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UNIVERSITY OF THE WITWATERSRAND, SCHOOL OF ECONOMIC AND BUSINESS SCIENCES

POWER AND INFLUENCE OF INFORMATION TECHNOLOGY PROJECT TEAMS: AN EMPIRICAL STUDY IN A SOUTH AFRICAN CONTEXT.

By

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Abstract

Information systems development (ISD) project teams are involved in requirements elicitation, analysis, development, testing and deployment of various information technology solutions. These teams often compete with each other for limited resources in an attempt to fulfil their organisational mandate. As a result, project teams can exert power over each other and employ various influence tactics in attempt to gain and maintain positions of power which allow them to control key resources and influence decision making processes. This study examined the strategic environmental and structural conditions of fulfilment which influence the power of ISD project teams, and the extent to which influence tactics can impact on team power level. Data was collected using a structured questionnaire instrument. A sample of 106 teams from five companies was obtained. The companies operate in the financial services and government sectors. A single key informant responded on behalf of their team. Correlation and regression analysis was used to test the hypothesized links between power and the structural conditions of fulfilment namely centrality and substitutability, as well as, the environmental condition of coping with uncertainty. The moderating effects of influence tactics on these relationships was tested via hierarchical moderated regression. Results indicated that the strategic condition of coping with uncertainty significantly and positively affects perceived team power, whilst substitutability significantly and negatively affects perceived team power. Support for the structural condition of centrality was not found to be significant. Additionally, the influence tactic of rational persuasion was found to moderate the relationship between power and coping with uncertainty such that rational persuasion interacts with coping with uncertainty to affect power. Results also indicated that the influence tactic of collaboration was not a moderator but rather has significant direct effects on perceived team power. The study concluded that ISD project teams who cope with project uncertainties and whose tasks and functionalities are difficult to replace, as well as, those who effectively collaborate with other teams will have greater power within project settings. Moreover, ISD project teams can combine rational persuasion tactics with coping with uncertainty to exert even stronger effects on power. The outcomes of this study help to bring an understanding of the impact of the strategic conditions factors on perceived team power within ISD project settings, as well as the role of specific influence tactics in the formation of power.

Declaration

I declare that this research project is my own work, except as acknowledged in the text. It has not been submitted before for any other degree or examination in this or any other university.

_____

Mpho David Kobedi

28 February 2017

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1. INTRODUCTION TO RESEARCH PROBLEM

1.1 INTRODUCTION

This chapter provides a background to the study. Firstly, the chapter introduces the concept of project teams in Information Systems Development (ISD). Secondly, the problem of power and influence within ISD project teams is highlighted. This is followed by the research problem and justification of research question. The aims and objectives of the study, as well as the significance of the study are also discussed.

1.2 BACKGROUND

1.2.1 BACKGROUND TO ISD PROJECT TEAMS

Organisational behaviour, industrial & organisational psychology, and the management literature has over the past four decades highlighted the prevalence of work teams or work groups within organisations (Gordon, 1992; Devine et al., 1999; Kozlowski & Bell, 2003). In an organisational setting, work teams can be defined as collective groups of individuals who interact in their tasks towards a common gaol through shared responsibilities (Cohen & Bailey, 1997; Devine et al., 1999). Furthermore, these teams are embedded within a social system that exists across the organisational boundaries wherein the teams function in the context of mutual interdependency (Cohen & Bailey, 1997; Drach-Zahavy & Somech, 2010). In this social system, the notions of power and influence amongst the interdependent work teams often emerge.

The occurrence of work teams or work groups has also been observed specifically within information systems development (ISD) projects. These teams play a role in the innovation and development of technology-based solutions that foster company competitiveness. Additionally, as technology innovations become more complex, the responsibility of innovation becomes shared across multiple, inter-dependent ISD project teams- often with different specialist focus areas (Pinto et al., 1993; Hogel et al., 2004). Within these intra-organisational cross-functional project teams, divergent perspectives and interests often emerge due to opposing and competing goals and interpersonal relations (Pinto et al., 1993).

The shift towards embedded team structures emanates from the need within organisations to consolidate core functionalities, reduce duplication, address organisational skills pressures, drive efficiency in work outputs and promote agility in innovation. For this reason, ISD project teams need to be efficient and effective in assisting the organisation to fulfil its intended mandate.

At the same time, ISD project teams have to deal with issues such as resource constraints, limited budgets and stringent timelines. Therefore, IT managers and CIO's are constantly pressured to reduce IT cost spend. Whilst efforts can be driven towards various cost saving strategies, such as, renegotiation of licence and vendor/procurement fees, or even renegotiation of various service level agreements etc., there is also a shift towards reducing physical headcount and staffing costs within project teams in an effort to optimise efficiencies and reduce overall IT operating expenses. ISD teams whose functionality and work outputs remain unproductive and inefficient, can therefore be seen as unnecessary expenditure and can suffer the risk of redeployment or even retrenchment. On the other hand, ISD teams whose core functionality is deemed critical to the survival of the organisation, or who are key participants in decision making processes and control key resources can be seen as powerful and influential and therefore stand a greater chance of survival.

1.2.2 THE PROBLEM OF TEAM POWER

The phenomenon of power and influence within the context of ISD project teams has attracted much attention within the Management Information Systems literature. Studies such as Sabherwal and Grover (2010); Azad and Faraj (2011) and Chang (2013) highlight the demonstration of power and the manifestation of various influence processes which exist amongst the various stakeholders within information systems projects. These views are further reinforced by Ngwenyama and Nielsen (2014) who observed how information systems implementations are largely driven by organisational influence processes and that a team can design and implement an organisational influencing strategy to help overcome barriers in information systems implementations. Additionally, in a project team context, influence tactics can further help to shape and direct team members' behaviour to obtain desired project outcomes (Narayanaswamy et al., 2013). To this end, teams have to consider various strategies that they can utilise in order to obtain (or retain) levels of power. Teams can also deploy various influence tactics in an attempt to persuade other teams in their favour.

There are numerous reasons why teams battle each other for positions of power and influence. Organisational behaviour research has shown that empowered teams are more effective and productive than less empowered teams (Kirkman & Rosen, 1999; Mathieu et al., 2006; Maynard et al., 2012). Additionally, teams who are in positions of power enjoy greater levels of job satisfaction and demonstrate greater levels of commitment to the organisation and the team itself (Kirkman & Rosen, 1999). Moreover, the organisational characteristics emanating from the structural features of the work setting which allow for teams to be empowered on the basis of their level of authority and responsibility or increased participation in decision-making, allows empowered teams to share a greater sense of motivation, shared team responsibility, as well as,

greater team psychological empowerment (Mathieu et al., 2006; Maynard et al., 2012). This positively influences the teams' overall effectiveness (Mathieu et al., 2006). Additionally, according to Greer (2008), high-powered teams find themselves in leading roles and are often perceived by others as winners. Lastly, Pearce and Sims (2002) and Doorewaard and Brouns (2003) argue that increased team power levels promote positive influence processes within the team itself which results in team members who are open to express their opinions and will often increase their effort on team tasks improving the overall effectiveness of the team.

Team power can be defined as the collective capacity of a team (or organisational subunit) to exert influence over others (Saunders, 1981; Provan, 1980; Greer et al., 2011), or the degree of control a team has over other teams (Drach-Zahavy & Somech, 2010), or the ability a team has to make or control decisions which affects others (Provan, 1980; Greer, 2008). Furthermore, influence is described as the means through which a team acts to change the behaviour of another team intentionally (Provan, 1980). The present study refers to the term influence tactics to describe these inter-team behavioural manoeuvres. According to Jasperson et al. (2002) organisational structural factors such as hierarchical authority (which informs the level of command based on the rank of the team) and formal decision rights (which represents the legitimate entitlement the team has in making decisions) can become the basis through which teams acquire power and influence.

Given the above, team power is therefore beneficial as it leads to overall performance. Similarly, the individual members within powerful teams also benefit from being empowered to express their opinions and take charge in key decision making processes. Team power is also important as it leads to team member motivation and commitment towards team performance. Thus powerful teams can be in a more favourable position when compared to their less empowered counterparts. To this end, the question that arises is what are the factors which influence the formation of team power? Also, what are the strategic considerations which teams (specifically teams who lack hierarchical authority and formal decision rights on the basis of their structural positioning within the organisation) need to be mindful of in order to align themselves to be in positions of power so as to reap the benefits of team power such as team effectiveness, performance, motivation, commitment and greater influence in decision making.

1.3 PROBLEM STATEMENT AND RESEARCH QUESTION

Prior studies on team power have attempted to define team power and understand its intended outcomes. Other studies endeavour to explain the manifestations of team power in various contexts and how power shifts from one team to another. However, not much research has been

carried out so as to provide an answer to the question of what are the factors which influence the formation of team power. Particularly, the extent to which organisational structural factors not related to a team's hierarchical authority or formal decision rights promote or restrict the formation of team power is not well understood in the ISD context. It is also not clear how the link between these structural factors and team power is impacted by influence tactics. This is what constitutes the research problem for this study.

To address this problem, this study draws on the Strategic Contingencies Theory of Intra-organisational Power (Hickson et al., 1971), (hereby referred to as SCTIP) to examine a combination of the organisational structural factors of Centrality and Substitutability, as well as, the environmental factor of Coping with uncertainty, which together formulate the strategic conditions of fulfilment that lead to team power within ISD project settings (Hickson et al., 1971; Hinnings et al., 1974). In addition, the influence tactics of Rational persuasion, Exchange, Coalition, and Collaboration are observed to determine the impact they have on team power within ISD project teams (Yukl & Falbe, 1990; Yukl &Tracey, 1992; Yukl et al., 2005).

The context selected for this study is organisations which exist within predominantly information intensive sectors, with significant IT budgets and substantial technology investments used to create competitive IT-based solutions and products. Thus, this study is predominantly focused at, but not limited to, organisations within the financial services, insurance and banking sectors. Included also, is a government agency which is mandated to advance information systems services to various government departments within South Africa. Altogether, ISD teams from five organisations were sampled for the purposes of the study.

1.4 OVERALL AIM AND OBJECTIVES OF THE STUDY

The overall aims of this study are to develop and then test a research model of:

1.4.1 The influence of centrality, substitutability and coping with uncertainty on the power of ISD project teams.

1.4.2 The impact of the influence tactics of rational persuasion, exchange, coalition, and collaboration on the formation of team power within ISD project teams.

In order to achieve the above aims, the study has the following objectives:

- To conduct a review of the literature on power and influence within the organisational behaviour, management and information systems literature.

- To develop and hypothesise a research model linking team power to the strategic conditions factors and influence tactics.

- To source empirically tested measures which will be used to determine team power, the strategic conditions factors and influence tactics.

- To ensure that the chosen measures are tested and piloted, thus ensuring the specified constructs are measured correctly.

- To collect data from a sample of ISD project teams that are based within a population of organisations in the financial services, insurance and banking industry which are largely IT-driven with significant IT budgets. Data will also be collected from a sample of ISD project teams which are based within a government agency organisation that is mandated to deliver IT-based solutions for various government departments in South Africa.

- To analyse the data and test the hypotheses against the predefined measures.

- To assess the relationship between team power and its associated variables. Additionally, the moderating effect of the influence tactics will also be assessed.

1.5 SIGNIFICANCE OF THE STUDY

The findings from this study are intended to provide insight on the manner in which ISD project teams who are not in formal positions of authority based on the organisational structure, can strategically position themselves within the organisation to be in positions of power and influence. Furthermore, the findings of this study can be used to enlighten ISD project teams to be mindful of the various influence tactics which other teams can employ to threaten their positions of power, as well as, be cognisant of those influence tactics which they themselves can deploy to influence other teams in their favour as they strive to achieve their team mandate. Additionally, it is vital for IT managers and project team managers, to know how to strategically create and maintain appropriate team power for their respective teams since powerful teams have a greater organisational impact as far as decision making, solution formulation and performance is concerned. Thus managers of powerful teams can be admired by others as effective leaders. Lastly, this study adds empirical evidence on the phenomena of power and influence within the extant MIS literature, and positions power as a theoretically reinforced phenomenon worth investigating.

1.6 STRUCTURE OF REPORT

This report is presented according to the following layout:

- *Chapter 2*: Literature Review

  In this chapter a review on team power and influence tactics is presented. Power relations within ISD projects are discussed in view of the dispositional (or macro-structural) and process (or micro-behavioural) aspects of team power. By incorporating Resource Dependency Theory, *centrality* and *substitutability* are both viewed as strategic conditions factors emanating from the macro-structural properties of an organisation. In addition, Contingency Theory is used to illustrate that *coping with uncertainty* can be viewed as the strategic condition factor which emanates from the environment of the organisation. The influence tactics of rational persuasion, exchange, coalition and collaboration are highlighted as the micro-behavioural aspects of team power.

  Furthermore, this chapter introduces the Strategic Contingencies Theory of Intraorganisational Power (SCTIP) which forms the fundamental theoretical background underpinning this study. In addition, the influence tactics taxonomy is also discussed. Lastly, the research model which links team power to the strategic conditions factors and influence tactics is presented. The research hypotheses relating to the constructs of team power, strategic conditions factors and influence tactics are also developed and presented.

- *Chapter 3*: Research Methodology

  This chapter describes the methodology that was used to test the hypotheses. The research paradigm which informs the study is discussed, as well as, the research approach that was followed. In addition, this chapter also highlights the research design which was adopted for the current study, the data collection strategy and the data collection method which was used to collect data. Furthermore, the theoretical constructs which are measured in the study are defined conceptually and operationally whilst the procedure that was followed to develop and test the research instrument is highlighted. The outcomes from the pre-testing and pilot testing are also discussed. In addition, the chosen population, sampling frame and sampling technique are also described. Lastly, the data analysis methods which were used to analyse and measure the validity and reliability of the research instrument are highlighted, as well as, the data analysis techniques which were employed to test the hypotheses. Finally, key ethical considerations and limitations which were pertinent to the study are outlined.

- *Chapter 4*: Results

  This chapter discusses the key findings of the study. Data cleaning is discussed and a sample profile is presented. Factor analysis is conducted to assess the validity of the chosen measures whilst measures are also assessed for reliability by computing tests for internal consistency. Basic descriptive statistics pertaining to the data are presented. Lastly, the results of the hypothesis testing using correlation, multiple regression and hierarchical moderated regression are presented.

- *Chapter 5*: Discussion

  This chapter discusses the results from the study with reference to the literature.

- *Chapter 6*: Conclusion

  This chapter provides a conclusion to the study by reflecting on the overall aims of the study. Lastly, the limitations, recommendations and future considerations emanating from the study are highlighted.

The following chapter presents a review of the literature related to the concepts of power and influence.

2. LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews the literature on power and influence tactics within organisational work teams. The concept of team power in relation to the organisational structural and behavioural aspects of power is reviewed. Additionally, the organisational environmental aspect of team power is also evaluated and the key gaps in the literature are highlighted. Furthermore, in response to the study's objective to develop and theorise a research model associating team power to key strategic conditions factors which emanate from the organisations' structural characteristics and the influence tactics, the research model and hypotheses which are drawn from the Strategic Contingencies Theory of Intraorganisational Power (SCTIP) are developed and presented.

2.2 TEAM POWER

Power relations within ISD projects have been studied extensively within the MIS literature (Allen et al., 2000; Sabherwal & Grover, 2010; Azad & Faraj 2011; Chang 2013; Narayanaswamy et al., 2013; Ngwenyama & Nielsen, 2014) both from a positivist and interpretivist perspective. However, there is a lack of a unified conceptualisation of the notion of power, with numerous theoretical perspectives through which power can be observed. This lends to multiple meanings and interpretations (Jasperson et al., 2002; Silva, 2007). As a result, the study of power is criticised as being vague and obscure in nature, resulting in it remaining on the periphery of the broader MIS literature (Jasperson et al., 2002).

Researchers who study the phenomena of power often view the phenomena from two different aspects, namely; the dispositional aspects (or structural view) of power, and the process aspects (or behavioural view) of power (Cavaye & Christiansen, 1996; Brass & Burkhardt, 1993). Firstly, when power is viewed from the dispositional viewpoint, it is the factors which enable individuals or groups to acquire and retain power that are investigated. In this view, the individuals or groups gain power by virtue of their positioning within the social system of the organisation. This refers to the structural factors observed on the basis of the inherent organisational structure (Cavaye & Christiansen, 1996; Brass & Burkhardt, 1993). Brass and Burkhardt (1993) specifically denotes this as the macro-structural treatments of power. Secondly, when the process aspects of power are considered, the focus shifts to understanding the mechanisms or different ways in which the organisational actors, through their behaviour, actually influence each other either individually or as a group, and how they influence particular

events and outcomes (Cavaye & Christiansen, 1996; Brass & Burkhardt, 1993). Brass and Burkhardt (1993) specifically refers to these as the micro-behavioural treatments of power. Both Cavaye & Christiansen (1996) and Brass and Burkhardt (1993) acknowledge that empirical research on power tends to focus on either of the aspects with complete disregard of the other.

Studies on power, particularly within the information systems and management domain, have been influenced by Jasperson et al. (2002) who undertook an extensive analysis of the extant MIS and management literature in an attempt to conceptualise power and its associated meanings. Through a structured review of the literature on power spanning over a 20 year period, Jasperson et al. (2002) highlight four common themes that emerge within power studies. These are; *Authority*, *Decision Rights*, *Influence* and *Politics* (Jasperson et al., 2002). According to Jasperson et al. (2002), *authority* (also referred to as structural-based power) is commonly regarded as the structural source of power, and is viewed as the mandated legitimate or formal right to issue orders and instructions and enforce obedience thereto. *Decision rights* on the other hand are owned by those individuals or groups within the organisation who hold the privileges of making decisions. Therefore, individuals or groups obtain power when they are in positions of formal authority or hold decision rights. Furthermore, authority and decision rights are linked to the structural positioning of the individual or group emanating from the organisational structure. Thus, individuals or groups who are placed at higher levels of the organisational hierarchy possess authority and decision rights by virtue of their positioning. It can be argued therefore, that the concepts of Authority and Decision rights relate to the aspects of disposition (or macro-structural aspects of power) as provided by Cavaye and Christensen (1996) and Brass and Burkhardt (1993). In this view, authority and decision rights can thus be perceived as factors which enable power. In contrast, the question that arises therefore, is how does a team which lacks the strategic positioning of authority and formal decision rights (which would otherwise enable it to obtain power), gain power, if it is inherently disadvantaged by its structural positioning within the organisation? This is the first gap which this study aims to address.

The concept of *influence* as per the review by Jasperson et al. (2002) is linked to observations of actor behavioural influences and the framing of others' choices, interests and behaviours. This is consistent with the process or micro-behavioural aspects of power. Jasperson et al. (2002) also link "Network Centrality" to the concept of influence borrowing from Astley and Sachdeva (1984), but seemingly only provide a circumstantial account to this effect. According to Astley and Sachdeva (1984), network centrality has its basis in the organisational structure, and as such is the means through which organisational actors gain power by virtue of their location and operations being central to the organisational workflow. Therefore, network centrality does not necessarily describe the behavioural mechanisms through which organisational actors influence

each other. In this study, network centrality is viewed in terms of the macro-structural aspect of power rather than a micro-behavioural view of power.

Lastly Jasperson et al. (2002), cite Sillince and Mouakket (1997) to describe the concept of power as *politics* in terms of how power is derived from political role playing. This involves a series of political processes and strategies used to manipulate individuals within the organisation. In this study, the concepts of *influence* and *politics* are viewed together as the process aspects of power which describe the notion of influence tactics.

Informed by the above, this study therefore focuses on the macro-structural factors (not derived from hierarchal authority or formal decision entitlement) which can lead to team power. In addition, this study also addresses the shortcomings of most studies on power by simultaneously observing the process or micro-behavioural view of power (Cavaye & Christiansen, 1996; Brass & Burkhardt, 1993). This is achieved by incorporating the concept of influence tactics. This concurrent assessment of the macro-structural and micro-structural aspects of power constitute the second gap in the literature which this study aims to address.

In addition, special consideration is also given to the unique inherent characteristic of uncertainty which arises within the project environment. ISD implementations are laden with high levels of uncertainty (Alter & Ginzberg, 1978; Barki et al., 2001; Jun et al., 2011). Furthermore, the uncertainty can arise from the unique environmental features emanating from within the organisation itself. These include the complexity resulting from the domain and system (or technical) landscape, the speed with which the organisational environment changes, the level of skill of the development team and the level of experience of the client/user based on their familiarity of the type of applications being developed and their ability to clearly comprehend and articulate the problems they want to resolve through the technology (Barki et al., 2001; Jun et al., 2011). Since ISD project teams are faced with high levels of uncertainty in project implementations, it is also worth examining, in addition to the macro-structural and micro-behavioural aspects of power, the environmental uncertainty aspect and its relation to team power.

2.3 DISPOSITIONAL (MACRO-STRUCTURAL) DETERMINANTS OF TEAM POWER

The Resource Dependence Theory (1974), when applied at an intraorganisational level suggests that organisational subunits require critical resources to fulfil their departmental outcomes. Moreover, if an organisational subunit is able to provide or maintain the control of key resources which are deemed necessary to the organisation, the subunit gains power. Therefore, power which is possessed by organisational subunits (or teams) is dependent on the amount of

resources and capabilities the department possesses or controls. Studies such as Harpaz and Meshoulam (1997) which utilise The Resource Dependency Theory at the intraorganisational subunit level demonstrate that subunits which control key resources and processes which are needed by other subunits occupy positions of power. Therefore, drawing from The Resource Dependence Theory (1974), it can be argued that if a team wishes to be in a position of power it has to be in a strategic position which enables it to either supply or control key processes, capabilities and resources which are deemed indispensable by other teams. So, although a team may not obtain power by virtue of formal authority or mandated decision rights on account of its hierarchical structural positioning, it can obtain power if it is able to supply the resources which other teams require.

Furthermore, since organisational work teams interact on the basis of their tasks (Cohen & Bailey, 1997; Devine et al., 1999), it can be reasoned that if a teams' tasks and functionality are deemed a fundamental and essential resource which is required by others within the organisation, the team will gain power. This notion is captured succinctly by Hickson et al. (1971) who refer to this determinant of team power as centrality. According to Hickson et al. (1971), when the activities and tasks of a team are central to the organisation, the team obtains power. Centrality is driven by how vital and dependent the activities of the team are to the organisation. Centrality can therefore be viewed in terms of the extent to which a department is interconnected with other departments, and the immediacy with which the functions of the team affects other teams (Hickson et al., 1971; Hinnings et al., 1974).

Moreover, Hickson et al. (1971) refer to another determinant of team power called substitutability. Substitutability refers to the degree of difficulty of substituting a teams' tasks and functions. Substitutability denotes the availability of alternatives to a particular subunit (Hickson et al., 1971; Hinnings et al., 1974). A team which provides specialist technical or domain knowledge is deemed least substitutable and can thus be seen as powerful and influential, whilst a team whose functions can be sourced easily from elsewhere can be deemed to be less powerful, and less influential. Thus both centrality and substitutability are two structural determinants of team power.

2.4 THE ENVIRONMENTAL DETERMINANT OF TEAM POWER

Within MIS and Organisational research, Contingency Theory has been used as a lens to study ISD project implementations, and has been useful to illustrate how a fit between the extent of the environmental uncertainties experienced within ISD project settings and the organisational structural and process characteristics can lead to performance (Barki et al., 2001). Furthermore, Barki et al. (2001) reflect upon this environmental uncertainty within project settings specifically

as emanating from factors such as the complexity associated with ISD project environments, the rate at which changes are experienced within ISD project implementations, as well as, the availability (or lack thereof) of accessible and clear information required for decision making within ISD project implementations. Hickson et al. (1971) refer to this organisational uncertainty as a subunit's lack of information about future events involving inputs, throughputs, and outputs. According to Hickson et al. (1971) and Hinnings et al. (1974), a team's ability to deal or cope with the environmental uncertainties is a key determinant to team power. Additionally, according to Lucas (1984), a team is able to cope with uncertainty if it is able to cope with uncertainty in general, cope with environmental uncertainty and cope with the uncertainty from its operations. Coping with uncertainty in general refers to the teams' ability to reduce changes in work inputs and outputs arising from uncertainty, and its ability to provide the information needed to predict future changes. Coping with environmental uncertainty refers to the team's ability to cope with changing departmental circumstances, whilst coping with uncertainty from operations refers to the team's ability to ensure consistent delivery of their work outcomes (Lucas, 1984). Thus, a team's power arises to some extent, from its ability to cope with uncertainty and predict future changes in order to ensure it delivers its work outputs consistently.

2.5 PROCESS (MICRO-BEHAVIOURAL) ASPECTS OF POWER: INFLUENCE TACTICS

The processes through which individuals and groups within ISD projects influence each other have been observed in numerous studies. Sabherwal and Grover (2010) refer to the concept of influence tactics as "political processes" and define it as the sequence of project events, driven by the emotions of the project stakeholders. Similarly, Ngwenyama and Nielson (2014) suggest various "organisational influence processes" or "influence strategies" that the various role players within interrelated group settings employ to gain positions of influence and power over each other. In other related studies such as Chang (2013), influence tactics are observed as a series of "political games" which play out daily in project implementations. Later, Chang (2014) refers to influence tactics as "political behaviours". The description of influence tactics as "political tactics" traces back to Bradshaw-Camball (1991). Narayanaswamy et al. (2013) make specific mention of the term "influence tactics" to describe the same phenomenon where project stakeholders apply various strategies within ISD project settings with the intention to influence each other. Although the different authors make use of different terminology, they all converge on how influence tactics manifest; (i) the agent exercises power (exerts influence) over the target, (ii) the agent shapes or frames the choices, attitudes and interests of the target, (iii) such that the target ultimately displays a behavioural change in favour of the agent. This study adopts the term "influence tactics" however recognising that various similar terms do exist within the broader literature.

A key element emergent from the above studies is the direction in which the influence tactics can be exerted. Narayanaswamy et al. (2013) observe influence tactics which are exerted at a dyadic relational level of authority, suggesting a superior-subordinate relationship. Ngwenyama and Nielsen (2014) refer to a triad relationship suggesting that influence tactics can be exerted in a downward direction (superior to subordinate), upward direction (subordinate to superior) and lateral direction (peer to peer). Sabherwal and Grover (2010) and Chang (2013) also refer to generic relationships between ISD project teams with no formal reporting lines between the teams. This study similarly takes the stance that various project teams can relate as peers without a superior-subordinate relationship existing or the need for formal reporting lines into each other. Therefore, the influence tactics which are examined are at a lateral level.

A detailed and empirically tested investigation into influence tactics was first attempted by Kipnis et al. (1980) who identified eight influence tactics which can occur when individuals within an organisational setting interact with each other. However, it is Yukl and Falbe (1990), Yukl and Tracey (1992), Yukl et al. (2005) and Yukl et al. (2008) who validated and extended the examination of influence tactics further and highlighted the direction in which the various influence tactics can be exerted, as well as, the frequency of use of the influence tactics in each direction. Their taxonomy of influence tactics is often cited and is used as the basis of investigation in studies such as Narayanaswamy et al. (2013) and Ngwenyama and Nielson (2014).

Yukl and Falbe (1990), Yukl and Tracey (1992) and Yukl et al. (2005) examine and test the direction and frequency of use of a total of nine influence tactics (refer Table 2.1). From the three studies, an analysis was conducted to determine which of these tactics were observed at a lateral level. Three indicators (U, D, and L) are used in the table to indicate the direction of influence for each observed influence tactic. “U” denotes particular influence tactics which were observed in an upward influence direction, “D” where the influence tactics were observed in a downward direction, and “L” is used to indicate those influence tactics which were observed in a lateral direction. “ANY” is used to denote influence tactics which were observed in any direction of influence- and as such are applicable to all directions of influence (upward, downward, and lateral). Additionally, in the below table (Table 2.1), “M” is used to denote the frequency of use of the influence tactics in the observed direction. Furthermore, “M” denotes instances where the respective influence tactics were used most frequently in the observed direction.

Table 2.1: Taxonomy of influence tactics, direction of influence and frequency of use of influence tactics

Influence Tactics	Yukl & Falbe, 1990			Yukl & Tracey, 1992			Yukl et al., 2005			Influence tactics considered for the current study on the basis that the influence tactics were observed most frequently a lateral level.
	U	D	L	U	D	L	U	D	L	
Pressure Tactics		M			M					No
Exchange Tactics			M			M			M	***Yes***
Coalition Tactics	ANY					M				***Yes***
Ingratiating Tactics					M					No
Rational Persuasion	ANY			M			ANY			***Yes***
Inspirational Appeals		M			M					No
Consultation Tactics		M			M					No
Collaboration							ANY			***Yes***
Upward Appeals			M							No

Legend:

Direction of influence:
*[U]- **Upward** direction of influence*
*[D]- **Downward** direction of influence*
*[L]- **Lateral** direction of influence*
*[ANY]- Applies in **ANY** direction of influence*

Frequency of use:
*M- used **Most** frequently*

Based on the above analysis, four of the influences tactics (namely; Rational Persuasion, Exchange Tactics, Coalition Tactics, and Collaboration) are identified as applicable to the current study as these were observed most frequently in the lateral level, or in any direction (Table 2.1). Furthermore, studies such as Narayanaswamy et al. (2013) and Ngwenyama and Nielson (2014) demonstrate the manifestation of these specific influence tactics empirically within the context of ISD projects.

2.6 STUDIES OF POWER AND INFLUENCE IN THE INFORMATION SYSTEMS CONTEXT

The key studies of power and influence within the information systems context referenced in this study are summarised in Appendix C. The study of power in the information systems context has largely focused on highlighting the manifestation of power and influence within ISD project implementations. The studies have drawn on theories such as organisational influence theory, circuits of power framework and McClelland's behaviour relationship framework. The majority of studies have employed qualitative methods such as case studies. The main conclusions drawn from across the studies are that within the ISD project implementations, power and influence is a reality and that ISD project implementations are surrounded by conflict, power, political playing and influence. Furthermore, studies on power and influence within the non-information systems context have endeavoured to explore the factors which lead to team power formation in various

team settings, as well as understanding the consequences of team empowerment. The key studies on power and influence within the non-information systems context are summarised in Appendix D.

