

Bangor University

DOCTOR OF PHILOSOPHY

Essays on ambidextrous leadership in small and medium sized firms

Oluwafemi, Tolulope

Award date:
2018

Awarding institution:
Bangor University

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Download date: 26. Apr. 2024



PRIFYSGOL
BANGOR
UNIVERSITY

**ESSAYS ON AMBIDEXTROUS LEADERSHIP IN
SMALL AND MEDIUM SIZED FIRMS**

Tolulope Busola Oluwafemi

Ph.D. Candidate in Management Studies

Supervisors:

Prof. Konstantinos I. Nikolopoulos

Dr. Siwan Mitchelmore

October 2018.

**A THESIS SUBMITTED IN CANDIDATURE FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY AT BANGOR UNIVERSITY**

I hereby declare that this thesis is the results of my own investigations, except where otherwise stated. All other sources are acknowledged by bibliographic references. This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree unless, as agreed by the University, for approved dual awards.

Yr wyf drwy hyn yn datgan mai canlyniad fy ymchwil fy hun yw'r thesis hwn, ac eithrio lle nodir yn wahanol. Caiff ffynonellau eraill eu cydnabod gan droednodiadau yn rhoi cyfeiriadau eglur. Nid yw sylwedd y gwaith hwn wedi cael ei dderbyn o'r blaen ar gyfer unrhyw radd, ac nid yw'n cael ei gyflwyno ar yr un pryd mewn ymgeisiaeth am unrhyw radd oni bai ei fod, fel y cytunwyd gan y Brifysgol, am gymwysterau deuol cymeradwy.

Dedication

*This thesis is dedicated to my Mum and Dad.
There are no words...
Thank you for everything.*

Acknowledgements

First, I would like to express my deep and sincere gratitude to my supervisors (Professor Kostas Nikolopoulos and Dr Siwan Mitchelmore).

Professor Kostas, thank you for your continuous support, advice, encouragement and patience. Your guidance helped me through my research and writing of this thesis. I wholeheartedly thank you for inspiring and encouraging me throughout the process.

Dr Siwan, thank you for your consistent support in this research. I appreciate your encouragement and insightful comments wholeheartedly. I benefited greatly from your knowledge and experience in my thesis.

I wish to thank the ION leadership Bangor team for their support during my data collection. I gratefully acknowledge all Bangor Business School lecturers, staff, forLAB and friends who have helped me in my work and made this PhD possible.

A big thank you to Dr Ama Eyo, Wei Kang, Miriam Mbah and Dr Monalisa Odibo who have become part of my family. I appreciate you.

In addition, I would like to thank all the leaders and entrepreneurs who participated in this research.

My deepest gratitude goes to my family, my kind parents and my siblings who have encouraged and believed in me. Thank you for all your love, kindness and endless support. Professor Timothy Folorunso Jemiriye, I will never forget you. Keep resting.

TABLE OF CONTENTS

Declaration and Consent	4
Dedication	8
Acknowledgements	9
Abstract	16
Introduction to the thesis	17
References.....	20
CHAPTER 1.....	22
1.1 Research Background	23
1.2 Innovation defined	24
1.3 Towards a better understanding of the innovation process	25
1.4 Conceptualising Leadership	28
1.5 Definition and components of Leadership	29
1.6 The full range leadership model.....	30
1.7 The context: Small and Medium Sized firms (SMEs)	32
1.8 The role of human capital in fostering innovation	34
1.9 Leadership and innovation paradoxes	35
1.10 Review of innovation and leadership studies	38
References.....	48
CHAPTER 2.....	59
Paper 1	59
1.1 Introduction	60
2.1 Background to the study.....	63
2.1.1 Duality of innovation and Paradoxes of leading innovative pursuits.....	63
2.1.2 SME leaders and innovation.....	66
2.1.3 Employees and innovation.....	68
2.1.4 Ambidextrous leadership theory	69
2.2 Hypothesis Development.....	71
2.2.1 Opening leadership behaviors and employee explorative behaviors	71
2.2.2 Closing leadership behaviors and employee exploitative behaviors	72
2.2.3 Ambidextrous leadership and employee ambidexterity	73
2.2.4 The effect of Adaptive/flexible leadership behaviors on the association between ambidextrous leadership and Employee ambidexterity.....	75
3.1 Method	77
3.2 Participants and procedure.....	78
3.3 Data Description	78

3.4 Measures	80
3.4.1 Opening and closing leadership behaviors	80
3.4.2 Employee exploration and exploitation behaviors	80
3.4.3 Adaptive/ flexible behavior	81
3.4.4 Demographic Variables and Control variables	81
3.4.5 Common-Method Bias	82
4.1 Data Analysis and Results	83
4.2 Measurement validation	83
5.1 Discussion	92
5.2 Theoretical and Practical Implications	95
5.3 Limitations and Future Research	96
References	99
CHAPTER 3	107
Paper 2	107
1.1 Introduction	108
2.1 Ambidextrous leadership for innovation	111
2.2 Hypotheses development	116
2.2.1 Personality traits and ambidextrous leadership	116
2.2.1 Emotional Intelligence and Ambidextrous leadership	120
2.2.3 Adaptive/flexible leadership and ambidextrous leadership	124
2.2.4 Transformational leadership and ambidextrous leadership	126
2.2.5 Transactional leadership and ambidextrous leadership	128
3.1 Methodology	129
3.2 Data collection and procedure	129
3.3 Measures	131
4.1 Data Analysis and Results	132
5.1 Discussion	139
5.2 Limitations and Future research	143
6.1 Conclusion	144
References	146
CHAPTER 4	157
Paper 3	157
1.1 Introduction	158
2.1 Background to the study	162
2.1.1 Social roles and Gender roles	162
2.1.2 Leadership and gender roles	163

