IMPACT OF LEADER-FOLLOWER DYNAMICS ON ORGANIZATIONAL CULTURE

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ABSTRACT

The objective of this research is to examine how leadership style, leader-member relationship, team orientation, team cohesiveness and commonality of goals are inter-related in managing a world-class research centre in Australia. The review of the literature yielded theories and constructs that enabled this research to construct a conceptual framework to investigate the interrelationships amongst these variables.

The research design employed primary data collection survey and analysis processes to determining the level of reliability, accuracy, efficiency and transparency of organization culture. The target population of the study was aimed at staff from an Australian Research Centre (ARC) who has worked for at least two years’ at the centre. Based on the findings generated by the study, the researcher recommended the most viable strategies that can be adopted in improving the work performance of research staff. Leadership styles of formal and informal team leaders are different, if a team leader’s tendency is to have more than one style, then how does the leader choose which style to use in different situations? Similarly, it is important to understand the team orientation and how members play different roles in different situations. The research questions sought to answer are: What leadership style differences exist between team leaders? How does leadership style affect leader-member relationship? How do leader-member relationships affect team orientation? How does team orientation affect the team cohesiveness? How does team orientation affect commitment to the goals of the organisation as a whole? The research provided a general understanding of how the leadership style, leader-member relationship, team orientation, team cohesiveness and commonality of goals are inter-related in managing a world-class research centre in Australia.

The research concluded that team cohesiveness and orientation affects the leadership style adopted by group leaders and in order to manage a better leader-member relationship that it is important to reach a consensus of goals.
I hereby certify that the work embodied in this thesis is the result of original research and has not been submitted for a higher degree to any other University or Institution

Thomson Kai Man, Chow
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I am also indebted to many of my colleagues who supported me by sharing their valuable opinions in the survey.

Lastly, I offer my regards and blessings to all of those who supported me during the completion of the project, especially my wife Winnie, and two daughters, Chloe & Vincy, who provided loving family support during my studies.
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Chapter 1 Introduction

This is a research thesis to examine how leadership style, leader-member relationship, team orientation, team cohesiveness and commonality of goals are inter-related in managing a world-class research centre in Australia. This chapter will cover research aims, objectives and justification of the research, as well as discuss the research problem and limitations of the research, and finally, conclude with a summary. It is important to note that the researcher has worked for the Australian Research Centre for over six years and as a result the idea of this research was adopted to suggest new insight, develop study related to the research field mainly in terms of leadership styles, team orientation and leader-member relationship. The research is intended to serve as an effective tool to help professionals working in the research field to gain a better understanding of how to manage research staff. These research findings will assist the ARC management on how to structure the research institution, recruit personnel, develop leadership and strengthen teamwork. Ultimately, other Australian research centres may be able to forge high-performing cultures by emulating the ARC’s example of how to successfully manage highly educated, experienced and intelligent team members.

1.0 Research Aims and Objectives

The Government’s National Collaborative Research Infrastructure Strategy (NCRIS) revealed that the microscopy and microanalysis were important industries to increase the strength of Australia’s research capability, and thus are receiving continuous support from the government’s initiative projects (Characterization, 2012). To understand how an individual research centre can improve their research capability, this research will focus on the employees working at the Australian Research Centre (ARC henceforth). Employees at ARC include academic, technical and administration personnel, divided into three functional teams. The research will focus on how these three teams interact, coordinate and communicate with one another in relation to leadership style, leader-members exchange, team orientation, team cohesiveness and commonality of goals impacting the ARC’s research capability.

The aims of this research are to, first, analyse the team dynamics within the teams at
the ARC; second, analyse if leadership style differences exist between team leaders; third, analyse the working relationships within the teams; and finally, analyse team cohesiveness and determine how committed the teams are to the ARC’s goals. These four aims will establish the basis of this research in understanding the working environment of the ARC. The next section will examine the research objective, which will assist this research to achieve the above-mentioned aims.

This study focuses on full-time employees in the academic, technical and administration teams. The three teams have different working styles in terms of job nature and task structures. This research will study how the leaders of these three teams interact, coordinate and communicate with their respective team members. Further, it will examine if a leader uses different styles in different situations and how a team member in different roles may respond differently to his/her leader. The research will specifically focus on concepts that are expected to affect the performance of the team, namely:

1. leaders’ (formal and informal) leadership styles;
2. levels of leader-member relationship;
3. team orientation;
4. team cohesion and;
5. team members’ organisational commitment to identify the impact of leader-follower dynamics on organisation culture.

1.1 Background To The Research

Research Setting

The research setting consists of an academic research centre in Australia and will be referred to in this research as “ARC”. The ARC is a national research centre specialising in microscopy & microanalysis, located on a university campus in Sydney. It is the headquarters of the Australian Microscopy & Microanalysis Research Facility which is funded by several state governments: New South Wales, Western Australia, Queensland and South Australia. The ARC is accessible by all Australian researchers, enabling them to discover and innovate in Australian science, and industry-based researchers can also access the ARC for proprietary research at
commercial rates.

The ARC’s clients can be divided into two groups: external users and internal students. External users may be from commercial firms or the non-profit sector such as other universities or research institutes. Internal students are those pursuing university postgraduate degree programs and typically spend three to four years at the ARC to learn relevant academic theories and the techniques for operating the instruments to explore microstructures in all areas of nanotechnology and biotechnology research.

The ARC is equipped with various ranges of microscopes for research and teaching purposes. There are approximately 30 major instruments for transmission electron microscopy, scanning electron microscopy, light-optical and confocal microscopy, scanned probe microscopy, atom probe tomography, X-ray micro tomography and X-ray diffraction. There were about 350 projects and 35,000 instrument-user hours a year for the study of material science, surface science, biological science, live-cell culturing, computational studios for image visualisation, simulation and analysis. (http://sydney.edu.au/acmm/about/history/index.shtml (Jan, 2012)).

The ARC is a successful research centre, receiving over AUD3 million of research grants and publishing 79 journal articles, 6 book chapters and numerous conference papers in 2010 (Grant Success, 2010). The ARC has 45 full-time employees who are working in three main teams: the academic team, technical team and administration team. The leader-member relations, team orientation, team cohesiveness and the commonality of goals among members are important aspects of its success. Senator Kim Carr, Minister for Innovation, Industry, Science and Research, remarked that ARC is a world-class research asset in research fields and is of immense importance to industry and academia (AMMRF Annual Profile, 2011).

The Work Teams

The ARC has 45 full-time employees in three main teams: academic team, technical team and administration team. The core activities of the ARC can be divided into three areas: to provide research support services, undertake cutting edge scientific
research programs and to deliver internationally recognised research programs (Vision & Mission, 2012).

Academic Team

The first core activity is research services. The research services offer a broad range of microscopy and microanalysis instruments, which are supported by academic and highly trained technical staff to fulfil research needs for postgraduate students or researchers. Researchers have access to a broad range of sophisticated microscopy and microanalysis instruments in light laser, atom probe, scanning electron microscopy; transmission electron microscopy and X-ray (Facilities, 2012).

The second core activity is research programs. The research programs of the academics and researchers in the ARC involve the development and application of advanced methodologies in microscopy and microanalysis. The research program is an essential part in maintaining the ARC as a world-class facility that enables researchers to generate knowledge and feeding innovation to public-funded and industrial sectors, further, technical and scientific staffs are trained to meet and resolve challenges from these research programs (Research Programs, 2012).

The third core activity is research training. Research training involves teaching users the theoretical basis and practical use of advanced microscopes and microanalysis instruments. Research training allows potential researchers to maximise the quality of their work. It provides users with services for testing samples of physical and biological matter, exploring their structure, analysing their data, and scaling the matter down to molecular and atomic particles for academic research and teaching purposes (Courses & Training, 2012). Members of the academic team are experts in microscopy and microanalysis of:
(1) biological science, such as live-cell imaging; fluorescent lifetime spectroscopy; nano-probe investigations of cellular processes; bio-organic, bio-mimetic and super-molecular chemistry; and
(2) physical science, such as light alloy design; structure-property relationships in optical fibre materials and,
(3) dopant distribution in semiconductors, characterisation of quantum wells and
nanostructures.

These experts have very strong academic backgrounds and hold positions of professor, associate professor, lecturer, research fellow, researcher or scientist. The task structures for the academic team are relatively unstructured, given that each research project is unique, complicated and dynamic.

Team members need to understand project goals, and contribute to the project with their personal methodologies and knowledge. Team meetings are the most important way to update other team members about the research progress status, opportunities and difficulties, technical problems and achievements. The character of these team members can be described as creative and self-managed; they are always investigating, exploring, and creating new ideas, and they can effectively direct their own activities towards the achievement of set objectives. Team leaders focus on coordinating and arranging resources for projects. To align the individual team member’s objective to the organization goals, team leaders need to prioritize resource allocation at their discretion. A strong leadership may therefore be required. Inter-team cohesiveness may be low as a consequence of members resource fights between team members, and project prioritization that is often a subject of arguments.

Technical Team

The members of the technical team are microscopy experts who are highly trained by microscope manufacturers and are capable of operating particular microscopes effectively and safely. These sophisticated microscopes include: near-field scanning optical microscope; dedicated high-resolution analytical microscope; confocal and multi-photon microscope; live-cell microscope; total internal reflection fluorescence microscope; motorised system microscope; multi-purpose scanning probe microscope; local electrode atom probe microscope and X-ray scanning microscope. Team members have strong technical backgrounds to resolve technical issues and hold positions such as: microscopist, image visualisation & analysis specialist, biological specimen preparation specialist, material specimen preparation specialist, bimolecular imaging specialist and atom probe engineer. The character of this team
can be described as “structured” as most operation techniques and training skills have set patterns and manual procedures to follow, however, creative ideas are not often encouraged in this team. Team members consult each other on day-to-day machine operations. High coordination is required between team members to ensure efficient and effective operation of machines. Inter-team cohesiveness may be high.

Administration Team

The members of the administration team are professionals registered with associations like Certified Practising Accountants Australia and Chartered Institute of Marketing. They are strong in particular areas and hold positions of general manager, centre manager, finance manager, marketing and business manager, research development manager, office administrator, administrative support officer and multimedia communications officer. The character of this team has varying degrees of structure; such areas as office administration, student administration, finance and accounting which all have policies, guidelines and procedures to follow, while marketing and multimedia design tasks are relatively unstructured and creative. Team members are working mostly independent from each other. However, individual team members are required to communicate and co-ordinate with members in other teams to ensure their duties can be carried out properly. Leaders are providing advice or instructions mainly on general procedural issues. Inter-team cohesiveness may be low as a result of lack of interaction between teams. Instead, intra-team cohesiveness may be high due to work requiring coordination.

The teams and their positions within the ARC are presented in Figure 1 below:
The above diagram gives an idea about the hierarchy in the ARC setting. The ARC is divided into three main teams and as described above comes under a team leader where all members of the team must be answerable to. As each team comprises of highly qualified professionals in those respective fields, coordination among the team members is the key to function everyday tasks smoothly. Where there is good performance among teams, it may be because members are experts in their fields and need minimal supervision; nonetheless, the leader-member relationship can be further developed to avoid any delays in work. There is a lack of immediate communication when a situation comes up. This leads to constraints within a team and causes problems later on.

As the three teams are different in terms of work handled, there can be less coordination with team members or their leaders between teams. In cases where the
respective team leader is absent from work or is unable to attend to any issues that arise, the supervision from other team leaders becomes crucial. This leads the team members to consult each other in times of crisis and come up with their own solutions. For this, developing better team cohesiveness is important.

Recruitment

All staff of the ARC was invited to participate in the research, including staff who recently left after having worked at the ARC for more than two years. All participants were invited by email to complete a self-administered questionnaire on the Internet, receiving an information sheet detailing the purpose and nature of the study. It was explained that participation was voluntary and confidential, as original data would not be divulged in any form and only final results with disguised identities and aggregated statistics would be published. Completed questionnaires would not bear individuals’ names or the names of their teams. All entities would be reported under pseudonyms. The next section will examine the research problem.

1.2 Research Problem

In a higher-education research facility, the academic, technical and administrative personnel have different working styles and skill requirements. There was limited research literature available on the team dynamics of research centres specialising in the scientific sector of microscopy and microanalysis discipline in terms of the impact of leader-follower dynamics on organisation culture. As such, it is important to discover how the various leadership styles influence the working cultures of such a facility.

Inter-relationships that will be investigated include:

- leadership style and leader-member relationship;
- leader-member relationship and team orientation;
- team orientation and team cohesiveness;
- team orientation and commitment to organizational goals and
- team cohesiveness and commitment to organizational goals.

The constructs embedded in these inter-relationships will be discussed in Chapter 2.
1.3 Limitation of the Research

The research is limited in its application and approach as its sole case study is only one research centre. This may become a barrier for development of further study into the subject as it lacks a balance. The researcher has worked for the ARC for over six years and personal biases may be presented in some of the findings and limit the research in terms of discovering and examining deeper into the subject. Due to time constraints, the participation of ARC employees were limited, and as a result limit the study to take the responses of the members who participated as the general view of ARC which may not always be the case.

1.4 Research Outline

This first chapter of this research has focused on introducing the study of the ARC. The chapter has provided a background of the study, stated the research problem, identified the purpose adopted by the study, defined the research objectives and aims, and expressed the desired outcomes.

The second chapter will provide a comprehensive literature review of previous research on leadership styles, management process and team building. The second phase of the chapter will then be dedicated to discussing the various theories applied to the study.

The third chapter of the dissertation will undertake to discuss the research methodology adopted for the present undertaking. The discussion will describe the research design and strategy, the primary data collection strategies and instruments, research materials, the target population, the sampling techniques and procedure, sample size and characteristics, data analysis strategies, ethical parameters, as well as the methodological measures employed to improve and maintain the reliability and validity of the empirical findings.

The fourth chapter of the dissertation will present the research findings and discuss them in relation to other research reviewed in the literature. Propositions will be examined both quantitatively and qualitatively to establish and explain the
inter-relationships this research set out to study.

The fifth and last chapter of the dissertation will discuss conclusions and recommendations derived from the study. Implications for further research and practice, specifically with regards to management of research centres similar to the ARC, will be presented.

1.5 Summary

In summary, this chapter detailed the research aims, objectives and justification of the research, the research problem and limitations of the research. The research settings (ARC) was discussed and examined and the research objective was established of how the teams at ARC interact, coordinate and communicate with one another in relation to leadership style, leader-members exchange, team orientation, team cohesiveness and commonality of goals impacting managing the ARC’s research capability. The research is intended to develop an effective tool to help professionals working in the research field to gain a better understanding of how to manage research staff, how to structure the research institution, recruit personnel, develop leadership and strengthen teamwork. Ultimately, other Australian research centres may be able to forge high-performing cultures by emulating the ARC’s example of how to successfully manage highly educated, experienced and intelligent team members.
Chapter 2 Literature Review

This chapter will review the literature concerning the manager’s performance both as a leader and as a manager of tasks to be performed. The business of the ARC, as described in Chapter 1, is a combination of research, technical support and administration. Thus the management of the ARC requires both managerial and leadership skills and knowledge, which together constitutes leadership style.

This Chapter will review definitions of management and leadership, the manager-leader role, the management processes of planning, organising and influencing, and the critical skills a manager and leader. The management and leadership theories will help develop the conceptual model to examine the performance of teams under different combinations of leadership style, leader-member relationship, team orientation, intra-team cohesiveness and commitment to organisational goals.

2.1 Meaning of Management

In the ARC, personnel in the academic, technical and administrative teams have different working styles and skill requirements. How these personnel interact, coordinate and communicate within their teams will have implications for structuring the research centre, recruitment of personnel, leadership development and team-building. The impact of a team leader’s role in the performance of an organisation activity or project is central to its success or failure. A leader can also be called a manager if he or she is responsible for achieving the overall targets of the organisation and motivating others (Handy, 1985).

The term management is not easy to define, partly because the concept is so complex. The problem is related to the difficulty of defining a manager or a manager’s role. The definitions of a manager tend to be broad and complex and as such in the process becomes meaningless (Handy, 1985). In brief, management means simply to be in control. It is the process of getting things done through the efforts of other
people. This includes the allocation and control of money, people and physical resources (Mondy and Premeaux 1995). So being in control includes responsibility for various functions of the management process.

2.2 Different interpretations of leadership styles

The research will analyse relationship between leaders and followers, however the dynamics of the relationship depend on where it is taking place and how. As such, the level of involvement within a team is important to this research and under what level it is operating will decide the team cohesiveness at a given time or place. In this case, distinguishing between management and administration will resolve any doubts between the two definitions and what is appropriate to this research. Management and administration are not the same, management means that managers do certain things in order to get results for themselves and others, this may include a variety of management activities and managers also evaluate various issues in order to try and minimise risks and improve output.

In contrast, administration is concerned with procedures, accountability and risk avoidance, this means that in proper administration, actions are carried out according to the correct procedures and if part of the procedure is not followed, people will be held accountable. The key difference between managers and administrators is this: management aims at taking calculated risks, whereas administration aims at avoiding it in order to ensure a proper and effective administration process. (Handy, 1985). In general, it is safe to say that every job includes administration, but not a lot of people manage. Administration can be viewed as a basic skill-set, whereas, management requires complex skills and processes, this will be summarised in the following Table 1 (see next page). For the purpose of this research, management seem more appropriate as it relates more to leaders who can also be known as managers guiding, delegating and leading a team towards a specific goal within an organisation. Table 1 (see next page) shows the different characteristics of leadership administration and management set out and expanded as described by Handy (1985, p.92 to p.117).
Table 1: Different characteristics of Leadership administration and management

<table>
<thead>
<tr>
<th></th>
<th>ADMINISTRATION (Leadership style)</th>
<th>MANAGEMENT (Leadership style)</th>
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<tbody>
<tr>
<td>OBJECTIVES</td>
<td>• stated in general terms and reviewed or changed infrequently</td>
<td>• stated as broad strategic aims supported by more detailed short term goals and targets reviewed</td>
</tr>
<tr>
<td>SUCCESS CRITERIA</td>
<td>• mistake avoiding</td>
<td>• success-seeking</td>
</tr>
<tr>
<td></td>
<td>• performance rarely measurable</td>
<td>• performance mostly measurable</td>
</tr>
<tr>
<td>RESOURCE USE</td>
<td>• secondary task</td>
<td>• primary task</td>
</tr>
<tr>
<td>DECISION MAKING</td>
<td>• has to make few decisions but affecting many and can take time over it</td>
<td>• has to take many decisions affecting few and has to make them quickly</td>
</tr>
<tr>
<td>STRUCTURE</td>
<td>• roles defined in terms of areas of responsibility. Long hierarchies and limited delegation</td>
<td>• shorter hierarchies and maximum delegation</td>
</tr>
<tr>
<td>ROLES</td>
<td>• arbitration</td>
<td>• protagonist</td>
</tr>
<tr>
<td>ATTITUDES</td>
<td>• passive: workload determined outside the system</td>
<td>• active: seeking to influence the environment</td>
</tr>
<tr>
<td></td>
<td>• best people used to solve problems</td>
<td>• best people used to find and exploit opportunities</td>
</tr>
<tr>
<td></td>
<td>• time-insensitive</td>
<td>• time-sensitive</td>
</tr>
<tr>
<td></td>
<td>• risk-avoiding</td>
<td>• risk-accepting but minimizing it</td>
</tr>
<tr>
<td></td>
<td>• emphasis on procedure</td>
<td>• emphasis on results</td>
</tr>
<tr>
<td></td>
<td>• doing things rightly</td>
<td>• doing the right things</td>
</tr>
<tr>
<td></td>
<td>• conformity</td>
<td>• local experiments: need for conformity to be proved</td>
</tr>
<tr>
<td></td>
<td>• uniformity</td>
<td>• independence</td>
</tr>
<tr>
<td>SKILLS</td>
<td>• legal or quasi-legal</td>
<td>• economic or socioeconomic</td>
</tr>
<tr>
<td></td>
<td>• literacy (reports, notes)</td>
<td>• numeracy (statistics, figures)</td>
</tr>
</tbody>
</table>

Source: adapted from Handy (1985, p.92 to p.117)

This research is concerned more with management in terms of leadership styles and team cohesiveness. The next section will examine the management process that involves leadership management in more detail.