2.7 SHORTCOMINGS FROM PRIOR RESEARCH AND CONTRIBUTIONS

Based on the review of the literature, this study aims to address three fundamental shortcomings related to team power formation. First, while past literature has recognized that structural factors are important, they have typically examined structure in terms of decision rights and hierarchal authority (Bradshaw-Camball & Murray, 1991), but have ignored other structural factors (Fincham, 1992). This study aims to address the gap in evidence pertaining to the degree of influence of structural factors, particularly, the structural factor of centrality and substitutability. Secondly, while much past literature have examined structural factors (Hinnings et al., 1974; Lucas, 1984; Saunders, 1990) or behavioural factors (Ngwenyama & Nielson, 2014; Chang, 2014), few have examined both in an ISD project team context. This study invokes a dual approach to studying power by considering both the structural and behavioural aspects of power. The environmental aspect of coping with uncertainty is also evaluated. Thirdly, while past literature has examined specific influence tactics within the context of ISD projects, few studies provide evidence on how the use of influence tactics across lateral teams can affect the organisational structural factors in team power formation.

In the next section, the theory underpinning the selection of the structural and environmental factors, as well as, influence tactics is outlined. This is then followed by presentation of the research model and hypotheses.

2.8 THEORETICAL BACKGROUND

2.8.1 THE STRATEGIC CONTINGENCIES THEORY OF INTRA-ORGANISATIONAL POWER (SCTIP)

The selection of the structural and environmental factors presented in this study is informed firstly, by the Strategic Contingencies Theory of Intraorganisational Power (SCTIP) (Hickson et al., 1971; Hinnings et al., 1974). The SCTIP views organisations as systems of inter-dependent subunits (referred to in this study as teams) having various power distributions. Additionally, the subunits are organised across an identifiable social system that is interlinked by the various activities which are driven by the behaviours of the individuals performing the tasks (Hickson et al., 1971; Hinnings et al., 1974).

According to SCTIP, power within intra-organizational teams is dependent on: (i) the degree to which the team is able to cope with uncertainty, (ii) the centrality of the team, and (iii) the extent to which the activities of the team are substitutable. Therefore, team

power is contingent to the team's ability to cope with environmental uncertainties (**COPING WITH UNCERTAINTY**), the teams positioning within the organisation in relation to its level of centrality within the organisational structure (**CENTRALITY**), as well as, the degree to which the team's functionality is substitutable (**SUBSTITUTABILITY**) relative to other teams. The combination of both the structural factors of centrality and substitutability, as well as, the environmental factor of coping with uncertainty, together make up the strategic conditions of fulfilment (or determinants) that lead to team power.

Coping with uncertainty is defined as the ability of a team to effectively deal with uncertainties by developing coping strategies such as coping by information, coping by absorption and coping by prevention (Hickson et al., 1971; Hinnings et al., 1974).

Centrality is defined as the degree to which a team is interconnected or linked with other teams, as well as, the speed with which the activities of the subunit affects the organisation in the event of disruption (Hickson et al., 1971; Hinnings et al., 1974).

Substitutability is defined as extent to which the activities and outputs of a team can be easily performed by other teams (Hickson et al., 1971; Hinnings et al., 1974).

2.8.2 INFLUENCE TACTICS

Secondly, the influence tactics examined in this study are adopted from Yukl and Falbe's (1990) taxonomy of influence tactics. This study focuses on the lateral influence tactics where there is no emphasis on formal reporting lines between the various teams. These are the influence tactics of rational persuasion, exchange, coalition, and collaboration (Yukl & Falbe, 1990; Yukl et al, 2005).

Teams can thus utilise the influence tactics of **rational persuasion, exchange**, **coalition**, and **collaboration**. By so doing, teams can institute an alteration to the strategic conditions of team power and thus cause a shift in the power dynamics.

Rational persuasion is defined as the use of influence by the agent (or focal team) through logical arguments and factual evidence to convince the target (or responding team) that a particular request or proposal is feasible, relevant and important (Yukl & Falbe, 1990; Yukl et al., 2008).

Exchange is defined as the use of influence by the agent (or focal team) based on the trading of resources in exchange for specific outcome. With exchange tactics, the agent

team offers something the target (or responding team) needs in exchange for something else (Yukl & Falbe, 1990; Yukl et al., 2008).

Coalition is defined as the use of influence by the agent (or focal team) by enlisting the support and aid of others with the intention to sway or convince the target (Yukl & Falbe, 1990; Yukl et al., 2008).

Collaboration is defined as the use of influence by the agent (or focal team), by offering the target (or responding team) assistance or necessary resources if the target will carry out a request (Yukl & Falbe, 1990; Yukl et al., 2008).

In this study, the agent (or focal team) is the team which is seen to be performing the influencing act or exercising the influence tactics. The target (or responding team) is the team which is being influenced.

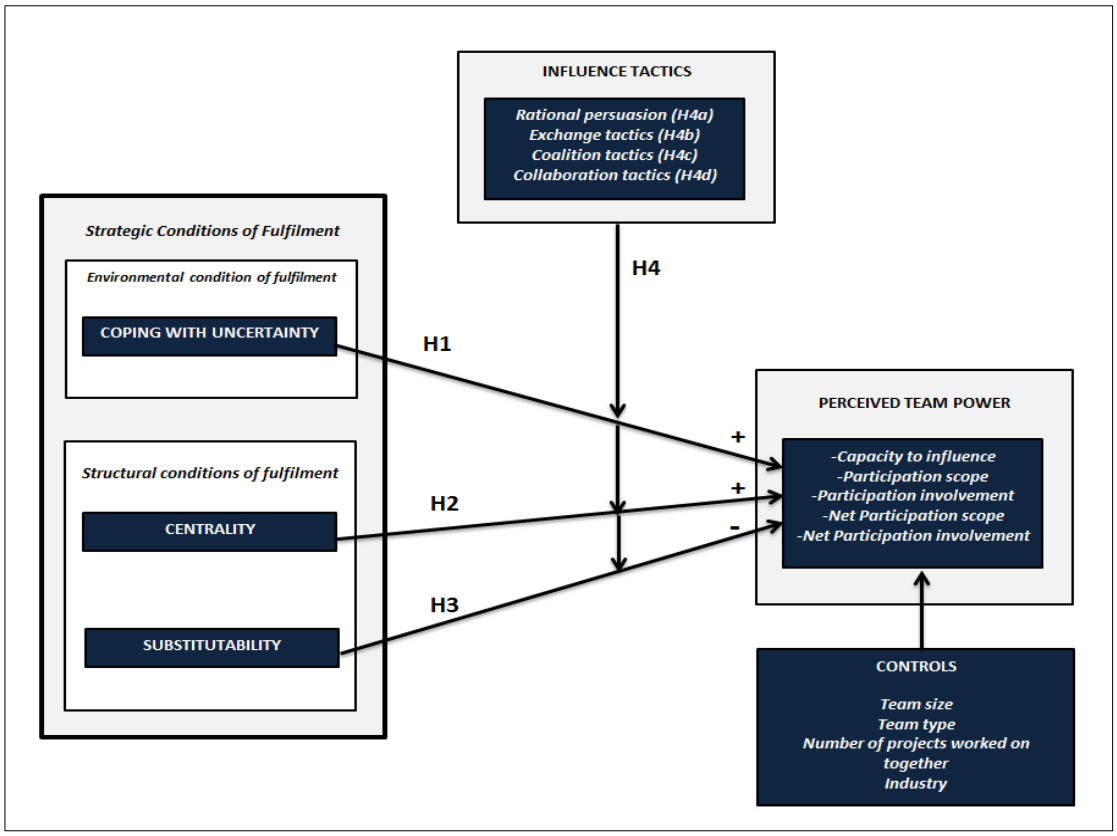
Drawing from the above theories, the study's research model is presented and described in the next section.

2.9 RESEARCH MODEL AND HYPOTHESES

The research model presented in Figure 2.1 illustrates the strategic conditions factors which lead to perceived team power and the interaction effects which the influence tactics has over the strategic conditions factors. Perceived team power is presented as the dependent variable.

The study's research model hypothesizes the independent variables of coping with uncertainty (H1), centrality (H2) and substitutability (H3) as strategic conditions factors which lead to perceived team power. In the model, coping with uncertainty is viewed as an environmental strategic condition factor which leads to perceived team power, whilst, centrality and substitutability are both regarded as structural strategic conditions factors which lead to team power. The research model also presents the influence tactics of rational persuasion, exchange, coalition and collaboration (H4a- H4d) as having a moderating effect on the strategic conditions factors to influence perceived team power. The influence tactics of rational persuasion, exchange, coalition and collaboration are thus regarded as moderating variables. The model below depicts the power of the agent (or focal team) relative to the target (or responding) team based on the focal teams' structural factors. This focal team exerts influence on the target team.

Figure 2.1: Research Model



The below sections discuss in detail the dependent variable, perceived team power, the independent variables of coping with uncertainty, centrality and substitutability, as well as the moderating variables which consists of the influence tactics of rational persuasion, exchange, coalition and collaboration.

2.9.1 DEPENDENT VARIABLE: PERCEIVED TEAM POWER

Jasperson et al. (2002) have illustrated that the concept of power can lend itself to multiple meanings and interpretations. This in turn means that power can be conceptualised and measured in various ways. For example, power can be conceptualised in terms of perceptions or representations (Provan et al., 1980; Finkelstein, 1992). Perceptive power refers to perceived judgements about the power a particular team may have. Power which is viewed in terms of perceptions is often criticized as being a subjective view of power (Provan et al., 1980; Finkelstein, 1992). On the other hand, representative power which refers to concepts such as representation of top executive members within the team and position of top-level management teams are deemed as a more objective view of power, however, representative power is equally criticised for only providing second hand information about power (Finkelstein 1992). Team power can also be defined in terms of potential power and enacted power (Provan et al., 1980; Finkelstein, 1992). Potential power speaks to the capacity of a team to influence other teams, whilst enacted power

refers to the actual exercise of power and is often associated with level of control of key resources (Provan et al., 1980).

Hickson et al. (1971: 218) define power explicitly as "*the determination of the behaviour of one social unit by another*", and refer to various types of power such as positional power (also known as authority), preferred power, perceived power and participation power. In Hinnings et al. (1974: 30) perceived power is defined as the "*influence attributed to the subunit*". This study examines the concept of perceived power which is regarded as a team's capacity to influence the actions and behaviour of another team.

Additionally, the concept of participation power is incorporated to examine a team's influence on the decision making of another team (Hickson et al., 1971; Hinnings et al., 1971). According to Hickson (1971), Hinnings et al. (1974) and Saunders and Scamell (1986), subunit or team power can also be defined in terms of participation power. Participation power refers to the extent to which a team impacts and influences the scope and domain of key decisions within the organisation. Participation power symbolises team power in terms of four levels of participation. Firstly, participation *scope* which refers to the number of decision areas in which a team has influence over. Secondly, participation *involvement* refers to the extent of influence the team has in making decisions. Thirdly, *net* participation scope refers to the number of decision areas which the team has influence in beyond what is officially defined. *Net* participation involvement refers to the extent of influence in making decisions beyond those areas which are officially defined (Hickson, 1971; Hinnings et al., 1974; Saunders & Scamell, 1986).

Taken together, perceived team power, the dependent variable is defined as follows:

(i) the collective capacity of a team (or organisational subunit) to exert influence over others (Hickson et al., 1971; Hinnings et al., 1974; Provan, 1980; Greer et al., 2011). This refers to the extent to which a team is *seen* to influence other teams. This definition of team power is consistent with the power-types of perceived and potential power as described by Provan et al. (1980) and Finkelstein (1992).

(ii) the element of participation power as the scope and influence of a team over decision making (Hickson et al., 1971; Hinnings et al., 1974).

Both Proven et al. (1980) and Finkelstein (1992) agree that a combined approach to defining and measuring power be adopted in order to capture and measure the multiple meanings of a complex concept such as power.

2.9.2 INDEPENDENT VARIABLES

The research model proposes the environmental condition of fulfilment of **COPING WITH UNCERTAINTY**, and the structural conditions of fulfilment of **CENTRALITY** and **SUBSTITUTABILITY** as independent variables.

2.9.2.1 ENVIRONMENTAL CONDITION OF FULFILMENT

2.9.2.1.1 Coping with uncertainty

Hickson et al. (1971) and Hinnings et al. (1974) demonstrated that teams who cope with organisational uncertainties will gain more power. Coping with uncertainty is the teams' ability to effectively deal with any uncertainties it is faced with. A team is able to cope with uncertainty if (i) it is able to cope with uncertainty in general. This is based on the team's ability to reduce changes in inputs, provide the necessary information needed to predict future changes, as well as, its ability to reduce changes in outputs. (ii) Secondly, a team is able to cope with uncertainty if it is able to cope with its environmental changes such as changing team circumstances i.e. resignation of key staff. (iii) Thirdly, a team is able to cope with uncertainty if it is able to cope with the uncertainty from its operations- thus ensuring that the same work is done consistently every day (Lucas, 1984).

ISD Project teams face uncertainties associated with the tasks and processes such as, managing changing requirements, budget overruns and prioritising or scheduling of key tasks (Westerveld, 2003). Project teams can reduce such uncertainties by (i) ensuring that relevant changes and updates to the key inputs and outputs of such processes are adequately managed through appropriate change control mechanisms, and by appropriate forecasting and scheduling, (ii) ensuring that key documents and recorded decisions are kept at a central location in order to facilitate a seamless transition should circumstances such as team redeployments occur, and (iii) by ensuring that the teams have an appropriate human resource plan with adequate contingency measures to help ensure the constant delivery of work outputs. Project teams that can cope with uncertainty and ensure that the maintenance of key systems does not impact daily operations may be more successful in power formation. It is hypothesized that:

Hypothesis 1: ISD project teams who deal effectively with project uncertainties will have greater perceived team power within ISD project settings.

2.9.2.2 STRUCTURAL CONDITIONS OF FULFILMENT

2.9.2.2.1 Centrality

Hickson et al. (1971) and Hinnings et al. (1974) argued that given the interdependency of the intra-organizational teams, a team which is highly centred on the organisation will gain more power. Team power is therefore dependent on the level of centrality of the tasks and functionality of the team. Conceptually, centrality arises when the tasks and functionality of the team are vital within the organisational structure also referred to as immediacy, and when the team's functionality is largely interconnected with the functions of other teams, also referred to as pervasiveness.

Therefore, the higher the level of the team's centrality the more power the team will possess and if the centrality of the team is low, the team will possess less power (Hickson et al., 1971; Hinnings et al., 1974).

ISD project teams can increase their level of centrality by ensuring that the solutions they deliver meet the needs of the organisation as a whole, such that, their outputs in the form of systems, applications and services are instrumental to the business (immediacy). Systems development teams can also increase their level of centrality by ensuring that the systems, applications and services that they offer are largely adopted within the organisational business units thereby increasing the level of connectivity the team has within the organisation (pervasiveness). It is hypothesized that:

Hypothesis 2: ISD project teams whose tasks and functionality are central to the organisational structure will have greater perceived team power within ISD project settings.

2.9.2.2.2 Substitutability

Substitutability refers to the degree of difficulty of substituting a department's functions. This refers to the availability of alternatives to a particular unit (Hickson et al., 1971; Hinnings et al., 1974). Hickson et al. (1971) suggest that the lower the substitutability of a team (i.e. the more difficult it is to find alternative resources for the same function) then the more power the team will have. Conversely, a team will

have less power if its activities are easily substitutable and its functionality can be easily sourced from elsewhere (Hickson et al. 1971).

ISD project teams who offer specialist technical or business domain knowledge and skills, which other team's lack, can be seen as non-substitutable by virtue of their specialisation, and thus deemed more powerful. On the contrary, ISD projects teams who can only provide general services which are not confined to a particular function or department can be easily substitutable and thus lose power. It is hypothesized that:

Hypothesis 3: ISD project teams whose tasks and functionality can easily be substituted by other teams will have lower perceived team power within ISD project settings.

2.9.3 MODERATING VARIABLES: INFLUENCE TACTICS

The research model proposes that the influence tactics of rational persuasion, exchange, coalition and collaboration moderate, via interaction, the effect of the strategic conditions factors on perceived team power. The influence tactics are described below.

2.9.3.1 RATIONAL PERSUASION

With rational persuasion, the agent uses logical arguments and factual evidence to make a convincing case towards the target- with the intention to demonstrate the viability of a request being made (Yukl & Falbe, 1990; Yukl et al., 2008). For example, a team of system architects may employ tactics of rational persuasion in an attempt to persuade other developer teams to migrate their applications onto a new system platform- even if the change is met with much scepticism and pushback. The system architects could persuade the other teams that the current architectural platform is operating on a system which has run out of vendor support and that it will not cope with growing business demands. As such, any system enhancements required by the teams will not be considered. The architecture team maintains their level of non-substitutability since every company-owned system is mandated to run on the organisations architectural platform on the basis of their approval. The architecture team thus gains power through the use of rational persuasion.

Hypotheses 4(a): The influence tactic of rational persuasion will interact with the three strategic conditions factors to influence the perceived team power of ISD project teams within ISD project settings.

2.9.3.2 EXCHANGE TACTICS

In exchange tactics, the (agent) exerting influence promises the other individual or team (the target) an incentive or benefit (either directly or indirectly) for complying or supporting a particular work request or approval (Yukl & Falbe, 1990; Yukl et al., 2008). Exchange tactics are premised on the notion of trading of resources in exchange for something the other person or team needs or requires. The potential for using exchange tactics is reflected when individuals or teams depend on each other for valuable information, assistance or support to accomplish set goals (Yukl & Falbe 1990). For example, a project team which is responsible for the company's core transaction processing system but is experiencing challenges on one of the middleware components which keeps failing over (Team A), can offer the team who is accountable for the input of the transactions from various business platforms (i.e. internet and mobile applications) (Team B) assistance in the form of testing resources to help alleviate their testing load on a critical project, on the condition that, Team B is willing to assist in resolving the issues experienced on the unstable middleware component. By so doing, Team A increases their ability to cope with operational uncertainties (i.e. fixing the middleware component ensures that the uncertainty of not knowing when the middleware component will fail is removed). Therefore, by using exchange tactics, Team A reinforces their ability to cope with uncertainties which in turn, can influence their power as a team.

Hypothesis 4(b): The influence tactic of exchange will interact with the three strategic conditions factors to influence the perceived team power of ISD project teams within ISD project settings.

2.9.3.3 COALITION TACTICS

With coalition tactics, the agent seeks or enlists the help of others in order to persuade and convince the target towards a particular goal (Yukl & Falbe, 1990; Yukl et al., 2008). For example, a less powerful team (the agent or focal team) which needs to initiate a particular change request on the company's central workflow system may experience resistance from the system owners (the target or target team). The agent team may wish to utilise the influence tactic of coalition by partnering with other bigger teams in an effort to raise the change initiative to be at a wider enterprise-level (this increases the agent teams' level of centrality), thereby ensuring that they gain adequate support to persuade the target team to carry out the change request.

Hypotheses 4(c): The influence tactic of coalition will interact with the three strategic conditions factors to influence the perceived team power of ISD project teams within ISD project settings.

2.9.3.4 COLLABORATION TACTICS

In collaboration, the agent wishes to convince the target towards a particular goal by providing the target with the necessary resources or assistance to carry out the task (Yukl & Falbe, 1990; Yukl et al., 2008). For example, a team of business architects who operate at a corporate or organisational group level, may offer each of the business analyst teams operating at various business unit levels assistance on a piece of analytical work required as input on an enterprise-wide project. By so doing, the business architecture team uses collaboration tactics to increase their level of connectivity within the organisation.

Hypotheses 4(d): The influence tactic of collaboration will interact with the three strategic conditions factors to influence the perceived team power of ISD project teams within ISD project settings.

2.9.4 CONTROL VARIABLES

In addition to the identified dependent, independent and moderating variables, the following control variables are observed in the study.

2.9.4.1 TEAM SIZE (FOCAL TEAM)

Team size of the focal team represents the number of individuals within the focal team or agent team who by virtue of their structural characteristics and influence tactics have power (included in studies such as Barki et al., 2001 and Greer et al., 2011).

2.9.4.2 TEAM SIZE (RESPONDING TEAM)

Team size of the responding team represents the number of individuals within the responding team or target of the other team's influence.

2.9.4.3 TEAM TYPE (FOCAL TEAM)

Team type for the focal team, or agent team, refers to the speciality which characterises the focal or agent team. In this study, a team could be characterised as either having a predominantly *Technical* focus (which typically includes special focus areas such as coding, systems

application design and development etc.) A team could also be characterised as predominantly *Analytic* (which typically includes special focus areas such as business process modelling, business requirements management, project implementation, etc.) A team could also be regarded as *Mixed*. A mixed team is characterised by both technical and analytic capabilities. Two additional team types were included; *Hybrid Team*, was used to indicate teams which could be characterised by a mix of IT and non-IT employees, and *Business Team*, which was used to denote teams which could be characterised by non IT-people working on IT projects. (Hollenbeck et al., 2012)

2.9.4.4 TEAM TYPE (RESPONDING TEAM)

The same team types as reflected above were used to categorise the responding (target) team.

2.9.4.5 NUMBER OF PROJECTS WORKED ON TOGETHER

The number of projects worked on together was the count of projects that both the focal team and the responding team have worked on together.

2.9.4.6 INDUSTRY

Industry represents the type of industry in which the responding team's (target team) organisation is based. The following industries were considered for the study: *Financial and insurance services, banking, telecommunications, government/government agency, consultancy* and *retail*. An additional option called "*other"* was also included to cater for respondents whose organisations did not fall in any of the categories provided. In this case, the respondents were asked to manually input the appropriate industry in which their respective organisations were based.

2.10 CONCLUSION

This chapter presented a review of the literature on power. It introduced the *Strategic Contingencies Theory of Intraorganizational Power (SCTIP)* and the *Influence Tactics* framework as a basis from which to conceptualize the strategic conditions and influence tactics that influence team power formation. Perceived team power was defined in terms of capacity to influence and scope of influence which is made up of participation scope, participation involvement, net participation scope and net participation involvement. The research model and accompanying hypotheses were presented and discussed.

The hypotheses are summarised as follows:

H1 **:** ISD project teams who deal effectively with project uncertainties will have greater power within ISD project settings.

H2 **:** ISD project teams whose tasks and functionality are central to the organisational structure will have greater power within ISD project settings.

H3 **:** ISD project teams whose tasks and functionality can easily be substituted by other teams will have lower power within ISD project settings.

H4 (a) **:** The influence tactic of rational persuasion will interact with the three strategic conditions factors to influence the power of ISD project teams within ISD project settings.

H4 (b) **:** The influence tactic of exchange will interact with the three strategic conditions factors to influence the power of ISD project teams within ISD project settings.

H4 (c) **:** The influence tactic of coalition will interact with the three strategic conditions factors to influence the power of ISD project teams within ISD project settings.

H4 (d) **:** The influence tactic of collaboration will interact with the three strategic conditions factors to influence the power of ISD project teams within ISD project settings.

The next chapter describes the research methodology used to test the research model and its hypotheses.

3 RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter describes the approach that was used to test the research model that investigates the phenomena of power and influence tactics within intra-organisational project teams. The research design, research methodology, data collection method and data analysis procedures are described. In conclusion, the specific ethical considerations relating to the study are discussed.

3.2 RESEARCH PARADIGM AND APPROACH

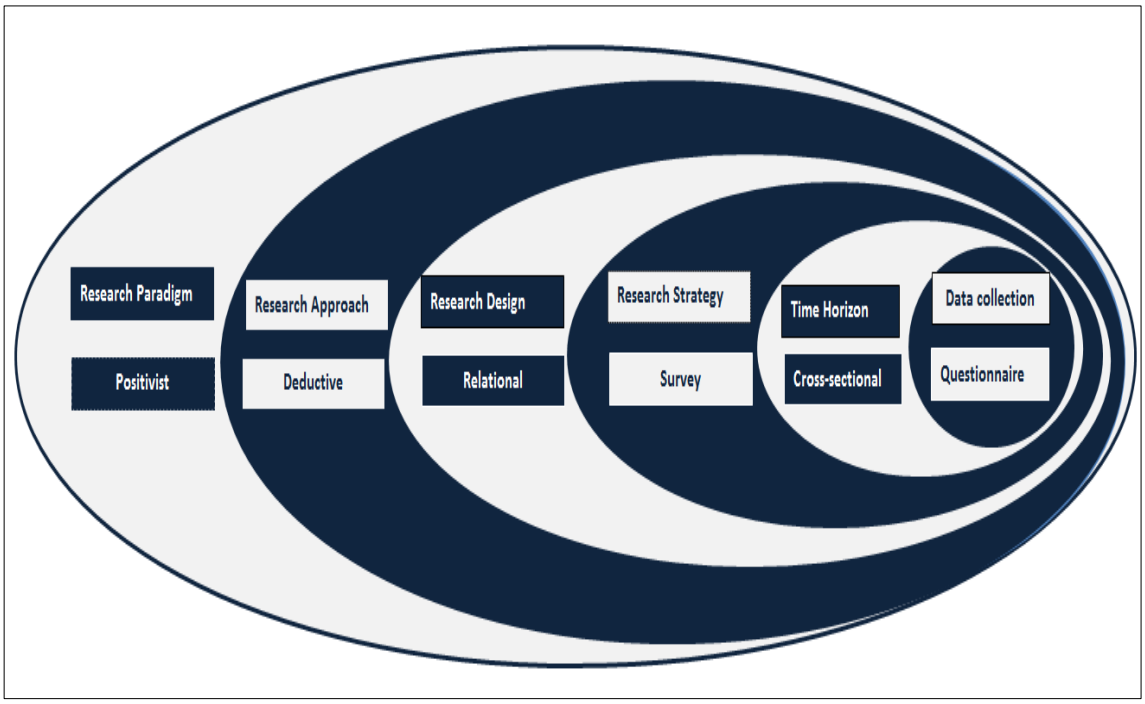
This study which investigated the phenomena of power and influence tactics in organisational project teams was informed by a positivist perspective and underpinned by the hypothetico-deductive approach (Lee, 1991). According to Bhattacherjee (2012), the deductive approach requires an examination of the theoretical components of a phenomena and uses the theory derived from the extent literature as the underlying base for the logic used to explain the phenomena. Therefore, theory plays a critical role as it helps to deduce or infer the relevant constructs and propositions which are broken down to describe how the various theoretically derived concepts are related (Bacharach, 1989; Bhattacherjee, 2012), modelled, measured and tested to explain the reality of the phenomena (Oates, 2006).

The identified theory used in this study was the Strategic Contingencies Theory of Intra-organizational Power (SCTIP) by Hickson et al. (1971). This theory helps to theorise power relations within interrelated organisational work teams. Specifically, three independent variables namely; coping with uncertainty, centrality and substitutability were drawn from SCTIP and were hypothesised as determinants of team power as the dependent variable. The second theoretical underpinning was the organisational influence tactics taxonomy by Yukl and Falbe (1990); Yukl et al. (2005) and Yukl et al. (2008). This taxonomy provides conceptual definitions and quantifiable measures of four specific influence tactics. Together, these theories were used to explain the rationale behind power behaviours and influence tactics within interconnected ISD project teams and to derive hypotheses that could be empirically tested.

At the conceptual level, perceived team power was defined in terms of perceptive-potential power and participation power. At the empirical level, team power was observed together with the three independent variables of coping with uncertainty, centrality and substitutability. In addition, the interaction effects of specific influence tactics of rational persuasion, exchange, coalition, and collaboration were observed.

The positivist approach to studying social phenomena such as power is often critiqued for its reductionist approach to breaking down concepts and constructs into smaller parts- thus missing the bigger picture (Silva, 2007; Oates, 2006). Additionally, it may not always be desirable to generalise results from studies on power but to rather focus on particular and unique characteristics which capture the depth and richness of the particular phenomena (Lee, 1991). Therefore, some (e.g. Silva, 2007) prefer an interpretivist approach to studying power as a phenomena within IS research. However, Silva does emphatically advocate that in order to help advance the development of solid theories on power research, any study of power (be it interpretive or positivist) should be complemented by a strong theoretical framework (Silva, 2007). This study adhered to Silva's recommendations by ensuring a firm theoretical background to the development of the research model. Moreover, the positivist perspective adopted allows for the opportunity of examining large number of observations, generalise findings to a broader population and derive predictions which are useful for practice (although this could be limited by the non-probability sampling technique used). Additionally, the positivist approach allows for the ability to replicate the study in different context (Lee.1991; Oates. 2006; Bhattacherjee. 2012; Creswell, 1998). The research methodology adopted for this study is reflected in Figure 3.1 below.

Figure 3.1: The Research Methodology (adapted from Saunders et al., 2012)



The research design, research strategy and data collection methods used in the study are discussed next in the next sections.

3.3 RESEARCH DESIGN

Research design refers to the overall plan employed to collect and analyse data, as well as, the procedure and methodology followed to test the specified hypotheses and ultimately answer the research question (Creswell, 1998). Cooper and Schindler (2006) considers factors such as the structure of the problem being addressed (i.e. highly structured vs. unconstrained problem), the purpose and type of study, as well as the type of data required as important considerations for the design of the research.

There are numerous types of research designs (Cooper & Schindler, 2006). This study adopted the relational design, since the study investigated the relationship between power and other variables. A major criticism of this design is that the relational research design does not lend itself to ascertain without doubt that an identified cause precedes an observed effect (as compared to an experimental design wherein it is possible to establish that cause relates and precedes effect) (Shadish et al., 2002). The reason for this is that the relational research design cannot fully control for alternative explanations for observed effects, and as such it is generally accepted that where correlation (or adequate strength) between the observed variables was observed, then the theory is relied upon to make the necessary inferences (Bhattacherjee, 2002). A relational research design fits the study's aim which was to investigate the association between the power variable and the other associated variables of coping with uncertainty, centrality and substitutability.

Moreover, the cross-sectional survey method was chosen as the primary strategy to collect the data for analysis and establishment of association between identified variables. The cross-sectional study approach is intended to collect and analyse data over a specific point in time, whereas the longitudinal approach involves studying observations over a longer period of time. Whilst a cross-sectional study only provides a snapshot of the reality under observation, the cross-sectional time frame is beneficial as it is relatively cheaper and takes less time to conduct as compared to the longitudinal timeframe (Cooper & Schindler, 2006).

The research strategy selected was the survey. Surveys are considered an effective data generation method which is deemed appropriate to study unobservable data such as power, politics, attitudes and beliefs (Oates, 2006). Additionally, surveys are easy to administer, as the informant is able to respond at their own convenience (Oates, 2006). However, issues of response bias and sampling appropriateness may be problematic (Bhattacherjee, 2002).