2.1.3 Female Entrepreneurs as Leaders.....	166
2.1.4 Ambidextrous leadership: A proposition for androgynous leaders?.....	168
3.1 Method	171
3.2 Reliability and Validity	174
3.3 Ethical considerations	175
4.0 Results	176
5.1 Interpretation	187
5.2 Implications	191
6.1 Conclusions, Limitations and Further Research	193
References.....	196
CHAPTER 5.....	204
1.1 Summary of the three papers and conclusion	204
Appendices.....	208

List of Tables

Chapter 1

Table 1.1. Large Organisations versus SMEs.....	31
Table 1.2. Paradoxes of Leading innovation.....	34
Table 1.3. Innovation and leadership studies.....	39
Table 1.4. Opening and Closing Leadership behaviors.....	44

Chapter 2

Table 2. 1. Examples of opening and closing leadership behaviors.....	70
Table 2. 2. Sample Description and Demographic characteristics	79
Table 2.3. Means (M), Standard Deviations (SD), and Correlations of Variables.....	82
Table 2. 4. Composite Reliability and Convergence Validity.	85
Table 2. 5. Sample characteristics of opening and closing leadership behaviors.....	85
Table 2. 6. Sample characteristics of employee exploration and exploitation behaviors.....	88
Table 2. 7. Results of Regression Analyses.....	89

Chapter 3

Table 3. 1. Results of Reliability and validity	133
Table 3. 2. Descriptive statistics and Correlation matrix.....	133
Table 3. 3. Regression analysis	137
Table 3.4. Suggested ambidextrous leadership antecedents.....	141

List of Figures

Chapter 1

Figure 1. 1.The cyclic nature of innovation	27
Figure 1.2. FRL model.....	28

Chapter 2

Figure 2. 1: Model of ambidextrous leadership	71
Figure 2. 2: Relationship between AL and employee ambidexterity.....	77
Figure 2.3: Effect of OLB and CLB on employee ambidexterity.....	88
Figure 2.4: Mediating effect of AFB.....	88

Chapter 3

Figure 3 .1: Model of ambidextrous leadership	114
Figure 3.2: Respondent's age.....	129
Figure 3.3: Years of experience.....	129
Figure 3.4: Number of employees.....	130

Ambidextrous

/ˌambɪˈdɛkstrəs/

Adjective

Meaning: ability to use the right and left hands with equal ease.

Dictionary Example: "few of us are naturally ambidextrous"

Abstract

As the growing body of literature draws on various theoretical perspectives of ambidexterity— an organization's ability to balance both exploration and exploitation activities, an important stream has emerged that focuses on the role of leaders in the development of ambidexterity. This thesis is seeking to advance knowledge on how SME leaders engage in ambidextrous leadership to respond to the complexities of innovation and improve employee's innovative behaviors as well as overall business performance.

Using survey generated data from 98 SMEs, the first paper reveals that opening and closing leadership behaviors predicted employee explorative and exploitative innovation behaviors respectively above all control variables. The combination of both leadership behaviors also predicted employee ambidexterity. A significant revelation was that the effect of ambidextrous leadership behaviors on employee innovation behaviors is mediated by adaptive/flexible leadership behavior.

The second paper investigates the association of potentially relevant antecedents: personality traits, emotional intelligence, adaptive/flexible leadership, transformational leadership and transactional leadership to ambidextrous leadership behaviors (including opening leadership behaviors and closing leadership behaviors). With the exception of personality traits which showed no relationship to ambidextrous leadership, the other independent variables showed varying relationships to ambidextrous leadership.

Using a qualitative methodology (interviews), the third paper explores ambidextrous leadership behaviors in female entrepreneurs in relation to gender-role identity. Our findings from semi-structured interviews with 14 female entrepreneurs in Wales reveal that female leaders in our study are mostly androgynous and ambidextrous. Our results demonstrate that female entrepreneurs have little or no consideration for gender stereotypes in performing their leadership duties. Rather, greater focus is placed on demonstrating their competence using traits and leadership behaviors that drive goal accomplishment including the integration of stereotypic masculine and feminine leadership behaviors as considered necessary. Additionally, we observe that the choice of leadership behavior/trait that is emphasized at any point in time is contingent on contextual or situational demands of work as well as individual competencies of the entrepreneur.

Overall, this thesis highlights theoretical and practical implications for ambidextrous leadership. Further, it provides steps towards effective understanding of ambidextrous leadership development and practical applications. This thesis indicates that ambidextrous leadership is important for SMEs seeking to enhance employee innovative work behaviors.