2.3 The Management Process

The management process is a decision-making process which consists of four functions: planning, organising, influencing and controlling. This section will examine these functions as it relates to the leadership styles within a team environment.
According to Mondy & Premeaux (1995), planning should be specific and provide clear guidance to both managers and workers. Incremental planning is important to this research as it discusses the aspects of preliminary work before undertaking a project. In the context of leadership, organising means knowing your staff and choosing the right person with the appropriate skills for the job. It also means finding the resources to complete the job and achieve your goals. A manager’s responsibilities and degrees of authority in achieving such are usually defined in an organization structure. Influencing is the process of affecting or dictating the behaviour of others. Influencing includes motivation, communication, development, conflict, creativity, group dynamics, power, politics and corporate culture. Controlling means comparing performance with the standards that have been set. It means the manager or the leader has to monitor performance, and where necessary, take corrective action to ensure that the performance is in line with the original goals, plans and standards of the organisation.

2.4 Management / Leader Work

As one of the aims of this research is to find out how leadership style influences the structure of a research institution, recruitment of personnel, leadership development and team building, understanding how management works and what is involved in undertaking such tasks is crucial to this study. The ARC's ability to forge a high-performing culture and adopt the most cost-effective processes and procedures will depend on the successful leadership of its highly educated and professionally qualified employees.

According to Blunt & Jones (1992), management work can be mechanical and dynamic. The mechanical work includes formulating objectives, developing plans of action and projections, dividing and allocating tasks and acquiring resources. The dynamic work involves the human element. This includes having discussions with subordinates and others, participating in meetings, communicating and motivating. This research will examine the work of team leaders at the ARC to determine their dominant leadership styles.
To carry out his/her management work, managers play various roles in interpersonal, information and decisional. In interpersonal role, manager becomes a figure head stands as a symbol of authority or power. He/She is also a motivator taking responsibility for the performance of others in addition to him/her. Manager in this role spent a lot of time in liaison with people and becomes a source of information. In ARC, the director and team leaders of Academic, Technical and Administration teams typically play this role. In information roles, manager scans the environment for information, shares, distributes and supplies information to people outside the leader’s unit. In decisional role, a manager takes initiative to improve the effectiveness and competitiveness of his or her own unit, involves in dealing with disturbances and conflicts, allocating resources, and most importantly as a peacekeeper or problem-solver.

The different roles of a manager depend on many factors and the leadership style adopted is equally varied. Central to this research is how these different leadership styles affect other members in a team. The next section will examine nine critical management skills that are essential for team leaders in a research outfit, like the ARC.

2.5 A Leader’s Nine Critical Management Skills

This section will review different management skills that enable the leaders of the academic, technical and administration team members interact, coordinate and communicate with their respective team members. Whetten & Cameron (1984, p.6) identified nine skills as most critical to successful management includes: developing self awareness, managing personal stress, solving problems creatively, establishing supportive communication, gaining power and influence, improving employee performance through motivation, delegating and making decisions, managing conflict and conducting effective group meetings.

Leaders should possess a variety of knowledge and skills that can lead an organisation to success by motivating others who are subordinates or team members and at the same time by regularly updating one’s self on new advancement and
knowledge about the field the individuals are attached to. The relationship of leaders and team members should be nurtured and continually adjusted to, as it requires the skills and knowledge of a number of many critical factors to lead a team of professional members to complete their duty or tasks on a daily basis. The nine critical management skills as discussed can be taken as a basis for developing constructive leadership styles that can be employed by team leaders of the ARC to gain a more in-depth insight of one’s own management skills. The next section is a continuation of how leaders react to situations in a work setting and what qualities and skills they need to successfully complete their tasks.

### 2.6 Managing People

According to Dale (1993: pp. 231-237), managers employ various approaches in managing co-workers and subordinates, though different approaches may be more or less effective depending on contingent factors. These approaches are also associated with leadership, as leaders’ main function is to influence subordinates to achieve organisational objectives. Understanding of these approaches helps to identify the effectiveness of leadership styles in ARC. First a quick review of these approaches is in order.

1. **Guiding** – Helping, monitoring, and managing the flow of staff and their work. This involves developing and sharing goals and ideas amongst the staff. Monitoring progress to find out how well individuals and the group are progressing towards the goals and ideal that has set out to achieve. The manager should indicate the cause of ineffective working and help the staff member work more effectively towards the organisation’s goals. Mentoring is another important aspect of guiding where the manager should guide the performance, commitment and productivity of individuals in the organisation.

2. **Directing** – Through encouragement and guidance. Motivating staff by giving them feedback and handing out rewards. Providing discipline to maintain standards. Managers initiate change by encouraging and enabling staff to any ideas on changes that could improve individual and organisational performance. Directing involves leadership strength.
3. **Enabling** – Listening actively is a unique way to enable someone to communicate well with others. Recognising and developing potential is helping staff to reach their potential is good for the person’s professional growth and for the organisation. Facilitating learning is the process of learning should be made as effective and easy as possible. In many ways, enabling is the most challenging area of managing other people. It involves personal qualities and skills that a manager may have to develop.

The leaders can set targets by taking into consideration the views of their subordinates as it affects the overall performance of the facility. The ARC can further maintain better coordination and cordial working relationships by sticking to a process which will help them keep a tab on the needs of subordinates and keep a check on the leader’s performance.

As highlighted in Chapter 1, there is a lack of past research literature available on the team dynamics of research centres specialising in the scientific sector of microscopy and microanalysis discipline in terms of the impact of leader-follower dynamics on organisation culture. As such, it is important to discover how the various leadership styles influence the working cultures of such a facility by applying similar theories to support this research. The next section will review some theories that address these people-management approaches as leadership functions such as: the Path-Goal theory; Leader-Member relationship; Team Role theories; Group Cohesiveness theories and Organisational commitment. Finally the research will develop propositions derived from these theories to examine the relationships between team leaders and their members in the ARC, and how such relationships affect the Centre’s performance culture.

### 2.7 Path-Goal Theory

The path-goal theory is a theoretical framework for understanding the effect of leadership behaviour on subordinate satisfaction and motivation. It explains the
effects of leader’s behaviour that affects the outcome of subordinates’ goal achievement. The major concern of this theory is how the leader influences the subordinates’ perceptions of their work goals, personal goals and paths to goal attainment (House, 1974 pp23). The effective sharing of a common vision within a group needs to have effective leader, however, there are many different theories discussed in the literature as to what would be the most effective leadership style.

Robert House’s Path-Goal Theory (House, 1974) focuses on how the leaders influence the subordinates to achieve their work goals; personal goals and paths towards achieving these set goals. In this theory, leaders’ behaviour is motivating or satisfying to the degree that the behaviour increases subordinate’s goal attainment, clarifies the path to achieve their goals and attempts to describe the effect of leadership behaviour on subordinate satisfaction and motivation. How can a small group of people manage this research centre so successfully? This theory will be used in the research to understand the various leadership styles used by leaders to motivate subordinates.

According to House (1974), Path-Goal Theory was derived from the expectancy theory, a motivational theory which briefly stated that an individual's attitudes or behaviour can be predicted from first, degree to which the job, or behaviour, is seen as leading to various outcomes (expectancy) and second, the evaluation of these outcomes. As a result, people are satisfied with their jobs if they think it leads to something of high value and they work hard if they believe that effort leads to things that are highly valued. The implication for leadership is that subordinates are motivated by leader behaviour to the extent that this behaviour influences expectancies, goal paths and goal attractiveness (House 1974, p. 23).

The central concept of this theory is to explain the effects of specific kinds of leader behaviour on the following three subordinate attitudes or expectations: work satisfaction, subordinates’ acceptance of the leader, and finally, the expectations of subordinates that effort will result in effective performance and that effective performance is the path to rewards. The four kinds of leadership to be examined in the following section are: directive leadership, supportive leadership, participative
leadership, and achievement-oriented leadership. These theories may assist the research problem of ARC’s concern about team performance and the influence of leadership and how subordinates are motivated by the leader’s behaviours.

Directive leadership

Directive leadership is characterised by a leader who lets subordinates know what is expected of them, gives specific guidance as to what should be done and how it should be done. (House, 1974). Leaders define standards of performance and request subordinates to follow these predefined standards and rules for their work. Leaders who use this leadership style will prefer advising subordinates what needs to be done, giving appropriate guidance along the way. This includes giving them schedules of specific work to be done at specific times. Rewards may also be increased as needed (House, 1974). One of the main aims of this research is to establish the team orientation of all members of ARC, and thereby understand the leadership styles of leaders of each team namely, academic, technical and administration. Directive leadership seeks to take immediate decisions and actions when a situation calls for someone in authority to act. The ARC work environment presents such situations on a daily basis because of the sensitivity and urgency of type of work it is involved in. When team members look for a leader who truly leads, the directive leadership style stands out.

Further, House (1974) argues leaders of ‘Directive Leadership Style’ has a positive correlation with satisfaction and expectancies of subordinates who are engaged in ambiguous tasks and a negative correlation with satisfaction and expectancies of subordinates engaged in clear task. House and Mitchell (1974) suggest that when task demands are ambiguous or when the organisation’s procedures, rules and policies are not clear, a leader behaving in a directive manner will be more likely to succeed. These findings demonstrate Directive leadership can be implemented in several organisations. The findings suggest that when task demands are ambiguous or when the organisation procedures, rules and policies are clear, a leader behaving in directive manner complements the members and supports organisation ethics by providing the necessary guidance and psychological structure for subordinates.
However, when the subordinate’s personality is not taken into account, task ambiguity does not always operate as a contingency variable as predicted by the theory. Job satisfaction among team members is important and adhering to proper procedures and implementations in the decision-making process will result in efficient group of team members and in turn relates to the level of satisfaction in completing tasks.

Finally, it is understood that the effects of the leaders’ behaviour are contingent on subordinates’ perception of their own ability with respect to their assigned tasks. The higher the degree of the subordinates’ perceived ability relative to task demands, the less the subordinate will view leader advice and coaching behaviour as acceptable. The next section will review how a supportive leadership style may assist the ARC in developing strategies to improve team performance.

Supportive leadership

House & Mitchell (1974) found that this leadership style was well received by subordinates as such leaders would consider the needs of subordinates, such as showing concern for subordinate’s welfare, making the work more pleasant, treating subordinates as equals and creating a friendly working environment. In a facility such as the ARC, it is important for leaders to be friendly, cooperative and flexible because employees are experts who are experienced in their own line of research and there are no subordinates in such a setting and they all expect mutual respect.

The theory holds that supportive leadership will have its most positive effect on subordinate satisfaction when subordinates work on stressful, frustrating or dissatisfying tasks (House & Mitchell, 1974). Supportive leadership may explain the cohesiveness in the ARC teams, as work can often be stressful and frustrating. The next section will review the contribution of another leadership style - participative leadership - in assisting the ARC to establish healthy levels of team orientation.

Participative leadership

This type of leadership helps to establish a link between leader and members and
open up a communication channel through which there is better communication and result. The ARC working environment warrants a continuous channel of communication where team members are constantly consulted in decisions and this shows that team leaders depend on their feedback on day-to-day tasks. It is this kind of leadership that seeks equality in a work setting and thereby encourages better interaction between and among members and leaders alike. According to House & Mitchell (1974), participative leadership is characterised by a leader who consults with subordinates, solicits their suggestions and takes these suggestions seriously into consideration before making a decision.

House (1974) further argues there are four ways in which a participative leadership style would impact on subordinate attitudes and behaviour: First, a participative climate should increase the clarity of organisational goals, such that subordinates who participate in the decision-making process can learn and understand consequences. From the path-goal viewpoint, participation would lead to greater clarity of the paths to achieve various goals. Secondly, the impact of participation by the subordinates would hopefully mean that they select goals they highly value and when participating in decisions about various goals, the individual would select goals that they desire. This participation process increases the alignment between organisation and subordinate goals. Thirdly, participation would increase the individual’s control over what happens on the job. Participants who have greater autonomy and ability to carry out their intentions will increase their effort and performance.

Finally, under a participative leader, the pressure towards increasing performance should come from the subordinates as well as the leader. When people participate in the decision process they become more ego-involved; the decisions made are in some part their own.

The Path-Goal Theory adds that the situation or environment moderates the relation between participation and subordinate attitudes and behaviour. Participative leadership is positively related to satisfaction, regardless of the predispositions of subordinates. However, when task demands are ambiguous, participative problem
solving between the leader and the subordinate would result in more effective decisions than when the tasks are unambiguous. When subordinates are ego-involved in their tasks, they are more likely to want a say in the decisions that affect them. The next section will review House’s (1974) last type of leadership and how it applies to the research.

Achievement-oriented Leadership

As discussed so far, House & Mitchell’s theory of Path-Goal is central to this research in terms of applying how leadership styles can affect subordinates’ relationship with their leaders and the consequent achievement of organisational goals. The ARC is a research centre that consists of many sections which requires proper coordination between the sectional heads and their team members. Differences of opinion and clash of work ethics can occur at any level and leadership styles may differ greatly according to various situations. How sectional heads apply their skills and knowledge affects team members and has a great impact on their performance. As a result, the appropriate leadership style can help team members to put their differences aside and focus on goals that are performance oriented. House (1974) notes an achievement-oriented leader sets challenging goals, expects subordinates to perform at their highest level, continuously seeks improvement in performance and shows a high degree of confidence that the subordinates will assume responsibility to exert effort and accomplish challenging goals. He further states that leaders who have this leadership style are constantly emphasising the excellence in performance and showing confidence that subordinates will meet high standards of excellence.

This theory hypothesises that achievement-oriented leadership will cause subordinates to strive for high standards of performance and to have more confidence in the ability to meet challenging goals. This type of leadership will allow ARC employees to meet the challenges facing research-oriented centres and thus help build a centre that continually strives to be ahead of others. Unlike other types of leadership styles, this type solely concentrates on achieving goals irrespective of team member views or opinions. This seems to; hamper cordial leader-member
relations, while improving the performance of team members. However, House (1974) argues a positive relationship can be found between the amount of achievement orientation of the leader and subordinates’ expectancy that their effort would result in effective performance. He further notes, for subordinates performing ambiguous, non-repetitive tasks, the higher the achievement orientation of the leader, the more the subordinates were confident that their efforts would pay off in effective performance. But for subordinates performing moderately unambiguous, repetitive tasks, there was no significant relationship between achievement-oriented leadership and subordinate expectancies that their effort would lead to effective performance.

The above findings by House & Mitchell (1974) can be interpreted in two ways. First, people who select ambiguous, non-repetitive work may be different in personality from those who select repetitive jobs and may, therefore, be more responsive to an achievement-oriented leader. A second explanation is that achievement-orientation only affects expectancies in ambiguous situations because there is more flexibility and autonomy in such tasks. Therefore, subordinates in such tasks are more likely to adapt well to such leadership style (House 1974, pp. 30).

2.7.1 Applying the Path-Goal Theory

In applying the Path-Goal Theory to the current research, the leadership style of section heads who serve also as team leaders are first identified by using a 20-item instrument (Appendix A). The approach to instrument development was to identify 20-items that appeared to classify participant’s leadership style from four quadrants: Directive, Supportive, Participative and Achievement-oriented leadership styles. In this survey, the higher the score in the quadrant, the more dominant that leadership style is. The team leader’s style is expected to influence leader-member relations, team orientation and team cohesiveness.

Further, it will seek to establish a common approach in order to arrive at the best leadership style that can bring out high performance of team members while maintaining a healthy relationship between leader and follower.
As discussed earlier, the ARC’s academic, technical and administrative team members have different working styles and skill requirements. The task structures for academic team are relatively unstructured, given that each research project is unique, complicate and dynamic. Task structures of the technical team can be characterised as “structured” as most operation techniques and training skills have set patterns and manual procedures to follow, though creative ideas are not often encouraged in this team. The tasks in the administration team have varying degrees of structure, the structured tasks being tasks such as office administration, student administration, and finance and accounting jobs that have policies, guidelines and procedures to follow, while marketing and multimedia design tasks are relatively unstructured and creative. What leadership style differences exist between team leaders? Following the logic of the Path-Goal Theory, an academic team leader will tend to have a supportive leadership style; both of the administrative team and technical team leaders will tend to have directive or supportive leadership styles. These possible tendencies will be examined along with the suggestions of other theories, to be reviewed in the next section.

2.8 Leader-Member Relationship
Leader-Member Relationship Theory (Graen et. al., 1975) provides a method that focuses upon vertical dyads as a basic unit for the analysis of influence between supervisors and subordinates. The theory describes the role-making processes to develop Leadership Exchange Relationship (LMX) over time, resulting in either in-group (high exchange relationship) or out-group (low exchange relationship) roles. The in-group can be very close and private issues may be talked about at work and personal feelings and authorities can be shared. The out-group usually maintains a simple working relationship and is only restricted to the workplace. Further, Graen et al (1975) noted the emergence of “intra-unit differentiation”, a process whereby vertical dyadic relationships that develop within an organisational unit are differentiated into at least two distinct behavioural patterns: a unit supervisor develops a leadership exchange (influence over a member without resort to authority) with one or more members of the unit but develops a supervision exchange (influence over a member based primary upon authority) with another member or other members of the unit. Both types of exchange are present within the same unit.
Extending the logic of intra-unit differentiation mechanism to vertical exchanges, the LMX theory leads to the prediction that the same leader will behave differently towards another team because of the restriction in his responsibilities towards that team. In other words, inter-unit differentiation occur when one leader behaves differently towards different units under his or her supervision.