3.4 DATA COLLECTION METHOD

The questionnaire was chosen in this study as the primary instrument to facilitate the collection of data. A questionnaire is in its simplest form, is a pre-defined set of questions (also referred to as items) which are gathered and assembled in a pre-determined, systematic order (Oates, 2006; Cooper & Schindler, 2006). Questionnaires are often associated with survey research strategy (Bhattacherjee, 2006; Oates, 2006). The questionnaire provides an efficient way of collecting data from multiple informants. Additionally, the predefined answers in a closed questionnaire (which were used for the purpose of this study) make the questionnaire an easy tool for respondents to complete (Peterson, 2000; Oates, 2006). Some disadvantages in using a questionnaire is that the pre-defined answers may at times cause frustration to the respondents and the researcher is not available to correct any misunderstandings, or possibly probe deeper into the responses provided (Peterson, 2000).

3.5 DEVELOPMENT OF THE RESEARCH INSTRUMENT

The research instrument was operationalized using variables and measures found in the existing MIS and organisational behaviour literatures. Multi-item measures on different Likert-type scales were used to measure the influence tactics, strategic conditions factors and team power. Items used to measure the influence tactics of rational persuasion, exchange, coalition and collaboration were adapted from the extended Influence behaviour Questionnaire (IBQ) used by Yukl et al (2008). Items used to measure the strategic conditions factors and the dependent variable perceived team powers were adapted from Hickson et al. (1971), Hinnings et al. (1974), Lucas (1984), Saunders and Scamell (1986) and Saunders (1990). Six additional control variables were included to measure team size (focal team and responding team), team composition or team type (focal team and responding team), number of projects worked on together and industry in which the respondents' organisation was based.

Table 3.1-3.4 indicate the conceptual and operational definitions, as well as, the items which were used to measure the variables under investigation.

Table 3.1: Operationalisation of influence tactics variables

Variable	Conceptual Definition	Operational Definition
Rational persuasion **[RA]**	Rational persuasion is the use of influence (by the agent team) through logical arguments and factual evidence to convince the target (responding team) that a particular request or proposal is feasible, relevant and important. (Yukl et al., 2008)	The frequency of use of the rational persuasion influence tactic by the focal team (agent team) was measured as the responding team's (target team) perception along four items on a four-point scale from "1" = Seldom to "4" = Very Often. An additional option "Can't remember" was added to the scale similar to Yukl et al., (2008) to capture responses where the responding team (target team) couldn't recall the agent (focal team) ever using the influence tactic on them. Items were adapted from the Influence behaviour Questionnaire (IBQ) used to measure the rational persuasion influence tactic from Yukl et al. (2008).
	Items: THE PROJECT TEAM WHICH MY TEAM HAS INTERACTED WITH… **[1]- [RA1]**: Uses facts and logic to make a persuasive case for a request or proposal. **[2]- [RA2]**: Explains clearly why a request or proposed change is necessary to attain a task objective. **[3]- [RA3]**: Explains why a proposed project or change would be practical and cost effective. **[4]- [RA4]**: Provides information or evidence to show that a proposed activity or change is likely to be successful.	
Exchange Tactics **[EX]**	Exchange tactics is premised on the notion of trading of resources in exchange for a particular outcome. With Exchange tactics, the agent team offers something the target (responding team) wants in exchange for something else. (Yukl et al., 2008)	The frequency of use of exchange tactics by the focal team (agent team) was measured as the responding team's (target team) perception along four items on a four-point scale from "1" = Seldom to "4" = Very Often. An additional option "Can't remember" was added to the scale similar to Yukl et al., (2008) to capture responses where the responding team (target team) couldn't recall the agent (focal team) ever using the influence tactic on them. Items are adapted from the Influence behaviour Questionnaire (IBQ) used to measure the rational persuasion influence tactic from Yukl et al. (2008).
	Items: THE PROJECT TEAM WHICH MY TEAM HAS INTERACTED WITH… **[5]- [EX1]**: Offers something my team wants in return for our help on a task or project. **[6]- [EX2]**: Offers to do something for my team in exchange for carrying out a request. **[7]- [EX3]**: Offers to do a specific task or favour for my team in return for our help and support. **[8]- [EX3]**: Offers to do something for my team in the future in return for our help now.	

<table>
<tr><td rowspan="2">Coalition tactics
[CO]</td><td>Coalition tactics involve the enlisting of support and aid of others as means to influence. With coalition tactics, the agent team enlists the aid of others, or uses the support of others as a way to influence the target (responding team) (Yukl et al., 2008)</td><td>The frequency of use of coalition tactics by the focal team (agent team) was measured as the responding team's (target team) perception along four items on a four-point scale from
"1" = Seldom to "4" = Very Often.

An additional option "Can't remember" was added to the scale similar to Yukl et al., (2008) to capture responses where the responding team (target team) couldn't recall the agent (focal team) ever using the influence tactic on them.

Items are adapted from the Influence behaviour Questionnaire (IBQ) used to measure the rational persuasion influence tactic from Yukl et al. (2008).</td></tr>
<tr><td colspan="2">Items:
THE PROJECT TEAM WHICH MY TEAM HAS INTERACTED WITH…
[9]- [CO1]: Mentions the names of other people who endorse a proposal when asking my team to support it.
[10]- [CO2]: Gets others to explain to my team why they support a proposed activity or change that they want my team to support or help implement.
[11]- [CO3]: Brings someone along for support when meeting with my team to make a request or proposal.
[12]- [CO4]: Asks someone my team respects to help influence my team to carry out a request or support a proposal.</td></tr>
<tr><td rowspan="2">Collaboration Tactics
[CL]</td><td>Collaboration tactics involve the agent team offering to provide assistance or necessary resources if the target (responding team) will carry out a request for them.
(Yukl et al., 2008).</td><td>The frequency of use of collaboration tactics by the focal team (agent team) was measured as the responding team's (target team) perception along four items on a four-point scale from
"1" = Seldom to "4" = Very Often.

An additional option "Can't remember" was added to the scale similar to Yukl et al., (2008) to capture responses where the responding team (target team) couldn't recall the agent (focal team) ever using the influence tactic on them.

Items are adapted from the Influence behaviour Questionnaire (IBQ) used to measure the rational persuasion influence tactic from Yukl et al. (2008).</td></tr>
<tr><td colspan="2">Items:
THE PROJECT TEAM WHICH MY TEAM HAS INTERACTED WITH…
[13]- [CL1]: Offers to help with a task that they want our team to carry out.
[14]- [CL2]: Offers to provide resources our team would need to do a task for them.
[15]- [CL3]: Offers to show our team how to do a task that they want us to carry out.
[16]- [CL4]: Offers to provide any assistance our team would need to carry out a request.</td></tr>
</table>

Table 3.2: Operationalisation of the team power variable

Variable	Conceptual Definition	Operational Definition
PERCEIVED TEAM POWER **[PTP]**	Perceived team power is defined in terms of a teams' capacity to influence other teams. This is based on perceived judgements about the teams' capacity to influence others **[INFG]**. Additionally, perceived team power is also measured based on the extent of influence which a team has in making decisions (also known as participation power) and is based on: **Participation scope [PTS1]** which refers to the number of decision areas in which a team has influence over. **Participation involvement [PIN1]** which refers to the extent of influence the team has in making decisions. **Net participation scope [PTS2]** refers to the number of decision areas the team influences, beyond what is officially defined. **Net participation involvement [PIN2]** refers to the extent of influence in making decisions beyond what is officially defined. (Hickson et al, 1971; Hinnings et al, 1974; Saunders & Scamell, 1986)	The perceived power of the focal team (agent team) was measured as the responding teams' (target team) perception along a single item on a five-point scale, from "1"= Very little influence to "5" = Very much influence. The Participation power of the focal team (agent team) was measured as the responding teams' (target team) perception of the extent of influence which the focal team has along four items on a five-point scale, from "1" = "None of our decisions" to, "5" = "Almost All of our decisions." For participation scope and net participation scope. and "1" = "Very Little influence" to, "5" = "Very Much influence" for participation involvement and net participation involvement. Items were adapted from: Hickson et al. (1971); Hinnings et al. (1974); Saunders & Scamell (1986).
	Items: CAPACITY TO INFLUENCE **[17]- [INFG]:** How much influence do you think the project team you have interacted with has beyond the context of the project you are working on? PARTICIPATION POWER **[18]-[PIN1] :** How much influence does this team have in the decisions reached by your team?- **Participation involvement** **[19]-[PIN2]:** How much influence does this team have in the decisions reached by the entire IS group (or overall IT community) **-Net participation involvement** **[20]-[PTS1]:** Over how many decisions made by your team does the other team have at least some influence in?- **Participation scope** **[21]-[PTS2]:** Over how many decisions made by the entire IS group (or the overall IT community) does this team have at least some influence?- **Net participation scope**	

Table 3.3: Operationalisation of the strategic conditions factors

Variable	Conceptual Definition	Operational Definition
COPING WITH UNCERTAINTY **[COP]**	A teams ability to cope with uncertainty is a measure of the team's ability to - Cope with uncertainty in general. This is based on the team's ability to reduce changes in inputs, provide information needed to predict future changes, and the team's ability to reduce changes in outputs**. [COP1-COP3]** - Cope with environmental uncertainty. This involves the ability to cope with changing departmental circumstances. **[COP4]** - Cope with the uncertainty from operations. This involves the ability to ensure constant delivery of work outputs. **[COP5]** Lucas (1984).	How well the focal team (agent team) was able cope with uncertainty was measured as the responding teams'(target team) perception using five items on a five-point scale, from "1"= "Not at all" to 5= "Entirely". The five items were made up of three items to measure coping with uncertainty in general, one item to measure coping with environmental uncertainty, and one item to measure coping with uncertainty from operations. Items are adapted from Lucas (1984).
	Items: **[24]- [COP1]**: To what extent does this team help your team to cope with uncertainty by reducing variability of work inputs? *(uncertainty is the lack of adequate information about future events)* **[25]-[COP2]**: To what extent does this team provide the information that helps to predict and prevent future problems? **[26]- [COP3]:** To what extent does this team help your team by reducing changes in work outputs? **[27]- [COP4]**: To what extent do the circumstances of the project team which your team has interacted with change? **[28]- [COP5]**: To what extent does the project team which your team has interacted with do the same tasks every day without disruption?	

CENTRALITY **[CEN]**	Centrality refers to the degree to which a team is interconnected with other teams (Pervasiveness) and the speed with which the activities of the subunit affect the organisation in the event of disruption (Immediacy) (Hickson et al., 1971; Hinnings et al., 1974; Saunders, 1990)	The extent to which the focal team (agent team) was central to the organisation was measured as the responding teams' (target team) perception by using two items on a five-point scale. The first item measured the extent to which the focal team was connected to the target (responding) team-pervasiveness. The scale was anchored from "1"= "Not at all" to 5= "Entirely". The second item measured the speed or rate at which the disruption of the focal team impacted the respondent (target team) team (Immediacy). The scale was anchored from "1"= "Not for a long time" to "5" = "Instantly". Items adapted from: Hinnings et al. (1974); Saunders (1990).
	Items: **[22]- [CEN1]:** To what extent is this team involved in tasks and projects concerning your own team or unit? **[29]- [CEN2]:** How quickly would the elimination of the tasks of the project team affect your own team?	
SUBSTITUTABILITY **[SUB]**	A team is substitutable if its functionality (activities and outputs) can be easily performed by other teams. (Hickson et al., 1971; Hinnings et al., 1974)	The extent to which the focal team (agent team) was substitutable was measured as the responding teams' (target team) perception by a single item on a five-point scale, from "1"= "Not at all" to 5= "Entirely" Items adapted from: Hinnings et al. (1974); Saunders (1990).
	Items: **[23]- [SUB]:** To what extent could other teams do the tasks expected from the team you have interacted with?	

Table 3.4: Operationalisation of control variable

Variable	Conceptual Definition	Operational Definition
Team size (focal team) **[30]-[C1]**	The number of individuals within the focal team (agent team).	The team size of the focal team (agent team) was measured using the below scale: 2-5 6-10 11-15 16 and more
Team type (focal team) **[31]-[C2]**	Team type for the focal or agent team refers to the area of speciality which characterises the focal or agent team. A team could be characterised as either having a predominantly *Technical* focus (which typically includes special focus areas such as coding, systems application design and development etc.) A team could also be characterised as predominantly *Analytic* (which typically includes special focus areas such as business process modelling, business requirements management, project implementation, etc.) A team could also be regarded as *Mixed*. A mixed team was characterised by both technical and analytic capabilities. Two additional types were included; Hybrid Team, was used to indicate teams which could be characterised by a mix of IT and non-IT employees, and Business Team, which was used to denote teams which could be characterised by non IT-people working on IT projects.	The type of team which characterises the focal or agent team was reflected on a categorical scale by asking the responding teams' perception of whether the focal team is predominantly a : Technical, Analytic, Mixed, Hybrid or, Business Team.
Number of projects worked on together **[32]-[C3]**	The number of projects worked on together was the count of projects that both the focal team and the responding team have worked on together.	Number of projects worked on by both the focal team (agent team) and responding team (target team) was measured using the below rank-order scale to capture the responding team's self-report of the number of projects worked on together. 1-3 4-6 7-9 10+
Team size (responding team) **[33]-[C4]**	The number of individuals within the responding team (target team)	The team size of the responding team (target team) was measured using the scale: 2-5 6-10 11-15 16 and more
Team type (responding team) **[34]-[C5]**	Team type for the responding or target team refers to the area of speciality which characterises the focal or agent team. A team could be characterised as either having a predominantly	The type of team which characterises the focal or agent team was reflected on a categorical scale by asking the responding teams' perception of whether the focal team is predominantly : Technical,

	Technical focus (which typically includes special focus areas such as coding, systems application design and development etc.) A team could also be characterised as predominantly *Analytic* (which typically includes special focus areas such as business process modelling, business requirements management, project implementation, etc.) A team could also be regarded as *Mixed*. A mixed team was characterised by both technical and analytic capabilities. Two additional types were included; Hybrid Team, was used to indicate teams which could be characterised by a mix of IT and non-IT employees, and Business Team, which was used to denote teams which could be characterised by non IT-people working on IT projects.	Analytic, Mixed, Hybrid or, Business Team.
Industry **[36]-[C6]**	Industry represents the industry in which the responding teams' (target team) organisation was based in.	The industry of the responding team (target team) was classified into the following categories: - Financial and Insurance Services - Banking - Telecommunications - Government/Government Agency - Consultancy - Retail - Manufacturing "Other" was used to for the responding team to indicate the industry in which their team was based, if it wasn't included on the category list provided.

3.6 DETERMINATION OF POPULATION AND SAMPLING TECHNIQUE

3.6.1 IDENTIFICATION OF POPULATION

This study was geared towards understanding how project teams can gain and maintain positions of power and how influence tactics could be used to influence a shift in the strategic conditions which could lead to team power within ISD project teams. The original intention was to sample more broadly and allow for different industries in the study. However, due to sampling from mostly financial services and government, the population was thus contained mostly within the financial services sector and government. As such, the greater population which was considered for the study was all the ISD project teams functioning within the various financial services institutions and in all the government departments within South Africa. The teams themselves were thus regarded as the actual units of analysis.

3.6.2 SAMPLING FRAME

Sampling is defined as the statistical process for the selection of the subset of individuals to which statistical inferences and conclusions can be made (Cooper & Schindler, 2006). The sampling frame suggests the list of probable members from which the sample could be drawn (Oates, 2006). Since a list of teams meeting the research criteria was not readily available to the researcher, for the purposes of the study, three financial institutions within which project teams operate were selected based on their known levels of IT investment and operations. Additionally, one organisation which provides information management services to various banking and financial services institutions was also considered. Lastly, one government agency was selected and included in the sampling frame. Organisations with completely outsourced IT development functions were not considered for the study. The financial services industry was selected as an appropriate industry sector for examining IS team power because of the information intensive nature of the sector and its high reliance on IT systems and large IT investments. Moreover, as an example, one of the sample firms has in excess of 3000 IS employees operating in teams of varying sizes suggesting that it is a context within which a large number of IS professionals work and within which teams of varying sizes work on a large number of projects. Table 3.5 below provides a summary of the firms which were sampled.

Table 3.5: Summary of sampled firms

Company 1	Profile
Company 1	Financial services and banking firm.
Company 2	Financial services and insurance firm.
Company 3	Financial services and insurance firm.
Company 4	Government agency responsible for providing IT and information services to other government departments.
Company 5	Information Management firm providing information management services to financial services institutions.

3.6.3 SAMPLING APPROACH

For the purposes of this study, a non-probability sampling technique using the snowball method was applied for the selection of the ISD project teams within the five sampled firms. In accordance with Oates (2006), once the initial teams from the target population were contacted, the researcher could request the respondents to recommend other teams within their respective domain who are relevant to the research topic. The additional teams were thus contacted and so the sample snowballed in size (Oates, 2006). According to Atkinson and Flint (2001), the snowball method is often used in cases where the population is considered hidden, not readily available, not easily accessible or hard to reach[1]. In this study, the researcher identified and

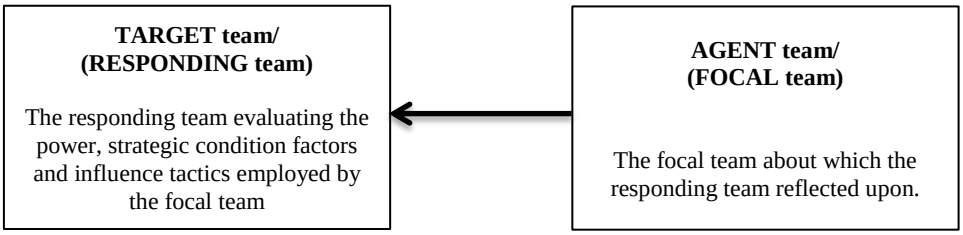
[1] Non-randomised sampling techniques such as the snowball method have certain limitations such as selection bias due to the subjective choices participants make when referring other participants and may require the researcher to have an established social network to initiate the "chain referral". However, the advantage of drawing from a convenient sample and using a method such as snowballing is that the sampling is relatively inexpensive to implement and requires less complex rules of how the sample should be collected (Atkinson and Flint, 2001).

contacted known individuals belonging to various ISD project teams from the organisations were permission was granted. Upon completing the questionnaire, the individuals in turn, either recommended or forwarded the questionnaire to members from other teams within their organisations, whom they had interacted with on a project. In this way, the sample snowballed in size.

3.6.4 KEY INFORMANTS

The key informants were the individual members who made up the ISD project teams. The members from these teams acted as the relevant informants reflecting upon another team with whom their team had interacted with, although the data collected was not about the individual, but rather about the team with whom they had interacted. The responding team (also known as the target team) was represented by the respondent who was evaluating the power, strategic conditions factors and influence tactics employed by the rival team (also known as the agent team). The agent team who was seen to be performing the influence acts was therefore regarded as the focal team. The relationship between the target team and responding team is depicted in Figure 3.2 below.

Figure 3.2: Relationship between agent (focal team) and target (responding team)



3.7 PRE-AND PILOT TESTING

A pre-test was conducted by distributing the research tool to three selected academics as well as three industry experts in order to solicit their evaluation of the tool. This was done to ensure content validity and verify that the proposed items matched the relevant domain constructs being measured. In an effort to ensure content validity, the questionnaire items used in the study were adapted from published literature. However, it was still necessary prior to the administration of the questionnaire to conduct a pre-test (Bhattacherjee, 2012). By doing so, content validity of the items was further enhanced. Moreover, the process helped to establish face validity as well. This assisted in determining whether the selected items were reasonable measures of the intended

underlying constructs being measured. For the pre-test, the proposed questionnaire was distributed to the three academic experts with special interests in ISD projects. Additionally, the questionnaire was also sent to the three industry experts who specialise in project management and information systems development practices.

As a result of the review from the pre-test panel, slight modifications were made to selected items. Typographical errors were corrected; certain questions which seemed ambiguous were also amended in line with the feedback which was received. In addition, the specific wording to the INFG, PIN1 and PIN2 scale was updated. Based on the feedback from one of the practioners, the team type measure (C2 and C5) was extended to include options for "Hybrid Team" and "Business Team".

Once all the updates from the pre-test were incorporated, a pilot test was then conducted on a convenient sample of six respondents which was drawn from the researchers own network of colleagues based in ISD project teams across different organisations. This was done in order to assess whether the respondents could make sense of the questionnaire, and that respondents were responding to the questions correctly, and that the questions were being interpreted accurately. Based on the responses to the questionnaire, as well as, the feedback received from the respondents, further updates were made to selected items. The pilot test helped to further establish the face validity of the instrument (Bhattacherjee, 2012). A copy of the final questionnaire appears in Appendix B.

3.8 QUESTIONNAIRE ADMINISTRATION

Upon completion of the pre-test and pilot test, the questionnaire was then administered through a web-based survey tool. Initial contact was made, via email, to known respondents from the firms where permission was authorised. The email was embedded with the link to the survey. Upon completion of the survey, the respondents were requested to forward the email together with the embedded survey link to members from other teams, within their organisation, with whom they had interacted with on a project recently, thus allowing for the snowballing.

3.9 DATA ANALYSIS METHODS

3.9.1 ANALYSIS TO DEMONSTRATE CONVERGENT AND DISCRIMINANT VALIDITY

Testing for convergent validity is necessary to establish that a measure is similar (or convergent) with other measures of the same construct. Thus convergent validity establishes the closeness or similarity with which a measure converges to its theoretical construct (Bhattacherjee, 2012; Cooper & Schindler, 2006). Discriminant validity, on the other hand, establishes that a specified measure does not measure other constructs that it is not intended to measure i.e. can be

discriminated from measures of different constructs (Bhattacherjee, 2012; Cooper & Schindler, 2006). Therefore, items which were intended to measure the same construct should strongly correlate or converge towards each other, such that correlation is established (convergent validity), and items measuring different constructs in the proposed model should be much less correlated and therefore demonstrate discriminate validity (Bhattacherjee, 2012; Cooper & Schindler, 2006).

To establish convergent and discriminant validity, a statistical technique called Principal Components Analysis (PCA) was applied to analyse evidence of unidimensionality and convergent validity by demonstrating that all the measured items for a single construct load onto a single component. In this study, items which exhibited factor loadings higher than (> 0.60) were preserved. Similarly, discriminant validity was assessed by observing that items that were intended to measure a specific construct did not cross-load highly (>0.40) onto other components.

3.9.2 ANALYSIS TO DEMONSTRATE SCALE RELIABILITY

To be reliable, a measurement scale should be consistent and dependable (Bhattacherjee, 2012). Reliability thus ensures that if the same scale is used to measure the same construct multiple times, it would yield consistent results. There are various approaches to establishing measurement reliability e.g. test-retest, inter-rater and internal consistency approaches (Hair et al., 2010). Since multi-item measures were used to measure the various variables, the internal consistency measure was used as the most appropriate method to establish the consistency between the different items relating to the variables being measured. As suggested by literature (Hair et al., 2010), evidence of whether a scale can be deemed reliable or not was determined by a measure of internal consistency known as Cronbach's alpha where the reliability coefficient measured should be at above a value of 0.70.

If reliability coefficients from the data items are above the suggested threshold of 0.7, then the measures used to measure the influence and power variables will be deemed consistent and dependable (Bhattacherjee, 2012; Cooper & Schindler, 2006).

Once convergent and discriminant validity as well as, scale reliability was confirmed, composite scores were then calculated for each construct and hypothesis testing could proceed.

3.9.3 HYPOTHESIS TESTING

Hypothesis testing involves the use of statistical measures to establish whether the null hypothesis of no relationship can be rejected (Hoel et al., 1971). Hypothesis testing was thus conducted to determine the probability of Hypothesis 1 to Hypothesis 4 being true. Firstly, bivariate correlation analysis was used to measure the strength of the relationship between the proposed variables as given by the product-moment correlation co-efficient (r). Secondly, multiple regression analysis was carried out to observe the combined effect of the independent strategic condition factors (environmental and structural conditions) on team power (Hypothesis 1 through Hypothesis 3). Computed p-values for regression coefficients were compared to the significance value (or alpha value) of 0.05 in order to reject the NULL hypothesis relationship. Thirdly, the strength at which the influence tactics interacted with the strategic condition factors to effect power (Hypothesis4a to Hypothesis 4d) was assessed by using a combination of hierarchical moderated regression analysis and stepwise moderated hierarchical regression analysis. According to Anderson (1986), hierarchical moderated regression analysis is a useful technique that helps to clarify the interaction between two or more independent variables on a dependent variable. In this case, the significance of the interaction term between the environmental and structural conditions factors on team power was observed. If the interaction terms were significant i.e. $p<0.05$ then the NULL hypothesis was rejected. The R-squared values for each of the regression models was also determined to establish the predictive power of the research model.

3.10 ETHICAL CONSIDERATIONS

Any research study needs to be conducted within legal and ethical confines (Oates, 2006). As such, all the steps considered in the research process need to carried out both ethically and legally. Oates advises that due caution needs to be considered concerning key issues such as the protection of data of the individuals or organisations who are participating in the study, whether or not it is permissible to offer incentives to encourage participation in the research, as well as adherence to any restrictions which may be imposed by the organisation where the research is being conducted (Oates, 2006).

The author was cognisant of the ethical behaviour in which he needed to carry himself during the execution of the research, and as such, ensured to adhere to the University ethical guidelines and code of conduct. To this effect;

- Participants were requested to provide informed consent to participate in the study before proceeding to complete the survey. Additionally, the participants were informed of the nature and objective of the study through the use of a covering letter (see Appendix A2).

- It was also explained to all participants through the cover letter that participation to the study was voluntary and that they had a right to withdraw at any point from completion of the survey without loss or penalty.

- Participants were also made aware of their right to anonymity and were not required to provide any identifying information in their responses. Confidentiality of all data collected was also ensured by not sharing the data with any third parties and by also ensuring that the data will be stored securely.

Ethical clearance was obtained from the relevant ethics committee at the University of the Witwatersrand, Johannesburg, clearance number: CINFO/1106 (refer Appendix A1).

3.11 LIMITATIONS

Firstly, the surveyed sample was mostly biased to the banking, financial and insurance services industry. Moreover, the non-probability sampling method used in the study threatens the external validity of the findings and limits the generalizability of the findings to ISD project teams operating in companies and industries not included in the sample. However, by focusing on companies with large IT investments and with numerous IS professionals working across multiple teams, the results provide useful evidence for understanding power and influence issues within ISD/IT projects albeit the industry context may vary slightly.

Additionally, whilst the primary objective of the study is aimed at determining whether a relationship between the strategic conditions of fulfilment and the power variables exists, the research design adopted cannot be used to confirm causal effects as it does not rule out that the observed dependent variable may actually be attributed to other causes. The researcher can therefore, not rule out the likelihood that the variation in the dependent variable may actually be attributed to other causes. The researcher therefore acknowledges that the chosen research design cannot allow for the control of other confounding factors. Causal inferences can only be made with respect to theory. It is also worth noting that a single team member was selected as a key informant. The team member acting as the key informant (and seen as representing the team) may feel pressurised to respond in a manner that either portrays the team in a good or bad light, and thus, a level of social desirability bias is also noted. The team member may also hold views about the other team's power and influence tactics not entirely representative of the rest of the team. It is also acknowledged that the chosen data collection method (i.e. the questionnaire) poses another limitation, since the use of such self-report measures tend to interfere with the interpretation of events as viewed from an individual level vs. a group level (Podsakoff et al.,

2003). Podsakoff et al. (2003), also highlight more of such common method biases which generally influence organisational and management research, such as, item ambiguity and item and measurement context effects. As such, there are various ways in which the chosen methods in this study can give rise to bias in the research and are therefore recognised as limitations.

3.12 CONCLUSION

This chapter described the research methodology which was used to test the study's research model and hypotheses. The chapter reflected on the research paradigm, research approach, research design as well as the data collection strategy which was adopted for this study. This chapter also highlighted the procedure that was followed to develop the research instrument as well as the process for pre-testing and pilot testing the instrument. The population, sampling frame, and sampling technique chosen for the study were also identified and data analysis techniques applied to the study were described. Lastly, key ethical considerations and limitations pertaining to the study were presented.

The next chapter presents the results and key findings from the data collection and results of hypothesis testing.

4 RESULTS

4.1 INTRODUCTION

This chapter presents the findings from the study. Firstly, the data is screened for missing values and outliers followed by an assessment of the normality of the data sample. Thereafter, the profile of teams which was sampled for the study is presented. Secondly, the results from the tests of validity and reliability of the data constructs are highlighted. Lastly, the outcomes from the correlation and multiple regression tests are reported followed by a summary of the hypotheses which were supported or rejected.

4.2 BASIC DATA SCREENING

4.2.1 SUMMARY OF RESPONSES RECEIVED

A total of 128 team responses from five organisations were received during the data collection phase. The non-probability sampling technique using the snowball strategy was employed as the primary method to collect the data. Table 4.1 below presents a breakdown of the responses which were received.

Table 4.1: Summary of responses received

Company	Profile of company	Number of team responses received
1	Financial services and banking firm.	98
2	Financial services and insurance firm.	3
3	Financial services and insurance firm.	9
4	Government agency responsible for providing IT and information services to other government departments.	14
5	Information Management firm providing information management services to financial services institutions.	4
	TOTAL	**128**

The large number of responses received from company 1 was as a result of it being the company where the largest number of initial contacts were obtained, and thus it is not surprising that through snowballing, more responses were received from teams within this company. As a result of this, the results from this study will therefore be largely reflective of company 1, and less so for those companies with fewer team responses.

4.2.2 ANALYSIS OF MISSING VALUES

The 128 responses were analysed for missing values. A total of 85 surveys were completed fully, whilst the remaining 43 responses had missing data. Of these 43 cases, 22 observations were regarded as missing a large amount of data and therefore excluded from the sample. The exclusion criteria for the 22 observations was based on cases where each survey response had 4 or more variables which were missing (being more than 10% of the questionnaire). The other 21 observations had only three or fewer variables missing. This meant that these cases had less than 9% of the questionnaire missing responses.

From the remaining 21 observations, 13 had only 1 missing variable, 5 observations had 2 missing variables and 3 observations had 3 missing variables. These 21 observations which were missing between one and three variables were further investigated to observe the trends of the missing data. After the investigation of the data, it was concluded that the missing values from these 21 cases was observed to be missing at random with the missing values being observed across the influence tactics variables, perceived team power variables, and the strategic conditions factors variables with no observable pattern as to why the data was missing.

Furthermore, each individual variable where missing data elements were identified was scanned and it was revealed that no variable was missing data on more than 5% of the cases.

As a result, the missing data values from the 21 cases were assumed to be at random and imputed by substituting the series mean for each variable. Therefore, these 21 observations were included in the overall sample. This meant that a total of 106 cases (n= 106) were regarded as having significantly sufficient data that would allow for meaningful data analysis. Table 4.2 provides a breakdown of the observations which were included or excluded in the overall sample based on the analysis of missing values.