Keywords: Ambidextrous leadership, Opening leadership, Closing leadership, Exploration, Exploitation, Personality traits; Emotional intelligence; Adaptive/Flexible leadership; Transformational leadership and Transactional leadership Female entrepreneurs and Gender roles.

Introduction to the thesis

Ambidexterity is a growing field of management research (Junni, Sarala, Tarba, Liu and Cooper, 2015). Literally, ambidexterity refers to the capability to write with both hands but when used in the context of management it explains the competence of an organization to balance the opposing organizational learning activities of exploration and exploitation innovation (Gibson and Birkinshaw, 2004; He and Wong, 2004). Companies often attempt to gain competitive advantage in market through innovation (Andriopoulos and Lewis, 2010). However, this is frequently elusive except a company is ambidextrous—excelling at both conflicting modes of innovation (exploration and exploitation). In other words, simultaneously exploring completely new capabilities and exploiting its existing ones (March, 1991).

As the growing body of literature draws on various theoretical perspectives, an important stream has emerged that focuses on the role of leaders in the development of ambidexterity (Gibson and Birkinshaw, 2004; Nemanich and Vera, 2009). However, this stream of research still lacks substantial empirical research. Therefore, the aim of this thesis is to answer calls for more empirical research on ambidextrous leadership and we do this in small and medium sized business settings – a context that is very important yet underexplored in relation to leadership behaviors and leadership development (Leitch, McMullan and Harrison, 2013). In agreement with Bledow et al. (2011), the relative importance of different leadership behaviors varies depending on context. Therefore, studies from large organisations may not represent the reality of smaller sized firms (Shrader, Mulford and Blackburn, 1989). In addition to providing empirical evidence for ambidextrous leadership in SMEs, this thesis contributes to the literature by highlighting new opportunities for future research of ambidextrous leadership in this business context.

Leadership and innovation are critical concepts in academic research. However, empirical research findings on innovation leadership studies are inconclusive (Chen, Tang, Jin, Xie, and Li, 2014; Bledow, Frese, and Mueller, 2011). To expound these mixed relationships between leadership and innovation, the concept of *ambidexterity* has recently been introduced to elucidate the process of innovation, suggesting that innovation is a complex process involving several paradoxical activities and as a result

will require ambidextrous leaders (Bledow, Frese, Anderson, Erez and Farr, 2009; Rosing, Frese and Bausch, 2011). Indeed, the innovation process is complex and full of paradoxes because of the constant need to achieve a balance between new and old activities; structured and chaotic activities; and uncertain and reliable activities (Rosing, Rosenbusch and Frese, 2010).

Explicitly, innovation typically involves *creating* and *implementing* ideas. However, generating creative ideas and implementing these ideas do not occur in a neat linear order as often described by extant literature (Anderson, De Dreu, and Nijstad, 2004; Van de Ven, Polley, Garud and Venkataraman, 1999). Rather, they occur extemporaneously in a constantly changing manner, thereby introducing paradoxes and tensions to the innovation process (Hunter, Thoroughgood, Myer and Ligon, 2011; Mirion, Erez & Naveh, 2004).

These entire activities map onto *ambidexterity* — the capability to maneuver complexities and balance opposing tendencies of exploration and exploitation. Exploration and exploitation are mutually inclusive innovation activities and are ubiquitous in all innovative undertakings regardless of whether a firm is more inclined to exploration innovation or exploitation innovation (Bagheri, 2017; He and Wong 2004). On the one hand, engaging in activities that explore new possibilities can lead to radical innovation; on the other hand, engaging in activities that exploit old certainties can lead to incremental innovation (Birkinshaw and Gupta, 2013; Bledow et al., 2009). However, exploration and exploitation have varying requirements, thus placing competing demands and tensions on the scarce resources of the firm (Gupta, Smith and Shalley, 2006; March, 1991). Therefore, leaders in the context of innovation must strategically work to resolve multiple tensions continually (Hunter et al., 2011; Bledow et al., 2009).

In light of this, innovation complexities and paradoxes require parallel leadership approaches (Andriopoulos and Lewis, 2010). Evidently, traditional models of leadership are deficient in capturing the dynamic nature of innovation and a single set of leadership behavior cannot foster innovation (Yukl, 2009). Rather, contemporary models that take into account the complexity of the innovation process are more

suitable to explain innovation (Rosing et al., 2010, 2011). The efficient management and leadership of innovation would require the demonstration of a combination of different leadership behaviors that corresponds to the changing needs of the innovation process (Ancona, Goodman, Lawrence and Tushman, 2001).

This thesis focuses on *ambidextrous leadership theory*, which proposes that to be able to drive innovation efficiently, leaders must demonstrate and constantly switch between *opening* and *closing* leadership behaviors. *Opening leadership behavior* (OLB) is directed at increasing variance in employee behaviors to promote exploration innovation while *closing leadership behavior* (CLB) is directed at decreasing variance in employee behaviors to promote exploitation innovation. By flexibly switching between opening and closing leadership behaviors based on changing requirements within the innovation process, leaders will promote innovation ambidexterity—simultaneous exploration and exploitation innovation behaviors in employees (Rosing et al., 2011). This theory represents a shift from stable or fixed leadership styles and recognises leadership flexibility as crucial to integrating the complementary leadership behaviors required to drive innovation.