The leader exchange versus supervision exchange differentiation creates a mechanism of in- and out- roles throughout the hierarchy. According to Graen et al (1975), members develop either in-member or out-member relations with their immediate superiors within a unit. At the next higher level, these superiors develop either in-superior or out-superior relations with their immediate boss who may exercise inter-unit differentiation. Looking down the hierarchy, bosses develop either in-boss or out-boss relations with their immediate subordinate, and so on back down the line. (Graen et al, 1975).

The assumption of the theory is that responsibility and authority flow more readily through in-group vertical dyad linkages (VDLs) than through out-group VDLs. The outcome of this differentiation may be reflected in the work attitudes of members towards their superiors. Superiors who fail to develop leadership exchanges with their boss, and hence receive fewer resources for their units, may be expected to be viewed as less competent by their members and to have their members view rewards they mediate as less valuable. Another interpretation is that superiors who fail to develop leadership exchanges with their boss may be seen as providing less leadership attention and less sensitivity of their members.

2.8.1 Applying the LMX Theory

The approach to instrument development was to identify 7-items (LMX-7) that represent the degree and type of vertical dyad relationship between superior and subordinate (Appendix B). A high score represents a more positive relationship with the subordinate. This theory will be applied to this research to examine how LMX is associated with team orientation. The role-making process as described in this theory shows that the early organisational experience of those newcomers who subsequently terminated their employment differed significantly from that of those
newcomers who remained within the organisation (former and present employees). The experience of these two groups showed differences in terms of both process-oriented (role-ambiguous over time) and outcome-oriented (performance and satisfaction) variables.

2.9 Team Role Theories
The team orientation is about the team formation, cohesion, and dynamics. Based on extensive research and testing, Meredith Belbin’s Team Role Theory (1991) offers guidelines for identifying individuals who will make strong team players. Belbin explained that building a good working relationship in a team is very important for a commercial success. In the past, commercial company invites experts in each critical area and set them up as a working group; however, specialists often fail to perform as a team and usually have gaps in their understanding of a problem that eventually caused failure. Belbin pointed out that the difficulty is to balance the keen insights of specialists with the broad view of generalists. Having different strengths and skills in mind permits managers to formulate a positive personnel strategy to address complex design challenges. One useful technique in developing effective teams is to review the composition of the group in terms of a two-dimensional matrix. One dimension accesses a candidate with respect to a functional role (the experience and qualifications), the other dimension is a critique of the team role (the characteristics that affect the way one team member interacts with another so as to facilitate progress as a whole) (Belbin, 1991 pp 39).

Belbin’s Theory is important to the research to address the issue of team orientation and team cohesiveness in order to utilize the best fitting approach in a research setting. This is so because individuals who become members of teams have an important contribution to make in terms of expertise, knowledge or experience. This becomes especially important considering the research discipline of ARC. The contributions they are expected to make are fairly straightforward in this respect. What these individuals know and contribute to their teams on the basis of their training, education or experience is encompassed by their Functional Role. They also have another part to play within their teams: This has to do with their preferred ways of behaving and interacting with other people. People are unique: they think, act and
arrive at decisions in different ways. They relate with each other in different ways as well. The behavioural and interactional patterns of individuals in groups have considerable impact on the way the groups or teams perform. It is these preferred styles of behaviour that Meredith Belbin refers to as individuals’ Team Roles. The work of Belbin (1991) is widely acknowledged to be the most significant research done on team effectiveness to date. Contrary to common assumption that the best teams are composed of the most highly skilled individuals, Belbin (1991) found that factors other than excellent technical abilities were more important in determining the success of a team. Her research showed that certain combinations of personalities and styles in a team gave it better chances for success and other combinations could be disastrous. A key factor in team success is heterogeneity: skills, abilities and preferred styles of behaving should be complementary rather than duplicated. The main implication is that a more creative and complex strategy is required to weld a diverse group of people into a cohesive team. A good way to start is to identify each individual member’s style and behavioural preference. Belbin (1991) has developed a system by which individuals assess themselves and are likewise assessed by the people they work with in terms of team role preference.

Belbin’s 1991 team role theory was first developed in Henley Management College, participants in the general management courses were organised as teams to play a competitive business game. To help determine which students joined which team, psychometric tests were used to investigate a number of hypotheses regarding the effectiveness of different team compositions. Examination of these team clusters demonstrated an association of particular strengths with what is termed “allowable weaknesses” and the examination concluded that there were eight team roles: plant; resource investigator; coordinator; shaper; monitor evaluator; team-worker; implementer and completer. An additional team-role of specialist was added in revised edition. As such, this theory will be applied to this research to understand the work roles of team members and how best they fit within the ARC set up. In order to understand the nature of these roles, each role is briefly explained in the following under the appropriate heading:

1. **Plant** - The person classified as plant tends to be highly creative and good at solving problems in unconventional ways. The allowable weakness for this
kind of people is weakness in communicating with and managing ordinary
people.

2. **Resource Investigator** - The person classified as resource investigator
   provides inside knowledge on the opposition and can make sure that the
team’s idea would carry to the world outside the team. The allowable
weakness for this kind of people is that they lose interest once the initial
enthusiasm has passed.

3. **Coordinator** - The coordinator focuses on the team’s objectives, draws out
team members and delegates work appropriately. The allowable weakness for
this kind of people is that they are not necessarily the most clever or creative
members of a group.

4. **Shaper** - The shaper provides the necessary drive to ensure that the team kept
   moving and did not lose focus or momentum. The allowable weakness for
this kind of person is proneness to provocation and short-lived bursts of
temper.

5. **Monitor Evaluator** - The person classified as monitor evaluator provides a
   logical eye, makes impartial judgments where required and weighs up the
team’s options in a dispassionate way. The allowable weakness for this role is
a lack of drive and ability to inspire others.

6. **Team-worker** - The person classified as team-worker helps the team to gel,
   using his versatility to identify the work required and completes it on behalf
of the team. The allowable weakness for the team-worker is his
indecisiveness in crunch situations.

7. **Implementer** - The person classified as implementer is capable to plan a
   practical, workable strategy and can carry it out as efficiently as possible. The
allowable weakness is that he is inflexible and slow to respond to new
possibilities.

8. **Completer / Finisher** - The person classified as completer / finisher is most
effectively used at the end of a task, as he can polish and scrutinise the work
for errors, subjecting it to the highest standards of quality control. The
allowable weakness for this kind of person is that he worries unnecessarily
and is unwilling to delegate.

9. **Specialist** - The person specialist is single-minded, self-starting, and has
in-depth knowledge of a key area. The allowable weakness for the specialist is that he contributes on only a narrow front.

The initial assessment is aimed at developing these team role preferences into individual strengths that can be used within a specified team. A clear awareness of one’s team role preference helps the individual to understand why he responds or reacts to other people the way he does. It is important to bear in mind, however, that the team roles should not be misinterpreted or misused as labels or stereotypes. Each team role consists of behavior patterns that the individual engages in or is comfortable with. People are capable of instigating change in their ways of thinking, behaving and interacting and can therefore vary their team role preference as well.

2.10 Group Cohesiveness Theory

The Group Environment Questionnaire (GEQ), according to Neil Widmeyer, Albert Carron and Lawrence Brawley (1987) is a conceptual model of group cohesion and is an effective tool for assessing the cohesion of teams, which was originally designed for the sports industry. This conceptual model of cohesion is primarily influenced by two cohesive-related issues that continually resurface in the group dynamics literature. The issues are, first, the distinction between individuals and groups, and second, the distinction between task and social concerns of the team members. By applying this model in the research, the researcher seeks to address the following questions: what makes a group and why do people come together and spend time with each other? The cohesion model (Widmeyer et al, 1987) pointed out that situational factors such as task goals and interactions play a great role in affecting group cohesion in the early stages of the group life. When the group matures over time, social norms, values, and motives began to play a larger role in affecting group cohesion.

It can be reasoned that group members possess views of what personally attracts them to the group and how the group functions as a total unit. This cohesion of teams’ conceptual model labelled individual attractions to the group for the first issue, and labelled group integration for the second issue, which both help to bind the group. This will be helpful to identify ARC’s team orientation and cohesiveness. Further, the theory argues that the Group Environment Questionnaire model of cohesion can
measure two dimensions, “group integration” and “individual attractions to the group”. This model described four related constraints that bind members to their group: individual attractions to the group – task (ATG-T); individual attractions to the group – social (ATG-S); group integration – task (GI-T) and group integration – social (GI-S). Without member’s beliefs about the group’s potential to fulfil certain personal needs and the existence of group integrity/unity, there is less motivation to maintain the group or resist disruptive forces; in another words, there is less group cohesion (Widmeyer et al, 1987). The next section will further explain its components and review how this model can be applied practically to the research.

2.10.1 Applying the GEQ

The Group Environment Questionnaire (GEQ) uses four constructs that measure the perceived cohesiveness of sports teams. The instrument has 18 items in four scales each relating to the four constructs of how attractive a group is to its individual members. Each element is associated with different sets of questions. The questions Q2, Q4, Q6, Q8 are used to measure attraction to group – task (ATG-T); the questions Q1, Q3, Q5, Q7, Q9 are used to measure attraction to group – social (ATG-S); the questions Q10, Q12, Q14, Q16, Q18 are used to measure group integration – task (GI-T), and questions Q11, Q13, Q15, Q17 are used to measure group integration – social (GI-S). The higher score on each subscale, the greater it reflects that dimension with the team (Appendix C).

2.11 Organisational Commitment

This section will examine Mowday, Steers & Porter’s (1979) mechanism for measuring organisational commitment (OCQ). This research has reviewed various theories so far which shows relevance to organisational commitment as an important variable in understanding the work behaviour of employees. Commitment represents something beyond passive loyalty to an organisation and involves an active relationship with the organisation where the individuals are willing to give something of themselves in order to contribute to the organisation’s well being. The OCQ model has two elements of commitment: commitment-related behaviour and an attitude of commitment. Mowday, Steers and Porter (1979) focussed their study on attitudinal
commitment, though they acknowledge that organisational commitment is an expression of an individual’s beliefs and opinions and also of the individual’s actions. Attitudinal commitment represents a state in which an individual identifies with a particular organisation and its goals and wishes to maintain membership in order to facilitate these goals. For the purpose of instrument development, organisation commitment was defined as the relative strength of an individual’s identification with and involvement in a particular organisation. It was characterised by three related factors: first, a strong belief in and acceptance of the organisation’s goals and values; second, a willingness to exert considerable effort on behalf of the organisation and third, a strong desire to maintain membership in the organisation (Mowday, Steers and Porter, 1979). It is expected that the team orientation is positively associated with intra-group cohesiveness in this study. The following sections will review the key aspects of OCQ.

This study (Mowday, Steers and Porter, 1979) was applied by identifying 15-items that appeared to tap the three aspects of above definition of commitment. The original response format employed a 7-point Likert scale with anchors: strongly agree, moderately agree, slightly agree, neither agree nor disagree, slightly disagree, moderately disagree and strongly disagree. In order to keep consistent in the survey, this section employs 5-points levels from “completely agree” to “completely disagree”. Results are then summed and divided by 15 to arrive at a summary indicator of employee commitment. Several statements were negatively phrased and reverse scored in an effort to reduce response bias.

2.12 Development of a Conceptual Framework

The preceding discussion of theories has led to the development of several propositions to address the research questions alluded to in Chapter 1.

Q1. What leadership style differences exist between team leaders?
Q2. How does leadership style affect leader-member relationship?
Q3. How do leader-member relationships affect team orientation?
Q4. How does team orientation affect the team cohesiveness?
Q5. How does team orientation affect commitment to the goals of the
organisation as a whole?

These propositions will be presented in this section, culminating in a conceptual framework to explain the relationships between leadership styles, leader-member relationships, organisational commitment, and team cohesiveness.

2.12.1. Propositions Relating to Leader-Member Relationship

By combining the four styles of leadership as explained by House (1974); the Belbin (1991) - Team Role Theory and utilising the Path & Goal Theory (House & Mitchell, 1974) discussed in Section 2.8 and 2.10 it can be argued that “Directive” and “Achievement-oriented” leadership styles are associated with low leader-member exchange relationship. The “Supportive” and “Participative” leadership styles are associated with high leader-member exchange relationship. Figure 2 below reflects these relationships and the following two propositions (Proposition 1a and Proposition 1b) were formulated:

Figure 2: Propositions relating to Leader-Member Relationship

Proposition 1a: Directive & Achievement-Oriented leadership styles are associated with low LMX.
Proposition 1b: Supportive & Participative Leadership styles are associated with high LMX.

2.12.2. Proposition Relating to LMX and Team Orientation

By utilising Leader-Member Relationship Theory (Graen et. al., 1975) discussed in Section 2.9 provides a method that focuses upon vertical dyads as a basic unit for the analysis of influence between supervisors and subordinates. For this research to determine how the leader-member relationship at ARC affects team orientation the following proposed Figure 3 on next page, will include the relationships of leadership style; LMX; team orientation and the following proposition (Proposition
2) was formulated.

**Figure 3: Propositions relating to LMX and Team Orientation**

![Diagram showing Leadership Style, Leader-Member Relationship (LMX), and Team Orientation]

**Proposition 2: LMX is positively associated with team orientation.**

2.12.3. Propositions Relating to Team Orientation and Intra-group Cohesiveness.

By utilising Widmeyer et al. (1987) Group Environment Questionnaire (GEQ) discussed in Section 2.11 it can be argued that model of group cohesion can be utilised as an effective tool for assessing the cohesion of teams. Figure 4 reflects the relationship between team orientation and team cohesiveness and the two propositions (**Proposition 3a and Proposition 3b**) were formulated.

**Figure 4: Propositions Relating to Team Orientation and Intra-group Cohesiveness**
Proposition 3a: Team orientation is positively associated with intra-team cohesiveness.

Proposition 3b: Team orientation is positively associated with commitment to organizational goals.
2.12.4. Propositions Relating to Intra-group cohesiveness and Organisational Goals.

By utilising the Mowday, Steers & Porter’s (1979) mechanism for measuring organisational commitment (OCQ) discussed in Section 2.12 it can be argued that team cohesiveness is positively associated with the team’s commitment to the organisational goals. Further, it can be argued that team members develop a strong desire to maintain membership in the organisation.

Proposition 4: Intra-team cohesiveness is positively associated with commitment to organisational goals.

Figure 5 presents the complete conceptual model for empirical study.

**Figure 5: Complete Conceptual Model of the Research Objective**

2.13 Summary

In summary, a conceptual model that proposed relationships amongst leadership style, leader-member relationship, team orientation, intra-team cohesiveness and commitment to organisational goals was built in this chapter to examine the
propositions. This model will provide the framework to investigate the dynamics of team performance and how the leader-manager influences relations; team orientation, team cohesiveness and the commonality of goals among members affect the team’s performance. An empirical study based on the model will help to formulate recommendations for better team management at ARC.
Chapter 3 Research Methodology

This chapter will focus on discussing the research methodology and the research design applied to achieve the stated purpose and objectives of the research. Towards achieving this purpose, the present study adopted a mixed research methodology incorporating both qualitative and quantitative research processes. The research made use of interpretative/intuitive analysis of the ARC structure and existing relationships by applying the different theories explained in Chapter 2. A quantitative study was undertaken to test several propositions relating to the key constructs, as a complement to the qualitative analysis.

3.1 Research Demographics

This research will focus on the employees working at the ARC which include academic, technical and administration personnel, divided into three functional teams. The three teams are academic, technical and administrative teams. They may be described as follows:

1. **Academic team** – this team consists of 5 leaders and 17 members. It is more focused on specific specializations in research, each of which is unique and requires team members to adopt a more serious outlook in the process of carrying out their tasks. The urgency of their work requires them to make quick decisions and be in control of their tasks at all times. Leadership style is not mutually exclusive, which means a leader could have more than one leadership style in different situations. The association between leader characteristics and strategic planning process has not been well developed. For example, a chief executive officer of an organisation will design strategic planning systems that seem more likely, that leader styles or characteristics lead to modification in the design and use of planning systems (Drago and Clements, 1999, p.12).

2. **Technical Team** – This team, consisting of 5 leaders and 14 members, is committed towards common goals and this team is positively associated with the intra-team cohesiveness in handling their day to day tasks. The directive and achievement-oriented leadership styles which are associated with low leader-member exchange (LMX) can be applied to this team.
3. **Administrative team** – With 2 leaders and 6 members, this team works in coordinating all three teams, so leadership styles that are conducive in the work environment and are acceptable without being too harsh can be considered the best approach in leading others. Team cohesiveness can be attributed to supportive leadership, which is characterised by a friendly and approachable leader who shows concern for the status, well-being and needs of subordinates.

3.1.1 Studying the Population

The present undertaking was aimed at employees of ARC and included current and former employees with at least two years’ experience. The target population for the present study was 49 participants. The entire population was studied in this research for several reasons. First, the size of the population was small; hence every response was significant and had potential impact on the overall results. Second, the first phase of the research was designed to be conducted through participant-observation. Hence the researcher was to attend most of the team activities involving all ARC employees, making the entire population accessible for the research. Third, in the second phase of the research, which was the administration of a questionnaire online for a limited period of time, participants’ self-selection was expected to result in a certain degree of possible attrition. Sure enough, of the entire population, 36 completed the survey, giving a response rate of 73.46%.

3.2 Research Design

The primary purpose of the research was to examine how leadership style, leader-member relationship, team orientation, team cohesiveness and commonality of goals, are all inter-related in managing a successful research centre in Australia. Towards achieving this purpose, the research methodology was implemented in two distinct phases.

3.2.1 Phase 1- Qualitative Study

In the first phase, a participant-observation research methodology was used to test the propositions. With the permission from the ARC Chief Executive Officer and
supports from the team leaders, the researcher attended the social gatherings and internal meetings in each of the three teams in a 3-month research period. During the period, the researcher attended the weekly team lunch and regular monthly/weekly team meeting as well as ad hoc work meeting. During this phase of the research design, the researcher was able to immerse in situations together with other team members and thus obtain insights on their perceptions. The observation points included: Leadership style in each team, how the different leadership style applied in each team, how team leaders got along with their members, how diverse team roles were performed in each team, how team members interacted with each other, how committed team members were to their team and how team members worked together towards their goals.

3.2.2 Phase 2-Quantitative Study

In the second phase of research a questionnaire survey was conducted to collect primary data from full time staff employed at the ARC and former employees who had at least two years’ experience at ARC. This phase of the research design was an attempt to corroborate the qualitative analysis of the ARC’s leadership and team dynamics. The results were to be compared to the observations in phase 1, in order to answer the research questions set down earlier and to test the propositions by using a questionnaire survey and statistical data.

