclosed in any report. The data collected will not be distributed for any commercial reasons and will be used solely for academic purpose.

**What is next from here?**
Consent form is attached next to this information sheet. Please sign it and return it back to public relations officer from whom the researcher will collect the information sheets. You will be contacted soon with timeline and other details about data collection.

*Although I hope it is not the case, if you have any complaints or concerns about any aspects of the way you have been approached or treated during the course of this study, please feel free to contact me on 0420338511 or 0770303152. Or you can email to bmudannayake@csu.edu.au.*

*Thank you very much for reading this information and giving consideration to taking part in this study.*
Participation Consent Form – Subordinates’
(Quantitative Study)

Thank you for participating in this study. Please be aware that Charles Sturt University’s Faculty of Business Human Research Ethics Committee has approved this project [Protocol number 200/2016/17]. Please read the statements below, circle and sign where indicated. Thank you for your time and contribution.

I, the undersigned ……………………………………………
….as………………………………
of…………………………………………………………..…… hereby freely agree to take part in the study entitled “The impact of team temporal leadership on work engagement and team performance”.

1. I confirm that I have been given a Participant Information Sheet which indicates the purpose of the study, the names and contact details of key people and, the risks, potential and benefits. I have been given details of my involvement in the study. I have been told that in the event of any significant change to the aim(s) or design of the study I will be informed.

2. I have been assured that I may withdraw from the study at any time without being disadvantaged or having to give a reason.

3. I have been told how information relating to me (data obtained, and data provided by me about myself) will be handled: how it will be kept secure, who will have access to it, and how it will or may be used.

4. I have been told that I may at some time in the future be contacted again in connection with this or another study.

Signature of participant………………………………………Date………………

Name of Researcher …………………………………………

Signature of Researcher ………………………………………Date………………

NOTE: If you have any complaints or reservations about the ethical conduct of this project, you may contact the Committee through the Executive Officer:

The Executive Officer
Human Research Ethics Committee
Tel: (02) 6338 4628
Email: ethics@csu.edu.au

Any issues you raise will be treated in confidence and investigated fully and you will be informed of the outcome.
SUBORDINATE
Survey Questionnaire
Time 1

Part A
Complete your response by placing an ‘X’ on the corresponding square.

1. Please indicate your current role.
   a) Stores
   b) Fabric inspection
   c) Cutting
   d) Pad printing
   e) Sewing/ Production
   f) Ironing
   g) Mechanical
   h) Maintenance
   i) Stain
   j) Packing
   k) Quality
   l) Work study

2. How long have you been employed with this organization?
   a) 1 month to less than 1 year
   b) 1 year to less than 3 years
   c) 3 years to less than 5 years
   d) 5 years to less than 10 years
   e) More than 10 years

3. What is your gender?
   a) Male
   b) Female

4. What is your age range?
   a) 18 – 21 years
   b) 22 – 25 years
   c) 26 – 30 years
   d) 31 – 35 years
   e) 36 – 45 years
   f) 46 – 55 years
   g) Over 55 years

5. What is the highest level of formal education attained?
i) Junior high school (up to year 10)  
j) High school (year 12 A/L’s)  
k) Technical or trade qualification  
l) Certificate or Diploma  
m) Bachelor degree  
n) Masters’ degree  
o) Doctorate degree  
p) Other

**Part B**

Instructions: Please circle the answer based on your **personal experience**. Don’t try to think how other people might answer the questions, or what might be happening in other parts of the organisation.

1. **Team Temporal Leadership**

<table>
<thead>
<tr>
<th></th>
<th>To what extent does your project leader remind members of important deadlines</th>
<th>Not at all</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>To what extent does your project leader prioritize tasks and allocate time to each task</th>
<th>Not at all</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>b)</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>To what extent does your project leader prepare and build in time for contingencies, problems, and emerging issues</th>
<th>Not at all</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>c)</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>To what extent does your project leader pace the team so that work is finished on time</th>
<th>Not at all</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>d)</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>To what extent does your project leader urge members to finish subtasks on time</th>
<th>Not at all</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>e)</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>To what extent does your project leader set milestones to measure progress on the project</th>
<th>Not at all</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>f)</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>To what extent does your project leader effective in coordinating the team to meet client deadlines</th>
<th>Not at all</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>g)</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
## 2. Employee Engagement

### How do you feel your work?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Almost Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) At my work, I feel bursting with energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>b) At my job, I feel strong and vigorous</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>c) I am enthusiastic about my job</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>d) My job inspires me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>e) When I get up in the morning, I feel like going to work</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>f) I feel happy when I am working intensely</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>g) I am proud of the work that I do</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>h) I am immersed in my work</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>i) I get carried away when I am working</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
## SUBORDINATE
### Survey Questionnaire
#### Time 2

### 1. Team Conflict

**Relationship conflict**

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>Minor</th>
<th>Neutral</th>
<th>Moderate</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a)</strong> How much anger was there among the members of the group?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td><strong>b)</strong> How much personal friction was there in the group during decisions?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td><strong>c)</strong> How much tension was there in the group during decisions?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Task conflict**

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>Minor</th>
<th>Neutral</th>
<th>Moderate</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a)</strong> How many disagreements over different ideas were there?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td><strong>b)</strong> How many differences about the content of decisions did the group have to work through?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td><strong>c)</strong> How many differences of opinion were there within the group?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### Role Innovation

<table>
<thead>
<tr>
<th>Role Innovation</th>
<th>I do the job much the same as other people have done</th>
<th>I do the job somewhat differently than others have done it</th>
<th>I do the job very differently than others have done it</th>
<th>I do the job completely differently than the others have done it</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a)</strong> Setting work targets/ objectives</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>b)</strong> Deciding the methods used to achieve work targets/objectives</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>c)</strong> Deciding the order in which different parts of the job are done</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>d)</strong> Choosing whom you deal with in order to carry out your work duties</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>e)</strong> Initiating new procedures or information systems</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>f)</strong> Developing innovative ways of accomplishing targets/objectives</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

*Thank for taking the time to complete this questionnaire, your contribution is very much appreciated*