The following thesis is comprised of three working papers and a general literature review of the main research areas of this study as well as the context (SMEs). The first paper presents one of the first empirical investigations of ambidextrous leadership behavior amongst SME business leaders while the second paper explores the antecedents of ambidextrous leadership. Finally, the third paper explores ambidextrous leadership behaviors amongst female entrepreneurs. In this thesis, we use a mix of research techniques. While the first two studies are quantitatively undertaken using survey (questionnaires) as a data collection method. The questionnaire was designed using a five point Likert-type scale to evaluate respondent's views. The third paper is a qualitative study and interviews have been used to collect data from female entrepreneurs.

These papers have been written in a way that they can be submitted to journals for publication.

Paper 1: Leading Innovation: Empirical Evidence for Ambidextrous Leadership from UK High-Tech SMEs

Paper 2: Antecedent Influences For Effective Ambidextrous Leadership: What Roles Do Personality Traits, Emotional Intelligence, Adaptive /Flexible Leadership And Transformational Leadership Play?

Paper 3: Gender Role Identity and Ambidextrous Leadership Behavior in Female Entrepreneurs: A Qualitative Study

This thesis sought to understand and advance knowledge on how SME leaders engage in ambidextrous leadership to respond to the complexities of innovation and improve employee's innovative behaviors as well as overall business performance. All of the following papers cover some aspects of this, and in doing so offer a number of important contributions to research and practice in the fields of innovation and leadership. The next section provides a general background to the research areas examined in this thesis.

References

- Ancona, D. G., Goodman, P. S., Lawrence, B. S., & Tushman, M. L. (2001). Time: A new research lens. *Academy of management Review*, 26(4), 645-663.
- Anderson, N., De Dreu, C.K. and Nijstad, B.A. (2004). The routinization of innovation research: A constructively critical review of the state-of-the-science. *Journal of organizational Behavior*, 25(2), pp.147-173.
- Birkinshaw, J., & Gupta, K. (2013). Clarifying the distinctive contribution of ambidexterity to the field of organization studies. *Academy of Management Perspectives*, 27(4), 287-298.
- Bledow, R., Frese, M., Anderson, N. R., Erez, M., & Farr, J. L. (2009). A dialectic perspective on innovation: Conflicting demands, multiple pathways, and ambidexterity. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 2(3), 305-337.
- Bledow, R., Frese, M., Mueller, V. (2011). Ambidextrous leadership for innovation: the influence of culture, in William H. Mobley, Ming Li, Ying Wang (ed.) *Advances in Global Leadership* (Advances in Global Leadership, Volume 6) Emerald Group Publishing Limited, pp.41 - 69

- Chen, Y., Tang, G., Jin, J., Xie, Q., and Li, J. (2014). CEOs' transformational leadership and product innovation performance: The roles of corporate entrepreneurship and technology orientation. *Journal of Product Innovation Management*, 4(31), 2-17.
- Gibson, C.B. and Birkinshaw, J. (2004), "The antecedents, consequences, and mediating role of organizational ambidexterity", *Academy of Management Journal*, Vol. 47 No. 2, pp. 209-226.
- Gupta, A. K., Smith, K. G., & Shalley, C. E. (2006). The interplay between exploration and exploitation. *Academy of management journal*, 49(4), 693-706.
- Hunter, S.T., Thoroughgood, C.N., Myer, A.T. and Ligon, G.S. (2011). Paradoxes of leading innovative endeavors: Summary, solutions, and future directions. *Psychology of Aesthetics, creativity, and the arts*, 5(1), p.54.
- Junni, P., Sarala, R. M., Tarba, S. Y., Liu, Y., & Cooper, C. L. (2015). Guest editors' introduction: The role of human resources and organizational factors in ambidexterity. *Human Resource Management*, 54(S1), s1-s28.
- March, J.G. (1991), "Exploration and exploitation in organizational learning", *Organization Science*, Vol. 2 No. 1, pp. 71-87.
- Miron, E., Erez, M., & Naveh, E. (2004). Do personal characteristics and cultural values that promote innovation, quality, and efficiency compete or complement each other? *Journal of Organizational Behavior*, 25(2), 175-199.
- Rosing, K., Frese, M., & Bausch, A. (2011). Explaining the heterogeneity of the leadership-innovation relationship: Ambidextrous leadership. *The Leadership Quarterly*, 22(5), 956-974.
- Van de Ven, A. H., Polley, D., Garud, R., & Venkataraman, S. (1999). The innovation journey. New York: Oxford University Press.
- Yukl, G. (2009). Leading organizational learning: Reflections on theory and research. *The Leadership Quarterly*, 20(1), 49-53.

CHAPTER 1

RESEARCH BACKGROUND

1.1 Research Background

To survive in today's dynamic and competitive business environment, firms must innovate (Bagheri and Akbari, 2018). Innovation has become an essential strategy vital to firm performance, growth and survival (Anderson, Potočnik and Zhou, 2014; Rosenbusch, Brinckmann and Bausch, 2011). Small and Medium sized enterprises (SMEs) have been found to exert a strong positive influence on the economies of all countries through their capacity to develop and commercialise innovation (Keizer, Dijkstra, and Halman, 2002; Ladzani and Van Vuuren, 2002; Radas and Božić, 2009). Acknowledging the economic impact of SMEs, many developing and developed countries all over the world have shown great interest and support to SMEs to stimulate the realisation of innovation (Burns, 2011; Radas and Božić, 2009).