A questionnaire survey was chosen for the research for several reasons: A questionnaire is a set of questions based on a prior qualitative analysis of the situation. Moreover, they were informed by relevant literature, which has been thoroughly reviewed and conceptualised into a research framework. In order to test the conceptual model it was important to ask questions that could be answered honestly and unreservedly by the respondents. Given the nature of the research setting, where all staff members were known to one another, and often worked closely together, it was important to assure respondents of anonymity and confidentiality. Hence a self-administered questionnaire was least invasive and provided the best assurance.

The survey helped the researcher to derive the interpretations based on the responses
for each question. Details are presented in the current chapter include sampling, primary data collection strategies and instruments, research materials, data analysis strategies and ethical parameters. An online self-administered questionnaire was developed for this study. The questionnaire was anonymous so that participants would not be identified and participation was totally on a voluntarily basis (Appendix D). The questionnaire was conducted via web interface on Internet and a third-party commercial company hosted the website and a questionnaire link was provided for participants together with the introduction letter and information fact sheet via an email distribution. (Copies are attached in Appendix E).

The questionnaire was available online for two weeks. A friendly reminder was sent after the first week to remind the target participants to complete the questionnaire. The questionnaire closed after two weeks, and the data were exported to Excel format and downloaded from the website for data analysis. The export and download function are provided from the website hosting company (Appendix F).

3.3 Questionnaire Design
The survey questionnaire (Appendix D) consisted of 68 questions which were divided into five sections. There was a separate section to be filled by leaders and another section to be filled by team members. The questions targeted toward leaders were mostly focused on getting an idea about how they treat their team members and of their ideas on how they consider the feelings of subordinates and of their decision-making process. The section for team members were structured in order to get their responses on how they feel about working in their team and how their team leader treat them in terms of decision making, delegating tasks and their independence level within the ARC. There was also a category for participants who were not part of any team but only as employees of ARC, however this was limited as almost all participants were part of a team in one way or the other. The survey questions were devised considering the leadership-follower dynamics in mind and also how to best address the problems of team orientation and cohesiveness. The questions were formulated by the researcher solely for this research and the choice of questions was a result of the main theories reviewed in Chapter 2: House and
Mitchell’s Path-Goal Theory of Leadership (1974) was used to collect information about team four leadership styles, namely, Directive, Supportive, Participative, and Achievement-oriented. The Leader-Member Exchange (LMX) Theory (Graen, et al., 1975) was used to understand the nature of interaction between each leader and the team members. Meredith Belbin's Team Role Theory (Belbin, 1991) was the basis of questions on effective teamwork and team roles. W. Neil Widmeyer’s Group Environment Questionnaire (GEQ) (Widmeyer, 1987) provided inspiration for assessing the cohesion of teams. The GEQ model mainly focused on two issues (a) the distinction between individual and group, (b) the distinction between task and social concerns of the team members. Richard T. Mowday, et al’s Measurement of Organisational Commitment Questionnaire (OCQ) (Mowday et al., 1978) was used to measure organisational commitment.

3.4 Data Collection

The questionnaire was uploaded to the “Survey Monkey” site (http://www.surveymonkey.com/s/thomsonchow). Survey monkey is a free online survey site where professionals of all disciplines use to conduct, manage and analyse research. It is easily accessible and can be kept available for a period of time. It was necessary for an online survey site to host the questionnaire and as such the Survey Monkey site was the best available medium through which all the participants at ARC had access to. All respondents were invited by email to complete the online survey, accessing the site simply by clicking on a link provided in the email. (A copy of the sample letter is attached in Appendix G). It informed them of the purpose of the present study as well as the assurance of confidentiality and anonymity. Once all data were collected, the researcher moved on to collate, analyse and synthesise them. Scoring on the questionnaire was on a 5-point Likert scale. The data would be subject to statistical analysis to test the stated propositions. The findings are presented in the next chapter.

3.5 Ethical Parameters Adopted for the Study

In accordance with the University Human Research Ethics Committee’s rules, the researcher sought approval from the ARC Director to conduct this survey.
Permission was granted and copy of the letter attached (Appendix H).

The researcher also promised that the results of the study would be made available to ARC upon completion of the study, as a goodwill gesture to assure the respondents that they would be treated with courtesy and respect. The next step was to ensure that all respondents were thoroughly informed about the study before conducting the actual research. A comprehensive email message was sent to all participants providing comprehensive information and linkage to the online survey; a copy is attached (Appendix G). A returned, completed questionnaire was considered as approval to use the data provided by the respondent.

Furthermore, the researcher ensured that each participant was accorded a right to confidentiality and anonymity. In all the documentation for the study, the participants were not identified and neither was their station of work, their job description or position. This ensured that nobody could possibly be identified as a participant or the data they provide be traced to their personal and or professional identity. Finally, the findings posted by the study as well as any data collected from its participants, were used only for the stated purposes of the study, and were not made available to any other person or entity. This project has been approved by the University’s Human Research Ethics Committee (Approval No. H-2011-0318 in Appendix I).

3.6 Summary

Qualitative and quantitative research methods are being deployed in this study. Participant-observation is used in qualitative research that enables the researcher to experience in the way the participants are experiencing. This provides a solid valuable data and allows the researcher to interpret the subsequent return survey results in a more accurate way. The questionnaires are designed in a comprehensive way to gather data in answering to the research questions. The way that the questionnaires are design allows the participants to freely express their views without the worry of being identified in any way. The data returned from the questionnaires are to be further analyzed by apply Chi-Square tests, which is a widely acceptable and easy understand tools for testing the propositions. The results from the survey
are then compared to the researcher’s observations and help to provide further explanations.

In the next chapter, the findings from both qualitative and quantitative research methods are to be discussed in details.
Chapter 4 Findings & Discussion

4.0 Introduction

This chapter will present the findings from the participant-observation and the questionnaire survey, and the data analysis will seek to test the propositions based on the conceptual model. It will discuss the findings in relation to the literature reviewed in this thesis. The research objective was to establish and examine how leadership style, leader-member relationship, team orientation, team cohesiveness and commonality of goals are inter-related in managing a world-class research centre in Australia. The three teams selected for the study were academic, administration and technical with a total response of 36 participants. The total number of participants from the academic team were 17 of whom 8 were leaders and 9 were team members. The total participants from the administration team were 5 with 2 leaders and 3 members. The technical team consisted of 13 participants of whom 5 were leaders and 8 were members. One participant who did not indicate which team he/she belonged in was excluded from the study, as the propositions were focused on team dynamics. Specific results will be discussed under each analysis.

Four sets of proposed relationships were investigated:

1) Leadership – Leader Member Exchange (LMX)

   Proposition 1a: Directive & Achievement-Oriented leadership styles are associated with low LMX.
   Proposition 1b: Supportive & Participative Leadership styles are associated with high LMX

2) LMX – Team Orientation

   Proposition 2: LMX is positively associated with team orientation.

3) Team Orientation – Team & Organizational Culture

   Proposition 3a: Team orientation is positively associated with intra-team cohesiveness.
   Proposition 3b: Team orientation is positively associated with commitment to organizational goals.
4) Proposition 4: Intra-team cohesiveness is positively associated with commitment to organizational goals.

4.1 Types of Analysis

This research set out to answer five questions: firstly, what leadership styles exist between team leaders at a national research facility, secondly, whether leadership style affects leader-member relationship (LMX) in a team, thirdly, whether LMX will affect team orientation, fourthly, whether team orientation will affect team cohesiveness and finally, whether team orientation will affect commitment to the goals of the organisation as a whole. Answers to these questions will have implications for structuring research centres, recruitment of personnel, leadership development and team building. How team leaders of academic, technical and administrative team interact, coordinate and communicate with their respective team members may have implications for centre structuring, recruitment of personnel. Leadership development and team building has become crucial in a research related setting. Each area of investigation will be discussed with data from both qualitative and quantitative methods.

The researcher, a full time employee at the academic research centre (ARC), took the role of participant-observer in the whole research process as a team member in one of the teams. The weakness of this qualitative approach is personal bias, which is an acknowledged limitation of this research. The researcher has been part of ARC for over 6 years, and has built up personal connections with all personnel in the ARC, which inevitably affects his observations in the present study. Nevertheless, these unobtrusive and discrete observations help in the formulation of the survey of other participants, and in providing a comparison for the survey results, which will be presented in the next section.

The returned survey questionnaires yielded numerical scores that were analysed using Chi-Square test at a probability level of 95%. The Chi-Squares were calculated to test if the null hypothesis for each proposition could be supported.
Rejection of the null hypothesis would mean that the proposed relationship actually exists.

4.2 Findings
The following are the researcher’s observations and survey results.

4.2.1 Leadership Style – Leader-member Relationship (LMX)

Observations:
The researcher observed that leaders in different teams exercise their leadership styles differently. Further, leaders in the same team also exercise their leadership styles differently. In the Academic team, Directive & Achievement-Oriented leadership styles were observed, while in the Administration team, the researcher observed a relatively Supportive leadership style, and both Directive and Supportive leadership styles were seen in the Technical team. These different approaches relate to the different job requirements of these teams. The Academic has a requirement for time-dependent and responsive work. The work of the Administrative team is mostly laid down in policy and procedures and is of a routine nature, and the role of the leaders in this team is to provide advice on interpretation of these policies and procedures. The work of the Technical team, on the other hand, is a combination of routine and contingency.

The norm of any research centre and attitude of all members and leaders alike are to work towards the organisation’s goals. According to the researcher’s observation, the ARC Team leaders are able to nurture the interests and activities and supervise a team of full time paid staff constructively. The team leaders give regular feedback – individually as well as in meetings. They tackle problems with staff straight away and do not let them fester. These approaches make the relationship between leader and member healthy and nurturing. The team leaders share information, goals and aspirations with staff which keeps team members informed and continuously encouraged. They make an effort to make staff feel they are an important part of the
organisation. The team leaders perform their duties in a way that allows leadership to enable everyone in the organisation to understand and own the organisation’s purpose and strategies. The leaders build on trust which affirms the value of all members and their roles and functions. Overall leaders display an aggressive leadership style in achieving the organization goals and the team members respond positively to such leadership styles. A High LMX was generally displayed in all teams.

Survey:

**Proposition 1a:** Directive & Achievement-Oriented leadership styles are associated with low LMX.

**Proposition 1b:** Supportive & Participative Leadership styles are associated with high LMX.

The returned questionnaires show that eight participants indicated that they were leaders in the Academic team, two were leaders in Administration team, and five were leaders in the Technical team. As Table 4.1 below shows, of the fifteen leaders, six were identified as showing a Directive leadership style, five a Supportive leadership style, and one each showed Achievement-oriented and Participative leadership styles. The remaining two were identified as having mixed leadership styles. The leaders in the Academic team were predominantly either Directive or Supportive, while no clear style emerged in the other teams.

**Table 4.1 Leadership Styles**

<table>
<thead>
<tr>
<th>Leadership Style</th>
<th>Academic Team</th>
<th>Administration Team</th>
<th>Technical Team</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement-oriented</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Directive/Supportive</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Directive</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Directive/Supportive/Participative</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Participative</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Supportive</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Grand Total</td>
<td>8</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
</tbody>
</table>

The above result is mostly in line with the researcher’s observations except in the
Academic team where the researcher observed a combination of Directive and Achievement-oriented leadership style but the survey returned with Directive and Supportive styles. The discrepancy could be ascribed to time constraints, since the researcher only observed the team for a three-month period. The tasks demanded during this period could have been of a more challenging nature that required the leaders to deploy a more achievement-oriented leadership style in order to provoke the team members’ performance to a higher standard and to induce them to assume more responsibility. The returned survey, on the other hand, may reflect the leadership styles over a longer term.

Chi-Square tests are presented below in Table 4.1.1 to Table 4.1.4 on the associations between leadership styles and LMX.

A total of 36 responses were received, 15 of which were from leaders and 21 from members. This analysis is based on the subordinate’s perception of their team leaders’ style, therefore 21 records were analyzed. The all-teams Chi-Square test results in Table 4.1.1 further show that Directive & Achievement oriented leadership styles has a high association with High LMX.

The Chi-Square overall analysis calculated at 0.49 with a degree of freedom of 20. The result is smaller than the critical value of 18.31, and as such the null hypothesis is rejected. Looking into the three teams individually, Chi-Square results are 0.32, 0.69 and 0 for Academic, Technical and Administration teams respectively. The critical value for Academic team with a degree of freedom of 8 is 15.51 and Technical team with a degree of freedom of 7 is 14.07, so the null hypothesis is rejected for the Academic & Technical teams. With a degree of freedom of 3 and a critical value of 7.82, the null hypothesis is also rejected for the Administration Team. The rejection of the null hypothesis in all three teams means that there are associations between leadership styles and LMX. From the frequency distribution, it is clearly shown that there is a high positive association between LMX and both Directive and Supportive leadership styles, and therefore proposition 1a is rejected and proposition 1b is supported.
The following Table 4.1.1 reflects the association between leadership style and the leader-member relations in all teams.

### Table 4.1.1 Chi-Square test – All Teams

<table>
<thead>
<tr>
<th>Leadership Style</th>
<th>No. of Records</th>
<th>P-Value</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td>Low LMX</td>
<td>High LMX</td>
</tr>
<tr>
<td>Directive</td>
<td>2</td>
<td>9</td>
<td>11</td>
<td>1.57</td>
<td>9.43</td>
</tr>
<tr>
<td>Supportive</td>
<td>1</td>
<td>7</td>
<td>8</td>
<td>1.14</td>
<td>6.86</td>
</tr>
<tr>
<td>Participative</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.14</td>
<td>0.86</td>
</tr>
<tr>
<td>Achievement-oriented</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.14</td>
<td>0.86</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>18</td>
<td>21</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chi-Square = 0.49  
Critical value = 18.31  
Degree of freedom = 20

The Chi-Square value is less than critical value so the null hypothesis is rejected. The Chi-Square value is significantly lower than the critical value, which indicates a strong association between leadership styles and LMX.

### Table 4.1.2: Chi-Square Test - Academic Team

<table>
<thead>
<tr>
<th>Leadership Style</th>
<th>No. of Records</th>
<th>P-Value</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td>Low LMX</td>
<td>High LMX</td>
</tr>
<tr>
<td>Directive</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>0.89</td>
<td>3.11</td>
</tr>
<tr>
<td>Supportive</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>0.89</td>
<td>3.11</td>
</tr>
<tr>
<td>Participative</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Achievement-oriented</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.22</td>
<td>0.78</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>7</td>
<td>9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chi-Square = 0.32  
Critical value = 15.51  
Degree of freedom = 8

The Chi-Square value is less than critical value so the null hypothesis is rejected. The Chi-Square value is significantly lower than the critical value, which indicates a strong association between leadership styles and LMX.
Table 4.1.3: Chi-Square Test - Technical Team

<table>
<thead>
<tr>
<th></th>
<th>LMX</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Directive</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Supportive</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Participative</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Achievement-oriented</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

Chi-Square = 0.69
Critical value = 14.07
Degree of freedom = 7

The Chi-Square value is less than critical value so the null hypothesis is rejected. The Chi-Square value is significantly lower than the critical value, which indicates a strong association between leadership styles and LMX.

Table 4.1.4: Chi-Square Test - Administration Team

<table>
<thead>
<tr>
<th></th>
<th>LMX</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Directive</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Supportive</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Participative</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Achievement-oriented</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

Chi-Square = 0
Critical value = 7.82
Degree of freedom = 3

The Chi-Square value is less than critical value so the null hypothesis is rejected. The Chi-Square value is significantly lower than the critical value, which indicates a strong association between leadership styles and LMX.

Based on the responses from subordinates, the understanding between team leaders and team members is positive, which makes their working relationship supportive, participative and achievement-oriented. The directive leadership style is also deemed important as it is necessary to guide the performance of employees towards reaching
their yearly targets. The analysis shows that there is no significant need for improvement in the leader-member relationships within the ARC setting and the type of leadership style used by the majority of leaders is Directive and Supportive. This does not mean that it has affected the leader-member relationship adversely as it facilitates the timely delivery of high quality work.

4.2.2 LMX – Team Orientation

Observations:

As discussed above, the researcher observed high LMX across the three teams. On the other hand, the researcher also observed that a variety of team roles identified in Belbin’s Theory exists in each of the three teams, including plant, shaper, chairperson, worker, monitor & completer. These differences in personality did not have adverse impact on team relationships; on the contrary, diversity provided synergy to each team. There were occasions when members challenged each other’s ideas especially in the Academic team, where most members observed were shapers. Arguments and conflicts were frequent, yet all team members were able to contribute effectively towards their job and organisational goals. Across the three teams, team leaders and members viewed mistakes and failures as learning opportunities while striving for excellence. In each team, clear plans, criteria and standards were communicated. Progress and achievement were measured reasonably.

Survey:

Proposition 2: LMX is positively associated with team orientation.

It is noted out of the 36 responses received, 9 respondents either did not identify their team role or did not rate their LMX. The analysis below is based on the remaining 27 valid responses received.

Results are presented below from Table 4.2.1 to 4.2.4. Overall, Chi-Square calculated is 12.54 at degree of freedom of 26. The critical value is 38.89 and the null hypothesis is rejected. There is a strong association between team orientation and
LMX. The Chi-Square calculated for Academic team was 5.25 at 12 degree of freedom, the critical value was 21.03. Zero Chi-Squares were calculated for the Technical and Administration teams, at degree of freedom of 9 and 3 respectively, critical values are 16.92 and 7.82. The null hypothesis is therefore rejected for all three teams. Thus the alternative hypothesis that there is an association between team orientation and LMX is accepted.

By examining the frequency distribution, overall positive associations are indicated, especially for the Technical and Administration teams. In the Academic team, positive associations can generally be identified, though attention needs to be given to the low LMX associated with team roles of team worker and completer. This finding attests to the independent nature of work within the Academic team, and does not mean negative team relationships, as the following tables show.