Table 4.2: Breakdown of included and excluded observations based on number of missing values threshold

			Included	Excluded
Total completed responses		**85**	**85**	
Total responses with missing values		**43**		
Missing data items ≥ 4	**22**			**22**
(>10% missing values per response)				
Missing values = 4	*1*			
Missing values = 6	*2*			
Missing values = 19	*12*			
Missing values = 20	*2*			
Missing values = 24	*1*			
Missing values = 26	*1*			
Missing values = 30	*1*			
Missing values = 33	*2*			
Missing data items ≤ 3	**21**		**21**	
(< 9% missing values per response)				
Missing values = 3	*3*			
Missing values = 2	*5*			
Missing values = 1	*13*			
**series mean was used to substitute/ impute missing values,*				
TOTAL RESPONSES CONSIDERED			**106**	

4.2.3 RECODED VALUES

The single scale item used to measure the substitutability construct was worded as "To what extent could other teams do the tasks expected from the team you have interacted with?" and scored on a scale where 1=not at all to 5=entirely. This scale was subsequently reverse scored such that higher scores would represent a lesser degree of non-substitutability. Thus a negative correlation between the substitutability construct and team power could be expected as per hypothesis H3.

No other items on the questionnaire were either negatively phrased or reversed scored.

4.2.4 OUTLIERS

In order to reduce response bias and extreme or unusual cases, the remaining cases (n=106) were further assessed for outlier values using univariate analysis. Generally, univariate outliers are identified by observing standardised scores (z scores) on each data point which are either less than -3 or greater than +3. Thus indicating the specific data point as being either below or greater than the group distribution.

Based on the analysis of the standardised scores, one case (ResponseID 4940358140) had a z-score of -3.6 on item **[RA1].** However, further analysis showed that the remaining items on the specific case were within the acceptable standardised score range. This case was therefore not excluded from the sample as the extreme response on only a single item did not suggest that this case was an outlier. Therefore, no outliers were identified and all cases were retained. (Refer to Appendix F: Outlier analysis)

4.2.5 DATA NORMALITY

The data sample was further tested for skewness and kurtosis in order to establish the normality and distribution of the data sample itself. Skewness was assessed in order to determine the symmetric distribution of each variable whilst kurtosis was assessed in order to measures the apex (or peakedness) with which each variable displays towards or away from the normal distribution of the data set. Based on the analysis of the skewness values, items **[RA2]** and **[RA3]** exhibited properties of being negatively skewed. This suggested that most of the respondents scored these items higher when compared to the normal distribution of the data sample. Both items **[RA2]** and **[RA3]** displayed skewness values of -1.3. When kurtosis was further assessed for these items it was established that the peakedness of these variables on the other hand was fairly evenly distributed, as both items displayed kurtosis values which were regarded to be within the acceptable range of between -1 and 1. Based on the analysis, both items **[RA2]** and **[RA3]** were thus not excluded from the data set.

Furthermore, items **[CO3]**, **[CL2]** and **[C1]** exhibited properties of negative kurtosis, suggesting a more peaked distribution of these variables when compared to the overall data sample. Similarly, however, when the skewness of these variables was assessed, the variables were fairly symmetrically distributed across the data sample, although moderately peaked. Thus these items were also retained. (Refer to Appendix G: Skewness and Kurtosis)

4.2.6 DROPPED ITEMS

Item **[C6]**, which was intended to reflect the industry of the responding (target) team was dropped as the initial intention was to sample more broadly and allow for different industries, however, due to the final sample being mostly representative of the financial services and government sectors, the item was subsequently dropped.

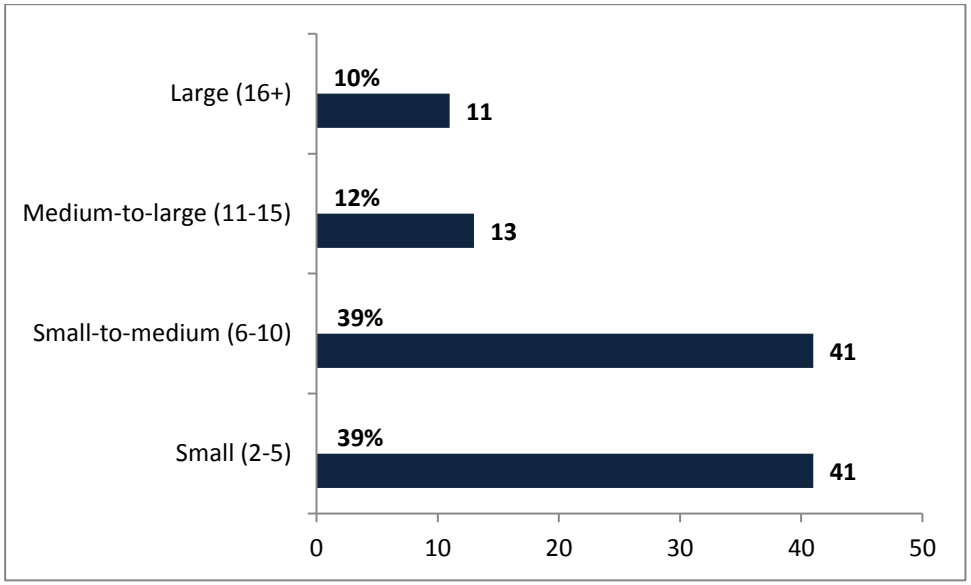
4.3 PROFILE OF KEY INFORMANTS

Based on the final data set included in the sample (n=106), the following profile of key informants is presented based on the characteristics of team size, team type and number of projects worked on together. The key informants in this study were the individual team members who reflected on behalf of their teams, and who observed the power relations and influence tactics between their own team (the target team) and another team with whom they had recently interacted with on a project (the focal team).

4.3.1 PROFILE OF KEY INFORMANTS (RESPONDING/TARGET TEAM) BASED ON TEAM SIZE AND TEAM TYPE

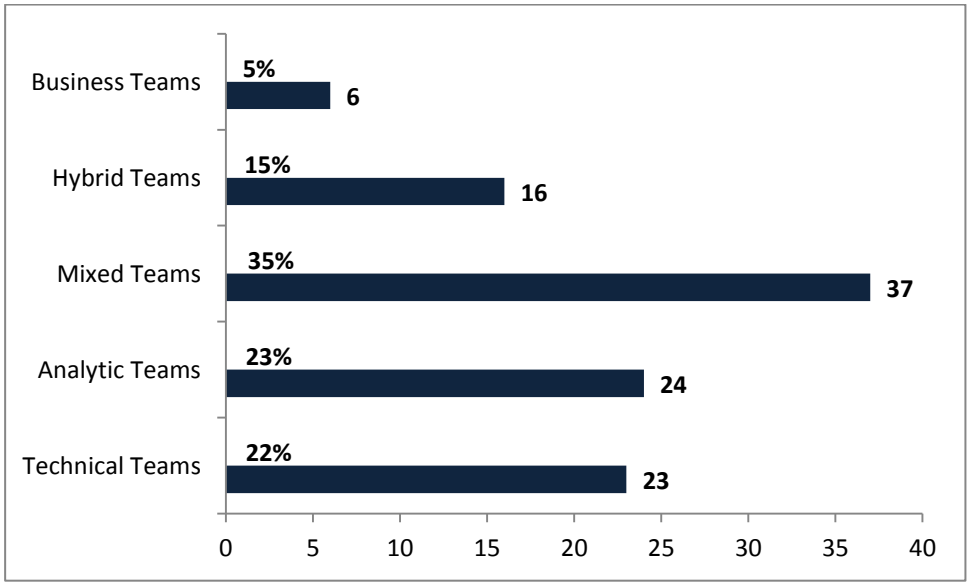
From the total of 106 responses, an equal amount of respondents characterised their own teams as either being small (consisting of 2 to 5 members) or small-to-medium (consisting of 6 to 10 members). Thus small and small-to-medium teams (each represented by 39% of the sample) summarily constituted 78% of the overall sample. The remaining 22% of respondents indicated that their teams were either medium-to-large (consisting of 11 to 15 members) or large (consisting of 16 or more members) reflected by 12% and 10% of the total sample respectively. Figure 4.1 below shows the profile of respondents based on team size. The respondents are therefore more representative of smaller to medium teams under 10 members, and less representative of larger teams with more than 10 members.

Figure 4.1: Respondents based on team size



In addition, from the total number of respondents who reflected on behalf of their teams, 35% of the respondents indicated that their teams were predominantly mixed teams, which were characterised by both technical and analytic capabilities. This is followed by 23% of the respondents who denoted their own teams as being predominantly analytic in nature. The remaining 42% of respondents reflected their teams as either being technical, hybrid or business teams, with business teams being represented by the smallest percentage of teams from the overall sample. Figure 4.2 below provides a summary of respondents based on team type. The respondents are therefore representative of all team types with Mixed, Analytic and Technical teams accounting for the vast majority of the sample.

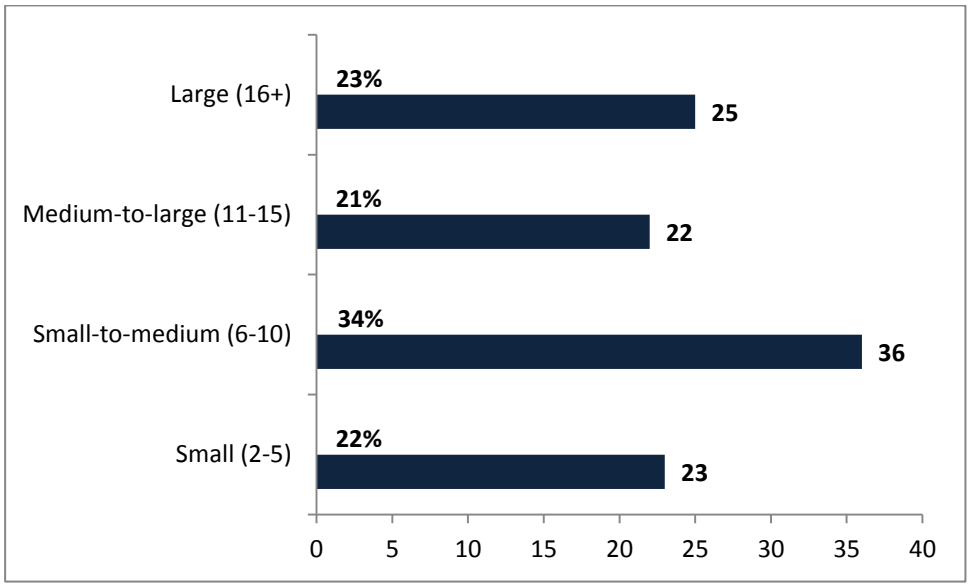
Figure 4.2: Respondents based on team type



4.3.2 KEY INFORMANTS' PERCEPTION OF AGENT/FOCAL TEAM SIZE AND TEAM TYPE

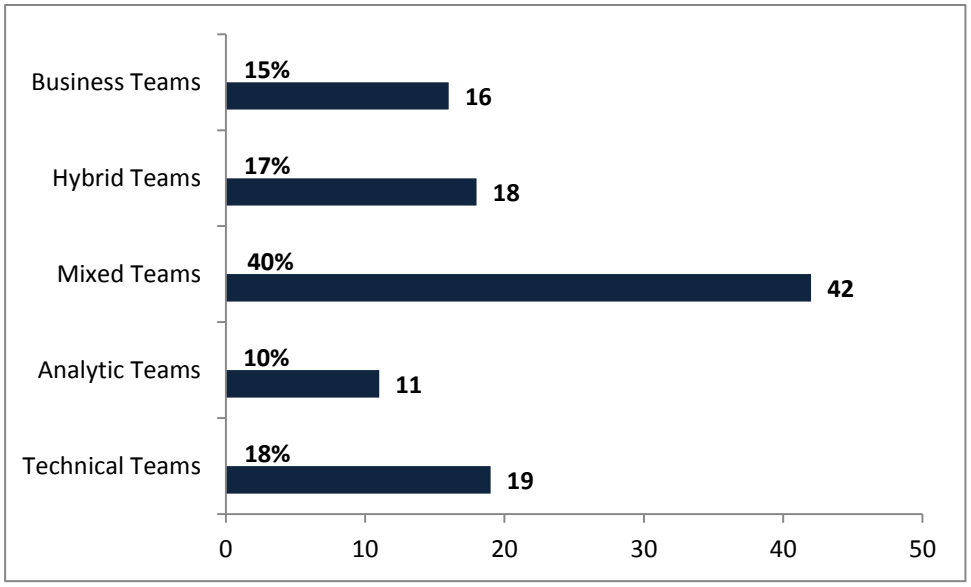
From the total number of respondents received, a majority of respondents (34%) indicated that the other team on which they were reflecting were small-to-medium teams (consisting of 6-10 members), followed by 23% of respondents who indicated that they had reflected on large teams (16 or members) whilst 22% of the responses showed they had reflected on small teams (2 to 5 members). A slightly larger percentage of the respondents (56%) reflected on either small or small-to-medium teams compared to 44% of the respondents who indicated that they had reflected on medium-to-large or large teams. Figure 4.3 illustrates the respondents' view of the focal team based on team size.

Figure 4.3: Key informants' perception of the size of the agent/focal team



Furthermore, the key informants indicated that a large majority of the teams that they had reflected upon were mixed teams which were represented by 40% of the total sample, followed by technical teams (18%) and hybrid teams (17 %) respectively. The remaining 25% of the respondents indicated that they were reflecting on analytic or business teams specifically. Figure 4.4 below illustrates the respondents' view of the agent or focal team's type.

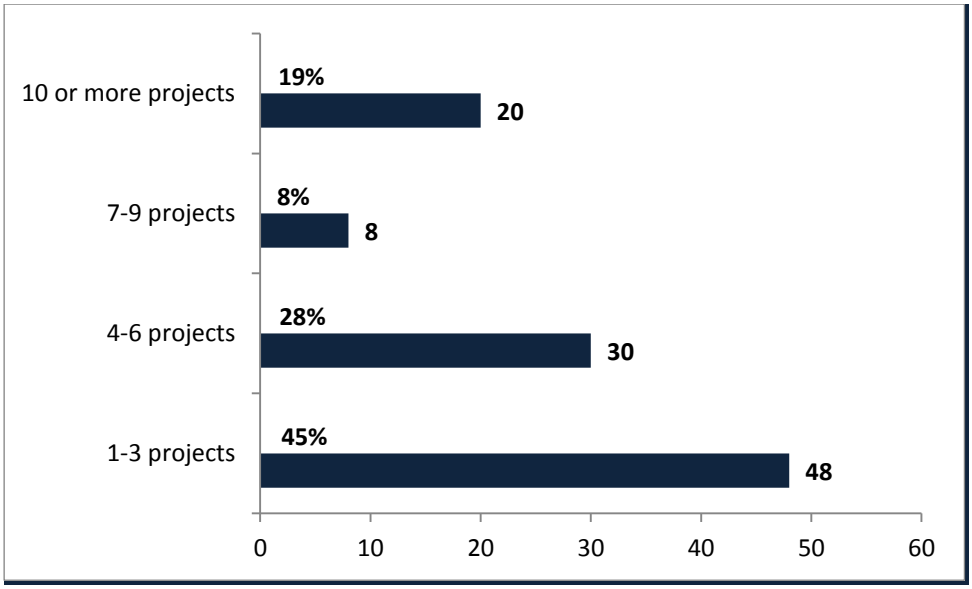
Figure 4.4: Key informants' perception of the team type of the agent/focal team



4.3.3 NUMBER OF PROJECTS WORKED ON TOGETHER

The majority of respondents (45%) had worked on between 1 and 3 projects with the teams they had responded about. Figure 4.5 below illustrates the respondents based on number of projects worked on together with the rival team.

Figure 4.5: Key informants' perception of number of projects worked on together



4.3.4 SUMMARY

The data sample reveals that the vast majority of respondents belong to small or small-to-medium sized teams, and that these teams are largely characterised as being mixed teams consisting of a combination of technical and analytic capabilities. The focal teams about which respondents reflected were mostly small-to-medium sized teams with mixed team capabilities. This suggests that the majority of respondents reflected about power and influence issues between teams which were of a similar nature to their own teams. Additionally, these teams have generally only interacted on between 1 and 3 projects.

Having examined the profile of teams, the next section presents results of the tests of validity and reliability of the measurement scales that will be used to test the study's hypotheses.

4.4 VALIDITY AND RELIABILITY OF MEASURED CONSTRUCTS

In the study, the variables of the influence tactics, strategic conditions factors and perceived team power were measured using multi-item measures on various Likert-type scales. The items were adapted from literature and face and content validity of these measures was further established through earlier pre-testing and pilot testing. Prior to hypothesis testing, it was still necessary to also establish the empirical reliability and validity of the measured constructs.

Tests for the validity of the data items were conducted using the Principal Components Analysis (PCA) technique incorporating varimax rotation. Convergent validity of the various constructs was assessed by observing factor loadings of each item to examine whether they loaded onto their respective construct where the factor loading values for each item were higher than 0.65. Where items from the same construct load onto a single component, then the unidimensionality of the construct is established together with its convergent validity. Furthermore, discriminant validity was confirmed where items did not load highly (greater than 0.40) onto constructs they were not supposed to measure. Loadings below 0.40 were suppressed to facilitate the interpretation of the output.

The rotated component matrix from the initial PCA analysis showed that the items used to measure influence tactics of rational persuasion, exchange and coalition all loaded as expected, whilst 1 item **[CL3]**, for the influence tactic of collaboration was dropped as it loaded below the 0.65 cut-off. Additionally, all items used to measure the variables of perceived power (capacity to influence and participation power) all loaded as expected. Of the five items used to measure the strategic condition factor of coping with uncertainty, only three of the five items loaded successfully as expected, whilst item **[COP4]** appeared to have loaded under the substitutability construct and item **[COP5]** loaded considerably below the 0.65 cut-off. These two items were subsequently dropped from the coping with uncertainty measure. Furthermore, the two items which were used to measure the centrality construct seemed not to load on the centrality variable initially. However, after forcing an 8 factor solution on the PCA, 1 centrality item was retained and 1 item **[CEN1]** was dropped as it loaded under the perceived team power construct. Lastly, the single item used to measure substitutability loaded as expected and was retained. Table 4.3 depicts the final PCA results after the failed items were removed.

Once the validity of the data elements was confirmed, further tests for the reliability of the data constructs was conducted by computing Cronbach's alpha values for each construct. These were then compared against the cut-off alpha value of 0.70 to establish whether the items demonstrated evidence of internal consistency. As centrality and substitutability were only measured using single items as per Table 4.3, Cronbach's alpha values cannot be computed for

these constructs. Table 4.3 displays the Cronbach's alpha values for each of the multi-item constructs based on the final items retained after the PCA analysis. The following sections (4.4.1 to 4.4.4) discuss the PCA and reliability results in greater detail.

Table 4.3: Factor loadings form the Principal Components Analysis (only loadings above 0.4 are shown).

Item	Perceived Team Power [PTP]	Influence Tactics				Strategic conditions factors		
		Exchange tactics [EX]	Rational persuasion [RA]	Coalition [CO]	Collaboration [CL]	Coping with uncertainty [COP]	Substitutability [SUB]	Centrality [CEN]
RA1			0.711					
RA2			0.850					
RA3			0.850					
RA4			0.776					
EX1		0.743						
EX2		0.858						
EX3		0.836						
EX4		0.828						
CO1				0.781				
CO2				0.705				
CO3				0.794				
CO4				0.779				
CL1					0.695			
CL2					0.820			
CL4					0.795			
INFG	0.799							
PIN1	0.812							
PIN2	0.835							
PTS1	0.651							
PTS2	0.725							
CEN2								0.890
SUBS							0.797	
COP1						0.767		
COP2						0.771		
COP3						0.687		
Cronbach's Alpha	0.861	0.890	0.843	0.819	0.817	0.813	-	-

4.4.1 TESTS FOR THE VALIDITY AND RELIABILITY OF THE INFLUENCE TACTICS VARIABLES

Table 4.3 depicts the loadings for the influence tactics. All four of the influence tactics variables (which were considered as moderating variables) were measured using multi-item measures. Each of the influence tactics variables were measured using four items. Based on the results from the principal components analysis as reflected in Table 4.3, items measuring three of the four the influence tactics variables namely, rational persuasion [**RA1** to **RA4**], exchange [**EX1** to **EX4**] and coalition [**CO1** to **CO4**] all converged along their intended constructs with each variable reflecting factor loadings well above than 0.65. Therefore, all the items for the influence tactics of rational persuasion, exchange and coalition were retained. Examination of the influence tactic of collaboration [**CL1** to **CL4**] revealed that even though all the items intended to measure the influence tactic of collaboration converged towards the same variable, the specific factor loading for item **[CL3]** loaded below the cut-off value 0.65. Therefore, this item was excluded from the measure for the influence tactic of collaboration. The discriminant validity of all four of the influence tactics variables was established as no item loaded highly on constructs they were not expected to measure. Furthermore, the reliability of each of the influence tactics variables based on retained items were retained was assessed by observing Cronbach's alpha values. All four of the influence tactics measures demonstrated high reliability with alpha values way in excess of 0.7 as reflected in Table 4.3.

4.4.2 TESTS FOR THE VALIDITY AND RELIABILITY FOR PERCEIVED TEAM POWER

Perceived team power, the dependent variable, was measured across five items. These items captured a teams' collective capacity to exert influence [INFG], a teams' level of participation power consisting of participation scope [PTS1], participation involvement [PIN1], net participation scope [PTS2] and net participation involvement [PIN2].

According to the principal components analysis tests, all five of the items, which were intended to measure the perceived team power construct, converged together. Additionally, all of the items displayed factor loadings above the 0.65 cut-off. The discriminant validity of all five of the perceived team power as a single uni-dimensional construct was thus established. Furthermore, both capacity to influence and participation power are combined into a single team power variable that is the dependent variable of this study. Lastly, the reliability of the perceived team power construct was established by assessing the Cronbach alpha value which was observed to be higher than the 0.7 cut-off as reflected in Table 4.3, thus the perceived team power construct reflected a high level of reliability.

4.4.3 TESTS FOR THE VALIDITY AND RELIABILITY OF THE STRATEGIC CONDITIONS FACTORS

Three strategic conditions constructs were measured, namely coping with uncertainty **[COP]**, centrality **[CEN]** and substitutability **[SUB]**. Coping with uncertainty was measured along five items **[COP1** to **COP5]**, centrality was measured along two items [**CEN1**, **CEN2**]. Lastly substitutability was measured by one item **[SUB]**. Table 4.3 displays the factor loadings for each of the strategic conditions factors.

Coping with uncertainty

Based on the factor loadings as presented in Table 4.3, only three items [**COP1**, **COP2** and **COP3]** displayed convergent validity for the coping with uncertainty construct. All three of the items each displayed factor loadings above 0.65. The third and fourth variables **[COP4]** and **[COP5]** were both excluded from the coping with uncertainty construct because the item for **[COP4]** loaded under the substitutability construct, whilst the item for **[COP5]** loaded substantially below the cut-off of 0.65. Therefore, only items **[COP1], [COP2]** and **[COP3]** were retained under the coping with uncertainty construct, whilst items **[COP4]** and **[COP5]** were dropped. Reliability of the three remaining coping with uncertainty items was also assessed with an alpha value in excess of 0.7 as reflected in Table 4.3.

Substitutability

The substitutability construct which was only measured by a single item **[SUB]**; this item displayed a factor loading of 0.797 as reflected in Table 4.3.

Centrality

After dropping [**CEN1**] due to its cross-loading on the power construct, only a single item **[CEN2]** was retained as a measure of the centrality construct with a factor loading of 0. 890.

4.4.4 SUMMARY OF RETAINED AND EXCLUDED ITEMS FOR EACH CONSTRUCT

Table 4.4 below provides a summary of items which were retained or excluded for each construct based on the tests of validity and reliability.

Table 4.4: Summary of retained and excluded items

Construct		Item	Retained/ Dropped	Reason for rejection
Influence tactics	Rational persuasion	RA1	Retained	
		RA2	Retained	
		RA3	Retained	
		RA4	Retained	
	Exchange tactics	EX1	Retained	
		EX2	Retained	
		EX3	Retained	
		EX4	Retained	
	Coalition tactics	CO1	Retained	
		CO2	Retained	
		CO3	Retained	
		CO4	Retained	
	Collaboration tactics	CL1	Retained	
		CL2	Retained	
		CL3	***Dropped***	***Factor loading <0.65 cut-off***
		CL4	Retained	
Perceived team power	Capacity to influence	INFG	Retained	
	Participation involvement	PIN1	Retained	
	Net participation involvement	PIN2	Retained	
	Participation scope	PTS1	Retained	
	Net participation scope	PTS2	Retained	
Strategic conditions factors	Coping with uncertainty	COP1	Retained	
		COP2	Retained	
		COP3	Retained	
		COP4	***Dropped***	***Loaded under substitutability construct***
		COP5	***Dropped***	***Factor loading <0.65 cut-off***
	Substitutability	SUB	Included	
	Centrality	**CEN1**	***Dropped***	***Loaded under perceived team power construct***
		CEN2	***Retained***	

Once the validity and reliability of the measures for the influence tactics, perceived team power and strategic conditions factors was confirmed, composite scores were calculated for each of the multi-item constructs based on the arithmetic average of the individual items weighted equally. Thereafter, the constructs were checked for normality, skewness and kurtosis. Table 4.5 shows descriptive statistics for the composite measures. Based on the Table 4.5, the influence tactic of rational persuasion demonstrated slight skewness, however when kurtosis for the same construct was observed, it was seen

to be within the acceptable rage, thus this construct was retained. The influence tactic of collaboration also demonstrated slight properties of kurtosis; similarly the skewness value was observed to be within the acceptable range, therefore this construct was retained. The remaining influence tactics of exchange and coalition as well as the constructs for perceived team power and strategic conditions factors demonstrated properties of data normality.

Table 4.5: Descriptive statistics for composite measures

Construct		Items	MIN	MAX	MEAN	Standard Deviation	Skewness	Kurtosis
Influence tactics	Rational persuasion [RA]	RA1 RA2 RA3 RA4	4	16	13.06	3.082	-1.109	0.381
	Exchange tactics [EX]	EX1 EX2 EX3 EX4	0	16	7.19	3.946	0.711	-0.525
	Coalition tactics [CO]	CO1 CO2 CO3 CO4	0	16	9.85	3.888	-0.156	-0.818
	Collaboration tactics [CL]	CL1 CL2 CL4	3	12	7.75	2.787	-0.001	-1.108
Perceived team power	Perceived Team Power [PTP]	INFG PIN1 PIN2 PTS1 PTS2	5	21	14.98	3.716	-0.694	0.242
Strategic conditions factors	Coping with Uncertainty [COP]	COP1 COP2 COP3	3	14	8.72	2.393	-0.290	-0.091
	Substitutability [SUB]	SUB	1	5	2.81	1.015	-0.112	-0.623
	Centrality [CEN]	CEN2	1	5	3.04	1.187	-0.109	-0.801

4.5 HYPOTHESIS TESTING

In order to test the study's hypotheses, firstly bivariate correlation was used to establish the relationship between the dependent variables of perceived team power, the independent variables (strategic conditions factors) and the moderating variables

(influence tactics). This was achieved by observing the nature and the strength of the relationship between the study's variables indicated by the correlation coefficient and the significance levels for each paired relation. Once the association between the study's variables was established, regression analysis was then used to test the combined effects of the independent variables and how these independent variables effectively predicted the dependent variables of perceived team power. Lastly, a combination of hierarchical moderated regression analysis and stepwise moderated hierarchical regression analysis was applied to test specifically the effects of the interaction between the influence tactics and the strategic conditions factors on team power.

4.5.1 CORRELATION ANALYSIS

Bivariate correlation was conducted in order to assess whether the phenomena underling the variables being tested were associated. This was achieved by computing the Pearson correlation coefficient (r value). Where the correlation coefficient between two variables was observed as positive, a positive relationship between the variables was established. Likewise, where a negative correlation coefficient was observed it was concluded that a negative relationship between the two variables existed. A two-tailed test of significance was conducted in order to assess both positive and negative relationships. Additionally, significant statistical correlation between variables was tested by assessing significance values (p values) greater than 0.05. Table 4.6 below displays the pair-wise correlation matrix and variables which correlated with each other.

Table 4.6: Correlation Matrix

VARIABLES	RA	EX	CO	CL	PTP	COP	SUB	CEN
RA								
EX	**.267****							
CO	0.116	**.487****						
CL	**.335****	**.428****	**.262****					
PTP	0.147	0.159	0.177	**.375****				
COP	**.395****	**.340****	**.196***	**.467****	**.512****			
SUB	0.054	**-.243***	-0.126	**-.274****	**-.411****	**-.283****		
CEN	**.300****	0.124	0.041	**.291****	0.056	**.262****	0.026	

*Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed)
Key: RA= Rational Persuasion, EX=Exchange tactics, CO=Coalition, CL=Collaboration, PTP=Perceived Team Power, COP= Coping with uncertainty, SUB=Substitutability, CEN=Centrality

- Table 4.6 shows that the independent variables of coping with uncertainty and substitutability are significantly correlated with perceived team power, the dependent variable. Additionally, the substitutability variable shows a negative association with the perceived team power variables suggesting that as substitutability increases, then perceived team power decrease and vice versa. H1 hypothesized that coping with uncertainty would be positively related to power, and this seems to be borne out in the findings. Similarly, H3 hypothesized a negative impact of substitutability on power. Correlation appears to support H3. Centrality however, showed no correlation with perceived team power. H2 does not appear to have much support.

- Correlation was also observed across the strategic conditions factors and the influence tactics. The influence tactic of rational persuasion showed correlation between centrality ($r=0.300$; $p<0.01$) and coping with uncertainty ($r=0.395$; $p<0.01$). Exchange tactics on the other hand demonstrated negative association with substitutability ($r=-0.243$; $p<0.05$) and positive relationship with coping with uncertainty ($r=0.340$; $p<0.01$). The influence tactic of collaboration appeared on the other hand, to be correlated with all three of the strategic conditions factors. A positive relationship with the strategic conditions factors of centrality ($r=0.291$; $p<0.01$) and coping with uncertainty ($r=0.467$; $p<0.01$) was observed, whilst a negative association with substitutability ($r=-0.274$; $p<0.01$) was established. Lastly, the influence tactic of coalition only demonstrated correlation with the strategic condition factor of coping with uncertainty ($r=0.196$; $p<0.05$) and no association with strategic conditions factors of centrality and substitutability. The moderating effect of these variables as hypothesized in H4 will be examined in section 4.5.2.3.