Innovation is also crucial to academics. Several studies have been conducted to identify the determinants of innovation and amongst other factors, leadership has been acknowledged as a vital predictor of innovation (Jansen, Vera and Crossan, 2009; Manz, Bastien, Hostager and Shapiro, 1989; Mumford, Scott, Gaddis and Strange, 2002). Indeed, the crucial role played by entrepreneurial leaders to foster innovation has been well documented (Bagheri, 2017; Lin, McDonough, Lin and Lin, 2013). For example, Schumpeter (1965) recognised entrepreneurs as leaders and innovators who constantly engage in new activities that challenge the status quo.

However, research findings on the association between leadership and innovation have shown high heterogeneity ranging from positive to negative associations due to the complexity of the innovation process, which demands divergent requirements (March 1991). This has limited holistic knowledge and understanding of the leadership behaviors and dynamics required to foster innovation in different contexts (Bledow, Frese, Anderson, Erez, and Farr, 2009; Yukl, 2009). Consequently, there have been calls for comprehensive models that take into account the changing requirements within these processes (Yukl, 2009) and this has led to the proposition of ambidexterity theory of leadership for innovation (Rosing, Frese and Bausch, 2011). In this thesis, we examine the propositions of this theory within the SME business context.

1.2 Innovation defined

There are varied descriptions of innovation. Schumpeter (1934) defined innovation as the reflection of novel outputs of a new good, a new method of production, a new market, a new source of supply, or a new organizational structure. Schumpeter further suggested that innovation can be classified as product, process or business model innovation. Similarly, Kanter (1983) defines innovation as the generation, acceptance and implementation of new ideas, processes, products and services involving creativity as well as original invention.

Another widely accepted definition of innovation is that innovation is the mutually inclusive processes of *creativity* and *implementation* (including commercialization) (Amabile, 1996). West and Farr (1990) also describe innovation as “the intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organization or wider society” (p. 9).

Crossan and Apaydin (2010) developed a comprehensive typology for innovation and refined the definition of innovation as “production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new models of production; and establishment of new management systems. It is both a process and an outcome” (p. 1155).

From these definitions, it is clear that innovation goes beyond creativity. Even though creativity and innovation share some similar characteristics, the implementation and commercialization dimensions included in innovation are what differentiates innovation from creativity, which by itself is limited in scope to sheer idea generation (West, 2002). Van Grundy (1987) distinguished between both constructs by asserting that creativity can be a part of the innovation process thereby contributing to innovation but creativity can be extended towards other ends. Therefore, a creative venture without a commercial value will be recognised as an invention (West, 2002). This suggests that the social process of commercialisation of the invented

product/service is a huge factor in determining the innovativeness of the product/service. (Keizer et al., 2002).

Schumpeter (1965) classified identified five kinds of innovation including

- The introduction of a new good (or a significant improvement in the quality of an existing good)
- The introduction of a new method of production (process innovation)
- The opening up of a new market (especially an export market in a new territory)
- The identification of new sources of supply of raw materials or half-manufactured goods
- The creation of a new type of industrial organization (e.g., administrative innovation)

1.3 Towards a better understanding of the innovation process

Most models of innovation identify creativity (idea generation) and implementation as the two processes of innovation and these different processes are linked to exploration and exploitation activities. *Exploration innovation* seeks to create new products/services and technologies (Hernández-Espallardo, Manuel Sánchez-Pérez and Segovia-López, 2011); while *exploitation innovation* is focused on improving competencies and maintaining established routines (Nooteboom, Haverbeke, Duysters, Gilsing and Van den Oord, 2007). Exploration innovation are driven by activities such as flexibility, experimentation, variance, taking risks and search, while exploitation innovation are facilitated by activities such as efficiency, refinement, choice, selection, implementation and execution. (March, 1991; Levinthal and March, 1993).

Traditional models of innovation falsely present the process of innovation as a linear activity starting with creativity and ending with implementation. However, the realistic nature of innovation is cyclic, constantly requiring a change from exploration to exploitation, creativity to implementation and vice versa (Anderson, De Dreu and

Nijstad, 2004; King, 1992; Schroeder, Van de Ven, Scudder and Polley, 1989). Furthermore, exploration and exploitation are not mutually exclusive, rather they are complementary innovation activities (Bledow et al., 2009). The combination of both exploration and exploitation have been found to be highly essential to optimal innovation performance (March, 1991; Nemanich and Vera, 2009; O'Reilly and Tushman, 2004). This strategy of engagement in exploration and exploitation on high levels whilst maintaining the right balance between both activities is termed "organizational ambidexterity" (Gibson and Birkinshaw, 2004). By focusing on one of either exploration or exploitation activities, a leader puts the organization at the risk of missing the benefits of the other (He and Wong, 2004). Furthermore, research has demonstrated that organizations that achieve ambidexterity are more successful than organizations that fail to achieve ambidexterity (Gibson and Birkinshaw, 2004; He and Wong, 2004).