Table 4.2.1 reflects the association between team roles and leader member exchange.

| No. of Records | P-Value | |
|----------------|---------|--|----------------|----------------|--|----------------|----------------|--|----------------|----------------|--|----------------|----------------|--|----------------|----------------|--|----------------|----------------|--|
|                | Low     | High | Total        | Low LMX | High LMX        | P-Value | Low LMX | High LMX | P-Value | Low LMX | High LMX |
| Chairperson / Coordinator | 0       | 2    | 2            | 0.22    | 1.78             | 0.22    | 1.78    | 0.22    | 1.78    | 0.22    | 1.78   |
| Company worker / Implementer | 0       | 4    | 4            | 0.44    | 3.56             | 0.22    | 1.78    | 0.22    | 1.78    | 0.22    | 1.78   |
| Completer / Finisher         | 1       | 1    | 2            | 0.11    | 0.89             | 0.11    | 0.89    | 0.11    | 0.89    | 0.11    | 0.89   |
| Monitor / Evaluator         | 0       | 1    | 1            | 0.33    | 2.67             | 0.33    | 2.67    | 0.33    | 2.67    | 0.33    | 2.67   |
| Plant / Originator          | 0       | 3    | 3            | 1.56    | 12.44            | 1.56    | 12.44   | 1.56    | 12.44   | 1.56    | 12.44  |
| Shaper / Driver             | 1       | 13   | 14           | 0.11    | 0.89             | 0.11    | 0.89    | 0.11    | 0.89    | 0.11    | 0.89   |
| Team worker / Supporter     | 1       | 0    | 1            | 0.11    | 0.89             | 0.11    | 0.89    | 0.11    | 0.89    | 0.11    | 0.89   |
| Total                       | 3       | 24   | 27           |         |                  |         |         |         |         |         |        |

Chi–Square = 12.54
Critical value = 38.89
Degree of freedom = 26

The calculated Chi-Square value is significantly lower than the critical value so the null hypothesis is rejected and there is a strong association between team roles and LMX. The role of shaper is predominant in this population of knowledge workers.

Table 4.2.2: Chi-Square test - Academic Team
### Table 4.2.3: Chi-Square Test - Technical Team

<table>
<thead>
<tr>
<th>No. of Records</th>
<th>P-Value</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low LMX</td>
<td>High LMX</td>
<td></td>
</tr>
<tr>
<td>Chairperson / Coordinator</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Company worker / Implementer</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Completer / Finisher</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Monitor / Evaluator</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Plant / Originator</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Shaper / Driver</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Team worker / Supporter</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Chi-Square = 5.25  
Critical value = 21.03  
Degree of freedom = 12  

The calculated Chi-Square value is significantly lower than the critical value so the null hypothesis is rejected and there is a strong association between team roles and LMX. Attention needs to be drawn to high proportion of shapers in this team and there is no coordinator, originator and evaluator role in this team, suggesting that members manage and evaluate their own work.
that each technical expert works independently.

Table 4.2.4: Chi-Square test - Administration Team

<table>
<thead>
<tr>
<th>Role</th>
<th>No. of Records</th>
<th>P-Value</th>
<th>Low LMX</th>
<th>High LMX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairperson / Coordinator</td>
<td>0/1/1</td>
<td></td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Company worker / Implementer</td>
<td>0/1/1</td>
<td></td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Completer / Finisher</td>
<td>0/0/0</td>
<td></td>
<td>-/-</td>
<td></td>
</tr>
<tr>
<td>Monitor / Evaluator</td>
<td>0/0/0</td>
<td></td>
<td>-/-</td>
<td></td>
</tr>
<tr>
<td>Plant / Originator</td>
<td>0/1/1</td>
<td></td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Shaper / Driver</td>
<td>0/1/1</td>
<td></td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Team worker / Supporter</td>
<td>0/0/0</td>
<td></td>
<td>-/-</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0/4/4</td>
<td></td>
<td>-/-</td>
<td></td>
</tr>
</tbody>
</table>

Chi-Square = 0
Critical value = 7.82
Degree of Freedom = 3

The calculated Chi-Square value is significantly lower than the critical value, so the null hypothesis is rejected and there is a strong association between team roles and LMX.

The overall result is consistent with the researcher’s observations. Proposition 2 is supported.

4.2.3 Team Orientation – Team & Organisational Culture

Observations:

According to the researcher’s observations, the leaders displayed a highly positive relationship with team members and thus affected intra-team cohesiveness positively on work-related issues. There are occasional conflicts of opinions, which though they did not damage leader-member relationships, did reduce team cohesiveness. In Belbin’s terms, individuals were multi-dimensional, so the work carried out individually would affect the relationship with others as a team. Less social interaction outside of work could be the result of the conflicts that arose in the
workplace. Team members with the team role of shaper carried on their frustrations even to their team’s social activities especially after their ideas were challenged or turned down. As observed, such negative feelings did not cause any major impact on the work relationship, but the distressed team member kept a distance from his/her other team members in social activities. Team leaders did not seem to attend to the situation promptly. This was especially the situation in Academic team, where most of the team members were highly respected in their own discipline and were mostly shapers; any challenge to each individual’s ideas/work was easily taken as disrespectful.

In the Technical team, team members were all professionally trained in equipment operations. The problems faced by team members were mostly equipment-related and could be resolved by referring either to manuals or back to the manufacturer. Hence conflicts in this team were minimal and the team relationship was strong. Unlike the situation in other teams, members of the Administrative team mostly worked as individuals with their own specialized responsibilities. Their jobs required consolidating requests from the other teams of the ARC and coordinating with personnel outside the ARC. Hence the need for coordination and interaction between intra team members was relatively low. The team relationship in Administrative team was quite dynamic as a result. In general, the majority of team leaders were aware of the management tasks that were important for the delivery of project goals and were committed to performing them. Team members were able to tackle and identify problems as they arose, dealt with them promptly and did not allow them to escalate. This approach prevented serious open conflicts, which was just as well, since a majority of the members were unable to practise conflict resolution strategies effectively at work. The researcher observed that the ARC teams showed a strong sense of togetherness in completing their daily tasks and although the leadership styles and the leader-member dynamics differed, the final outcomes were positive as far as goals are concerned. This may indicate that intra-team cohesiveness is important but not necessarily vital in achieving organisational goals.

Survey:
Proposition 3a: Team orientation is positively associated with intra-team cohesiveness.

Proposition 3b: Team orientation is positively associated with commitment to organizational goals.

According to The Group Environment Questionnaire (GEQ), there are two cohesive-related issues that continually resurface in the group dynamics literature. The issues are, first, the distinction between individuals and groups, and second, the distinction between task and social concerns of the team members. This cohesion of teams’ conceptual models labelled individual attractions to the group for the first issue, and labelled group integration for the second issue, both of which help to bind the group.

Overall, Chi-Square values calculated in Table 4.3.1 were 10.51 in terms of attraction to the group and 5.96 for group integration on social matters. At a degree of freedom of 46, the critical value is 62.83. The null hypothesis is therefore rejected for both attraction to group and group integration on social matters. There is a strong association between team orientation and intra-team cohesiveness and commitment to organizational goals. Chi-square tests for individual teams are presented in Table 4.3.1.

Table 4.3.1 Overall Chi-Square test results for each team – Social Integration

<table>
<thead>
<tr>
<th>Team</th>
<th>Chi-Square Attract to Group - Social</th>
<th>Chi-Square Group Integration – Social</th>
<th>Degree of Freedom</th>
<th>Critical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>5.21</td>
<td>7.22</td>
<td>20</td>
<td>31.41</td>
</tr>
<tr>
<td>Technical</td>
<td>4.96</td>
<td>17.00</td>
<td>16</td>
<td>26.30</td>
</tr>
<tr>
<td>Administration</td>
<td>9.00</td>
<td>2.93</td>
<td>8</td>
<td>15.51</td>
</tr>
<tr>
<td>Overall</td>
<td>10.51</td>
<td>5.96</td>
<td>46</td>
<td>62.83</td>
</tr>
</tbody>
</table>

With Chi-Squares calculated for all teams being less than the critical values; the null hypothesis is rejected for all teams. There is an association between team
orientation and attraction to group and group integration on social concerns.

The overall Chi-Square value calculated in Table 4.3.2 is 0 for both attraction to group and group integration in task matters. At a degree of freedom of 46, the critical value is 62.83. The null hypothesis is therefore rejected for both attraction to group and group integration on task concerns. Chi-Square tests for individual teams are presented below:

**Table 4.3.2 Chi-Square test for each team - Task Integration**

<table>
<thead>
<tr>
<th>Team</th>
<th>Chi-Square Attract to Group - Task</th>
<th>Chi-Square Group Integration - Task</th>
<th>Degree of Freedom</th>
<th>Critical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>0</td>
<td>0</td>
<td>20</td>
<td>31.41</td>
</tr>
<tr>
<td>Technical</td>
<td>0</td>
<td>0</td>
<td>16</td>
<td>26.30</td>
</tr>
<tr>
<td>Administration</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>15.51</td>
</tr>
<tr>
<td>Overall</td>
<td>0</td>
<td>0</td>
<td>46</td>
<td>62.83</td>
</tr>
</tbody>
</table>

With Chi-Squares calculated for all teams being less than the critical values; the null hypothesis is also rejected for all individual teams. This indicates that an association exists between team orientation and attraction to group task and group integration on task concerns.

By examining the frequency distributions in Tables 4.3.3 to 4.3.6, in relation to social group integration between the team members, an overall negative association between team orientation and attractions to group is displayed. Positive associations are displayed in team roles of Chairperson and Resource Investigator. While negative associations are displayed in team roles of Shapers, Plant, Monitor and Completer. Other team roles however do not display any positive nor negative association. The Academic team shows a negative association to attractions to group, while the Technical and Administration teams display a positive association. Overall high group integrations are also displayed especially in the Academic & Technical teams, while the Administration team shows slightly lower group integration. The results
show a positive association between team orientation and intra-team cohesiveness in the Technical and Administration teams. In the Academic team, the results show a negative association, which indicates that though team members are not attracted to their team’s social matters, they still hold themselves as part of their own team. This reflects a strong sense of togetherness in the Academic Team.

Table 4.3.7 to 4.3.10 show the results in relation to group integration on task concerns of the team members. Members across all teams displayed a strong attraction to their teams, but all three teams showed low task integration. The results indicate that members are attracted to the team tasks, but conflicts exist when they are working together.

The results from the survey are in line with the researcher’s observations. Proposition 3a is supported in the Technical and Administration teams only but not in the Academic team and Proposition 3b is not supported.
Table 4.3.3 Association between team orientation and team cohesiveness in social matter – (All teams)

<table>
<thead>
<tr>
<th>Team Role</th>
<th>Low</th>
<th>High</th>
<th>Total</th>
<th>P-Value</th>
<th>Low</th>
<th>High</th>
<th>Total</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attraction to Gp-Social</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chairperson / Coordinator</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>1.15</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0.60</td>
</tr>
<tr>
<td>Shaper / Driver</td>
<td>10</td>
<td>7</td>
<td>17</td>
<td>9.77</td>
<td>4</td>
<td>13</td>
<td>17</td>
<td>5.06</td>
</tr>
<tr>
<td>Plant/ Originator</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>3.45</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>1.79</td>
</tr>
<tr>
<td>Monitor / Evaluator</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1.72</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0.89</td>
</tr>
<tr>
<td>Company worker / Implementer</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>4.60</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>2.38</td>
</tr>
<tr>
<td>Team worker / Supporter</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>1.72</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>0.89</td>
</tr>
<tr>
<td>Resource investigator / Liaison</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.57</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.30</td>
</tr>
<tr>
<td>Completer / Finisher</td>
<td>5</td>
<td>2</td>
<td>7</td>
<td>4.02</td>
<td>1</td>
<td>6</td>
<td>7</td>
<td>2.09</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>27</td>
<td>20</td>
<td>47</td>
<td>Chi-Square = 10.51</td>
<td>14</td>
<td>33</td>
<td>47</td>
<td>Chi-Square = 5.96</td>
</tr>
</tbody>
</table>

Critical value = 62.83
Degree of freedom = 46

The calculated Chi-Square is significantly less than the critical value, so the null hypothesis is rejected. There is an association between team orientation and team cohesiveness in social matters.
Table 4.3.4 - Association between team orientation and team cohesiveness in social matters (Academic team)

<table>
<thead>
<tr>
<th>Role</th>
<th>Attraction to Gp-Social (ATG-S)</th>
<th>P-Value</th>
<th>Gp integration - social (GI-S)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td>Low</td>
</tr>
<tr>
<td>Chairperson / Coordinator</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Shaper / Driver</td>
<td>7</td>
<td>2</td>
<td>9</td>
<td>6.43</td>
</tr>
<tr>
<td>Plant / Originator</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1.43</td>
</tr>
<tr>
<td>Monitor / Evaluator</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1.43</td>
</tr>
<tr>
<td>Company worker / Implementer</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2.86</td>
</tr>
<tr>
<td>Team worker / Supporter</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.71</td>
</tr>
<tr>
<td>Resource investigator / Liaison</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Completer / Finisher</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2.14</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>6</td>
<td>21</td>
<td>Chi-Square = 5.21</td>
</tr>
</tbody>
</table>

Critical value = 31.41
Degree of freedom = 20

The calculated chi-Square is significantly lower than the critical value, so the null hypothesis is rejected. There is a negative association between team orientation and team cohesiveness in social matters.
Table 4.3.5 - Association between team orientation and team cohesiveness on social matters (Technical Team)

<table>
<thead>
<tr>
<th>Role</th>
<th>Attraction to Gp-Social (ATG-S)</th>
<th>P-Value</th>
<th>Gp integration -social (GI-S)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td>Low</td>
</tr>
<tr>
<td>Chairperson / Coordinator</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.29</td>
</tr>
<tr>
<td>Shaper / Driver</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>1.76</td>
</tr>
<tr>
<td>Plant / Originator</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>0.88</td>
</tr>
<tr>
<td>Monitor / Evaluator</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.29</td>
</tr>
<tr>
<td>Company worker / Implementer</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0.59</td>
</tr>
<tr>
<td>Team worker / Supporter</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.29</td>
</tr>
<tr>
<td>Resource investigator / Liaison</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.29</td>
</tr>
<tr>
<td>Completer / Finisher</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0.59</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>12</td>
<td>17</td>
<td>chi-square = 4.96</td>
</tr>
</tbody>
</table>

Critical value = 26.30
Degree of freedom = 20

The calculated Chi-Square is lower than the critical value, so the null hypothesis is rejected. There is an association between team orientation and team cohesiveness in social matters. In general, team members are socially attracted to the team and are positively integrated within the team.
Table 4.3.6 – Association between team orientation and team cohesiveness on social matters (Administration team)

<table>
<thead>
<tr>
<th>Role</th>
<th>Attraction to Gp-Social(ATG-S)</th>
<th>P-Value</th>
<th>Gp integration-social(GI-S)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td>Low</td>
</tr>
<tr>
<td>Chairperson / Coordinator</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Shaper / Driver</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Plant / Originator</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Monitor / Evaluator</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Company worker / Implementer</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Team worker / Supporter</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Resource investigator / Liaison</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Completer / Finisher</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>2</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

Critical value = 15.51
Degree of freedom = 8

The calculated Chi-Square is lower than the critical value, so the null hypothesis is rejected. There is an association between team and team cohesiveness in social matter. In general, team members are not socially attracted to team and low socially integration within the team.
Table 4.3.7 - Association between team orientation and team cohesiveness in task matters (All teams)

<table>
<thead>
<tr>
<th>Role</th>
<th>ATG-T</th>
<th>P-Value</th>
<th>GI-T</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Chairperson / Coordinator</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Shaper / Driver</td>
<td>0</td>
<td>17</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Plant / Originator</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Monitor / Evaluator</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Company worker / Implementer</td>
<td>0</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Team worker / Supporter</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Resource investigator / Liaison</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Completer / Finisher</td>
<td>0</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>47</td>
<td>47</td>
<td></td>
</tr>
</tbody>
</table>

Chi Square = 0

The calculated Chi-Square is lower than the critical value, so the null hypothesis is rejected. There is a strong association between team orientation and team cohesiveness in task matters. Team members are highly attracted to team task, but negatively associated to team integration.

Critical value = 62.83
Degree of freedom = 46
Table 4.3.8 - Association between team orientation and team cohesiveness in task matters (Academic team)

<table>
<thead>
<tr>
<th>Role</th>
<th>Attraction to Gp-Task (ATG-T)</th>
<th>P-Value</th>
<th>Gp Integration-Task (GI-T)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td>Low</td>
</tr>
<tr>
<td>Chairperson / Coordinator</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Shaper / Driver</td>
<td>0</td>
<td>9</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Plant / Originator</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Monitor / Evaluator</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Company worker / Implementer</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Team worker / Supporter</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Resource investigator / Liaison</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Completer / Finisher</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>21</td>
<td>21</td>
<td>Chi Square = 0</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>0</td>
<td>21</td>
<td>Chi Square = 0</td>
</tr>
</tbody>
</table>

Critical value = 31.41
Degree of freedom = 20

Chi-Square values are significantly lower than the critical value, so the null hypothesis is rejected. There is a strong association between team orientation and team cohesiveness in task. Team members are highly attracted to team tasks, but are negatively associated to team integration.
Table 4.3.9 - Association between team orientation and team cohesiveness in task matters (Technical team)

<table>
<thead>
<tr>
<th>Role</th>
<th>Attraction to Gp-Task(OTG-T)</th>
<th>P-Value</th>
<th>Gp integration -Task (GI-T)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td>P-Value</td>
</tr>
<tr>
<td>Chairperson / Coordinator</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Shaper / Driver</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Plant / Originator</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Monitor / Evaluator</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Company worker / Implementer</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Team worker / Supporter</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Resource investigator / Liaison</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Completer / Finisher</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>17</td>
<td>17</td>
<td>Chi Square = 0</td>
</tr>
</tbody>
</table>

Critical value = 26.30
Degree of freedom = 16

Chi-Square values are significantly lower than the critical value, so the null hypothesis is rejected. There is a strong association between team orientation and team cohesiveness in task. Team members are highly attracted to team task, but are negatively associated to team integration.
Table 4.3.10 - Association between team orientation and team cohesiveness in task matters (Administration team)

<table>
<thead>
<tr>
<th></th>
<th>Attraction to Gp-Task (ATG-T)</th>
<th>P-Value</th>
<th>Gp integration -Task (GI-T)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td>Low</td>
</tr>
<tr>
<td>Chairperson / Coordinator</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Shaper / Driver</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Plant / Originator</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Monitor / Evaluator</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Company worker / Implementer</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Team worker / Supporter</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Resource investigator / Liaison</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Completer / Finisher</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>9</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

Chi Square = 0

Chi-Square values are significantly lower than critical value, so the null hypothesis is rejected. There is a strong association between team orientation and team cohesiveness in task. Team members are highly attracted to the team task, but are negatively associated to team integration.
Proposition 4: Intra-team cohesiveness is positively associated with commitment to organizational goals

Proposition 4 is put forward to find out the relationship between team cohesiveness and members’ commitment to achieving organisational goals. The survey results show high commitment to organizational goals despite low intra-team cohesiveness.

Table 4.4.1 to 4.4.4 presented in the following pages the show association between team cohesiveness and commitment. The related Chi-Square result is presented below:

<table>
<thead>
<tr>
<th>Team</th>
<th>Chi-Square</th>
<th>Degree of Freedom</th>
<th>Critical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>0.02</td>
<td>16</td>
<td>26.30</td>
</tr>
<tr>
<td>Technical</td>
<td>2.00</td>
<td>11</td>
<td>19.68</td>
</tr>
<tr>
<td>Administration</td>
<td>5.00</td>
<td>4</td>
<td>9.49</td>
</tr>
<tr>
<td>Overall</td>
<td>1.89</td>
<td>33</td>
<td>47.40</td>
</tr>
</tbody>
</table>

The null hypothesis is rejected in all teams and in the ARC as a whole. There is an association between team orientation and commitment to organisational goals.