4.5.2 REGRESSION ANALYSIS

In addition to identifying the nature of the relationship between the study's variables by observing the correlation coefficient and significance levels of each established association. Regression analysis was also used to assess how the effects of the independent variables (the strategic conditions factors) effectively predicted the dependent variables of perceived team power along with the effects of the selected control variables.

4.5.2.1 EFFECT OF THE CONTROL VARIABLES ON PERCEIVED TEAM POWER

First, in order to assess the effects of the control variables on perceived team power, the control variables were recoded into dummy variables. A summary of the control variables is presented in Table 4.7. Multiple regression analysis was conducted to test the independent effects of the control variables on perceived team power, thereafter; hierarchical regression analysis using the

stepwise method was used to examine the total variance explained by the significant independent variables and control variables in determining perceived team power.

Table 4.7: Summary of control variables

Control Variable	Option on questionnaire	Focal team (agent team)	Responding team (target team)
Team Size: The number of individuals within focal or responding team	(1) 2 to 5 team members	TeamSize_F_2_to_5	TeamSize_T_2_to_5
	(2) 6 to 9 team members	TeamSize_F_6_to_10	TeamSize_T_6_to_10
	(3) 11 to 15 team members	TeamSize_F_11_to_15	TeamSize_T_11_to_15
	(4) 16 and more team members	TeamSize_F_16	TeamSize_T_16
Team Type: The area of speciality which characterises the the focal or responding team	(1) Predominantly technical team	Team_Type_F_Tech	Team_Type_T_Tech
	(2) Predominantly analytic team	Team_Type_F_Anl	Team_Type_T_Anl
	(3) Predominantly mixed team	Team_Type_F_Mix	Team_Type_T_Mix
	(4) Predominantly hybrid team	Team_Type_F_Hyb	Team_Type_T_Hyb
	(5) Predominantly business team	Team_Type_F_Bus	Team_Type_T_Bus
Number of Projects worked on together: The count of projects that focal and responding team worked on together	(1) 1 to 3 projects worked on together	Num_Proj_1_to_3	
	(2) 4 to 6 projects worked on together	Num_Proj_4_to_6	
	(3) 7 to 9 projects worked on together	Num_Proj_7_to_9	
	(4) 10 or more projects worked on together	Num_Proj_10	

According to Table 4.8, the independent effects of the control variables alone are not significant in determining team power when all are entered into the model. However, a subsequent step-wise regression of the controls revealed that Team_Type_T_Mix control variable was found significant for power perceptions i.e. respondents coming from mixed teams perceived other focal teams as having more power. This is reflected in Table 4.9. This control variable was retained in further analyses. No other controls were found to be significant.

Table 4.8: Regression Analysis- Independent effects of control variables on perceived team power

Model		Unstandardized Coefficients		Standardized Coefficients	t	R Square	Adjusted R Square Change	R Square Change	F	Collinearity Statistics
		B	Std. Error	Beta						VIF
1	(Constant)	10.741	4.603		2.334	0.181	-0.011	0.181	0.942	
	TeamSize_F_2_to_5	-0.494	1.226	-0.055	-0.403					1.938
	TeamSize_F_6_to_10	-0.629	1.092	-0.081	-0.576					2.029
	TeamSize_F_11_to_15	0.409	1.272	0.045	0.322					2.019
	Team_Type_F_Tech	1.462	4.065	0.152	0.360					18.454
	Team_Type_F_Anl	3.491	4.085	0.288	0.855					11.781
	Team_Type_F_Mix	3.126	3.978	0.405	0.786					27.629
	Team_Type_F_Hyb	2.297	4.035	0.233	0.569					17.420
	Team_Type_F_Bus	1.584	4.042	0.153	0.392					15.896
	Num_Proj_4_to_6	-0.509	0.940	-0.062	-0.541					1.361
	Num_Proj_7_to_9	-1.473	1.573	-0.105	-0.936					1.311
	Num_Proj_10	0.939	1.159	0.099	0.811					1.560
	TeamSize_T_2_to_5	2.136	3.949	0.281	0.541					28.077
	TeamSize_T_6_to_10	2.785	3.930	0.365	0.709					27.547
	TeamSize_T_11_to_15	2.445	4.075	0.217	0.600					13.561
	TeamSize_T_16	1.630	4.080	0.134	0.400					11.751
	Team_Type_T_Tech	-0.238	4.750	-0.027	-0.050					29.098
	Team_Type_T_Anl	0.041	4.753	0.005	0.009					30.035
	Team_Type_T_Mix	0.713	4.606	0.090	0.155					35.087
	Team_Type_T_Hyb	-1.477	4.777	-0.143	-0.309					22.205
	Team_Type_T_Bus	-2.298	4.911	-0.144	-0.468					9.775

Dependent Variable: PTP

Table 4.9: Regression Analysis- Effects arising from respondents who are in mixed teams and their perception of the focal team

Model	Unstandardized Coefficients		Standardized Coefficients	t	R Square	Adjusted R Square Change	R Square Change	F	Collinearity Statistics
	B	Std. Error	Beta						VIF
(Constant)	14.415	0.429		33.602	0.050	0.041	0.050	5.447	
Team_Type_T_Mix	1.768	0.757	0.223	2.334**(*)**					1.000

Dependent Variable: PTP

** p< 0.05*

4.5.2.2 EFFECTS OF THE STRATEGIC CONDITIONS FACTORS ON PERCEIVED TEAM POWER

In order to establish the effects of the strategic conditions factors of coping with uncertainty, centrality and substitutability on perceived team power, regression analysis was conducted, initially without the controls (Table 4.10) then with the control variable Team_Type_T_Mix (Table 4.11). The results of the regression analysis highlighted in Table 4.10 illustrate that both coping with uncertainty ($t=5.107$; $p<0.01$) and substitutability ($t=-3.371$; $p<0.01$) are significant predictors of perceived team power. Additionally, both the beta coefficients and t-values for substitutability are negative which reinforces the negative relationship between coping with uncertainty and perceived team power. The centrality variable failed to demonstrate any significant effects on perceived team power. Furthermore, it was earlier established in section

4.5.1 that the centrality construct had failed to show any significant association or relationship with perceived team power.

Table 4.10: Regression Analysis- Effects of strategic conditions factors on perceived team power

Model		Unstandardized Coefficients		Standardized Coefficients	t	R Square	Adjusted R Square Change	R Square Change	F	Collinearity Statistics
		B	Std. Error	Beta						VIF
1	(Constant)	12.769	1.756		7.271	0.342	0.323	0.342	17.673	
	COP	0.692	0.135	0.446	5.107**(**)**					1.180
	SUB	-1.040	0.308	-0.284	-3.371**(**)**					1.100
	CEN	-0.167	0.262	-0.053	-0.636					1.086

Dependent Variable: PTP
*** p< 0.01*
Key: PTP= Perceived Team Power, COP= Coping with uncertainty, SUB= Substitutability, CEN= Centrality

In the regression model reflected above (Table 4.10), the R^2 value was 0.342. This suggested that the independent effects of coping with uncertainty and substitutability in the model explains for 34% of the variance in perceived team power. The model was observed to be significant at the $p<0.01$ level. Moreover, the independent variable of coping with uncertainty reflected the largest significant effect on perceived team power based on the standardized beta coefficient of 0.446 which is significant at the $p<0.01$, this is followed by the independent variable of substitutability which was observed to have a negative effect on perceived team power with the standardized beta coefficient observed at -0.284 with its significance at the $p<0.01$ level. According to the model, the independent variable of centrality was observed to have no significant statistical effects on perceived team power, and thus adds no significance in predicting perceived team power.

Moreover, hierarchical regression analysis was further carried out to test the effects of the control variable together with the strategic conditions factors. The first block contained the control variable, whilst the second block of the regression model included the main effects variables (the strategic conditions factors). Results as reflected in Table 4.11 below show that control variable (Team_Type_T_Mix) significantly accounts for 5% of the variance in perceived team power. However, inclusion of the strategic conditions factors. Moreover, the inclusion of the strategic conditions factors resulted in an increase in the R^2 value from 5% to roughly 38% of the overall variance in perceived team power. Team type (mixed) in respect to the responding or target team ($t=2.309$; $p<0.05$) was observed to have a significant effect on perceived team power, along with coping with uncertainty ($t=4.962$; $p<0.01$) and substitutability ($t=-3.493$; $p<0.05$). The combined effect of the control variable and strategic conditions factors accounts for 38% of the total variance in perceived team power.

Table 4.11: Regression Analysis- Effects of the control variables and strategic conditions factors on perceived team power

Model		Unstandardized Coefficients		Standardized Coefficients	t	R Square	Adjusted R Square Change	R Square Change	F	Collinearity Statistics
		B	Std. Error	Beta						VIF
1	(Constant)	14.415	0.429		33.602	0.050	0.041	0.050	5.447	
	Team_Type_T_Mix	1.768	0.757	0.223	2.334**(*)**					1.000
2	(Constant)	12.532	1.723		7.273	0.375	0.350	0.325	15.151	
	Team_Type_T_Mix	1.447	0.627	0.183	2.309**(*)**					1.010
	COP	0.662	0.133	0.426	4.962**(**)**					1.192
	SUB	-1.055	0.302	-0.288	-3.493**(**)**					1.100
	CEN	-0.138	0.257	-0.044	-0.536					1.089

Dependent Variable: PTP
*** p< 0.01*
** p< 0.05*
Key: Team_Type_T_Mix = Mixed Team (Technical and Analytic capabilities) of the responding or Target team.
PTP= Perceived Team Power, COP= Coping with uncertainty, SUB=Substitutability, CEN=Centrality

It can thus be concluded that coping with uncertainty was observed to be the most significant of the strategic conditions factors in predicting perceived team power. Substitutability was also significant but centrality was not. Therefore, H1 and H3 are thus supported, while H2 is rejected.

4.5.2.3 MODERATING EFFECT OF INFLUENCE TACTICS ON STRATEGIC CONDITIONS FACTORS

In order to test the interaction between the influence tactics and the strategic conditions factors on perceived team power formation, moderated hierarchical regression analysis technique was used incorporating a combination of the full enter method and the stepwise method.

Firstly, centred scores for the strategic conditions factors (independent variables), and the influence tactics variables (moderating variables) were calculated by subtracting the mean of each variable from each variable score. Secondly, twelve interaction terms (see Table 4.12) were computed by multiplying each of the combination of the centred scores of the strategic conditions variables, influence tactics and the control variable. Thirdly, hierarchical moderated regression models were tested. Three models were tested. The first focused on the interaction between the influence tactics and coping with uncertainty. The second focused on the interaction between the influence tactics and centrality. The third focused on the interaction between the influence tactics and substitutability. Table 4.12 shows the list of interaction terms which were computed and incorporated into the hierarchal multiple regression models. For each test, the first block incorporated the control variable, the strategic conditions factor (e.g. coping with uncertainty or centrality or substitutability) and the four influence tactics as main effects variables, while the second block incorporated the effects of the relevant interaction terms.

Table 4.12: Computed interaction terms.

Variables	Rational persuasion [RA]	Exchange tactics [EX]	Coalition tactics [CO]	Collaboration tactics [CL]
Coping with uncertainty [COP]	c_[COP]x c_[RA]	c_[COP]x c_[EX]	c_[COP]x c_[CO]	c_[COP]x c_[CL]
Centrality [CEN]	c_[CEN]x c_[RA]	c_[CEN]x c_[EX]	c_[CEN]x c_[CO]	c_[CEN]x c_[CL]
Substitutability [SUB]	c_[SUB]x c_[RA]	c_[SUB]x c_[EX]	c_[SUB]x c_[CO]	c_[SUB]x c_[CL]

4.5.2.3.1 Test for the moderating effect of the influence tactics on coping with uncertainty

Table 4.13 and Table 4.14 shows the outcome of the moderated hierarchical regression tests focused on the interaction between the influence tactics and the strategic condition factor of coping with uncertainty. Firstly, moderated hierarchical regression analysis was conducted using the full enter method. However, results from the full enter method did not suggest any significant interactions between the influence tactics and coping with uncertainty (refer to Table 4.13). Subsequently, when the stepwise method was used, the results from the moderated hierarchical regression analysis indicated that only the influence tactic of rational persuasion demonstrated significant interaction effects with coping with uncertainty in determining team power at the $p<0.05$ significance level (refer to Table 4.14).

Additionally, Figure 4.6 shows the interaction plot which graphically illustrates the interaction effects between coping with uncertainty and rational persuasion in predicting team power. In the interaction plot, the relationship between coping with uncertainty and perceived team power was observed to be positive, moreover, this relationship seems to be strengthened when higher levels of rational persuasion are in place. Additionally, according to Dawson (2014), if the slopes of the lines of the interaction plot are significantly different from each other, and not parallel with each other, as observed in Figure 4.6, then the interaction effects can be confirmed. Results suggest that teams with the largest perceived power employ rational persuasion tactics along with their ability to cope with uncertainty. Lastly, the influence tactic of collaboration ($t=2.256$; $p<0.05$) was observed to have a direct positive effect on perceived team power.

Table 4.13: Interaction effects of the influence tactics on coping with uncertainty in perceived team power formation (using full enter method)

Model		Unstandardized Coefficients		Standardized Coefficients	t	R Square	Adjusted R Square Change	R Square Change	F	Collinearity Statistics
		B	Std. Error	Beta						VIF
1	(Constant)	7.153	1.599		4.473	0.344	0.305	0.344	8.670	
	RA	-0.098	0.109	-0.082	-0.900					1.244
	EX	-0.114	0.096	-0.121	-1.195					1.559
	CO	0.118	0.090	0.124	1.315					1.341
	CL	0.297	0.132	0.222	2.256**(*)**					1.469
	COP	0.683	0.152	0.440	4.497**(**)**					1.445
	Team_Type_T_Mix	1.605	0.655	0.203	2.451**(**)**					1.032
2	(Constant)	5.692	1.737		3.276	0.381	0.316	0.037	5.852	
	RA	0.014	0.120	0.011	0.115					1.523
	EX	-0.153	0.103	-0.162	-1.477					1.851
	CO	0.113	0.091	0.118	1.239					1.386
	CL	0.297	0.132	0.223	2.245**(*)**					1.512
	COP	0.690	0.153	0.444	4.510**(**)**					1.489
	Team_Type_T_Mix	1.621	0.653	0.205	2.484**(**)**					1.041
	c_COP_X_c_RA	0.081	0.044	0.194	1.838					1.708
	c_COP_X_c_EX	0.015	0.039	0.039	0.392					1.540
	c_COP_X_c_CO	0.021	0.039	0.051	0.549					1.306
	c_COP_X_c_CL	-0.019	0.053	-0.033	-0.349					1.363

Dependent Variable: PTP

*** p< 0.01*

*** p< 0.05*

Key: RA= Rational Persuasion, EX= Exchange Tactics, CO= Coalition tactics, CL= Collaboration tactics, PTP= Perceived Team Power, COP= Coping with uncertainty, SUB=Substitutability, CEN=Centrality, Team_Type_T_Mix = Mixed Team (Technical and Analytic capabilities) of the responding or Target team., c_COP_X_c_RA = coping with uncertainty and rational persuasion interaction term, c_COP_X_c_EX = coping with uncertainty and exchange interaction term, c_COP_X_c_CO = coping with uncertainty and coalition interaction term, c_COP_X_c_CL = coping with uncertainty and collaboration interaction term.

Table 4.14: Interaction effects of the influence tactics on coping with uncertainty in perceived team power formation (using stepwise method)

Model		Unstandardized Coefficients		Standardized Coefficients	t	R Square	Adjusted R Square Change	R Square Change	F	Collinearity Statistics
		B	Std. Error	Beta						VIF
1	(Constant)	7.153	1.599		4.473	0.344	0.305	0.344	8.670	
	RA	-0.098	0.109	-0.082	-0.900					1.244
	EX	-0.114	0.096	-0.121	-1.195					1.559
	CO	0.118	0.090	0.124	1.315					1.341
	CL	0.297	0.132	0.222	2.256**(*)**					1.469
	COP	0.683	0.152	0.440	4.497**(**)**					1.445
	Team_Type_T_Mix	1.605	0.655	0.203	2.451**(**)**					1.032
2	(Constant)	5.621	1.708		3.290	0.377	0.332	0.032	8.462	
	RA	0.010	0.118	0.008	0.083					1.493
	EX	-0.123	0.094	-0.130	-1.308					1.561
	CO	0.119	0.088	0.124	1.347					1.341
	CL	0.280	0.129	0.210	2.167**(*)**					1.474
	COP	0.690	0.149	0.444	4.632**(**)**					1.445
	Team_Type_T_Mix	1.629	0.642	0.206	2.537**(**)**					1.032
	c_COP_X_c_RA	0.083	0.037	0.199	2.253**(*)**					1.231

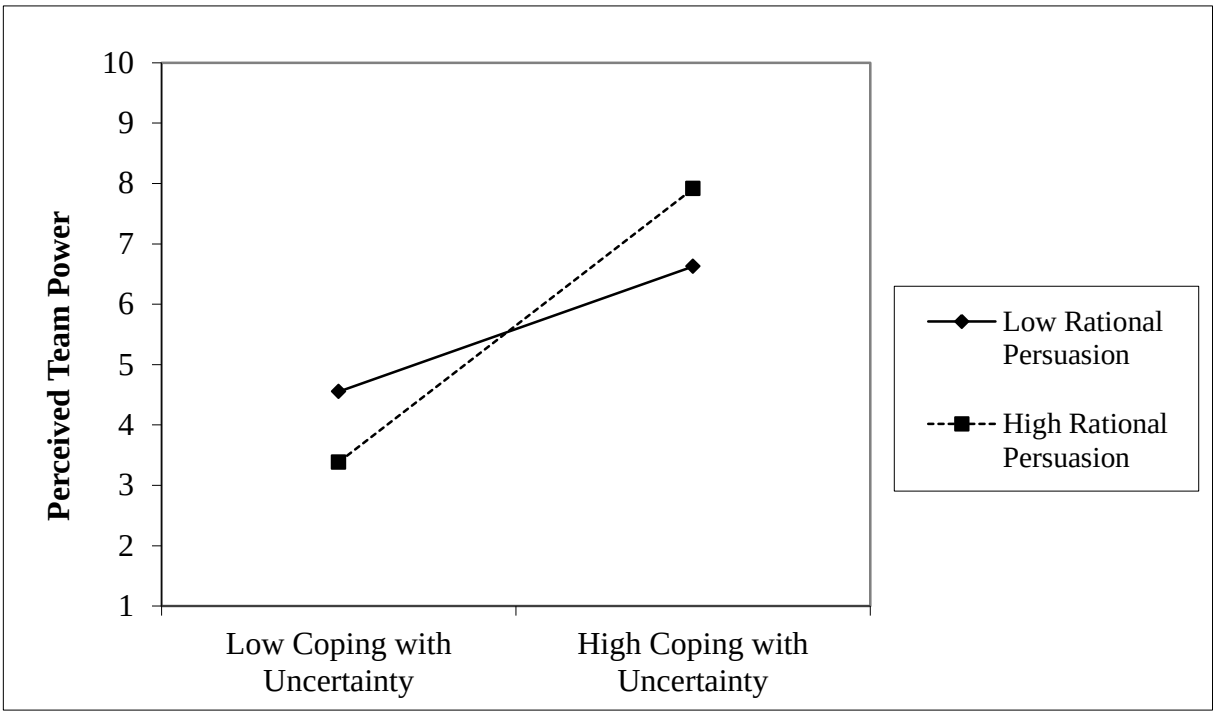
Dependent Variable: PTP

*** p< 0.01*

*** p< 0.05*

Key: RA= Rational Persuasion, EX= Exchange Tactics, CO= Coalition tactics, CL= Collaboration tactics, PTP= Perceived Team Power, COP= Coping with uncertainty, SUB=Substitutability, CEN=Centrality, Team_Type_T_Mix = Mixed Team (Technical and Analytic capabilities) of the responding or Target team., c_COP_X_c_RA = coping with uncertainty and rational persuasion interaction term.

Figure 4.6: Interaction plot- Interaction between coping with uncertainty and rational persuasion



4.5.2.3.2 Test for the moderating effect of the influence tactics on centrality

Using moderated hierarchal regression analysis, tests for the interaction effects between the influence tactics and the strategic condition factor of centrality indicated that none of the influence tactics demonstrated any significant interaction effects with centrality. Neither the full enter method nor the stepwise method could confirm a significant interaction effect. Table 4.15 below shows the outcome of the moderated hierarchical regression test using the full enter method. Only a direct effect of the influence tactic of collaboration ($t=3.303$; $p<0.01$) on perceived team power was observed.

Table 4.15: Interaction effects of the influence tactics on centrality in perceived team power formation

Model		Unstandardized Coefficients		Standardized Coefficients	t	R Square	Adjusted R Square Change	R Square Change	F	Collinearity Statistics
		B	Std. Error	Beta						VIF
1	(Constant)	9.500	1.718		5.530					
	RA	0.051	0.118	0.042	0.433					1.214
	EX	-0.066	0.104	-0.070	-0.637					1.539
	CO	0.131	0.099	0.138	1.332	0.213	0.166	0.213	4.478	1.341
	CL	0.505	0.139	0.379	3.623**(**)**					1.377
	CEN	-0.182	0.300	-0.058	-0.606					1.154
	Team_Type_T_Mix	1.964	0.712	0.248	2.759**(*)**					1.016
2	(Constant)	8.614	1.865		4.619					
	RA	0.136	0.133	0.113	1.025					1.520
	EX	-0.073	0.105	-0.078	-0.698					1.545
	CO	0.125	0.103	0.130	1.206					1.458
	CL	0.478	0.145	0.359	3.303**(**)**					1.470
	CEN	-0.193	0.321	-0.062	-0.600	0.239	0.158	0.025	2.977	1.312
	Team_Type_T_Mix	1.957	0.718	0.247	2.725**(**)**					1.025
	c_CEN_X_c_RA	0.121	0.108	0.121	1.126					1.447
	c_CEN_X_c_EX	-0.007	0.090	-0.008	-0.075					1.277
	c_CEN_X_c_CO	0.093	0.075	0.122	1.239					1.213
	c_CEN_X_c_CL	-0.010	0.117	-0.009	-0.086					1.220

Dependent Variable: PTP

** *p< 0.01*

** *p< 0.05*

Key: RA= Rational Persuasion, EX= Exchange Tactics, CO= Coalition tactics, CL= Collaboration tactics, PTP= Perceived Team Power, CEN=Centrality, Team_Type_T_Mix = Mixed Team (Technical and Analytic capabilities) of the responding or Target team, c_CEN_X_c_RA = Centrality and Rational persuasion interaction term, c_CEN_X_c_EX= Centrality and Exchange interaction term, c_CEN_X_c_CO= Centrality and Coalition interaction term, c_CEN_X_c_CL = Centrality and Collaboration interaction term.

4.5.2.3.3 Test for the moderating effect of the influence tactics on substitutability

Using moderated hierarchal regression analysis, tests for the interaction effects between the influence tactics and the strategic condition factor of substitutability indicated that none of the influence tactics demonstrated any significant interaction effects with substitutability. Once again, neither the full enter method nor the stepwise method confirmed a significant interaction effect. Table 4.16 shows the outcome of the moderated hierarchical regression test using the full enter method. Only a direct effect of the influence tactic of collaboration (t=2.699; p<0.01) on perceived team power was observed, together with the direct negative effect of substitutability on team power.

Table 4.16: Interaction effects of the influence tactics on substitutability in perceived team power formation

Model		Unstandardized Coefficients		Standardized Coefficients	t	R Square	Adjusted R Square Change	R Square Change	F	Collinearity Statistics
		B	Std. Error	Beta						VIF
1	(Constant)	13.730	1.915		7.171	0.321	0.279	0.321	7.783	
	RA	0.117	0.109	0.097	1.068					1.194
	EX	-0.128	0.098	-0.136	-1.306					1.579
	CO	0.137	0.092	0.143	1.496					1.339
	CL	0.364	0.130	0.273	2.790**(**)**					1.394
	SUB	-1.299	0.324	-0.355	-4.002**(**)**					1.145
	Team_Type_T_Mix	1.927	0.662	0.243	2.913**(**)**					1.016
2	(Constant)	13.618	2.055		6.626	0.348	0.279	0.027	5.069	
	RA	0.113	0.112	0.094	1.013					1.254
	EX	-0.071	0.106	-0.075	-0.668					1.843
	CO	0.106	0.095	0.111	1.110					1.454
	CL	0.354	0.131	0.266	2.699**(**)**					1.411
	SUB	-1.255	0.332	-0.343	-3.779**(**)**					1.200
	Team_Type_T_Mix	1.753	0.684	0.221	2.563**(**)**					1.085
	c_SUB_X_c_RA	0.160	0.108	0.144	1.477					1.377
	c_SUB_X_c_EX	-0.072	0.111	-0.075	-0.646					1.954
	c_SUB_X_c_CO	0.091	0.096	0.096	0.950					1.474
	c_SUB_X_c_CL	0.013	0.136	0.010	0.095					1.690

Dependent Variable: PTP

** *p< 0.01*

Key: RA= Rational Persuasion, EX= Exchange Tactics, CO= Coalition tactics, CL= Collaboration tactics, PTP= Perceived Team Power, SUB=Substitutability, Team_Type_T_Mix = Mixed Team (Technical and Analytic capabilities) of the responding or Target team, c_SUB_X_c_RA = Substitutability and Rational Persuasion interaction term, c_SUB_X_c_EX = Substitutability and Exchange interaction term, c_SUB_X_c_CO = Substitutability and Coalition tactics interaction term, c_SUB_X_c_CL = Substitutability and Collaboration tactics

Taken together, the results suggest that the influence tactic of collaboration together with the strategic condition factors of coping with uncertainty and substitutability are important to team power, and that rational persuasion strengthens the strategic factor of coping with uncertainty on power.

4.5.2.4 MODEL VALIDATION AND TESTS OF ASSUMPTIONS

The assessment of fit of the computed regression models was examined in three ways. Firstly, the R-Squared and adjusted R-Squared values were observed for each regression model in order to establish the variability in the dependent variables of perceived team power as a result of the independent variables and moderating variables- thus establishing how well the models are able to predict perceived team power. The adjusted R-squared values were examined to account for the number of predictors in the models. Secondly, the residual values (including outliers) from the regression models were analysed. Histograms, P-P plots and scatterplots of the regression standardized residuals from the regression models were analysed for the model assumptions of

normality and linearity. Thirdly, checks for multicollinearity and heteroskedasticity were also conducted.

In the first regression model (Table 4.8), the independent effects of the control variables were examined. The results showed that none of the control variables by themselves affected any changes in perceived team power. The second regression model however, (refer Table 4.9) which incorporated the step-wise method revealed that only one of the control variables (Team_Type_T_Mix) significantly impacted on team power, accounting for 5% of the variance in perceived team power. In the third regression model which tested the independent effects of the strategic conditions factors on perceived team power (refer Table 4.10), both the R^2 and adjusted R^2 values indicated that 34% of the total variance in perceived team power was accounted for as a result of the strategic condition factors. Additionally, the strategic condition of coping with uncertainty seemed to have the largest effect on perceived team power as compared to substitutability. Moreover, when the strategic conditions factors were examined in conjunction with the control variable (refer Table 4.11), the effective variance in perceived team power increased from 34% to roughly 38% as a result of the combined effect. This additional variance was accounted for by team type. Coping with uncertainty has the greatest effect on perceived team power followed by substitutability having a negative effect.

The remaining models tested the interaction effects of the influence tactics on the strategic conditions factors in team power formation (refer Table 4.13-Table 4.15). The influence tactic of rational persuasion demonstrated a moderating effect on coping with uncertainty in the formation of team power. This interaction effect accounted for roughly 38% of the total variance in team power formation. Whilst the remaining influence tactics of exchange, coalition and collaboration did not have any significant interaction effects in team power formation. Moreover, the influence tactic of collaboration was seen to rather have a direct effect on team power accounting for 34% of the variance in team power in the presence of coping with uncertainty, 23% when centrality is present and 34% when substitutability is present.

In addition, the histograms of the residual values from each of the regression models appeared to be normal and the plotted points on the normal probability plots (p-p plots) appeared normally distributed along the distribution line. Lastly, the scatterplots of the standardized residuals for each of the regression models displayed random patterns with no visible violations to the models. The scatter plots were also assessed for any evidence of heteroskedasticity to check if the variances in the residuals were not distributed in the shape of a cone. If such shape was present, it would suggest that the residuals from the regression models were uneven, thus possibly impacting the models ability to consistently predict the dependent variables across all

values. No such pattern was detected and the assumption of homoskedasticity has not been violated. Refer to Appendix E.1 to E.5 for the histogram, p-p plots and scatter plots for each of the regression models.

Lastly, the independent and moderating variables were also assessed for any evidence of multicollinearity so as to ascertain that the constructs actually measured distinct attributes in the models (Kock and Lynn, 2012). To this effect, the variance inflation factors (VIF) for each model were evaluated. According to O'brien (2007), VIF values which are greater than 5 indicate the presence of multicollinearity. As reflected in the regression analysis tables for each of the models, all the VIF values were less than 2. Thus it was concluded that none of the constructs being measured were highly correlated and with multicollinearity absent, the regression assumption has not been violated.

H1 hypothesized that coping with uncertainty was positively associated with perceived team power. The findings presented above support this hypothesis.

H2 hypothesized that centrality was positively associated with perceived team power. H2 was not supported in this study.

H3 hypothesized that substitutability was negatively associated with perceived team power. H3 was supported based on the results.

H4 (a) hypothesized that the influence tactic of rational persuasion would interact with the three strategic conditions factors to influence on team power formation. This was supported only in the case for the strategic condition factor of coping with uncertainty, and not for centrality and substitutability.

H4 (b) hypothesized that the influence tactic of exchange would interact with the three strategic conditions factors to influence on team power. However, H4 (b) was not supported.

H4 (c) hypothesized that the influence tactic of coalition would interact with the three strategic conditions factors to influence on team power. However, H4 (c) was not supported.

H4 (d) hypothesized that the influence tactic of collaboration would interact with the three strategic conditions factors to influence on team power. However, H4 (c) was not

supported. On the contrary, it emerged from the findings that the influence tactic of collaboration has an independent direct effect on perceived team power even in the presence of the strategic conditions factors.

The next section presents a summary of the results:

4.5.2.5 SUMMARY OF HYPOTHESIS TESTING

Table 4.17 below presents a summary of the hypothesis testing and summary of outcomes.