Berkhout (2007) highlighted the shortcomings of linear models of innovation stating that

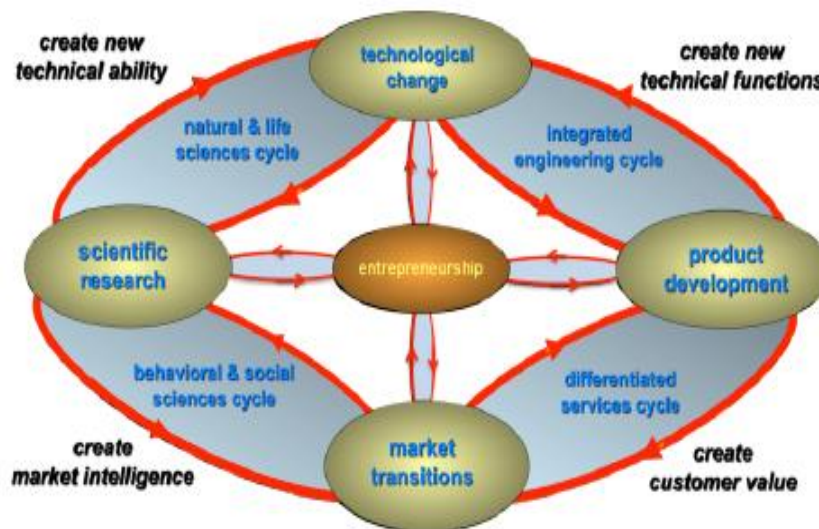
- a). Most models describe innovation as an activity starting from generating an idea to market introduction and such models fail to give attention to the dynamic properties of the innovation process
- b). The emotional components of innovation (which are responsible for many failures) are hardly addressed. This is because science is being viewed as technology-orientated and R & D is closely linked to manufacturing, thereby less attention is given to the social and behavioral sciences involved in the innovation process.
- c). Despite suggestions that the complex interactions between new technological capabilities and emerging markets are a vital part of the innovation process, the traditional innovation models fail to capture this.
- d). Finally, the role of the entrepreneur/leader is not highlighted in these traditional linear models.

As the need to engage in both creativity and implementation interchange constantly during the innovation process; finding the right balance between exploration and

exploitation becomes a daunting experience for leaders given that the requirements for exploration and exploitation differ considerably (March, 1991). Thus, this places competing demands and tensions on the scarce resources of the firm (Gupta, Smith, and Shalley, 2006; March, 1991) and introduces complexities, tensions and paradoxes to the entire innovation process (Hunter, Thoroughgood, Myer and Ligon, 2011).

Shifting from these linear models, Berkhout (2007) proposed a holistic, dynamic and cyclic innovation model (CIM) that emphasises the importance of showing the relationship between the hard world of changing technical capabilities and the soft world of changing needs and concern. The model also highlights the important role of the entrepreneur/leader in connecting all the various components of the innovation process.

Figure 1. 1.The cyclic nature of innovation



Source: Berkhout, G. 2007, *The cyclic nature of innovation: connecting hard sciences with soft values*, Elsevier

The CIM model depicts innovation as a system of dynamic processes, and a circle of change with four nodes of change namely: scientific research, technological change, product development, and market transitions. Also important in this model are cycles of change by which the dynamic processes in the nodes influence each other. Precisely, they inspire, correct, and supplement each other consequently creating a first-order

dependency effect. This then produces a system of linked cycles, which in turn influence each other causing higher-order dependencies. Overall, this creates a coordinated system of highly non-linear dynamic processes that spark a creative interaction between changes in science and industry on one hand and between changes in technology and market on the other hand. It is pertinent to emphasise that in the cyclic model of innovation, the role of the leader is pivotal (Berkhout, 2007).

1.4 Conceptualising Leadership

Leadership is a widely studied topic in the social sciences that has gained the attention of researchers worldwide (e.g., Bass, 1990; Bryman, 1992; Bryman, Collinson, Grint, Jackson & Uhl-Bien, 2011; Day & Antonakis, 2012; Gardner, 1990; Hickman, 2009). For over a century, scholars and practitioners have attempted to have a universal consensus on a definition of leadership without success. In a review of leadership studies, Stogdill (1974) pointed out there are about as many definitions of leadership as the number of people who have tried to define the construct.

According to (Fleishman, Mumford, Zaccaro, Levin, Korotkin and Hein, 1991) as many as 65 (different) classification systems have been developed in the past 60 years to define the dimensions of leadership. While some scholars emphasize the trait, skill or relational aspects of leadership, some other scholars debate as to whether management and leadership are separate processes (Rost, 1991). One set of definition conceptualises leadership as the focus of group processes (Hemphill, 1949). This perspective suggests that the leader is at the centre of group change and activity, and that the leader embodies the will of the group (e.g., Bass, 1990). Another set of definition conceptualises leadership from a personality perspective (e.g., Peters and Waterman, 1982). From this viewpoint, leadership is seen as a combination of special traits (or characteristics) possessed by some individuals. These special traits are believed to enable leaders to influence other individuals to complete tasks (Northouse, 2013). The 'power' relationship that exists between leaders and followers has also been emphasized in some definitions of leadership (Rost 1991). Typically, these definitions focus on the power the leader has to effect change(s) in others.