The overall results show a slightly higher association between team cohesion and commitment. In general, the Academic team shows a high commitment to commitment of team goals despite only moderately strong intra team cohesiveness. The technical team shows high team cohesion along with high commitment to team goals. The administration team shows low team cohesion and a slightly higher commitment to commitment of team goals. As examined in Proposition 3b, the intra-team cohesiveness is not strong across the three teams, but that does not affect member’s commitment to achieving organisational goals. The results from the survey are in line with the researcher’s observations. Proposition 4 cannot be supported.
Table 4.4.1 Association between intra team cohesiveness and commitment (All teams)

<table>
<thead>
<tr>
<th></th>
<th>Commitment</th>
<th></th>
<th></th>
<th></th>
<th>P-Value</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td></td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Low Team Cohesion</td>
<td></td>
<td>6</td>
<td>10</td>
<td>16</td>
<td>4.24</td>
<td>11.76</td>
<td></td>
</tr>
<tr>
<td>High Team Cohesion</td>
<td></td>
<td>3</td>
<td>15</td>
<td>18</td>
<td>4.76</td>
<td>13.24</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>9</td>
<td>25</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chi-Square = 1.89
Critical value = 47.40
Degree of freedom = 33

Chi-Square is significantly lower than the critical value, so the null hypothesis is rejected. There is an association between team orientation and commitment.

Table 4.4.2 Association between intra team cohesiveness and commitment (Academic team)

<table>
<thead>
<tr>
<th></th>
<th>Commitment</th>
<th></th>
<th></th>
<th></th>
<th>P-Value</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>High</td>
<td>Total</td>
<td></td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Low Team Cohesion</td>
<td></td>
<td>2</td>
<td>6</td>
<td>8</td>
<td>1.88</td>
<td>6.12</td>
<td></td>
</tr>
<tr>
<td>High Team Cohesion</td>
<td></td>
<td>2</td>
<td>7</td>
<td>9</td>
<td>2.12</td>
<td>6.88</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4</td>
<td>13</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chi-square = 0.02
Critical value = 26.30
Degree of freedom = 16

Chi-Square is lower than the critical value, so the null hypothesis is rejected. There is an association between intra team cohesiveness and commitment.
Table 4.4.3 – Association between intra team cohesiveness and commitment
(Technical team)

<table>
<thead>
<tr>
<th>Commitment</th>
<th>Low</th>
<th>High</th>
<th>Total</th>
<th>P-Value</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Team Cohesion</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>1.00</td>
<td>1.00</td>
<td>3.00</td>
</tr>
<tr>
<td>High Team Cohesion</td>
<td>1</td>
<td>7</td>
<td>8</td>
<td>2.00</td>
<td>2.00</td>
<td>6.00</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>9</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chi-Square = 2.00
Critical value = 19.68
Degree of freedom = 11

Chi-Square is significantly lower than the critical value, so the null hypothesis is rejected. There is a strong association between intra team cohesiveness and commitment. Overall a large majority of members showed high levels of commitment.

Table 4.4.4 – Association between intra team cohesiveness and commitment
(Administration team)

<table>
<thead>
<tr>
<th>Commitment</th>
<th>Low</th>
<th>High</th>
<th>Total</th>
<th>P-Value</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Team Cohesion</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>1.06</td>
<td>1.06</td>
<td>2.94</td>
</tr>
<tr>
<td>High Team Cohesion</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.26</td>
<td>0.26</td>
<td>0.74</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chi-Square = 5.00
Critical value = 9.49
Degree of freedom = 4

Chi-Square is lower than the critical value, so the null hypothesis is rejected. There is an association between intra team cohesiveness and commitment.
Leadership styles are mainly Directive and Supportive in the ARC. Among the 36 ARC respondents, ten reported multiple leadership roles. The Directive leadership style dominated in the Technical team though the task structures are quite structured. This is because the tasks, in terms of equipment operation, are clearly stated in procedures, but when it comes to decisions as to which techniques or equipment should be used there is a heavy reliance on the individual member’s judgment. In the Academic team, directive and supportive leadership styles are equally deployed. This because employees are experts in their own field and they all expect mutual respect while their tasks are often unstructured and quite ambiguous and require a lot of creative thinking. The directive leadership style in the Academic and Technical teams does not damage its leader member relationships, on the contrary it one of the success factors of the ARC. This finding aligns with House’s theory, where House argues that leaders with Directive leadership styles have a positive correlation with satisfaction and expectancies of subordinates who are engaged in ambiguous tasks. In the ARC, daily tasks in the Academic and Technical teams often require lots of trial and error; there are no clear guidelines or solutions, and achieving task goals relies on team members’ expertise. House and Mitchell (1974) also suggest that when task demands are ambiguous, leaders behaving in a directive manner will be more likely to succeed.

Belbin’s theory was used extensively in this research to understand team orientation and cohesiveness. Out of the 36 ARC respondents, 3 members in each of the three teams identified themselves of having more than one team roles. The majority regarded themselves as having a single team role. This reflects the fact that individuals are multidimensional: most people show preferences for more than one role. This means that one individual can fulfill more than one function or activity within the team. If need be, an individual with a preference for two roles can consciously focus himself on the one the team is in need of and play down the one the team has a surplus of. Belbin’s description of the team roles includes the strengths of the behavioural styles as well as the corresponding weaknesses of each. Any behavioural style, when taken to the extreme, can be counter-productive for the team as well as for the individual. Bearing in mind that a balanced team is based on
complementarily rather than similarity, there is a strong chance that conflict will occur due to personality differences. A balanced team can only work well together if all members:

• appreciate their own and each other’s strengths and weaknesses based on their team role preferences.
• recognize the need to actively participate and complement each other’s behavioral patterns.
• respect each other and respect the differences.

It is only in doing these that team members can gain confidence in themselves as a united group.

Overall, 17 respondents reckon they are Shapers, 8 Implementers and 7 Completers. No member reported being in the Coordinator role. According to Belbin’s theory, a Shaper (SH) is the antithesis of a team player: Shapers challenge, they argue and they disagree. They are impatient and easily frustrated. An Implementer (IM) is on the other hand is a disciplined individual. Implementers are conscientious and aware of external obligations; they also have a well-developed self-image and consequently, a high degree of internal control. The Implementer is tough-minded, practical and conservative in the sense of being a respecter of established conditions and ways of looking at things. The personality of Shaper and Implementer are very different and the combination of the two in same team, although it creates conflicts, also allows creativity to flourish. In the Academic team, out of the 21 team roles identified, nine were shapers and four were implementers. The conflicts created by these two team roles are enormous and cannot be ignored. This also explains the low intra team cohesiveness in Academic Team. The seven Completers in the ARC are important, their abilities are most effectively used at the end of a task, as they can polish and scrutinise the work for errors, subjecting it to the highest standards of quality control. Despite the conflicts generated by Shapers and Implementers, the Completer ensures tasks are finished to high standards.

Only one member in Administration team identified himself or herself as a team worker. No members of the Academic and Technical teams regarded themselves team workers. As explained in Belbin’s theory, a Team Worker is one that has the
skill of listening to others and coping with awkward people. He or she exercises a favorable influence on team spirit by placing group objectives above self-interest. A team worker’s weakness is indecisiveness. In the Academic and Technical teams, team members are mainly professional, they are high self-esteem individuals, and they take pride of their professional achievements. They do not have the personality to be a team worker nor are they willing to take up such role. Hence it makes sense that no one in Academic and Technical teams fulfils the team worker role.

There is no coordinator role identified in any of the three teams. According to Belbin’s theory, a Coordinator’s function is to draw out team members and delegate work appropriately. In the ARC’s environment, members are mostly professionals. They are self-motivated individuals, work independently and commit themselves to high standards. An organization consisting of these knowledgeable workers does not require a coordinator.

Despite the low intra team cohesiveness in all three teams, the commitment to goals is high across all three team. The fact the goals are very task-oriented, especially in the Academic and Technical Teams, and that individual members are committed to achieving goals, means that the need for teams to be highly cohesive is diminished.

4.4 Summary
The study has dealt with the research questions set out in the beginning and the results analysed. The ARC’s strength lies in its directive and supportive leadership. Team cohesiveness depends on many factors including, job satisfaction, job security, personality, stress management and employee performance, leadership and how it affects team members, and the overall functioning of the group.

This research was conducted by deploying the qualitative research method of participant-observation and also quantitative research methods. The research survey was carried out via questionnaires hosted online and was self-administered by participants. All the ARC members were invited and participation was on a voluntary and confidential basis. Chi-Square tests were used to test whether null hypotheses
could be supported for each proposition

Through the quantitative data analysis and the qualitative analysis the researcher was able to triangulate the data to give a more accurate representation of the views of the participants. The survey data collected for this analysis are the perceptions shared by the participants and are not imposed by the researcher.

The study found that the leader-member relationship could improve by understanding some aspects of leadership and team dynamics. The ARC’s strength lies with its directive and supportive leadership, team orientation and team commitments to organisational goals, and how these affect team members and the overall group functioning. The study recommends some suggestions in relate to organisational restructuring and this will be discussed in detail in the next chapter. These recommendations could be considered in the context of improving the overall performance of the ARC and the relationship between employees.
Chapter 5 Discussion and Recommendations

5.0 Discussion

The objective of this research thesis was to examine how leadership style, leader-member relationships, team orientation, team cohesiveness and commitment to goals are inter-related in managing a world-class research centre in Australia. In the absence of any specific indicators for measuring the performance of team leaders and members working in a research environment, the study applied and tested some of the key techniques used in other areas to understand the impact of leader-follower dynamics on organisational performance. The theories discussed in Chapter 2 were applied and analysed to address several research questions:

RQ1. What leadership style differences exist between team leaders?
RQ2. How does leadership style affect leader-member relationship?
RQ3. How do leader-member relationships affect team orientation?
RQ4. How does team orientation affect the team cohesiveness?
RQ5. How does team orientation affect commitment to the goals of the organisation as a whole?

The research adopted a research methodology incorporating qualitative and quantitative processes for primary data collection and analysis. As a member of the ARC, the researcher collected observational data along the dimensions defined by the propositions. Further, a total of 49 participants were invited and 36 respondents participated in an online survey.

From the results presented in Chapter 4, proposition 1a, (Directive & Achievement-Oriented leadership styles are associated with low LMX) is not supported while proposition 1b (Supportive & Participative Leadership styles are associated with high LMX) is supported. The leadership-member exchange is high despite the finding that a majority of leaders are of the Directive leadership style. The results differ from what is expected in the commercial world where the Directive leadership style generally results in lower leader-member exchange relationships. This may be due to the study being undertaken within a research centre where most
members are highly professional. To lead a team of highly qualified knowledge workers, a leader needs to be strong to gain the respect from his/her subordinates. At the ARC, the leaders are mostly highly accredited professionals in their own field so their subordinates respect them a lot. Hence, the directive leadership styles do not affect team relationships adversely.

Proposition 2 (LMX is positively associated with team orientation) is supported. The integrations between LMX and team orientation are high between and within the three teams, which indicates that team members were able to contribute effectively to their jobs, organisational and personal development. Some respondents indicated they maintain multiple roles. This means that some members are fulfilling more than one function or activity within the team. Multi functioning by an individual can not only help individual member to build up their skills in management and leadership, it can also give individual members the feeling of being important in the team. In return, it helps to build up a strong leader membership relationship.

Proposition 3a (Team orientation is positively associated with intra-team cohesiveness) is not completely supported while Proposition 3b (Team orientation is positively associated with commitment to organisational goals) is not supported. Most respondents identify themselves as Shaper, Implementer and Finisher. As discussed above, a Shaper is an enthusiastic person who has lot of ideas but is easily frustrated. Members of the second major group identify themselves as Implementers, who are tough-minded and highly disciplined. Shapers in the Academic and Technical teams generate ideas and suggest ways to achieve the task goals. They challenge each other’s ideas and push their ideas to a level that goes beyond normal boundaries. This helps the ARC to set a higher standard bar and creates cutting-edge advantages for the ARC to become a successful research centre of its kind. Implementers on the other hand, are inflexible. They lay down practical plans of doing things. They tend to prevent teams from going beyond their working plans. The presence of Implementers in the ARC ensures that tasks are carried out systematically and results can be easily valued and measured. These two types of team members bargain with each other and push others to adopt their ways. With teams made up of mainly these two types of members, conflicts are visible in
everyday life. This also explains the reason for comparatively low intra-group cohesiveness.

Proposition 4 (Intra-team cohesiveness is positively associated with commitment to organizational goals) is also not supported. Intra team cohesiveness is low across the three teams. On the other hand, individual members’ commitment to goals is high in general. This contradicts the normal situation where commitment to goals highly dependent on high team cohesiveness. In the ARC’s situation, the goals are very task-oriented and the members work independently, lack of team cohesiveness is not a burden to commitment to goals. However, the ARC consists of professionals from specific disciplines who are eager to improve their performance and take the research centre into greater heights in Australia. With all these professionals joined together, it should bring synergy to the ARC as a whole. In the event that members are not cohesive, this can adversely affect the performance of ARC as a whole in the long run.

5.1 Limitations
Several limitations may be noted in this study. Firstly, it is necessary to note that a number of responses in some cells are less than 5, which may yield inaccurate chi-square results and the potential of committing a statistical Type II error. A Type II error means the statistical result cannot be drawn and the null hypothesis is incorrectly rejected. Some effort was made to offset this limitation through the qualitative method of participant-observation. Secondly, the findings for this specific scientific research centre cannot be generalized to other research centres, even though they give a good snapshot of how leadership and team dynamics operated. Finally, given the scarcity of similar research, the results cannot be compared to other studies, though it offers many opportunities for further research.

5.2 Recommendations for further research
The results in Chapter 4 reveal that proposition 3a is not completely supported especially in The Academic team. At this point, we cannot completely understand the association between the team orientation and team cohesiveness in the ARC.
The overall low team cohesiveness raises the question of what is the best team role combination for the ARC. It is suggested that further research could be conducted by correlational studies. This may involve longitudinal study over a longer period, say one year, and/or combined with quantitative analysis using correlation analysis.

5.3 Recommendations for Improving the ARC

This study is on the Impact of Leader-Follower Dynamics on organizational culture, the latter being defined by team cohesiveness and commitment to organizational goals. To make the ARC a truly world-class research centre, the following recommendations are offered for improving the performance of each team.

i) The leadership style in Academic team is mainly Directive, which helps to explain the result from the survey listed in Chapter 4 that the team cohesiveness in the Academic team is not very strong. Team members in the Academic team mostly consist of shapers whom have strong minds but need to follow instructions while on the other hand their ideas are being rejected or challenged. Team members’ negative feelings needs to be resolved in a timely manner. Team leaders are recommended to enhance their problem solving, conflict handling and nurturing skills. It is recommended that regular social activities e.g. sports, picnic, family fun days, should be arranged to help building better personal connections between team members and team leaders. These functions could, for example, be arranged on a quarterly basis.

ii) The team integration towards organizational goals, as indicated in Chapter 4, is low across all three teams. Though individual member’s commitment to organizational goals is high, improvements in team integration will definitely help the ARC to step up to a higher world-class standard. To achieve this, leaders need to cultivate their skills in team building. Team members need to be encouraged to be involved in achieving these goals as a team and their contributions should be awarded promptly and openly. It is recommended that a monthly performance award to be presented to a team that has an outstanding record of achieving organizational goals. This award could, for example, be free
fine dining, trophies, or free team leisure trips.

iii) Referring to the results on team roles, there is no team member in the Academic or Technical team who identifies himself/herself as a Team Worker. To build up a healthy and efficient team, there is a real need to have some members that bear the personality to be a team worker. In future recruitment, the ARC should consider recruiting people that have such a personality, to help in binding the team together.

iv) The team cohesiveness indicated in Tables 4.3.6 & 4.3.10 in the Administration team is considerably low. This may result from members being considered less important in the ARC setting. To enhance the performance of the ARC as a whole, it is recommended that in 5 years’ time, the Director of ARC could consider dissolving the Administration team and merging members into the other two teams. In this way, it would create a closer connection between the professionals and the general staff and would increase the self-esteem and the commitment to organizational goals of the present Administration team.

v) Restructuring the organization to work on a project basis instead of grouping members into three teams on a functional basis. Each project team would then have members that come originally from all three teams. By restructuring into a project based working team, each member will belong to one single team, the ARC, and be supervised by one project manager. This structure can create competition between each project team, and members are bound to the ARC as one and not as individual teams. Members can be better mixed as they will be able to work with different members in other teams on different projects. Further studies need to be carried out and careful planning is required before actual restructuring, hence the time frame for this recommendation would be for a 3 to 5 year period.