Table 4.17: Summary of hypothesis testing and outcomes

Hypothesis			Outcome	Conclusion	Summary	
Hypothesis 1	Coping with uncertainty is associated with team power and has a positive effect on team power.	$H_0 : \beta_{COP} = 0$ $H_1 : \beta_{COP} \neq 0$	***Perceived Team Power:*** r = 0.512; p<0.01 β=0.446; t = 5.107; p<0.01	Null hypothesis rejected for the alternative, since a positive association was established and is statistically significant (p<0.01). Thus, coping with uncertainty is significantly associated with team power.	Association established Independent effect confirmed	
Hypothesis 2	Centrality is associated with team power and has a positive effect on team tem power.	$H_0 : \beta_{CEN} = 0$ $H_1 : \beta_{CEN} \neq 0$	No correlation between centrality and team power. Centrality has no significant effect on team power.	Null hypothesis is supported. There exists no association between centrality and team power. Centrality has no significant effect on team power.	No association No Independent effect.	
Hypothesis 3	Substitutability is associated with team power and has a negative effect on team power.	$H_0 : \beta_{SUB} = 0$ $H_1 : \beta_{SUB} \neq 0$	***Perceived Team Power:*** r = -0.411; p<0.01 β=-0.284; t = -3.371; p<0.01	Null hypothesis is rejected for the alternative, since substitutability is negatively associated with team power. The association between substitutability and perceived team power is statistically significant.	Association established Independent effect confirmed	
Hypothesis 4(a)	The influence tactic of rational persuasion interacts with the strategic conditions factors in team power formation.	$H_0 : \beta_{RA} = 0$ $H_1 : \beta_{RA} \neq 0$	***Coping with uncertainty:*** Interaction effects significant at p<0.05 level β=0.206 ***Centrality:*** No significant interaction effects between rational persuasion and centrality ***Substitutability:***	Null hypothesis partially rejected. Only the interaction between rational persuasion and coping with uncertainty is statistically significant. There exist no significant interaction effects between rational persuasion and centrality as well as substitutability.	Coping with uncertainty	Association between rational persuasion and coping with uncertainty established. Moderating effect confirmed
					Centrality	Association between rational persuasion and centrality established. Moderating effect not confirmed

			No significant interaction effects between rational persuasion and centrality		Substitutability	No association established
Hypothesis 4(b)	The influence tactic of exchange interacts with the strategic conditions factors in team power formation.	$H_0 : \beta_{EX} = 0$ $H_1 : \beta_{EX} \neq 0$	No significant interaction effects between exchange tactics and the strategic conditions factors	Null hypothesis is supported. There exist no significant interaction effects between exchange tactics and the strategic conditions factors.	Coping with uncertainty	Association between exchange tactics and coping with uncertainty established. Moderating effect not confirmed
					Centrality	No association Moderating effect not confirmed
					Substitutability	Association between exchange tactics and substitutability established. Moderating effect not confirmed
Hypothesis 4(c)	The influence tactic of coalition interacts with the strategic conditions factors in team power formation.	$H_0 : \beta_{CO} = 0$ $H_1 : \beta_{CO} \neq 0$	No significant interaction effects between coalition tactics and strategic conditions factors .	Null hypothesis is supported. There exist no significant interaction effects between coalition tactics and the strategic conditions factors.	Coping with uncertainty	Association between coalition and coping with uncertainty established Moderating effect not confirmed
					Centrality	No association Moderating effect not confirmed
					Substitutability	No association Moderating effect not confirmed
Hypothesis 4(d)	The influence tactic of collaboration interacts with the strategic conditions factors in team power formation.	$H_0 : \beta_{CL} = 0$ $H_1 : \beta_{CL} \neq 0$	No interaction effects between collaboration tactics and the strategic conditions factors.	Null hypothesis is supported. There exist no significant interaction effects between the influence tactic of collaboration and the strategic conditions factors. However, the influence tactic of collaboration has a significant direct or independent effect on team power in the presence of coping with uncertainty,	Coping with uncertainty	Association between collaboration and coping with uncertainty established. Moderating effect not confirmed Independent effect of collaboration on team power established

				centrality and substitutability.	Centrality	Association between collaboration and centrality established Moderating effect not confirmed Independent effect of collaboration on team power established
					Substitutability	Association between collaboration and substitutability confirmed. Moderating effect not confirmed Independent effect of collaboration on team power established

4.6 CONCLUSION

This chapter presented the findings from the study. Graphical representation of the profile of teams which was sampled was presented according to various metrics such as team size, team type, and number of projects on worked on together. The validity and reliability of the measures used in the study was then established followed by the testing of hypotheses. It was found that the strategic conditions of coping with uncertainty and substitutability were significantly correlated to perceived team power, whilst centrality failed to demonstrate any association with perceived team power. Moreover, the positive relation between coping with uncertainty and perceived team power provided support for H1, whilst the negative effect of substitutability on perceived team power meant that H3 was also supported in this study. The disassociation of centrality and perceived team power meant that H2 was rejected. The findings from the study also revealed that the influence tactic of rational persuasion was associated with coping with uncertainty and centrality, however, interaction effects were only confirmed for coping with uncertainty. Thus partial support for H4a was confirmed. The influence tactic of exchange was seen to be associated only with coping with uncertainty and substitutability, however, no moderating effect of exchange tactics was established which meant that H4b was rejected. Association was established between coalition tactics and coping with uncertainty only, whilst no moderating effect for coalition was supported. Similarly, H4c was rejected. Lastly, the influence tactic of collaboration demonstrated association with all three of the strategic conditions factors, but failed to exhibit moderating effects which meant that H4d was not supported; however, the findings revealed that the influence tactic of collaboration actually possesses independent effects on team power in the presence of any of the strategic conditions factors. Lastly, only one control variable was found to significantly impact on team power. The findings showed that the responding teams (who predominantly consisted of mixed capabilities) observed other mixed project teams (the agent teams) as being more powerful. A summary of the hypothesis testing and outcomes is presented in Table 4.17. The findings are discussed further in the following chapter with reference to literature and theory.

5 DISCUSSION

5.1 INTRODUCTION

This study investigated the strategic conditions arising from the environmental and organisational structural factors which lead to the formation of team power within ISD project teams. Furthermore, various influencing strategies were examined in conjunction with the strategic conditions factors to evaluate their level of interaction in team power formation. This chapter discusses in detail the findings presented in the previous chapter, as well as further interpreting the findings in relation to the context of ISD project teams.

5.2 PROFILE OF SAMPLED TEAMS

The findings in this study revealed that the majority of ISD project teams sampled were largely representative of mixed teams consisting of both technical and analytic capabilities. Furthermore, these teams were classified as either being small or small-to-medium, and would have interacted with the focal team on between 1 and 3 projects. According to Kozlowski & Bell. (2003), research in organisational work groups supports the preference towards mixed teams versus homogenous teams because the diversity, variety of skills, competencies and expertise within heterogeneous teams can contribute to the overall performance of the team. Conversely, Kozlowski & Bell. (2003) draws from Argote and McGrath et al. (1993) to caution that non-homogenous work teams may also suffer non-performance due to too much dissimilarity, and thus in mixed-teams scenarios, it is key that different team members share a common vision, and ensure alignment of work tasks. Additionally, the preference towards small or small-to-medium project teams could be that small teams are easier to manage and coordinate as compared to larger teams (Kozlowski & Bell, 2003). Thus it was not surprising that the majority of teams were observed to fit the profile of team size and skills as suggested by literature.

5.3 PERCEIVED TEAM POWER AND THE STRATEGIC CONDITIONS FACTORS

In this study, perceived team power was conceptualised as a team's capacity to influence others, and was also viewed in terms of the scope and impact that a team has in decision making (referred to as participation power) (Hickson et al., 1971; Hinnings et al., 1974; Saunders & Scamell, 1986). Power was hypothesised to be associated with three strategic conditions factors emanating from both the environmental and structural elements within an organisation. The environmental condition of coping with uncertainty together with the structural conditions of centrality and substitutability were examined for their independent effects on team power within

the context of ISD project teams. The selection of these three factors was underpinned by the Strategic Contingencies Theory of Intra-organisational Power (SCTIP) (Hickson et al., 1971; Hinnings et al., 1974).

Coping with uncertainty and *centrality* were theorised to positively impact on perceived team power within ISD project teams, whilst *substitutability* was posited to weaken perceived team power within ISD project teams. Empirical results supported the relationship between the environmental strategic condition of coping with uncertainty and its independent effects on team power. Empirical results also supported the association between the structural condition of substitutability and perceived team power. Specifically, the assertion that substitutability would negatively impact on team power was supported. However, empirical evidence revealed that the structural condition of centrality may not have a significant association, nor any significant independent effects on perceived team power within ISD project team settings. These findings provide partial support of the Strategic Contingencies Theory of Intra-organisational Power within the context of ISD project teams.

The findings relating to the strategic conditions factors are elaborated further below:

5.3.1 COPING WITH UNCERTAINTY

When Hinnings et al. (1974) tested SCTIP using data collected from subunits in seven manufacturing firms; they established that the strategic condition of coping with uncertainty was a more significant determinant of team power when compared to centrality and substitutability. Thus according to Hinnings et al. (1974), coping with uncertainty could be viewed as the most critical determinant to team power. The findings in this study conquer with their observations. This study examined 106 project teams and found that perceptions of a team's ability to cope with uncertainty had a more significant impact on its perceived team power than any of the other strategic conditions. According to Hickson et al. (1971), part of effective coping with uncertainty involves coping by information, which involves obtaining critical information pertaining to the overall environment in which the subunit exists, and translating that information into plans of action.

ISD projects are largely information driven and heavily laden with uncertainties arising from within the organisational and project environment (Barki et al., 2001). Thus if a team is able to solicit critical information (i.e.: information about important stakeholders, key delivery dates and timelines, future organisational events or deliverables which will likely impact on the current project and strategic information about the other teams), and use this information to develop appropriate coping strategies which can be implemented into actionable plans which

can help to buffer the impact of any uncertainties arising from such information, the team will gain power. According to Hinnings et al. (1974), coping with uncertainty leads to subunit power because it creates key dependencies of one team upon another team, such that the activities of the dependent team are in effect contingent upon the team which is perceived to be coping better with uncertainties within the project landscape. The coping team is seen to be knowledgeable about current events and is perceived to be good at planning and foreseeing future problems. Thus teams who fail to plan for such uncertainties depend on the team which appear to 'have all the bases covered'. Kowshik (2010) further argues that the information itself does not lead to power, but rather it is the usefulness and value of the information which reduces uncertainties which creates the power and influence.

5.3.2 CENTRALITY

Centrality is defined with SCTIP as the extent to which a team is interconnected with other teams, and the promptness at which the activities of the team impacts on others in the event of interruption (Hickson et al., 1971; Hinnings et al., 1974; Saunders, 1990). In the current study, centrality failed to demonstrate any significant association with team power. However, this lack of significance is not unique to this study. In a similar study by Saunders and Scamell (1982), which applied SCTIP in two different contexts, namely oil/gas companies and a public university, certain strategic conditions factors also failed to show association with team power. In the first context, team power was only associated with coping with uncertainty but neither with centrality nor substitutability. In the second context, whilst all the strategic conditions were associated with team power, the levels of correlation were relatively low. This observation lead Saunders and Scamell (1982) to speculate about the unique context in which organisations existed and operated. This view is further reinforced by MacColl (1992) who additionally argues that the organisations which were examined in the Hinnings study were fairly simple and stable, whereas Saunders and Scamell examined more complex environments. Moreover, other earlier studies such as Frazier (1983) seemingly excluded centrality as a determinant of power when examining the same theory.

One possible explanation as to why centrality failed to show any significant effects on team power could be that in all the previous studies, power relations were investigated between different functional teams (i.e. human resources, procurement, finance, engineering, etc.) whilst the current study looked only at ISD project teams i.e. power relations across teams with the same functionalities. As reflected in the profile of respondents, the key informants who themselves belonged to mixed teams which were made up of technical and analytical capabilities similarly responded about mixed teams with similar team compositions. Centrality may not explain power formation among teams operating in the same functional context, and

may be more relevant for explaining power in relation to teams from different functional contexts. Future research should examine this further. It is also possible that because only the immediacy item was retained for the centrality variable following PCA analysis, the operational definition of centrality was restricted to the speed with which subunit activities impacted other teams in the event of disruption. It could be that the project teams which were sampled in this study don't necessarily impact each other critically in terms of delays on work outputs, and that perhaps these teams do not necessarily support mission critical systems, but rather only focus on implementing ad-hoc organisational projects with other key system support and maintenance roles being fulfilled by other teams.

Another explanation as to why centrality failed to demonstrate any significant effects on team power could also be as a result of the dynamic and ever-changing nature of ISD project teams (Lock & Scott, 2013). Project teams are subject to change due to reasons such as project constraints, organisational restructuring, the initiation of new project teams consisting of different team members as new projects are commissioned, or due to the collapsing or redeployment of old teams as older projects are completed over specified timeframes (Lock & Scott, 2013). This constant change may result in an ill-defined organisational social network as the project teams are formed and disassembled due to changing business requirements (MacColl, 1992). As a result of this variability and non-enduring team structure formations, it is possible that ISD project teams cannot rely on the centrality of their structural positioning but rather have to employ tactics such as collaboration to navigate the organisational information network and thus establish their power. Future research should extend the measurement of centrality so as to provide for further tests of its relevance as an explanatory factor.

Lastly, the findings in this study also showed an unexpected significant correlation between centrality and coping with uncertainty as per Table 4.6. Future research should also test this observation to determine the applicability of centrality as an exogenous variable and assess its possible effects on team power through coping with uncertainty.

5.3.3 SUBSTITUTABILITY

Substitutability refers to the ease with which the activities of one team can be easily replaced or performed by an alternate team or department (Hickson et al., 1971). It was hypothesised that substitutability would negatively impact on a team's power level. Teams whose activities are more easily duplicated will have lower levels of perceived power. The findings in this study support this hypothesis. Similarly, in other examinations, which observed and measured departmental levels of non-substitutability, it was found that when departments are non-substitutable, they will conversely gain power (Saunders and Scamell, 1982; Lachman, 1989).

According to SCTIP this is because when the assortment or multiplicity and complexity of a department's tasks and activities increase, the organisational resources it controls to successfully execute its intricate functions increases. Therefore, the subunit is less dependent on others but is more self-reliant and self-sufficient, thus the department obtains higher levels of non-substitutability. Due to the fact that the team has greater levels of autonomy, it gains greater authority. Conversely, if a subunits tasks and activities are similar to other teams, and are fairly simple to execute or replicate, the team controls less resources. Furthermore, there exists more alternatives, which decreases the teams' level of non-substitutability, and the team becomes highly substitutable and thus loses power.

Within the systems development context, different teams are responsible for different activities of the systems development life cycle. For example, the tasks and activities of a mixed project team with dual capabilities of analysis and development may be perceived as complex and multifaceted. Thus the team can control key decisions and resources pertaining to analysis tools, development platforms and technology configurations which enable them to accomplish the complex tasks which other teams (i.e. business or end-user teams) may not be able to perform. This makes the mixed project team, in this context, highly non-substitutable and thus the team gains greater levels of influence and power.

The next section closely examines the findings pertaining to the observations regarding the influence tactics:

5.4 INFLUENCE TACTICS

This study drew upon Yukl and Falbe (1990), Yukl and Tracey (1992) and Yukl et al. (2005) to identify key influence tactics which were deemed critical for influencing peer groups within ISD project settings. Only the influence tactics from the above studies which were observed to be most frequently used in the lateral direction, or those which could be applied in any direction were considered. Thus influence tactics which were most frequently used within a superior-subordinate relationship were not regarded, as it was assumed that the ISD project teams under study were related at a peer-level and had no formal reporting lines into each other. Therefore, only the influence tactics of rational persuasion, exchange, coalition and collaboration were considered for the current study. Moreover, using the previously validated influence behaviour questionnaire (IBQ) (Yukl et al., 2008) proved useful. This is evident in the high level of validity and reliability of the measures which were used to assess the influence tactics. However, in addition to confirming the existence of the influence tactics amongst ISD project peer groups, the present study was also concerned with establishing whether the influence tactics would interact with the strategic conditions factors to influence power.

5.4.1 RATIONAL PERSUASION

The influence tactic of rational persuasion, which involves the use of factual evidence and logical arguments to influence others (Yukl & Fable, 1990), was hypothesised to interact with the three strategic conditions factors to influence on team power formation. It was argued that rational persuasion would interact with the level of a team's ability to cope with uncertainties, the level of centrality and degree of substitutability to influence the power level of the team. Whilst rational persuasion was found to be positively linked with coping with uncertainty and centrality, empirical evidence however, only supported the significance of the interaction effects of rational persuasion in the presence of coping with uncertainty in predicting team power. Thus rational persuasion strengthens the effects of coping with uncertainty on team power.

Yukl et al. (2005) argue that since the rational persuasion tactic requires logic and facts to be effective, the onus is on the agent exercising this influence tactic to source and obtain the necessary insight pertaining to the needs of the target. Since coping with uncertainty also involves the ability of the agent or focal team to provide the predictive information needed by the target team to prevent future problems and reduce changes in work inputs and outputs (Lucas, 1984), it is not surprising that these findings support the interaction effects of rational persuasion and coping with uncertainty. Yukl et al. (2005) however also suggest that rational persuasion can only be effective if the target who is being influenced stands to gain benefit from the interaction and if the knowledge of the benefit is perceived only by the agent and not the target beforehand. Thus, a possible explanation as to why rational persuasion fails to significantly interact with the other strategic conditions of centrality and substitutability could be that the various project teams are aware of their own unique contributions or functionalities which add to their level of centrality (or interdependency) or non-substitutability. Therefore, if the agent team employs this influence tactic, the target team is able to foresee the loss in their strategic positioning or non-substitutability and foresee to suffer loss from the interaction. Therefore in this case, as argued by Yukl et al. (2005), the prior knowledge of the benefit to the agent team (or loss to the target team) is perceived by both parties and not only by the agent team which is the pre-condition for this influence tactic to be effective. It is thus perceivable that the influence tactic of rational persuasion would strengthen a team's ability to cope with uncertainty because in order to effectively cope with uncertainty, critical information is needed that can be translated into actionable steps. This can be obtained by applying rational, logical and evidence-based reasoning.

5.4.2 EXCHANGE TACTICS

The influence tactic of exchange is based on the premise that the agent is promising the target a reward or benefit in return for complying with a specific request (Yukl & Fable, 1990). It was hypothesized that exchange tactics would interact with the three strategic conditions factors to influence team power formation. It was stated that exchange tactics would strengthen the effects of a team's non-substitutability, centrality and ability to cope with environmental uncertainties in shaping the power which a team possesses. Whilst the influence tactic of exchange was found to be positively linked with coping with uncertainty and negatively associated with substitutability, no significant interaction effects were observed between exchange tactics and any of the strategic conditions factors.

According to Yukl et al (2005), it is often not possible within peer-to-peer relations to offer rewards that are substantial enough to convince others to comply with specific tasks which are generally met with opposition. Thus, the prospect of a work-around by the target seems more feasible rather than to comply with someone else's request despite being offered a particular reward. Additionally, Yukl et al. (2005) point out how in prior studies this specific influence tactic fails to demonstrate high levels of success specifically within peer groups. One possible explanation for this could be that the agent could be offering a reward that may not be relatable to the target. Yet exchange tactics were correlated with the strategic conditions factors of coping with uncertainty and substitutability and may be used as a means to influence perceptions of the team e.g. to reduce their perceived substitutability, which in turn are important to power. Future work should continue to explore the extent to which influence tactics such as exchange tactics serve as antecedents to strategic conditions for team power formation.

5.4.3 COALITION TACTICS

The influence tactic of coalition involves the agent enlisting the help of others in an attempt to influence the target (Yukl & Fable, 1990). It was hypothesized that coalition tactics would interact with the three strategic conditions factors to influence team power formation. It was perceived that coalition tactics would interact with the level of a team's ability to cope with uncertainties, level of centrality and degree of substitutability, thus affecting on the power level of the team. The findings from this study showed that the influence tactic of coalition could only be associated with the strategic condition of coping with uncertainty and no other strategic conditions factors. Furthermore, no significant interaction effects were observed between coalition tactics and any of the strategic conditions factors. Yukl et al. (1992) suggests that collation tactics are unique in that they are mostly used subsequent to initial opposition by the target to prior influencing strategies acted upon by the agent. Therefore, the use of coalition

tactics is mostly employed when it is anticipated that the target will resist being influenced. Yukl (1992) further argues that in most instances, the target may feel manipulated by the agent when coalition tactics are employed.

5.4.4 COLLABORATION TACTICS

The influence tactic of collaboration involves the agent offering resources or assistance to the target, if the target team will carry out the request (Yukl & Falbe, 1990). It was hypothesizes that collaboration would interact with the three strategic conditions factors to influence on team power formation. It was stated that collaboration tactics would interact with the level of a teams' ability to cope with uncertainties, the level of centrality, as well as, the degree of substitutability to influence on the power level of the team. Whilst the influence tactic of collaboration was found to be positively linked with coping with uncertainty and centrality, and negatively associated with substitutability, no significant interaction effects were observed between collaboration tactics and any of the strategic conditions factors in predicting team power. However, the influence tactic of collaboration was rather seen to be having direct effects on team power.

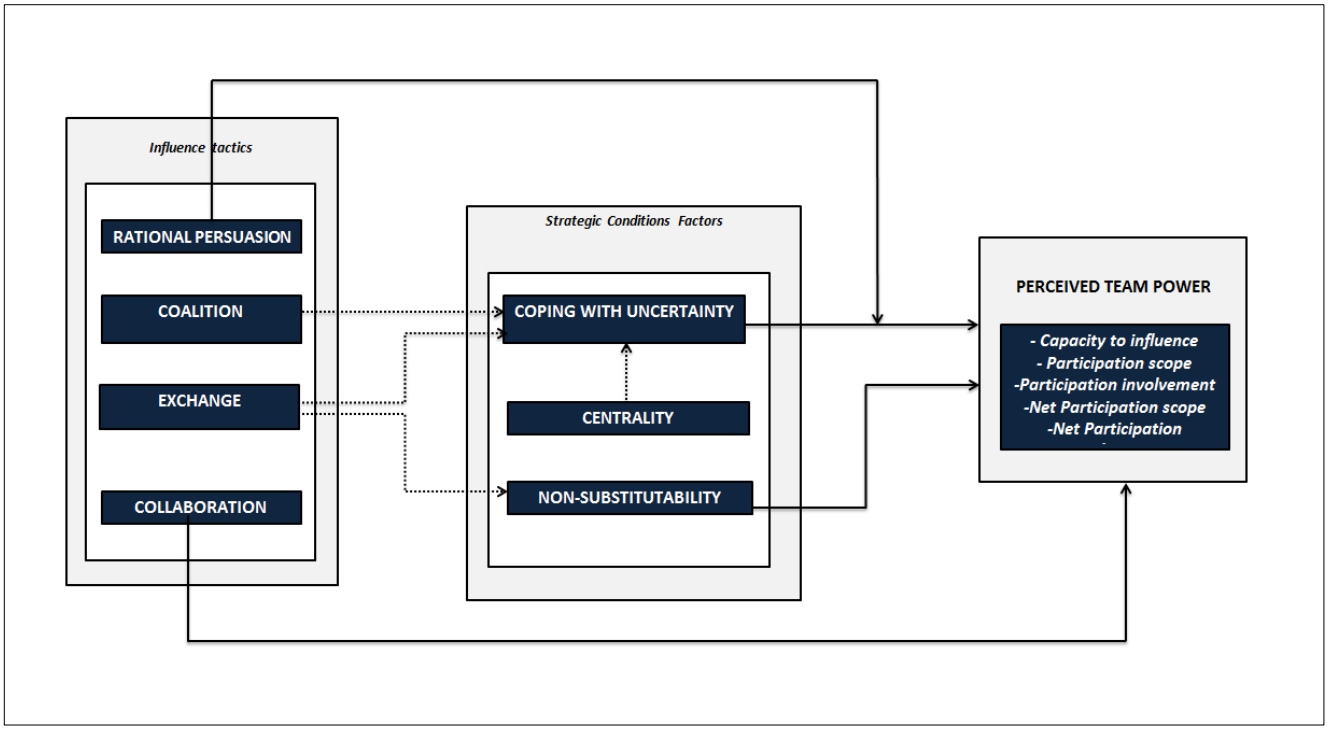
Yukl et al. (2005) present that since the agent is willing to assist the target, this may help to convince the target to act in the manner influenced by the agent. The added support which the agent provides may also result in the agent coming across as being supportive. This has a positive effect on the target as opposed to the target feeling manipulated into executing a specific task. Moreover, Studies such as Goltz and Hietapelto (2002) and Kowshik (2010) support this assertion, and corroborate these findings. These studies indicate that when a team is perceived to be partnering or collaborating with other departments, the influence and power which the team has increases. Furthermore, according to Dietrich et al. (2010), collaboration in projects which involve multi-partner or multi-team interaction is vital as it increases knowledge integration and the quality of the project. Lastly, Yukl et al (2005) reflect that the agent teams' ability to effectively collaborate with others is contingent not only on it offering the help the target needs to accomplish the task, but also on its capability to reduce the cost and risks associated with carrying out the request. These views further reinforce the importance of collaborative behaviour within ISD project teams and its implications for evaluating power in the ISD project team context.

5.5 SUMMARY OF FINDINGS

Data was collected and analysed from 106 project teams which were predominantly based within the financial and insurance services sector and government. A vast majority of the project teams which were sampled were characterised as mixed project teams which was made

up of a blended capability of both technical and analytic functionalities. Furthermore, the project teams which were analysed were either small or small-to-medium and had interacted on between 1 and 3 projects. The key informants, from whom the data was collected, reflected upon similar team structures from which they had experienced exertion of power and influence in one way or another. The findings in this study suggested that project teams which are able to cope with environmental uncertainties and teams whose tasks and functionality remain non-substitutable will gain power within ISD project settings. Furthermore, the interconnectedness of the project teams, as well as, the extent with which the tasks and activities of project teams impact on each other did not have a material impact on the power formation of these teams. However, centrality was rather found to be positively associated with coping with uncertainty. It was also observed that collaboration tactics had a direct impact on team power. It seems apparent that within the ISD project team context, the level of centrality of the teams does not directly impact team power as compared to the collaborative behaviour of the teams. In addition, the influence tactic of rational persuasion was shown to strengthen the effects of coping with uncertainty in team power formation. Exchange tactics was only associated with the strategic conditions of coping with uncertainty and substitutability but does not interact with them to influence on their relationship with team power. Similarly, coalition tactics was associated with the strategic condition of coping with uncertainty, but also did not interact to affect the level of coping with uncertainty. Taken together, a new conceptual model is emerging from the empirical finding which warrants further exploration in future team power studies. Refer to Figure 5.1 below.

Figure 5.1: Conceptual Model Emerging from the Findings (to be further explored in future studies of team power)



6 CONCLUSION

6.1 INTRODUCTION

This chapter concludes the study. First, a summary of the study is presented. This is followed by a brief discussion of the key contributions which the study adds to the body of knowledge on the subject of power within the organisational behaviour and organisational management literature. Additionally, a reflection on the implications for management and practice is presented, followed by key limitations highlighted in the study. The chapter concludes with some recommendations for future research.

6.2 SUMMARY OF STUDY

This study used the Strategic Contingencies Theory of Intra-organisational Power (SCTIP) as a theoretical lens to explore power within ISD project teams (Hickson et al., 1971; Hinnings et al., 1974). A research model was developed to test the effects of the strategic conditions factors of coping with uncertainty, substitutability and centrality on power. Furthermore, by drawing from the organisational influencing theory (Yukl & Falbe, 1990; Yukl &Tracey, 1992; Yukl et al., 2005) the impact of the influence tactics of rational persuasion, exchange, coalition and collaboration on the formation of team power were evaluated. Following a review of the literature on power and influence within organisational team settings, a survey was conducted which used a structured questionnaire instrument. The survey was distributed to various financial and insurance services institutions and a government agency using a snowball sampling strategy. Data was analysed from 106 teams which had provided sufficiently complete responses to the survey questions.

The findings in this study found partial support for SCTIP. The strategic conditions of coping with uncertainty and substitutability were found to significantly impact on team power. Although the findings did not provide support for the strategic condition of centrality, it emerged that centrality was associated with coping with uncertainty. Additionally, only the influence tactic of rational persuasion was found to strengthen the effects of coping with uncertainty on team power. The influence tactics of coalition, exchange and collaboration failed to demonstrate any interaction effects with the strategic conditions factors to influence on power. However, the findings revealed that coalition tactics was associated with coping with uncertainty and exchange tactics was associated with both coping with uncertainty and substitutability. Lastly, the influence tactic of collaboration was found to significantly impact on team power.

The research contributions, implications for research and practice and limitations of the study are presented in the following sections followed by recommendations for future research.

6.3 RESEARCH CONTRIBUTION

According to Jasperson et al. (2002) and Silva (2007), power cannot be restricted to a singular definition because of the influence of various meanings and interpretations associated with the construct of power. In addition, context also shapes how power is perceived (MacColl, 1992). By using SCTIP, this study provides insight into power as interpreted and perceived within the context of ISD project teams. In this context, team power was observed as the collective capacity of a team to exert influence over others. This is the extent to which ISD project teams are perceived to influence each other. Additionally, a team's power was conceptualized as its scope and influence on key decisions pertaining to the project environment. This conceptualization of power in the ISD context is a contribution that may benefit future work.

A second contribution made by this study pertains to the use of SCTIP as a lens for understanding power in the context of ISD project teams. The findings in this study provide insight as to which components of SCTIP are relevant to team power within such a context. SCTIP maintains that teams which are strategically positioned are powerful because they are less reliant on other teams and can cope with environmental uncertainties- provided the teams retain their level of centrality within the organisation and are not easily substitutable (Hickson et al., 1971; Hinnings et al., 1974). SCTIP was employed in this study where it was argued that ISD project teams would gain power from the centrality and non-substitutability of their functionality and operations, as well as, their ability to cope with uncertainties arising from the project environment. In so doing, the teams create conditions of dependency where the functions of other teams become contingent on the strategically placed team. This dependency creates team power. Results however showed that in the ISD project team context, only coping with uncertainty and non-substitutability from SCTIP have influence on team power. Although centrality was not shown to have a direct effect on team power in the ISD project team context, it does appear to be an important predictor to the ability of a team to cope with uncertainty. This may be because the more a team is involved in the tasks and projects of other teams; it is able to gather pertinent information from its interactions with others which it can then then use to develop effective strategies to cope with uncertainty.