In addition, some scholars have addressed leadership from a relational perspective stressing that leadership is a transformational process that inspires followers to perform beyond what is expected of them (Bass and Avolio, 2004). Finally, some scholars view leadership from the perspective of the skills (capabilities and knowledge) that make leadership possible and effective (Bass, 1990).

Overall, leadership is a mature field and after many years of dissention on its definition, it is clear that leadership is a complex construct that means different things to different people; more so because of factors such as growing global influences and generational differences (Northouse, 2013).

1.5 Definition and components of Leadership

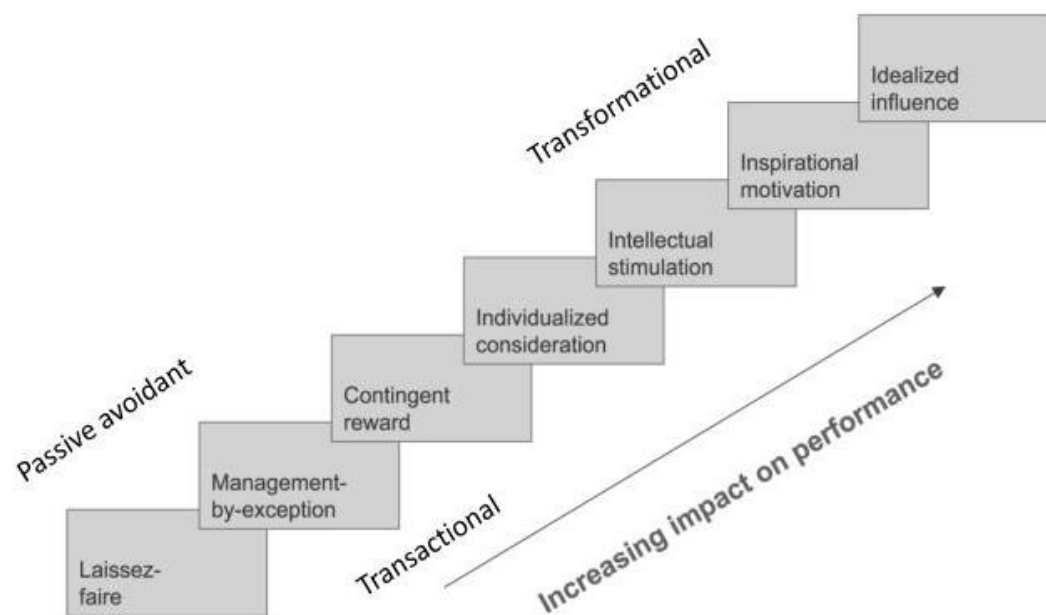
In order to provide a comprehensive definition of leadership, Northouse (2013) pointed out four basic components that are central to leadership irrespective of how it has been conceptualised. Firstly, Leadership is a process; secondly, leadership involves influence; thirdly, leadership occurs in groups and lastly leadership involves common goals. With these components as a guide, Leadership is defined as “a process whereby an individual influences a group of individuals to achieve a common goal” (Northouse, 2013, p. 5).

Defining leadership this way has several implications. Firstly, leadership is not a characteristic residing in the leader; rather it is a transactional or relational process occurring between the leader and the follower. This definition also calls attention to the fact that leadership is not a linear event but an interactive event where a leader affects and is affected by followers (Northouse, 2013). In addition, influence is absolutely necessary for leadership to exist. This definition also regards groups as the context in which leadership occurs. This group can range from a very small task group to a very large group and an entire organisation and a denominator feature of this group is the presence of mutual goal(s) or purpose(s). By stressing the mutuality required in the process of leadership, there exists an ethical overtone stressing the need for leaders to work together with followers to achieve a common good. This also reduces the possibility of leaders to use force or behave unethically towards the followers (Rost, 1991).

1.6 The full range leadership model

Extant literature consists of many models of leadership. However, this present work is not primarily concerned with a review or summary of all these models. Bass and Avolio (2004) introduced the full range model (FRL) of leadership, which captures most if not all leadership elements. FRL comprises of two main factors: *transformational* leadership and *transactional* leadership. The sub-dimensions of transformational leadership are idealised influence (attributed); idealised influence (behavior); inspirational motivation; intellectual stimulation; and individualised consideration. The sub-dimensions of transactional leadership include contingent reward; management by exception (active); management by exception (passive), and lastly the laissez faire leadership style.

Figure 1.2 The full range leadership model



Adapted from Bass and Avolio (2004). Multifactor leadership questionnaire: Manual and sampler set. *Mind Garden Inc., Redwood City, CA.*

Leaders that exhibit transformational leadership behaviors encourage their followers to achieve needs of higher order such as self-esteem and self-actualisation (Bass, 1985). These leaders also motivate their followers to self-sacrifice where necessary and to aspire to achieve organisational goals over personal goals (Bass, 1995).