The recommendations of this research can be used to develop a management plan to address the problems faced by team members when working within a team, and also how management can prioritise the work to increasing their morale to perform better.
5.4 Conclusion

This research can be used as a benchmark for management/leadership development, since there is either limited number of studies or no research literature available for discussing team dynamics of research centres, particularly specialising in the scientific sector of microscopy and microanalysis. This study explored the strengths and weaknesses in leadership and organizational culture in a leading research centre. The majority of leadership styles deployed in the ARC are directive and supportive with directive dominant. The combination of these two leadership styles seems to be effective in the ARC, but strengths in the deployment of other combinations of leadership styles cannot be totally ruled out. The high level of individual commitment provided a strong foundation for the success of the ARC. The low team cohesiveness in ARC however raises questions as to what is the “ideal” team combination, and how to balance creativity encouragement and policy preservation. The recommendations given here may provide guidance on how to further improve the performance of the ARC. Lessons drawn in this study may be applied to other similar centres such as medical research centres and other scientific research centres.
REFERENCES


AMMRF Annual Profile 2011, from the minister, pp.2


APPENDICES

Appendix A: *20 Instruments of Leadership Styles*

Key: 1 = Never  5 = Often
      2 = Hardly ever  6 = Usually
      3 = Seldom  7 = Always
      4 = Occasionally

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>I let subordinates know what is expected of them.</td>
</tr>
<tr>
<td>2</td>
<td>I maintain a friendly working relationship with subordinates.</td>
</tr>
<tr>
<td>3</td>
<td>I consult with subordinates when facing a problem.</td>
</tr>
<tr>
<td>4</td>
<td>I listen receptively to subordinates' ideas and suggestions.</td>
</tr>
<tr>
<td>5</td>
<td>I inform subordinates about what needs to be done and how it needs to be done.</td>
</tr>
<tr>
<td>6</td>
<td>I let subordinates know that I expect them to perform at their highest level.</td>
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<td>7</td>
<td>I act without consulting my subordinates.</td>
</tr>
<tr>
<td>8</td>
<td>I do little things to make it pleasant to be a member of the group.</td>
</tr>
<tr>
<td>9</td>
<td>I ask subordinates to follow standard rules and regulations.</td>
</tr>
<tr>
<td>10</td>
<td>I set goals for subordinates' performance that are quite challenging.</td>
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<tr>
<td>11</td>
<td>I say things that hurt subordinates' personal feelings.</td>
</tr>
<tr>
<td>12</td>
<td>I ask for suggestions from subordinates concerning how to carry out assignments.</td>
</tr>
<tr>
<td>13</td>
<td>I encourage continual improvement in subordinates' performance.</td>
</tr>
<tr>
<td>14</td>
<td>I explain the level of performance that is expected of subordinates.</td>
</tr>
<tr>
<td>15</td>
<td>I help subordinates overcome problems that stop them from carrying out their tasks.</td>
</tr>
<tr>
<td>16</td>
<td>I show that I have doubts about their ability to meet most objectives.</td>
</tr>
<tr>
<td>17</td>
<td>I ask subordinates for suggestions on what assignments should be made.</td>
</tr>
<tr>
<td>18</td>
<td>I give vague explanations of what is expected of subordinates on the job.</td>
</tr>
<tr>
<td>19</td>
<td>I consistently set challenging goals for subordinates to attain.</td>
</tr>
<tr>
<td>20</td>
<td>I behave in a manner that is thoughtful of subordinates' personal needs.</td>
</tr>
</tbody>
</table>
Appendix B: LMX 7 Item Sheet

(1) Do you know where you stand with your supervisor?
(Rarely / Occasionally / Sometimes / Fairly often / Very often)

(2) How well does your supervisor recognize your potential?
(Not at all / A little / Moderately / Mostly / Fully)

(3) How would you characterize your working relationship with your supervisor?
(Extremely ineffective / Worse than average / Average / Better than average / Extremely effective)

(4) How well do you feel that your immediate supervisor understands your problems and needs?
(Not a bit / A little / A fair amount) / Quite a bit / A great deal)

(5) What chance that your supervisor would use his/her power to help you solve problems in your work?
(None / Small / Moderate / High / Very high)

(6) What chance that your supervisor would bail you out at his/her expense?
(None / Small / Moderate / High / Very high)

(7) Do you agree you have enough confidence in your supervisor that you would defend and justify his/her decision if he/she were present to do so?
(Strongly disagree / Disagree / Neutral / Agree / Strongly agree)
Appendix C: **GEQ Questionnaire**

![Group Environment Questionnaire (GEQ)]

This questionnaire is designed to assess your perceptions of your team. There are no wrong or right answers, so please give your immediate reaction. Some of the questions may seem repetitive, but please answer ALL questions. Your personal responses will be kept in strictest confidence.

The following statements are designed to assess your feelings about YOUR PERSONAL INVOLVEMENT with this team. Please CIRCLE a number from 1 to 9 to indicate your level of agreement with each of these statements.

1. I do not enjoy being a part of the social activities of this team.
   - 1 Strongly Disagree
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9 Strongly Agree

2. I’m not happy with the amount of playing time I get.
   - 1 Strongly Disagree
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9 Strongly Agree

3. I am not going to miss the members of this team when the season ends.
   - 1 Strongly Disagree
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9 Strongly Agree

4. I’m unhappy with my team’s level of desire to win.
   - 1 Strongly Disagree
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9 Strongly Agree

5. Some of my best friends are on this team.
   - 1 Strongly Disagree
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9 Strongly Agree

6. This team does not give me enough opportunities to improve my personal performance.
   - 1 Strongly Disagree
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9 Strongly Agree

7. I enjoy other parties rather than team parties.
   - 1 Strongly Disagree
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9 Strongly Agree

8. I do not like the style of play on this team.
   - 1 Strongly Disagree
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9 Strongly Agree

9. For me, this team is one of the most important social groups to which I belong.
   - 1 Strongly Disagree
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9 Strongly Agree
The following statements are designed to assess your perceptions of YOUR TEAM AS A WHOLE. Please CIRCLE a number from 1 to 9 to indicate your level of agreement with each of these statements.

10. Our team is united in trying to reach its goals for performance.

   1 2 3 4 5 6 7 8 9
   Strongly Disagree
   Agree

11. Members of our team would rather go out on their own than get together as a team.

   1 2 3 4 5 6 7 8 9
   Strongly Disagree
   Agree

12. We all take responsibility for any loss or poor performance by our team.

   1 2 3 4 5 6 7 8 9
   Strongly Disagree
   Agree

13. Our team members rarely party together.

   1 2 3 4 5 6 7 8 9
   Strongly Disagree
   Agree

14. Our team members have conflicting aspirations for the team’s performance.

   1 2 3 4 5 6 7 8 9
   Strongly Disagree
   Agree

15. Our team would like to spend time together in the off season.

   1 2 3 4 5 6 7 8 9
   Strongly Disagree
   Agree

16. If members of our team have problems in practice, everyone wants to help them so we can get back together again.

   1 2 3 4 5 6 7 8 9
   Strongly Disagree
   Agree

17. Members of our team do not stick together outside of practice and games.

   1 2 3 4 5 6 7 8 9
   Strongly Disagree
   Agree

18. Our team members do not communicate freely about each athlete’s responsibilities during competition or practice.

   1 2 3 4 5 6 7 8 9
   Strongly Disagree
   Agree
Appendix D: Research Survey Questionnaire

You are invited to participate in a survey on leadership. This survey is part of the doctoral research by Thomson Chow (Doctor of Business Administration candidate at the University of Newcastle), supervised by Professor Soo May Cheng from the Newcastle Graduate School of Business, Faculty of Business and Law.

Why is the research being done?
The purpose of this survey is to find out how leadership style relates to team and organizational cultures in a research centre. Findings from this survey may help to improve centre productivity and staff satisfaction.

Who can participate in the research?
Australian Centre for Microscopy & Microanalysis staff members are invited to participate in this survey. With your participation, we shall be able to find out the best leadership style for structuring research centres, recruitment of personnel, leadership development, and team-building.

Is this survey anonymous and voluntary?
Yes, participants will not be identified individually in any form, and are only grouped according to their work teams. All information collected is treated confidentially. All information gathered from the survey will be stored securely, and once the information has been analyzed, all questionnaires will be destroyed. At no time will any individual be identified in any reports resulting from this study as no identification is attached to the survey questionnaire. Responses to specific questions will not be published. Only aggregated statistics will be published.

You can quit anytime by pressing the [Exit this survey] button at the top right corner of the screen. However, once you have completed and submitted the survey, you will not be able to withdraw your responses as the survey is anonymous and your specific questionnaire will not be identifiable.

How much time will it take?
It should take approximately 25-30 minutes.

What are the risks and benefits of participating?
In order to achieve its objectives, this survey should be answered as honestly as possible. As such, both positive and negative views may be expressed. The researcher will take every care to report the findings objectively, without identifying participants at any stage of the survey. Hence participants are encouraged to engage in this exercise as a means to better understand how the culture of their teams and the Centre is influenced by leadership styles and leader-member relationships. It may also enhance understanding and commitment to a high-performance culture.

A copy of the research report can be made available to participants upon request (Please email the researcher: thomsonkaiman.chow@uon.edu.au).

How will your privacy be protected?
Analyzed data and the original dataset will be burned on a DVD which will be kept in a locked cabinet in the researcher’s home for 5 years, in compliance with the University’s research records policy. Only the researcher and his supervisor will have access to the data for reporting purposes.

How will the information collected be used?
Results will be reported in the researcher’s final DBA dissertation. A written summary of results can be made available to the participants on request. Articles based on the research and its findings will be submitted to conferences and journals for possible publication.

What do you need to do to participate?
Simply click [Next] to start the online survey. By submitting the survey, you are in effect giving your consent for your responses to be reported for academic purposes.

Further Information
If you would like further information, please contact Thomson Chow at +612 9351 7545 (email: thomsonkaiman.chow@uon.edu.au) or Professor Soo May Cheng at email: smcheng2006@yahoo.com.

Professor Soo May Cheng
Project Supervisor

Complaints about this research
This project has been approved by the University’s Human Research Ethics Committee (WA-2011-0314) email: Human-Ethics@newcastle.edu.au

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Survey: Leadership and Organisation

Welcome to the Survey on Leadership and Organization

Instructions

There are no wrong answers. All honest opinions are appreciated.

Team Leader (Centre Director, General Manager and Laboratory Manager), please complete following sections:
Section A: Leadership style
Section C: Team role
Section D: Team cohesion
Section E: Commonality of goals

Team member, please complete following sections:
Section B: Leader-member relationship
Section C: Team role
Section D: Team cohesion
Section E: Commonality of goals

1. Before beginning the Survey, please indicate which group you belong to:
   - Academic & Research Group (academic & research staff)
   - Technical Group (technical support staff)
   - Administration Group (business & administrative staff)
   - No Specific Group

Powered by SurveyMonkey
Check out our sample surveys and create your own now!
Survey: Leadership and Organisation

Section A: Leadership style (For leaders only)

Team members can skip this section and go to Section B.

For each statement, please select only one answer that best represents your view.

2. I let subordinates know what is expected of them.
   - Never
   - Hardly ever
   - Seldom
   - Occasionally
   - Often
   - Usually
   - Always

3. I maintain a friendly working relationship with subordinates.
   - Never
   - Hardly ever
   - Seldom
   - Occasionally
   - Often
   - Usually
   - Always

4. I consult with subordinates when facing a problem.
   - Never
   - Hardly ever
   - Seldom
   - Occasionally
   - Often
   - Usually
   - Always

5. I listen receptively to subordinates’ ideas and suggestions.
   - Never
   - Hardly ever
   - Seldom
   - Occasionally
   - Often
   - Usually
   - Always
6. I inform subordinates about what needs to be done and how it needs to be done.
   - Never
   - Hardly ever
   - Seldom
   - Occasionally
   - Often
   - Usually
   - Always

7. I let subordinates know that I expect them to perform at their highest level.
   - Never
   - Hardly ever
   - Seldom
   - Occasionally
   - Often
   - Usually
   - Always

8. I act without consulting my subordinates.
   - Never
   - Hardly ever
   - Seldom
   - Occasionally
   - Often
   - Usually
   - Always

9. I do little things to make it pleasant to be a member of the group.
   - Never
   - Hardly ever
   - Seldom
   - Occasionally
   - Often
   - Usually
   - Always

10. I ask subordinates to follow standard rules and regulations.
    - Never
    - Hardly ever
    - Seldom
    - Occasionally
    - Often
    - Usually
    - Always

11. I set goals for subordinates’ performance that are quite challenging.
    - Never
11. I set goals for subordinates’ performance that are quite challenging.
- Never
- Hardly ever
- Seldom
- Occasionally
- Often
- Usually
- Always

12. I say things that hurt subordinates’ personal feelings.
- Never
- Hardly ever
- Seldom
- Occasionally
- Often
- Usually
- Always

13. I ask for suggestions from subordinates concerning how to carry out assignments.
- Never
- Hardly ever
- Seldom
- Occasionally
- Often
- Usually
- Always

- Never
- Hardly ever
- Seldom
- Occasionally
- Often
- Usually
- Always

15. I explain the level of performance that is expected of subordinates.
- Never
- Hardly ever
- Seldom
- Occasionally
- Often
- Usually
- Always

16. I help subordinates overcome problems that stop them from carrying out their tasks.
- Never
16. I help subordinates overcome problems that stop them from carrying out their tasks.

- Never
- Hardly ever
- Occasionally
- Often
- Usually
- Always

17. I show that I have doubts about their ability to meet most objectives.

- Never
- Hardly ever
- Occasionally
- Often
- Usually
- Always

18. I ask subordinates for suggestions on what assignments should be made.

- Never
- Hardly ever
- Occasionally
- Often
- Usually
- Always

19. I give vague explanations of what is expected of subordinates on the job.

- Never
- Hardly ever
- Occasionally
- Often
- Usually
- Always

20. I consistently set challenging goals for subordinates to attain.

- Never
- Hardly ever
- Occasionally
- Often
- Usually
- Always

21. I behave in a manner that is thoughtful of subordinates’ personal needs.

- Never
18. I ask subordinates for suggestions on what assignments should be made.
- Never
- Hardly ever
- Seldom
- Occasionally
- Often
- Usually
- Always

19. I give vague explanations of what is expected of subordinates on the job.
- Never
- Hardly ever
- Seldom
- Occasionally
- Often
- Usually
- Always

20. I consistently set challenging goals for subordinates to attain.
- Never
- Hardly ever
- Seldom
- Occasionally
- Often
- Usually
- Always

21. I behave in a manner that is thoughtful of subordinates' personal needs.
- Never
- Hardly ever
- Seldom
- Occasionally
- Often
- Usually
- Always
Survey: Leadership and Organisation

Section B: Leader-member relationship (For members only)

Leaders (Centre Director, General Manager and Laboratory Manager) can skip this section and go to Section C.

For each statement, please select only one answer that best represents your view.

22. Do you know where you stand with your supervisor?
- Rarely
- Occasionally
- Sometimes
- Fairly often
- Very often

23. How well does your supervisor recognize your potential?
- Not at all
- A little
- Moderately
- Mostly
- Fully

24. How would you characterize your working relationship with your supervisor?
- Extremely ineffective
- Worse than average
- Average
- Better than average
- Extremely effective

25. How well do you feel that your immediate supervisor understands your problems and needs?
- Not a bit
- A little
- A fair amount
- Quite a bit
- A great deal

26. What chance that your supervisor would use his/her power to help you solve problems in your work?
- None
- Small
- Moderate
- High
- Very high

27. What chance that your supervisor would bail you out at his/her expense?
- None
24. How would you characterize your working relationship with your supervisor?
- Extremely ineffective
- Worse than average
- Average
- Better than average
- Extremely effective

25. How well do you feel that your immediate supervisor understands your problems and needs?
- Not a bit
- A little
- A fair amount
- Quite a bit
- A great deal

26. What chance that your supervisor would use his/her power to help you solve problems in your work?
- None
- Small
- Moderate
- High
- Very high

27. What chance that your supervisor would bail you out at his/her expense?
- None
- Small
- Moderate
- High
- Very high

28. Do you agree you have enough confidence in your supervisor that you would defend and justify his/her decision if he/she were present to do so?
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
### Section C: Team role (For all participants)

The following statements help to identify your team role. On a scale of 1 through 5, where 1 indicates the strongest agreement and 5 indicates the strongest disagreement, please select one answer that best represents your view.

#### 29. When involved in a project with other people:

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>I can be relied on to see that work that needs to be done is organized.</td>
<td></td>
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<tr>
<td>I pick up errors and omissions others fail to notice.</td>
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<tr>
<td>I react strongly when meetings seem to lose track of the main objective.</td>
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<tr>
<td>I come up with original ideas and suggestions.</td>
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<tr>
<td>I analyze people's ideas objectively for both merits and failings.</td>
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<tr>
<td>I am always keen to find out the latest ideas and developments.</td>
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<tr>
<td>I have an aptitude for organizing people.</td>
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<tr>
<td>I am always ready to support good suggestions that help resolve a problem.</td>
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</table>

#### 30. In seeking satisfaction through my work:

<table>
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<tr>
<th>Statement</th>
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<th>2</th>
<th>3</th>
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<tbody>
<tr>
<td>I like to have a strong influence on decision.</td>
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<tr>
<td>I feel in my element when work requires a high degree of concentration.</td>
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<tr>
<td>I am concerned to help staff and colleagues with their problems.</td>
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<td>I like to make critical distinctions between alternatives.</td>
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<td>I tend to have a creative approach to problem-solving.</td>
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<tr>
<td>I enjoy reconciling different points of view.</td>
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<tr>
<td>I am more interested in the practicalities than in new ideas.</td>
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<tr>
<td>I particularly enjoy exploring different views and techniques.</td>
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</table>

#### 31. When the team is trying to solve a particularly complex problem:

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<tr>
<th>Statement</th>
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<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>I keep a watchful eye on areas where difficulties may arise.</td>
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<tr>
<td>I explore ideas that might have a wider application than this particular task.</td>
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<tr>
<td>I like to weigh up and evaluate a range of suggestions thoroughly before deciding</td>
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<tr>
<td>I can co-ordinate and use other people's talents productively.</td>
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<tr>
<td>I maintain a steady, systematic approach; whatever the pressure.</td>
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<tr>
<td>I often produce a new approach to a long continuing problem.</td>
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<tr>
<td>I am ready to make my personal views known in a forceful way if necessary.</td>
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<tr>
<td>I am ready to help whenever I can.</td>
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</table>
### 32. In carrying out my day-to-day work:
(1 = Completely Agree ...... 5 = Completely Disagree)

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>I am keen to see there is nothing vague about my tasks and objectives.</td>
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<tr>
<td>I make sure my own point of view is expressed at meetings.</td>
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</tr>
<tr>
<td>I can work with all sorts of people provided they have something worth to contribute.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I make a point of following up interesting ideas and people.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I can usually find the argument to refute unsound suggestions.</td>
<td></td>
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<tr>
<td>I tend to see patterns where others see items as unrelated.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Being busy gives me real satisfaction.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>I have a quiet interest in getting to know people better.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### 33. If I am suddenly given a difficult task with limited time and unfamiliar people:
(1 = Completely Agree ...... 5 = Completely Disagree)

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I often find my imagination limited by working in a group.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find that my personal skills particularly help achieve agreement in a group.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My feelings seldom interfere with my judgment.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I strive to build an effective system and structure.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can work with people who vary widely in their personal qualities and outlook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel it's sometimes worth incurring temporary unpopularity if one is to succeed in getting one's views across.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I usually know the right person to contact about different issues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I seem to develop a natural sense of urgency.</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

### 34. When asked to consider a new project:
(1 = Completely Agree ...... 5 = Completely Disagree)

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I start to look around for possible ideas and openings.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am concerned to finish and perfect current work before I start.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I approach the problem in a carefully analytical way.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am able to assert myself to get other people involved if necessary.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am able to take an independent, innovative look at most situations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am happy to take the lead when action is required.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can respond positively to my colleagues and their initiatives.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find it hard to give up my best if goals are not clearly defined.</td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

### 35. In contributing to projects in general:
(1 = Completely Agree ...... 5 = Completely Disagree)

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think I have a talent for sorting out the concrete steps that need to be taken, given a broad brief.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My considered judgment may take time but it is usually fairly correct.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>A broad range of professional and personal contact is important to my style of working.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have an eye for getting the details right.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I try to make my mark in group meetings.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I can see how ideas and techniques can be used in new relationships and situations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel as well able overall and work well for this team.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I often find my imagination limited by working in a group.
I find that my personal skills particularly help achieve agreement in a group.
My feelings seldom interfere with my judgment.
I strive to build an effective system and structure.
I can work with people who vary widely in their personal qualities and outlook.
I feel it's sometimes worth incurring temporary unpopularity if one is to succeed in getting one's views across.
I usually know the right person to contact about different issues.
I seem to develop a natural sense of urgency.