Thirdly this study contributes by extending SCTIP to incorporate the behavioural aspect of teams through the inclusion of the influence tactics. By incorporating the organisational influencing theory (Yukl & Falbe, 1990; Yukl &Tracey, 1992; Yukl et al., 2005), SCTIP was used to evaluate a combination of the structural, environmental and behavioural aspects of team

power. Specifically, it was argued that the influence tactics of rational persuasion, exchange, coalition and collaboration would interact with the structural and environmental strategic conditions factors to influence on power. The findings however showed that only the influence tactic of rational persuasion strengthened the effects of coping with uncertainty. Coalition tactics seemed rather to act as an antecedent to coping with uncertainty, and exchange tactics seemed to predict both coping with uncertainty and non-substitutability. Collaboration tactics on the other hand, were seen to directly impact on team power. Considering this, the findings in this study contribute to the broader understanding of how influence tactics impact on and/or interact with certain strategic conditions to influence power within ISD project teams. These findings also provide a broader understanding of the direct impact of certain influence tactics such as collaboration on team power. Combined, these findings bring insight into the unique processes of power mobilisation within ISD projects teams.

6.4 MANAGERIAL IMPLICATIONS AND CONTRIBUTIONS TO PRACTICE

Creating strategic conditions which lead to empowered teams within complex organisations is not an easy, once-off, occurrence. According to Kirkham and Rosen (2000), creating the conditions for team empowerment is a process which requires commitment from team managers. Additionally, leaders and managers must actively play the role of coach and support their teams to reach the desired states of empowerment. Thus, if team managers want to reap the benefits of team empowerment such as, high team member motivation, greater levels of job satisfaction, authority, control of key decisions and overall team effectiveness, they must commit to the team-empowerment process.

Team managers need to be aware of the strategic conditions which they need to create for their teams to be empowered. Project team leaders can create conditions for non-substitutability by actively ensuring that their teams play key roles in strategic organisational projects thereby creating a footprint which makes their teams indispensable to the organisation.

Additionally, project team leaders would benefit from developing appropriate strategies which will allow for their teams to cope with any project uncertainties, thereby increasing the power of their teams. Project team leaders and managers should firstly understand the types of uncertainty their teams are likely to experience by thoroughly surveying the project environment. Uncertainties arising from the technical and architectural landscape, management of people and resources, costing and scheduling, including changes in the project scope and changing requirements should be anticipated and well-considered. For each type of uncertainty, adequate scenario planning should be explored and the outcomes thereof needs to be filtered into the overall project plan, with the view of planning for perceived uncertainties arising from changes

encountered from the daily, weekly or monthly schedules which can impact on the critical path of a project. By so doing, coping strategies can focus on small incremental estimates and deliverables as opposed to big tasks which generally carry higher levels of uncertainty. This ability to cope with uncertainty creates power as other teams become dependent on the insights generated by the team which is perceived to anticipate and adequately plan for uncertain outcomes and events in the project.

Moreover, project team leaders and managers should be aware of influencing strategies such as rational persuasion which can enhance a teams' ability to cope with uncertainty. This can be achieved by using the basis of the information sourced from crafted coping strategies as evidence to convince other teams in their favour when building a case based on facts, logic and evidence.

Lastly, project team leaders and managers need to be aware of the specific influence strategy of collaboration as a means to directly increase the power level of their own teams. By offering assistance and collaborating with the target teams they wish to influence, their teams will gain power. This is because the target teams perceive this joint behaviour towards the successful delivery of project outcomes in a positive light and it also establishes trust. This in turn increases the influence which the agent team has over the target team. Moreover, collaboration with project stakeholders creates opportunities to leverage from cross-functional expertise where teams can leverage on each other's strengths which can result in the efficient and effective delivery of organisational projects. In the IS context, it appears that the collaboration of teams with others rather than the centrality of their structural position is important to power formation.

6.5 LIMITATIONS OF THE STUDY

In conducting this research, a number of limitations were identified and are acknowledged. Firstly, despite efforts to ensure that a sample which would be representative of all the surveyed organisations was obtained, the majority of responses received were from company 1. This could be due to the fact that this was the first company which was contacted and the company where the greatest number of initial contacts was obtained. Therefore, through snowballing the number of responses grew significantly as compared to the other companies. As a result of this, the findings in this study are more representative of this company. Secondly, restrictions pertaining to the survey method itself are also recognised. Since survey methods are reliant on self-report measures, this can interfere with the interpretation of events as viewed from an individual level as compared to the group level (Podsakoff et al., 2003). Given that the team

members from the sampled teams acted as key informants (and thus seen as representing the team), a level of social desirability bias is expected.

Thirdly, key limitations pertaining to the Strategic Contingency's theory itself were also identified. Despite SCTIP having been introduced in 1971 by Hickson et al. (1971), and tested for the first time in 1974 by Hinnings et al. (1974) few validated measures of SCTIP variables exist in the literature. Moreover, the replicability of this theory only seems possible within simple and stable environments (MacColl, 1992). Endeavours to develop newer and more relevant measures would require pretesting as well as further validity and reliability assessments.

Fourthly, limitations are also noted pertaining to the actual measures used in the study. It is worth nothing that all of the influence tactics measures demonstrated high levels of validity and reliability; this is because these measures have undergone extensive testing to refine and validate them over the past decade. The measures used to test the power variable and the strategic conditions factors however have limitations. For example, the substitutability variable (or non-substitutability as referenced in other studies) only applied one scale measure as initially proposed and measured by Hickson et al. (1971) and Hinnings et al. (1974). The use of a single item impacts on the reliability of this measure (or more specifically the amount of measurement error present cannot be estimated). To circumvent this, other studies have also attempted to use both questionnaires and face-to-face interviews to obtain richer information. The current study only applied quantitative techniques to gather the data and draw inferences. Future work on ISD project teams might consider interviews to supplement the quantitative findings reported in this study.

Lastly, the specific context of the study also poses key challenges. This is because project teams within organisations are dynamic and rarely stable, thus resulting in further complexity. For instance, project teams could be instituted for time-specific projects, and disbanded thereafter with new formations occurring. Thus, the system in which the subunits operate could result in imprecise networks which disperse and aggregate as business needs dictate- this could result in ill-defined social network power systems occurring within the organisation (MacColl, 1992). This complicates our ability to theorize about ISD project team power formation. Future researchers might consider incorporating the transient nature of ISD teams into the modelling of team power.

6.6 RECOMMENDATIONS FOR FUTURE RESEARCH

Firstly, future research should continue to explore and asses the centrality measure for its applicability as a contributing factor to power within the context of teams that operate in similar functional areas as well as in teams that are dynamic rather than structurally enduring. Additionally, future research should also extend the measurement of centrality so as to provide for further tests of its relevance as an explanatory factor and thus determine its applicability as an exogenous variable and assess its possible effects on team power through coping with uncertainty. Secondly, future explorations should probe deeper to understand the magnitude with which influence tactics such as exchange and coalition can directly impact on the strategic conditions factors and explore the extent to which they can serve as antecedents to the strategic conditions for team power formation. Thirdly, more work needs to be done to refine the measures used to assess the strategic conditions such as substitutability.

Fourthly, whilst qualitative techniques can be employed to discover and build relevant and appropriate measures for contingencies such as substitutability and centrality, quantitative investigations similar to the current study can still be extended to incorporate other contingencies such as team strategy in addition to the environmental, structural and behavioural contingencies. Moreover, future endeavours could further explore the strength of team power as a predictor of outcomes such as team performance. For example, team power could be modelled as a mediating variable between strategic contingencies, such as non-substitutability, and performance outcomes. Fifthly, whilst SCTIP is largely underpinned by the Resource Dependence Theory (RDT), future studies could also incorporate SCTIP with other theories such as Agency theory which explore organisational relationships and how parties (with specific focus on project teams) can influence the behaviours of their counterparts to align with them on project decisions and outcomes.

Lastly, it is also recommended that SCTIP be used to explore ISD project teams in other contexts where organisational dynamics may differ from financial services.

6.7 CONCLUSION

The objective of this study was to develop and test a research model through which broader power issues within IS development teams could be investigated empirically. The direct effects of the specific organisational structural factor of substitutability, as well as, the environmental factor of coping with uncertainty on ISD team power level were supported. Moreover, the influencing strategy of rational persuasion was observed to strengthen the effects of coping with uncertainty on team power formation. The influencing strategy of collaboration was observed

to have independent effects on team power and is more important than the structural condition of centrality. This study has provided a valuable perspective on the issue of power within ISD project teams. Power is important to ISD teams because it provides these teams with greater participation rights when making key decisions within projects, and increases the influence which these teams have on overall project outcomes. This study highlights the way in which teams can strategically position themselves within the broader organisation and the project landscape, and how the behaviour of teams can influence their power.

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APPENDIX A: ETHICS CLEARANCE DETAILS

A1: ETHICS CLEARANCE CERTIFICATE

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School of Economic and Business Sciences
Private Bag X3, WITS, 2050, South Africa • Telephone: +27 11 717 8024 •
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CLEARANCE CERTIFICATE **PROTOCOL NUMBER: CINFO/1106**

PROJECT: **POWER AND INFLUENCE OF INFORMATION TECHNOLOGY PROJECT TEAMS: AN EMPIRICAL STUDY IN THE FINANCIAL SERVICES CONTEXT**

INVESTIGATOR: Mpho David Kobedi

STUDENT NUMBER: **0305131k**

SCHOOL: SEBS

DATE CONSIDERED: 30 June 2016

DECISION OF THE ETHICS COMMITTEE: Approved

NOTE

Unless otherwise specified this ethics clearance is valid for 1 year and may be renewed upon application.
Please remember to include the protocol number above to your participation letter.

DATE: 06/07/2016 **CHAIRPERSON: Jean-Marie Bancilhon**

cc: Supervisor:

Prof Jason Cohen

SCHOOL OF ECONOMIC & BUSINESS SCIENCES

APPENDIX A2

A2: PARTICIPANT COVER LETTER



Project Teams Survey

Introduction

My name is Mpho David Kobedi and I am a Masters student in the Information Systems Division at the University of the Witwatersrand, Johannesburg under the supervision of Professor Jason Cohen. I am conducting research on the issue of power and influence within project teams. Project teams are regarded as collective groups of individuals (often from different disciplines and functional units within the organisation) who interact with each other and work together towards accomplishing specific project outcomes through shared responsibilities. Within an information systems context, project teams are involved in the various tasks and activities of the systems development life cycle and may consist of, but not limited to, business and systems analysts, developers, test analysts, development team leader, development manager, project manager, as well as various business representatives.

As a member of a project team you are invited to take part in this survey. When completing the questionnaire, think about a specific team which your own team has interacted with on a project within the organisation.

Your response is important and there are no right or wrong answers. This survey is both confidential and anonymous. Anonymity and confidentiality are guaranteed by not needing to enter your name or the name of your organisation on the questionnaire. Your participation is completely voluntary and involves no risk, penalty, or loss of benefits whether or not you participate. You may withdraw from the survey at any stage.

The questionnaire consists of three sections. Section A and section B comprises 29 statements. Please indicate the extent to which you agree with each statement by selecting the appropriate option. Section C captures some demographic data. The entire survey should take between 10 to 15 minutes to complete. The survey was approved by the Wits University Research Ethics Committee, Protocol Number: CINFO/1106.

Thank you for considering participating. Should you have any questions, please contact me on the below contact details:

E-mail: 0305131k@students.wits.ac.za
cell: 0736519168

My supervisor's details are as follows:
Name: Professor Jason Cohen
Email: Jason.Cohen@wits.ac.za

Please click on the **"Next"** button below as consent to continue to the survey.

APPENDIX B: COPY OF FINAL RESEARCH INSTRUMENT



Project Teams Survey

PART A

For the team you have chosen to reflect upon, think about your recent interaction with that team and consider the following statements:.

THE PROJECT TEAM WHICH MY TEAM HAS INTERACTED WITH...

* 1. Uses facts and logic to make a persuasive case for a request or proposal.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 2. Explains clearly why a request or proposed change is necessary to attain a task objective.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 3. Explains why a proposed project or change would be practical and cost effective.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 4. Provides information or evidence to show that a proposed activity or change is likely to be successful.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 5. Offers something my team wants in return for our help on a task or project.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 6. Offers to do something for my team in exchange for carrying out a request.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 7. Offers to do a specific task or favour for my team in return for our help and support.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 8. Offers to do something for my team in the future in return for our help now.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 9. Mentions the names of other people who endorse a proposal when asking my team to support it.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 10. Gets others to explain to my team why they support a proposed activity or change that they want my team to support or help implement.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 11. Brings someone along for support when meeting with my team to make a request or proposal.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 12. Asks someone else to help influence my team to carry out a request or support a proposal.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 13. Offers to help with a task that they want our team to carry out.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 14. Offers to provide resources our team would need to do a task for them.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 15. Offers to show our team how to do a task that they want us to carry out.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

* 16. Offers to provide any assistance our team would need to carry out a request.

SELDOM	OCCASIONALLY	MODERATELY OFTEN	VERY OFTEN	CAN'T REMEMBER
○	○	○	○	○

Project Teams Survey

PART B

REGARDING THE SAME PROJECT TEAM WHICH YOUR TEAM HAS INTERACTED WITH...

* 17. How much influence do you think the project team you have interacted with has beyond the context of the project you are working on?

VERY LITTLE INFLUENCE	A LITTLE INFLUENCE	SOME INFLUENCE	MUCH INFLUENCE	VERY MUCH INFLUENCE
○	○	○	○	○

* 18. How much influence does this team have in the decisions reached by your team?

VERY LITTLE INFLUENCE	A LITTLE INFLUENCE	SOME INFLUENCE	MUCH INFLUENCE	VERY MUCH INFLUENCE
○	○	○	○	○

* 19. How much influence does this team have in the decisions reached by the entire IS group (or overall IT community)?

VERY LITTLE INFLUENCE	A LITTLE INFLUENCE	SOME INFLUENCE	MUCH INFLUENCE	VERY MUCH INFLUENCE
○	○	○	○	○

* 20. Over how many decisions made by your team does the other team have influence?

NONE OF OUR DECISIONS	A FEW OF OUR DECISIONS	SOME OF OUR DECISIONS	MOST OF OUR DECISIONS	ALMOST ALL OF OUR DECISIONS
○	○	○	○	○

* 21. Over how many decisions made by the entire IS group (or the overall IT community) does this team have influence?

NONE OF OUR DECISIONS	A FEW OF OUR DECISIONS	SOME OF OUR DECISIONS	MOST OF OUR DECISIONS	ALMOST ALL OF OUR DECISIONS
○	○	○	○	○

* 22. To what extent is this team involved in tasks and projects concerning your own team or unit?

NOT AT ALL	A LITTLE	SOMEWHAT	MOSTLY	ENTIRELY
○	○	○	○	○

* 23. To what extent could other teams do the tasks expected from the team you have interacted with?

NOT AT ALL	A LITTLE	SOMEWHAT	MOSTLY	ENTIRELY
○	○	○	○	○

* 24. To what extent does this team help your team to cope with uncertainty?

(uncertainty is the lack of adequate information about future events)

NOT AT ALL	A LITTLE	SOMEWHAT	MOSTLY	ENTIRELY
○	○	○	○	○

* 25. To what extent does this team provide the information that helps to predict and prevent future problems?

NOT AT ALL	A LITTLE	SOMEWHAT	MOSTLY	ENTIRELY
○	○	○	○	○

* 26. To what extent does this team help your team by reducing changes in work outputs?

NOT AT ALL	A LITTLE	SOMEWHAT	MOSTLY	ENTIRELY
○	○	○	○	○

* 27. To what extent do the circumstances of the project team which your team has interacted with change?

NOT AT ALL	A LITTLE	SOMEWHAT	MOSTLY	ENTIRELY
○	○	○	○	○

* 28. To what extent does the project team which your team has interacted with do the same tasks every day without disruption?

NOT AT ALL	A LITTLE	SOMEWHAT	MOSTLY	ENTIRELY
○	○	○	○	○

* 29. How quickly would the elimination of the tasks of the project team affect your own team?

IN A FEW WEEKS OR MORE	IN A COUPLE OF WEEKS	IN A FEW DAYS	IN A COUPLE OF DAYS	IN A FEW HOURS OR LESS
○	○	○	○	○

Project Teams Survey

Part C

REGARDING THE SAME PROJECT TEAM WHICH YOU ARE RESPONDING ABOUT, NOW CONSIDER THE FOLLOWING....

* 30. What is the number of individuals within the team which your team has interacted with?

- ○ 2-5
- ○ 6-10
- ○ 11-15
- ○ 16 and more

* 31. How would you best characterise the team you have interacted with?

* 32. Please indicate the number of projects your team has worked on together with the team you are responding about.

- ○ 1-3
- ○ 4-6
- ○ 7-9
- ○ 10+

* 33. What is the number of individuals within **YOUR OWN** team?

- ○ 2-5
- ○ 6-10
- ○ 11-15
- ○ 16+

* 34. How would you best characterise **YOUR OWN** team?

* 35. In which industry is your organisation based?

- ○ Financial and Insurance Services
- ○ Banking
- ○ Telecommunications
- ○ Government/Government Agency
- ○ Consultancy
- ○ Retail
- ○ Manufacturing
- ○ Other (please specify)

APPENDIX C: SUMMARY OF KEY STUDIES OF POWER AND INFLUENCE IN THE INFORMATION SYSTEMS CONTEXT

Authors	Theoretical lens/framework	Methodology	Focus of Study	Measures: Dependent/Independent variables	Key findings
Pinto et al (1993)	n/a	Cross-sectional survey administered to project managers and project team members involved in an ISD project implementation.	This study examined the influence of four constructs (gaols, accessibility, physical proximity and formalised rules/procedures) on the attainment of cross-functional cooperation and perceived project outcomes.	*Dependent variable:* Psychosocial outcomes and Task Outcomes *Mediating variable(s):* - Cross-functional cooperation *Independent variable(s):* - Goals - Physical proximity - Accessibility - Project rules/procedures - Organisational rules/procedures	- Within IT implementations, divergent perspectives and interests emerge due to opposing or conflicting goals and interpersonal relations. - Cross-functional cooperation was a significantly associated with tasks and psychosocial project outcomes.
Cavaye & Christiansen (1996)	Framework based on SCTIP	Case study to observe power levels of an ISD project team in relation to other teams (i.e. operations, consultants, methods & finance) at a financial services firm during an ISD implementation project.			- SCTIP can be used as a framework to mapping relative power distribution amongst subunits at different points in time. - Changes in power distributions can help to explain dramatic changes in an ISD implementation process. - The ISD project team was found to have higher ability to cope with uncertainty and higher levels of non-substitutability and relatively higher power ratings during the systems development process in comparison to other groups/teams in the organisation.
Allen (2000)	n/a	This case study explores an ISD implementation which facilitates business interaction between motor vehicle leasing and associated repair companies. Using action research, the authors discover the problems experienced in the implementation of the inter-organisational information systems (IOS).			- The research emphasises the importance of soft/relational issue in IOS implementation and management. - The political climate in which the system was developed was driven by influence based on the perceptions of the users and the business community at large. - Trust affects power structures. Stakeholders within an ISD implementation can feel that the rules which are implemented in the system are implemented to "catch" a user which intensifies ill feelings, frustration and disappointment. Such feelings can impact on the enthusiasm and optimism during systems implementations.

					Inter-relational and social/behavioural dimensions in IOS implementations should not be ignored.
Jasperson et al. (2002)	Multiple theoretical frameworks/lenses (rational, pluralist, interpretive, radical, technology, organisational, emergent)	Metatriangulation (theory-building) to articulate paradigms underlying the phenomena of power. 82 journal articles from information management systems and organisational domains spanning over 20 year period were reviewed and analysed.			- Power can be studied through multiple perspectives and reflected through multiple paradigms. This makes power an elusive subject to study. - Power can be conceptualised as various themes such as Authority, Decision rights, Influence and Politics.
Silva (2003)	Circuits of power framework.	Longitudinal case study based on the adoption and institutionalization of an administrative information system in an organisation based in central America.			- Power is important to understanding how information systems are adopted and used in organisations. - The circuits of power framework reveal different dimensions of power which can help to analyse complex phenomena such as power. - An institutionalised information system can be both a result and source of power.
Sabherwal & Grover (2010)	n/a	Case study which evaluated 89 ISD projects to develop taxonomy of political processes which exist within ISD projects. Data was collected from three groups of executive post-graduate IS students in the USA.			- In ISD projects, it is important to consider the "soft"/relational organisational issues. - A possible taxonomy of political processes can include processes such as Tug of War wherein multiple parties strive to gain project control. Obstacle Race, which involves efforts to resist and to purse the project; and Empire and building wherein the project is used as an instrument to augment political games.
Azad & Faraj (2011)	n/a.	Study explores the concept of meaning power in ISD implementations. Study reveals practices and outcomes associated with exercise of meaning power within ISD projects. Study also endeavours to define the concept of meaning power. Furthermore, a conceptual framework is developed using a case study of an IT implementation which is driven by conflict and influence.			- IT implementations are generally surrounded by conflict, power playing and influence. - Members in IT implementations associate meaning power through actions and project outcomes to influence various decisions in the organisational landscape. - A framework to illustrate the exercise of meaning power for framing of decisions and choices is proposed.
Narayanaswamy et al. (2013)	Organisational influence theory/Influence tactics defined in terms of Yukl et al (2008). Congruence framework drawn from LMX & FLM theories.	Survey administered to matched pair of project manager and team member from 109 organisations. Responses from 113 completed matched pairs were analysed using polynomial regression analysis.	Study focused at understanding how alignment between awareness and use of influence tactics for communication between project manager and project team member can impact on control loss which is a measure of project performance by evaluating slippages in project outcomes.	*Dependent variable:* Control loss (measure of project performance by assessing slippages in respect to people, processes and resources) *Independent variable(s):* **Influence tactics** (Communicational and Perceptual Congruence) between matched pair of project manager and project team member.	- Developing congruent values or alignment between project manager and project team member regarding appropriate use of influence tactics within project settings can alleviate problems such (as misaligned communication) occurring in ISD projects. - Attaining congruence regarding chosen influence tactics when communicating within ISD projects will negatively impact control loss. - Achieving perceptual congruence regarding appropriate use influence tactics is negatively associated with control loss.

Chang (2013)	McClelland's power type/political behaviour relationship framework.	Case study of 56 ISD projects reflected by IS professionals from Taiwanese and Chinese firms to examine political behaviour in ISD projects using McClelland's power relationship theory.	- 192 political games were drawn from 56 cases which can be categorised into 23 kinds and 4 types of power. - Types of player power are complex and the relationship between the types/kinds of political games depends on context. - Various political games can produce adverse effects to successful implementation of ISD projects whilst others can be instrumental to successful IS project outcomes.
Chang (2014)	Gidden's structuration theory	Case study at an IS firm in Taiwan. Snowball sampling was used to find appropriate study subjects. Interviews were conducted from a total of 31 informants. Thematic data analysis was used to discover events which drive political behaviour patterns in ISD projects.	- Total of 16 political behaviour patterns discovered. - These political behaviour patterns produce responses which impact on the organisation, prompting it to produce/reproduce structures for authority, dominion and significance. - The study establishes the events and processes of these political behaviour patterns and demonstrates that both MIS professionals and system users can initiate political behaviour when their power is threatened.
Ngwenyama & Nielsen (2014)	Organisational influence theory/Influence tactics defined in terms of Yukl et al (1990).	Longitudinal case study of an ISD project implementation. Data collected over 23 months through series of meetings, interviews and project documentation. Study focused at understanding various influence strategies which project team members can use in ISD projects.	- ISD project teams can design and enact coordinated strategies of organisational influence to achieve project implementation success. - Power and influence within ISD projects does not necessarily (always) negatively impact on project performance.

APPENDIX D: SUMMARY OF KEY STUDIES OF POWER AND INFLUENCE IN THE NON-INFORMATION SYSTEMS CONTEXT

Authors	Theoretical lens/framework	Methodology	Focus of Study	Measures: Dependent/Independent variables	Key findings
Hinnings, Hickson, Pennings, Schneck (1974)	SCTIP	Combination of hypothesis testing and case analysis. Data collected from 26 departments drawn from a sample of 7 manufacturing firms. Questionnaire data analysed using Correlation analysis and regression analysis.	Test hypotheses related to SCTIP.	*Dependent variable:* Subunit **Power** (measured empirically in terms of level of influence) *Independent variable(s):* - **Coping with uncertainty** - **Centrality** **Substitutability (non-substitutability)**	- Coping with uncertainty is positively associated with subunit power. - Centrality is positively associated with subunit power. - Non-substitutability is positively associated with subunit power
Sanders & Scamell (1982)	SCTIP	Two studies were conducted in two different environments. The first study consisted of a sample of 6 universities wherein 62 participants completed a combination of questionnaire and structured interviews regarding departmental subunits at the university. The second study was conducted at an oil and gas firm wherein participants reflected on the power of various subunits from 20 departments. Similarly, questionnaire and structured interviews regarding submit power	Replication study of Hinnings et al. (1974) applied in two different contexts. The first being an academic institution, i.e.: university, the second context was the oil and gas industry.	*Dependent variable:* **Power** (measured in terms of perceived influence, position power and participation power) *Independent variable(s):* - **Coping with uncertainty** - **Non-substitutability** - **Centrality**	- In first study (university) all strategic conditions factors were associated with team power, however the levels of correlation were relatively low. - In the second study (oil industry) team power was only associated with coping with uncertainty but not centrality nor substitutability. - The context in which SCTIP is applied will determine its outcome. In the first study, the environment was deemed complex yet stable whilst the settings of the second study were thought to be complex and dynamic. -

		were analysed. Correlation analysis was used the primary data analysis technique.			
Lucas (1984)	SCTIP	Survey questionnaire administered to a total of 136 managers from three organisations in manufacturing, electrical and chemical engineering firms. Respondents reflected on the power distribution of 5 subunits within the organisations (Accounting, Engineering, Marketing, Production, IT). Correlation analysis and regression analysis used as primary data analysis and hypothesis testing techniques.	SCTIP applied to test the power level of information services (IT) departments.	*Dependent variable:* Subunit **Power** (measured in terms of influence and the average of a subunits' contribution towards organisational profits, preventing disruptions, formal position and solving problems). *Independent variable(s):* - **Coping with uncertainty** - **Centrality** - **Substitutability**	- Information Services (IT) departments have less power in comparison to Accounting, Engineering, Marketing and Production subunits. - Coping with uncertainty has the strongest relationship with power. - Substitutability is important for accounting and engineering subunits. - Centrality is related to power in most of the subunits.
Saunders & Scamell (1986)	SCTIP	Survey questionnaire designed to measure non-substitutability, coping with uncertainty, centrality and power from a sample of oil and gas companies in Houston. Sampled subunits included Accounting/finance, engineering, marketing and information services. A total of 17 subunits were used for data analysis. Correlation analysis	Application of SCTIP. The focus of the study was to ascertain how much power each of the subunits under investigation had.	*Dependent variable:* **Power** (measured in terms of perceived influence, participation power and subunit contribution) *Independent variable(s):* - **Coping with uncertainty** - **Non-substitutability** - **Centrality**	- Information Services (IT) departments have less power in comparison to Accounting, Engineering, and marketing department (reinforcement of Lucas, 1984 study). - The information services teams sampled had useful but were not involved in critical strategic operations (fulfilled a support role).

		was used as primary data analysis technique. Additionally, mean-scores for each power department were computed.			
Saunders (1990)	SCTIP	Questionnaire and structured interviews conducted from 5 universities based on 54 responses representing 74 departmental subunits. Correlation and regression analysis was used for data analysis.	Application of the SCTIP in a an academic institution, in this study the moderating effect brought about the control of strategic conditions is incorporated.	*Dependent variable:* **Power** (measured in terms of position, perceived power and participation power) *Independent variable(s):* - **Coping with uncertainty** - **Non-substitutability** - **Centrality** *Moderating variable(s):* **Control of strategic conditions** (measured as coping with uncertainty x centrality x non-substitutability)	- Coping with uncertainty, centrality and non-substitutability are positively associated with positional power but not participation power. - Moderated regression analysis and interaction plots supported the interaction effects of the control of strategic conditions. Thus the overall control of all three of the strategic conditions factors impacts positively on team power.
Bradshaw-Camball & Murray (1991)	Framework of sociological paradigms.	In this paper, the authors explore and contrast three key views of organisational politics according to power structures, processes and outcomes.			- Structural based power is focused on authority, information and expertise, rational decision making and the ability to control access to organisational realties.
Fincham (1992)	n/a	In this paper, the authors explore organisational power defined as the level of institutional structure and of processes of interactions.			- Structural based power is derived from social structures of class and ownership patterns. Power is allocated along hierarchical structures and relationships, which are allotted by domination and coalitions. - - Organisational process interactions views power outcomes as a contest of tactics.
MacColl (1992)	SCTIP	Survey instrument and interviews were used as primary data collection strategy. Data was collected from finance, sales, marketing and customer services teams. Correlation analysis and regression analysis conducted to test study's hypothesis	Examination of the power of 70 subunits in a large Canadian Telecommunications firm using SCTIP	*Dependent variable:* **Power** (measured in terms of perceived power, participation power, position power) *Independent variable(s):* - **Coping with uncertainty** - **Non-substitutability** - **Centrality**	- Coping with uncertainty is positively related to subunit power. - The lower the substitutability of a subunit the greater the power of subunit - Centrality is positively related to subunit power. - Context shapes power perceptions. - SCTIP is replicable in simple and stable environments.
Brass & Burkhardt (1993)	Resource dependency theory	75 Survey questionnaires	Exploration of the association between potential power	*Dependent variable:* **Power** measured in terms of extent or level	- Power can be observed in relation to behaviour. - Structure is associated with certain influence tactics.