34. When asked to consider a new project:
(1 = Completely Agree ...... 5 = Completely Disagree)

I start to look around for possible ideas and openings.
I am concerned to finish and perfect current work before I start.
I approach the problem in a carefully analytical way.
I am able to assist myself to get other people involved if necessary.
I am able to take an independent, innovative look at most situations.
I am happy to take the lead when action is required.
I can respond positively to my colleagues and their initiatives.
I find it hard to give my best if goals are not clearly defined.

35. In contributing to projects in general:
(1 = Completely Agree ...... 5 = Completely Disagree)

I think I have a talent for sorting out the concrete steps that need to be taken, given a broad brief.
My considered judgment may take time but it is usually fairly correct.
A broad range of professional and personal contact is important to my style of working.
I have an eye for getting the details right.
I try to make my mark in group meetings.
I can see how ideas and techniques can be used in new circumstances and situations.
I get on well with others and work hard for the team.
I try to be helpful and ensure each team member feels supported.
Section D: Team cohesion (For all participants)

The following statements help assess your feelings about your personal involvement with your team. On a scale of 1 through 5, where 1 indicates the strongest agreement and 5 indicates the strongest disagreement, please select one answer that best represents your view.

36. I do not enjoy taking part in social activities with this team.
   (1 = Completely Agree ...... 5 = Completely Disagree)

37. I am unhappy with the free time I get.
   (1 = Completely Agree ...... 5 = Completely Disagree)

38. I am not going to miss the members of this team when I leave this organization.
   (1 = Completely Agree ...... 5 = Completely Disagree)

39. I am dissatisfied with my team’s ambitions to win.
   (1 = Completely Agree ...... 5 = Completely Disagree)

40. Some of my teammates are my best friends.
   (1 = Completely Agree ...... 5 = Completely Disagree)

41. This team does not give me enough opportunities to improve my personal performance.
   (1 = Completely Agree ...... 5 = Completely Disagree)

42. I enjoy other parties more than team parties.
   (1 = Completely Agree ...... 5 = Completely Disagree)

43. I like the work style of this team.
   (1 = Completely Agree ...... 5 = Completely Disagree)
44. This team is one of my most important social groups.
(1 = Completely Agree ...... 5 = Completely Disagree)

45. Our team is unified in trying to reach our performance goals.
(1 = Completely Agree ...... 5 = Completely Disagree)

46. Members of our team would rather go out on their own than get together as a team.
(1 = Completely Agree ...... 5 = Completely Disagree)

47. We all take responsibility for any loss or poor performance of our team.
(1 = Completely Agree ...... 5 = Completely Disagree)

48. Our team members rarely party together.
(1 = Completely Agree ...... 5 = Completely Disagree)

49. Our team members have conflicting aspirations for the team’s performance.
(1 = Completely Agree ...... 5 = Completely Disagree)

50. Our team members like to spend time together after work.
(1 = Completely Agree ...... 5 = Completely Disagree)

51. If a member of our team has problems at work, everyone wants to help.
(1 = Completely Agree ...... 5 = Completely Disagree)

52. Members of our team do not stick together in or out of the office.
(1 = Completely Agree ...... 5 = Completely Disagree)

53. Our team members do not communicate freely about difficulties or problems in job assignments.
(1 = Completely Agree ...... 5 = Completely Disagree)
Survey: Leadership and Organisation

Section E: Commonality of goals (For all participants)

The following statements help assess your organizational commitment. On a scale of 1 through 5, where 1 indicates the strongest agreement and 5 indicates the strongest disagreement, please select one answer that best represents your view.

54. I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful.
   (1 = Completely Agree ...... 5 = Completely Disagree )
   My scale: □ □ □ □ □

55. I tell my friends that this organization is a great organization to work for.
   (1 = Completely Agree ...... 5 = Completely Disagree )
   My scale: □ □ □ □ □

56. I feel very little loyalty towards this organization.
   (1 = Completely Agree ...... 5 = Completely Disagree )
   My scale: □ □ □ □ □

57. I would accept almost any type of job assignment in order to keep working for this organization.
   (1 = Completely Agree ...... 5 = Completely Disagree )
   My scale: □ □ □ □ □

58. I find that my values and the organization's values are very similar.
   (1 = Completely Agree ...... 5 = Completely Disagree )
   My scale: □ □ □ □ □

59. I am proud to tell others that I am part of this organization.
   (1 = Completely Agree ...... 5 = Completely Disagree )
   My scale: □ □ □ □ □

60. I could just as well be working for a different organization as long as the type of work was similar.
   (1 = Completely Agree ...... 5 = Completely Disagree )
   My scale: □ □ □ □ □

61. This organization really inspires the very best in me in the way of job performance.
   (1 = Completely Agree ...... 5 = Completely Disagree )
   My scale: □ □ □ □ □
61. This organization really inspires the very best in me in the way of job performance.  
( 1 = Completely Agree ...... 5 = Completely Disagree )

<table>
<thead>
<tr>
<th>My scale:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

62. It would take very little change in my present circumstances to cause me to leave this organization.  
( 1 = Completely Agree ...... 5 = Completely Disagree )

<table>
<thead>
<tr>
<th>My scale:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

63. I am extremely glad that I chose this organization to work for over others I was considering at the time I joined.  
( 1 = Completely Agree ...... 5 = Completely Disagree )

<table>
<thead>
<tr>
<th>My scale:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

64. There’s not too much to be gained by sticking with this organization indefinitely.  
( 1 = Completely Agree ...... 5 = Completely Disagree )

<table>
<thead>
<tr>
<th>My scale:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

65. Often, I find it difficult to agree with this organization’s policies on important matters relating to its employees.  
( 1 = Completely Agree ...... 5 = Completely Disagree )

<table>
<thead>
<tr>
<th>My scale:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

66. I really care about the fate of this organization.  
( 1 = Completely Agree ...... 5 = Completely Disagree )

<table>
<thead>
<tr>
<th>My scale:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

67. For me this is the best of all possible organizations for which to work.  
( 1 = Completely Agree ...... 5 = Completely Disagree )

<table>
<thead>
<tr>
<th>My scale:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

68. Deciding to work for this organization was a definite mistake on my part.  
( 1 = Completely Agree ...... 5 = Completely Disagree )

<table>
<thead>
<tr>
<th>My scale:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>
Survey: Leadership and Organisation

Thank you for completing the questionnaire. Your participation is much appreciated.

Best Regards
Thomson
Email: thomsonkai-man.chow@uon.edu.au
Appendix E: Consent Letter & Survey Information to Participants

FACULTY OF BUSINESS AND LAW

Professor Soo May, Cheng
Thomson K.M Chow
Faculty of Business and Law
Email: smcheng2008@yahoo.com
Thomsonian.chow@uon.edu.au

Information Statement for the Research Project:
Leadership and Organization

Dear Participant,
You are invited to participate in a survey on leadership. This survey is part of the doctoral research by Thomson Chow (Doctor of Business Administration candidate at the University of Newcastle), supervised by Professor Soo May Cheng from the Newcastle Graduate School of Business, Faculty of Business and Law.

Why is the research being done?
The purpose of this survey is to find out how leadership style relates to team and organizational cultures in a research centre. Findings from this survey may help to improve centre productivity and staff satisfaction.

Who can participate in the research?
Australian Centre for Microscopy & Microanalysis staff members are invited to participate in this survey. With your participation, we shall be able to find out the best leadership style for structuring research centres, recruitment of personnel, leadership development, and team-building.

Is this survey anonymous and voluntary?
Yes, participants will not be identified individually in any form, and are only grouped according to their work teams. All information collected is treated confidentially. All information gathered from the survey will be stored securely, and once the information has been analyzed, all questionnaires will be destroyed. At no time will any individual be identified in any reports resulting from this study as no identification is attached to the survey questionnaire. Responses to specific questions will not be published. Only aggregated statistics will be published.

You can quit anytime by pressing the [Exit this survey] button at the top right corner of the screen. However, once you have completed and submitted the survey, you will not be able to withdraw your responses as the survey is anonymous and your specific questionnaire will not be identifiable.

What would you be asked to do?
If you agree to participate, you are required to click on the given link (https://www.surveymonkey.com/s/thomsonchow) to start the survey on the Internet.

How much time will it take?
It should take approximately 25-30 minutes.
What are the risks and benefits of participating?
In order to achieve its objectives, this survey should be answered as honestly as possible. As such, both positive and negative views may be expressed. The researcher will take every care to report the findings objectively, without identifying participants at any stage of the survey. Hence participants are encouraged to engage in this exercise as a means to better understand how the culture of their teams and the Centre is influenced by leadership styles and leader-member relationships. It may also enhance understanding and commitment to a high-performance culture.

A copy of the research report can be made available to participants upon request (Please email the researcher: thomsonkaiman.chow@uon.edu.au).

How will your privacy be protected?
Analyzed data and the original dataset will be burned on a DVD which will be kept in a locked cabinet in the researcher’s home for 5 years, in compliance with the University’s research records policy. Only the researcher and his supervisor will have access to the data for reporting purposes.

How will the information collected be used?
Results will be reported in the researcher’s final DBA dissertation. A written summary of results can be made available to the participants on request. Articles based on the research and its findings will be submitted to conferences and journals for possible publication.

What do you need to do to participate?
Simply click on this link to start the online survey (https://www.surveymonkey.com/s/thomsonchow).

By submitting the survey, you are in effect giving your consent for your responses to be reported for academic purposes.

Further information
If you would like further information, please contact Thomson Chow at +61 2 9351 7545 (email: thomsonkaiman.chow@uon.edu.au) or Professor Soo May Cheng at email: smcheng2006@yahoo.com.

Thank you for considering this invitation.

Professor Soo May Cheng
Project Supervisor

Complaints about this research
This project has been approved by the University’s Human Research Ethics Committee (Approval No. H-2011-0318).

Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, Australia, telephone (02) 49215333, email Human-Ethics@newcastle.edu.au.
Appendix F: Download Results

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<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Sequence</th>
<th>Committee</th>
<th>Question</th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
<th>Option 5</th>
<th>Option 6</th>
<th>Option 7</th>
<th>Option 8</th>
<th>Option 9</th>
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<td>55</td>
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<td>Academic &amp; Research Group</td>
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<td>Usually</td>
<td>Occasional</td>
<td>Always</td>
<td>Never</td>
<td>Usually</td>
<td>Often</td>
<td>Hardly ever</td>
<td>Selction</td>
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<td>Usually</td>
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<td>Never</td>
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<td>Occasional</td>
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<td>Always</td>
<td>Never</td>
<td>Usually</td>
<td>Often</td>
<td>Hardly ever</td>
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<td>Occasional</td>
<td>Usually</td>
<td>Always</td>
<td>Occasional</td>
<td>Selection</td>
<td>Usually</td>
<td>Always</td>
<td>Occasional</td>
</tr>
</tbody>
</table>
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Before filling in the survey, please indicate which group you belong to.

1. I am willing to put in a great deal of effort beyond what is normally expected in order to help this organization be successful. (1 = Completely Agree 5 = Completely Disagree)
2. My work will align with my personal values and beliefs.
3. I do what is required to get the job done.
4. I agree that I need to be satisfied with my job in order to get the job done.
5. I believe that I need to be satisfied with my job in order to get the job done.
6. I believe that I need to be satisfied with my job in order to get the job done.
7. I believe that I need to be satisfied with my job in order to get the job done.
8. I believe that I need to be satisfied with my job in order to get the job done.
9. I believe that I need to be satisfied with my job in order to get the job done.
10. I believe that I need to be satisfied with my job in order to get the job done.

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Appendix G: Invitation Letter to Participants

Thomson Chow

Tuesday, 22 November 2011 11:40 PM

Subject: Survey invitation for the research project "Impact of Leader-Follower Dynamics on Organizational Culture"

Date: Tuesday, 22 November 2011 11:37 PM
From: Thomson Chow <thomson.chow@sydney.edu.au>
To: Simon Ringer <simon.ringer@sydney.edu.au>

Dear Simon,

I am writing to invite you to participate in a research study that seeks your views on leadership & organization (Impact of Leader-Follower Dynamics on Organizational Culture).

This study seeks information on your:
• leadership style,
• team role,
• team cohesion,
• commonality of goals with your organization

Information gained helps to find out how leadership style relates to team and organizational cultures in a research centre.

The survey should take 20 - 30 minutes to complete. Your responses will be treated confidentially and your participation in this survey will not be identified individually in any form.

For more details, please refer to the attached information statement.

Please click on the link below to go to the survey. If you can't click on the link, simply copy and paste the link text into your web browser.
<https://www.surveymonkey.com/s/thomsonchow>

Survey closes: 2 December 2011

Thank you for your support and I hope you enjoy contributing to this research.

Thomson
Appendix H: Consent Letter from ARC Director

FACULTY OF BUSINESS AND LAW

Consent Form for the Research Project:
Leadership and Organization
(HREC#H-2011-0318 Date: 2 Nov 2011)

I agree on behalf of the Australian Centre for Microscopy & Microanalysis (“ACMM”) for all staff members to participate in the above research project and give my consent freely.

I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained.

I understand that any staff of the ACMM or the ACMM as a whole can withdraw from the project at any time and do not have to give any reason for withdrawing.

I consent to:
- Conducting the above research project at ACMM;
- The researcher assessing the staff list of ACMM.
- Allowing researcher to send invitation email to individual ACMM staff for conducting an online survey on above research project;
- Individual ACMM staff completing an online questionnaire provided by researcher;
- The researcher retaining the survey responses confidentially.

I understand that personal information for participants will remain confidential to the researcher; result will be disguised as pseudonyms.

I have had the opportunity to have questions answered to my satisfaction.

Print Name: Professor Simon Ringer
Director, Australian Centre for Microscopy & Microanalysis

Signature: Date:
Appendix I: Approval Letter from University HREC

HUMAN RESEARCH ETHICS COMMITTEE

Notification of Expedited Approval

To Chief Investigator or Project Supervisor:  
Professor Soo May Cheng

Cc Co-investigators / Research Students:  
Mr Thomson Kai Man Chow

Re Protocol:  
Impact of Leader-Follower Dynamics on Organisational Culture

Date:  
22-Nov-2011

Reference No:  
H-2011-0318

Date of Initial Approval:  
18-Nov-2011

Thank you for your Response to Conditional Approval submission to the Human Research Ethics Committee (HREC) seeking approval in relation to the above protocol.

Your submission was considered under Expedited review by the Chair / Deputy Chair.

I am pleased to advise that the decision on your submission is Approved effective 18-Nov-2011.

In approving this protocol, the Human Research Ethics Committee (HREC) is of the opinion that the project complies with the provisions contained in the National Statement on Ethical Conduct in Human Research, 2007, and the requirements within this University relating to human research.

Approval will remain valid subject to the submission, and satisfactory assessment, of annual progress reports. If the approval of an External HREC has been "noted" the approval period is as determined by that HREC.

The full Committee will be asked to ratify this decision at its next scheduled meeting. A formal Certificate of Approval will be available upon request. Your approval number is H-2011-0318.

If the research requires the use of an Information Statement, ensure this number is inserted at the relevant point in the Complaints paragraph prior to distribution to potential participants. You may then proceed with the research.

Conditions of Approval

This approval has been granted subject to you complying with the requirements for Monitoring of Progress, Reporting of Adverse Events, and Variations to the Approved Protocol as detailed below.

PLEASE NOTE:

In the case where the HREC has "noted" the approval of an External HREC, progress reports and reports of adverse events are to be submitted to the External HREC only. In the case of Variations to the approved protocol, or a Renewal of approval, you will apply to the External HREC for approval in the first instance and then Register that approval with the University's HREC.

- Monitoring of Progress

[Attachment or further details provided here]
Other than above, the University is obliged to monitor the progress of research projects involving human participants to ensure that they are conducted according to the protocol as approved by the HREC. A progress report is required on an annual basis. Continuation of your HREC approval for this project is conditional upon receipt, and satisfactory assessment, of annual progress reports. You will be advised when a report is due.

- Reporting of Adverse Events

1. It is the responsibility of the person first named on this Approval Advice to report adverse events.
2. Adverse events, however minor, must be reported by the investigator as observed by the investigator or as volunteered by a participant in the research. Full details are to be documented, whether or not the investigator, or his/her deputies, consider the event to be related to the research substance or procedure.
3. Serious or unforeseen adverse events that occur during the research or within six (6) months of completion of the research, must be reported by the person first named on the Approval Advice to the (HREC) by way of the Adverse Event Report form within 72 hours of the occurrence of the event or the investigator receiving advice of the event.
4. Serious adverse events are defined as:
   - Causing death, life threatening or serious disability;
   - Causing or prolonging hospitalisation;
   - Overdoses, cancers, congenital abnormalities, tissue damage, whether or not they are judged to be caused by the investigational agent or procedure;
   - Causing psycho-social and/or financial harm. This covers everything from perceived invasion of privacy, breach of confidentiality, or the diminution of social reputation, to the creation of psychological fears and trauma.
   - Any other event which might affect the continued ethical acceptability of the project.
5. Reports of adverse events must include:
   - Participant's study identification number;
   - Date of birth;
   - Date of entry into the study;
   - Treatment arm (if applicable);
   - Date of event;
   - Details of event;
   - The investigator's opinion as to whether the event is related to the research procedures; and
   - Action taken in response to the event.
6. Adverse events which do not fall within the definition of serious or unexpected, including those reported from other sites involved in the research, are to be reported in detail at the time of the annual progress report to the HREC.

- Variations to approved protocol

If you wish to change, or deviate from, the approved protocol, you will need to submit an Application for Variation to Approved Human Research. Variations may include, but are not limited to, changes or additions to investigators, study design, study population, number of participants, methods of recruitment, or participant information/consent documentation. Variations must be approved by the (HREC) before they are implemented except when registering an approval of a variation from an external HREC which has been designated the lead HREC, in which case you may proceed as soon as you receive an acknowledgement of your Registration.

**Linkage of ethics approval to a new Grant**

HREC approvals cannot be assigned to a new grant or award (ie those that were not identified on the application for ethics approval) without confirmation of the approval from the Human Research Ethics Officer on behalf of the HREC.

Best wishes for a successful project.
Professor Alison Ferguson
Chair, Human Research Ethics Committee

For communications and enquiries:
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Research Integrity Unit
HA14B, Hunter Building
The University of Newcastle
Callaghan NSW 2308
T +61 2 492 16900
F +61 2 492 17164
Human-Ethics@newcastle.edu.au

Linked University of Newcastle administered funding:

<table>
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<th>Funding project title</th>
<th>First named investigator</th>
<th>Grant Ref</th>
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