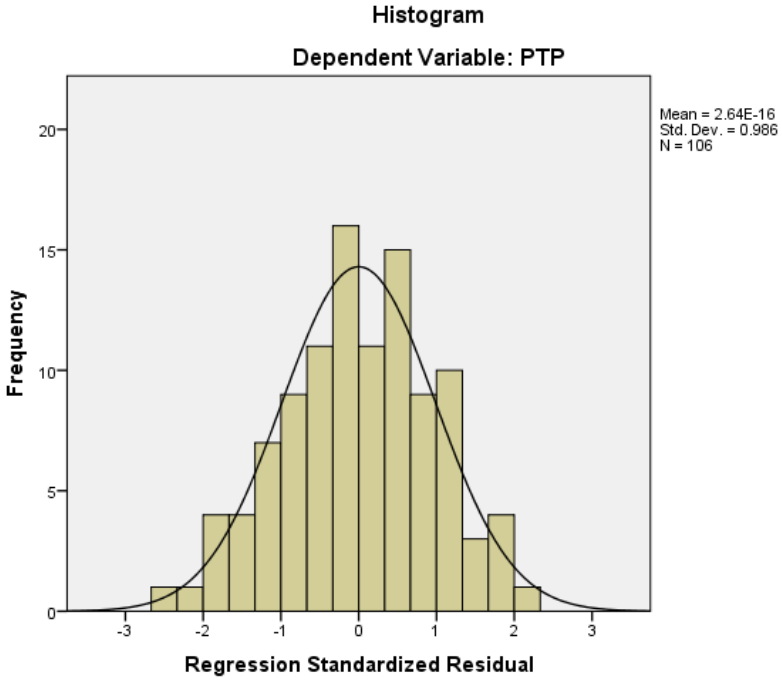
	and organisational influence theory.	administered at a research and development organisation. Correlation and Regression analysis was used to establish relationship between structural source of power and the exercise of power.	(structural position) and use of power (influence tactics)	of influence an individual has and domain of perceived influence. *Mediating variable(s):* - **Influence tactics (Behaviour)** (assertiveness, ingratiation, rationality, exchange, upward appeal and coalition). *Independent variable(s):* **Structure** (hierarchical level, centrality)	- Certain influence tactics (assertiveness, rationality, upward appeals) are associated with power/influence. - No support was found for the relationship between the influence tactics of ingratiation and coalition with power. - Structure is strongly related to power. - Future research should further explore both structural and behavioural aspects of power.
Harpaz & Meshoulam (1997)	Resource dependency theory and SCTIP	Sample of employees drawn from 58 technology firms in Israel to reflect on power level of various department subunits. 477 self-administered survey questionnaires used for analysis. Data was analysed using t-tests, F-tests and log linear regression	Establish understanding regarding relative power of subunits within high-technology firms.	*Dependent variable:* **Power** measured in terms of perception and also measured as the ability of a subunit to obtain power regarding critical elements of the organisation.	- Research and Development subunits in high-tech firms possess greater power than other subunits. - Human resources and administration subunits were not perceived to possess as much power as R&D teams. - Customer services divisions have the least subunit power. -
Kirkman & Rosen (1999)	Research model based on IPO (Input-Processes- Output) theory.	1075 Survey questionnaires were analysed drawn from a sample of 111 teams in 4 organisations from the textile, manufacturing and insurance industries with formally implemented work teams in USA. Correlation and regression analysis was used to test hypotheses.	Investigation into the antecedents, consequences and mediating effects of team empowerment	*Dependent variable:* Work team effectiveness: - Performance outcomes (measured in terms of productivity, proactivity, customer service) - Attitudinal outcomes (job satisfaction, organisational commitment, team commitment) *Mediating variable(s):* - **Team Empowerment** (measured in terms of potency, meaningfulness, autonomy, impact) *Independent variable(s):* Organisational and job characteristics - External team leader behaviour - Production service responsibilities - Team-based human resource policies - Social structure	- Team power is positively associated with team effectiveness (performance and attitudinal outcomes) - Organisational and job characteristics are positively associated with team power. - Empowered teams are more productive, than less empowered teams and had higher levels of customer service- thus more effective than less empowered teams. - Highly empowered teams showed higher levels of job satisfaction, organisational and team commitment.

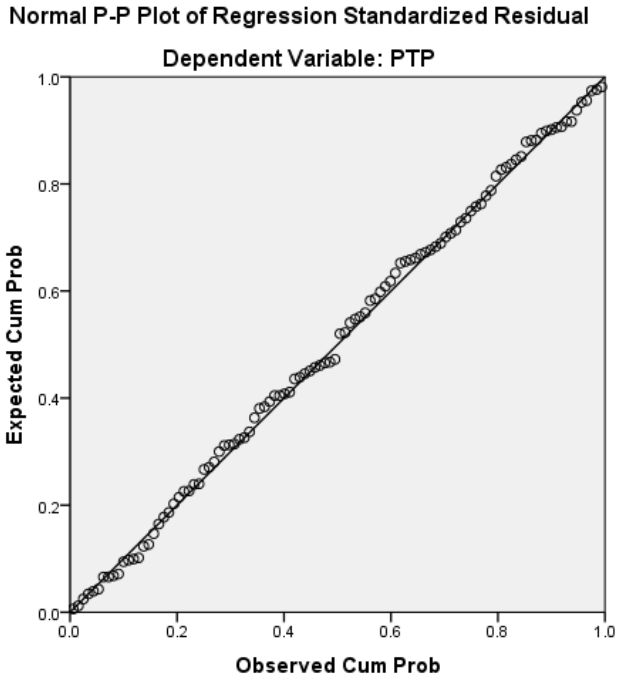
Mathieu, Gilson, & Ruddy (2006)	Research model based on IPO (Input-Processes- Output) theory.	452 survey responses from 121 service technician teams. SEM was used to test hypotheses.	Exploration of a model of team empowerment.	*Dependent variable:* Team performance (measured in terms of customer satisfaction and quantitative performance measures such as reliability, response time and reduced expenses) *Mediating variable(s):* - **Team Empowerment** (measured in terms of a team's sense of responsibility and authority to control their work) *Independent variable(s):* - Team-based HR practices - External Team Leadership - Organizational support - Work design	- Team empowerment is positively associated with Team performance. - Team empowerment is influenced by the organisational environment.
Maynard, Mathieu, Gilson, O'Boyle, Cigaularov (2012)	Research framework based on IPO (Input-Processes- Output) theory.	Meta-analysis-based correlations using SEM.	By using meta-analysis and structural equation modelling, the authors examine the combined relationship between team psychological empowerment, its antecedents, and outcomes. A research model is proposed and tested.	*Dependent variable:* Team performance (measured in terms of effectiveness, productivity, innovation and customer satisfaction) *Mediating variable(s):* - **Team Psychological Empowerment** (measured in terms of a team's level of potency, impact, meaningfulness and autonomy) *Independent variable(s):* - **Structural empowerment** (measured in terms of a team's autonomy and job formalization) - Organisational support - External managerial support - Team competencies	- Structural empowerment, organisational support, external management support and team competencies can positively influence on team psychological empowerment. Team psychological empowerment can lead to team performance.

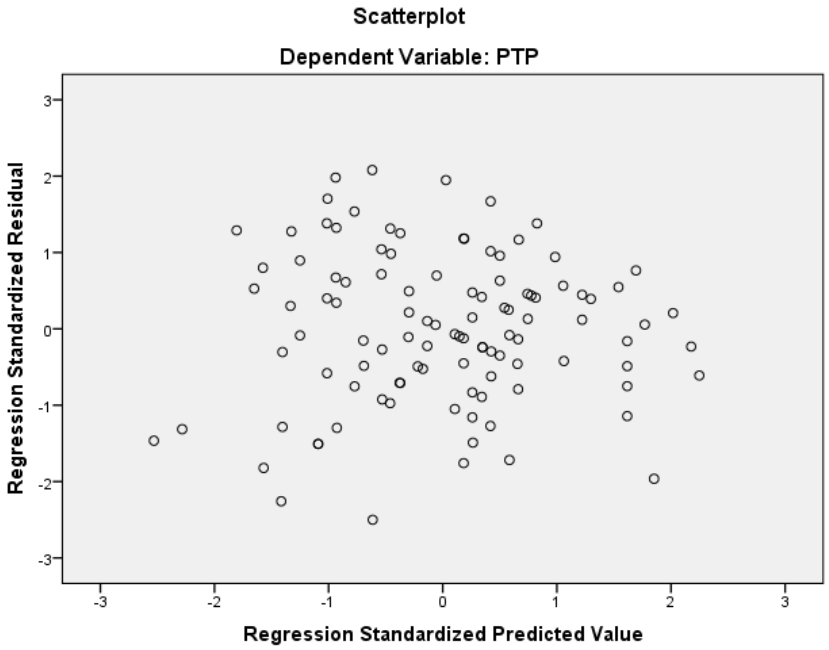
APPENDIX E: HISTOGRAM, PROBABILITY PLOTS AND SCATTERPLOTS FROM REGRESSION MODELS PLOTS OF REGRESSION.

E1: REGRESSION ANALYSIS: EFFECTS OF STRATEGIC CONDITIONS FACTORS ON PERCEIVED TEAM POWER.

Refer Table 4.10

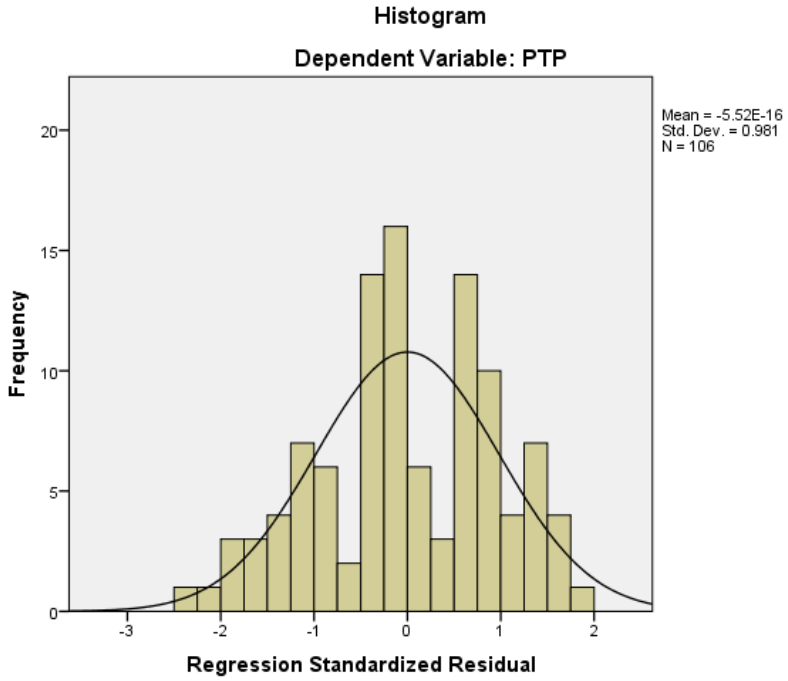


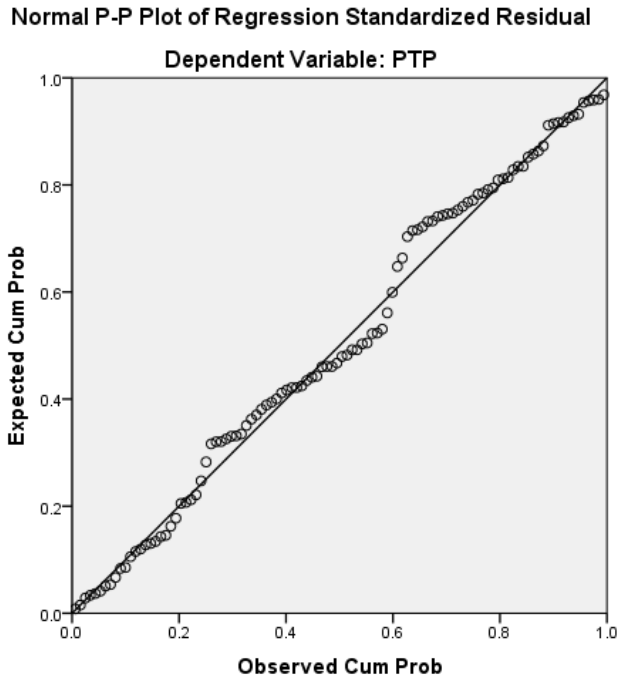


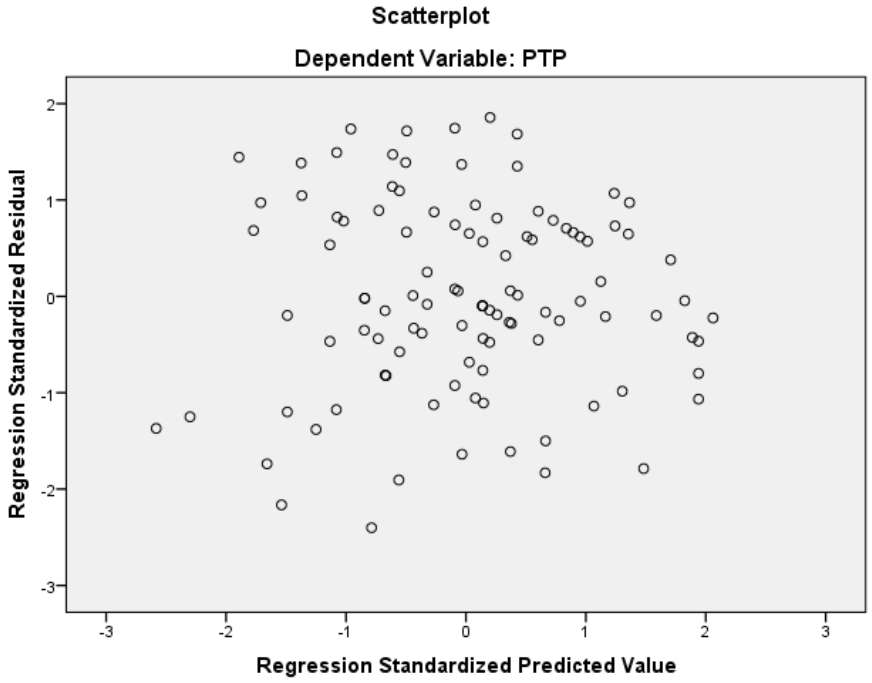

Scatterplot
Dependent Variable: PTP
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3

E2: REGRESSION ANALYSIS: EFFECTS OF CONTROL VARIABLE AND STRATEGIC CONDITIONS FACTORS ON PERCEIVED TEAM POWER.

Refer Table 4.11

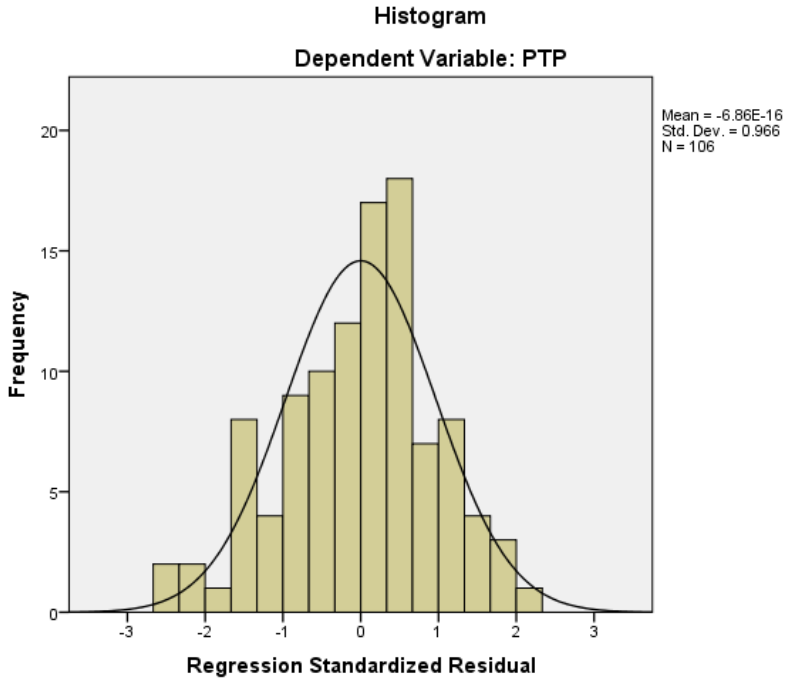


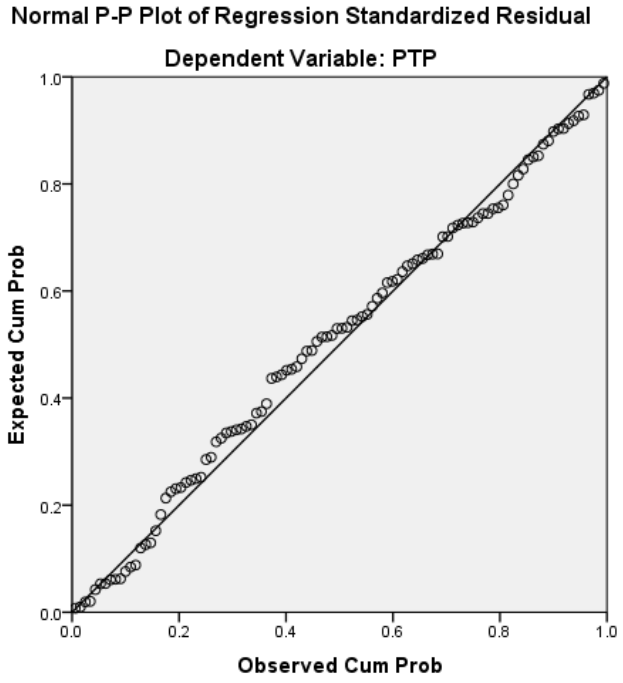


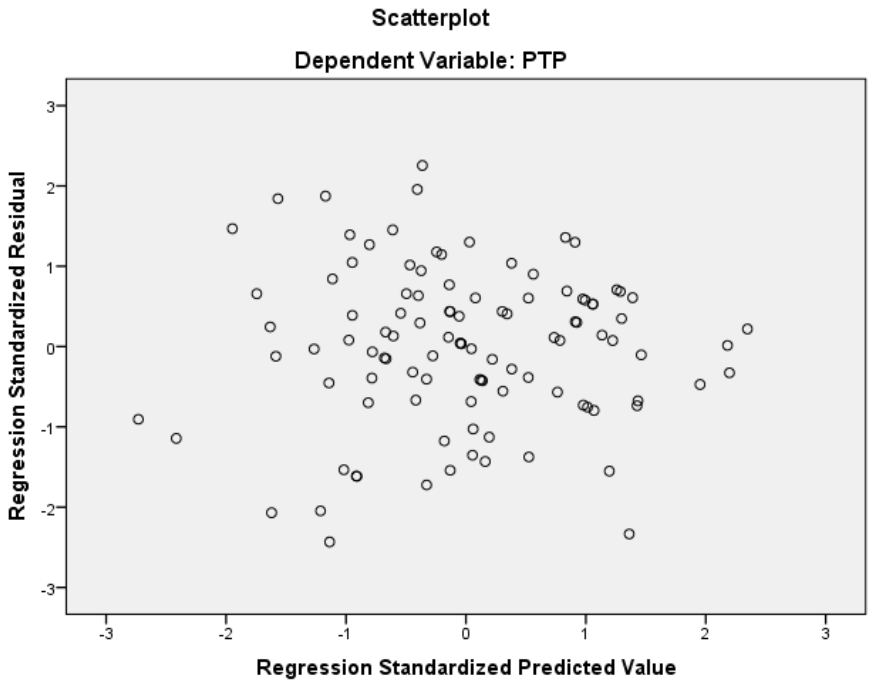

Scatterplot
Dependent Variable: PTP
Regression Standardized Residual
Regression Standardized Predicted Value
2
1
0
-1
-2
-3
-3
-2
-1
0
1
2
3

E3: REGRESSION ANALYSIS: INTERACTION EFFECTS OF THE INFLUENCE TACTICS ON COPING WITH UNCERTAINTY

Refer Table 4.14

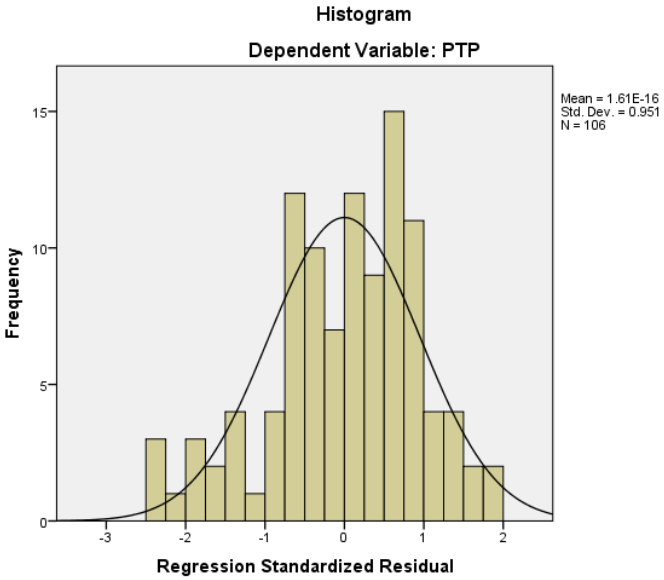


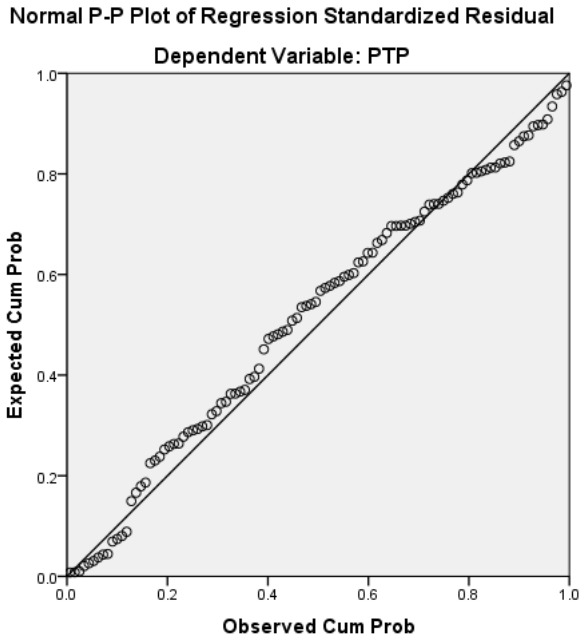


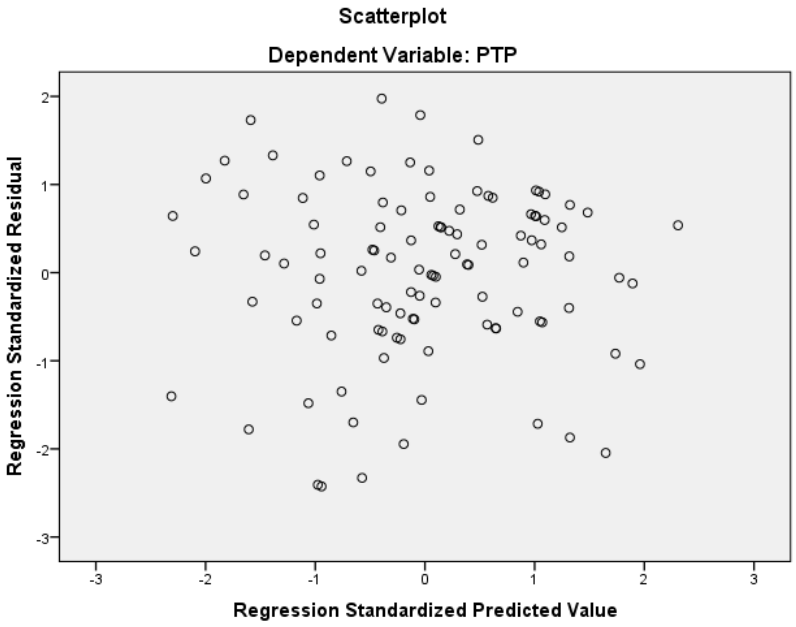


E4: REGRESSION ANALYSIS: INTERACTION EFFECTS OF THE INFLUENCE TACTICS ON CENTRALITY

Refer Table 4.15

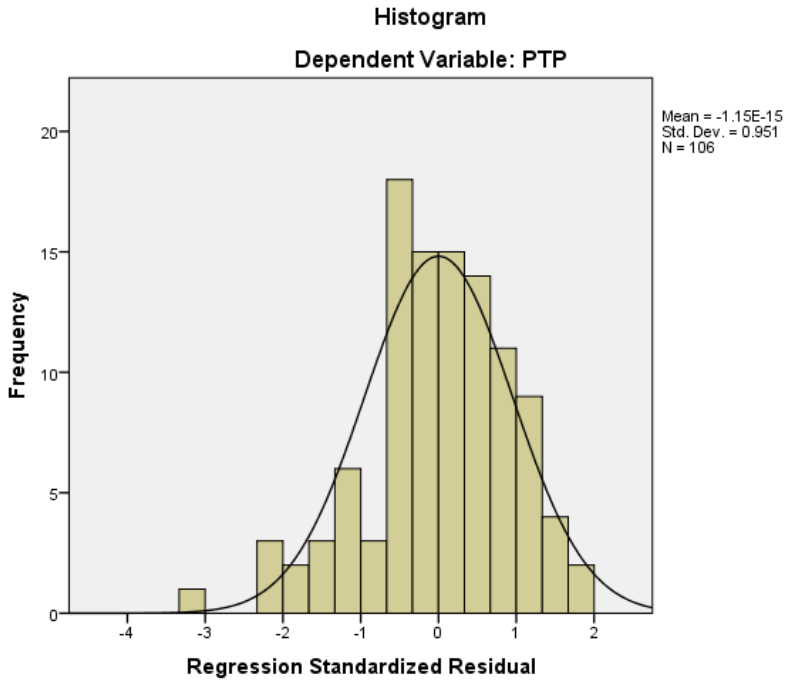


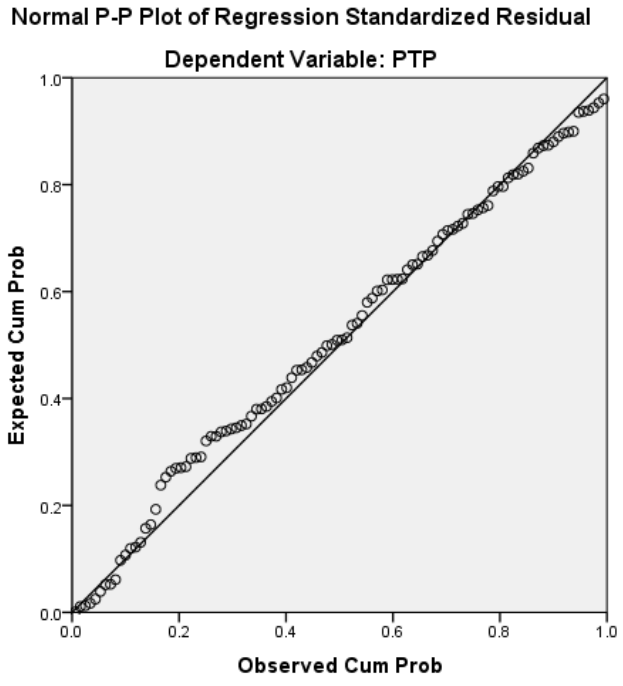

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: PTP
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

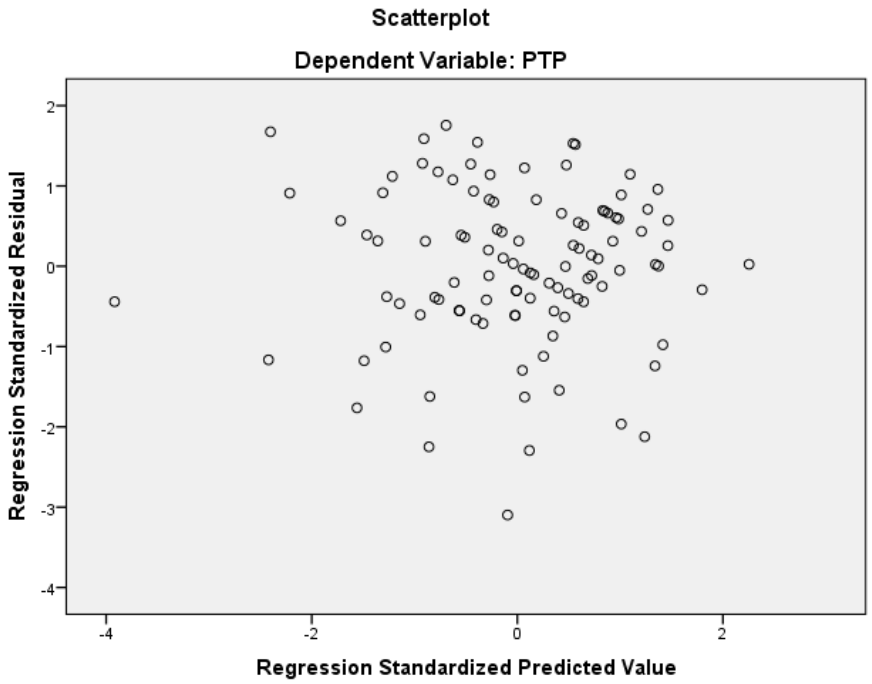

Scatterplot
Dependent Variable: PTP
Regression Standardized Residual
Regression Standardized Predicted Value
-3
-2
-1
0
1
2
3

E5: REGRESSION ANALYSIS: INTERACTION EFFECTS OF THE INFLUENCE TACTICS ON SUBSTITUTABILITY

Refer Table 4.16






Scatterplot
Dependent Variable: PTP
Regression Standardized Residual
Regression Standardized Predicted Value
2
1
0
-1
-2
-3
-4
-4
-2
0
2

APPENDIX F: OUTLIER ANALYSIS

Outlier cases on 0 items	105
Outlier cases on 1 item Item [RA1]	1
Outlier cases on 2 or more items	0
Total cases	106

* Outliers identified on cases where standard deviations >+-3

APPENDIX G: SKEWNESS AND KURTOSIS

	RA1	RA2	RA3	RA4	EX1	EX2	EX3	EX4	CO1	CO2	CO3	CO4	CL1	CL2	CL3	CL4	INFG	PIN1	PIN2	PTS1	PTS2	CEN1	SUBS	COP1	COP2	COP3	COP4	COP5	CEN2	C1	C2	C3	C4	C5	C6
Skewness	-1.028	-1.324	-1.310	-1.000	0.275	0.703	0.612	0.642	-0.495	-0.228	-0.139	0.021	-0.223	-0.064	-0.148	-0.406	-0.363	-0.660	-0.132	0.135	0.028	-0.388	-0.096	-0.105	-0.085	-0.168	0.066	-0.401	-0.093	0.169	-0.109	0.774	0.820	0.225	2.317
Std. Error of	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240
Kurtosis	0.644	0.753	0.910	0.398	-0.946	-0.467	-0.616	-0.153	-0.857	-0.841	-1.119	-0.957	-0.850	-1.276	-1.055	-0.640	-0.281	-0.125	-0.528	-0.277	-0.144	-0.566	-0.667	-0.535	-0.302	-0.597	-0.741	-0.606	-0.836	-1.214	-0.842	-0.842	-0.223	-0.664	5.392
Std. Error of Kurtosis	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476