Transformational leadership is positively related to both individual and organisational outcomes (Jung, Wu and Chow, 2008). The dimension of idealised influence describes how leaders show genuine concern for and awareness of followers' needs and create a sense of shared risk taking (Jung et al., 2008). Inspirational motivation provides encouragement towards the achievement of goals while intellectual stimulation is the leadership dimension that motivates followers to be more creative and innovative. The dimension of individualised consideration describes how transformational leaders value their relationship with their followers and try to personalise how they assist each follower in addressing their needs for personal growth, empowerment, self-efficacy and achievement (Jung et al., 2008).

Contingent reward and management by exception are the sub-dimensions of transactional leadership. In order to encourage good performance and to clarify the expectations from followers, transactional leaders use contingent rewards (Nielsen and Lassen, 2012). This style has been found to inhibit creativity and has been reported to have the tendency to influence employee job satisfaction negatively (Bono and Judge, 2004). Management by exception describes leader's behaviors that includes corrective criticisms, negative feedback and negative reinforcement (Northouse, 2013; Ryan and Tipu, 2013).

Laissez-faire leadership style is simply the absence of leadership (Northouse, 2013). Laissez-faire leadership manifests as non-leadership behavior in which leaders exhibiting this style have a tendency to disregard leadership responsibilities. Laissez-faire leaders show little or no involvement in important organisational matters and they delay response to critical issues (Bass and Avolio, 2004). Furthermore, Laissez-faire leaders avoid interventions and this causes frustration for followers (Lievens, Van Geit and Coetsier, 1997) as well as low levels of follower self-esteem (McColl-Kennedy and Anderson, 2005). Lievens et al. (1997) suggest that laissez faire leaders are not concerned about productivity, do not set performance standards and they do not provide feedback, which leads to demotivation of followers.

The major criticism of the FRL model is the use of the Multifactor Leadership Questionnaire (MLQ) to measure its dimensions (Antonakis, Avolio, and

Sivasubramaniam, 2003; Yukl, 1999). Bycio, Hackett, and Allen (1995) particularly noted that the nine-factor dimension of Bass and Avolio (2004) is not as stable as it seems to imply. Furthermore, Tracey and Hinkin (1998) reported that transformational leadership is the only valid factor in the model. However, a study by Antonakis et al. (2003) with over three thousand respondents show strong support for the nine factor model as the best representation of the MLQ'S factor structure. The MLQ is one of the most frequently used instruments in the leadership literature and many scholars consider the instrument to be highly reliable and well validated (Deichmann and Stam, 2015; Qu et al., 2015; Ryan and Tipu, 2013).

1.7 The context: Small and Medium Sized firms (SMEs)

In the UK, SMEs are usually defined as any company having less than €50 million annual turnover and having not more than 250 employees (European Commission, 2005). Statistics from National Federation of Self Employed & Small Businesses Limited for 2016 reported that there were 5.5 million private sector businesses in the UK at the start of the year and SMEs accounted for 99.9 % of all the businesses. Total employment in SMEs was 15.7 million constituting 60% of all private sector employment in the UK. The combined annual turnover of SMEs was £1.8 trillion, 47% of all private sector turnover in the UK. Evidently, SMEs are critical to the UK economy as they provide innovation, employment and economic value (CIPD, 2014).

There is no one agreed definition of high-tech SMEs. They are normally considered as SMEs operating at a fast pace, highly creative, technology-driven and innovation focused (Crick & Spence, 2005). Additionally, high-tech SMEs are known to have well educated employees and the capability to adapt to fast changing environments (Bagheri, 2017; Crick & Spence, 2005). These characteristics coupled with the flat and flexible structure of high-tech SMEs expedite innovation in this sector (Delahaye, 2005) and as such have positioned them as fundamental drivers of economic growth and employment in many countries (Bruque and Moyano, 2007). In Europe, the activities of SMEs are considered as instrumental to achieving the much-desired structural transformation of economies (European Commission, 2008).

The high-tech sector is particularly characterized by environmental uncertainty and complexities (Damanpour, 1996; Tidd, 2001). Thus, this industry may experience changes more frequently than other sectors and these firms will need to react rapidly and generate mechanisms to assess opportunities and threats quickly and allocate resources in order to take advantage of the opportunities while working to avoid or mitigate the threats (Eisenhardt and Martin, 2000; Teece et al., 1997). Due to the activities and characteristics of this sector, it is plausible that high levels of ambidexterity are required. The challenge of managing the stability needed for exploitation and fostering the change required for exploration (Nooteboom, 2000) will be increased in this sector (Raisch and Birkinshaw, 2008). This highlights leadership and management challenges, thereby underscoring the requirement for tactical leadership and management intervention when leading innovation in this sector.

Table 1.1 Large organisations versus SMEs

Large organisations	SMEs
High levels of formalisation	Low levels of formalisation
Limited visibility of top management	Increased visibility of top management
Low rate of innovation	High rate of innovation
Low personnel authority	High personnel authority
Abundant human and financial resources	Limited human and financial resources
Higher rate of resistance to change	Lower rate of resistance to change
Tall organizational hierarchy	Flat organizational hierarchy

Adapted from Nicholas et al., (2011, p. 229).

Achieving optimal innovation can prove to be a formidable task for SMEs due to the fast changing scientific and technological developments, the complex nature of innovation, activities of larger organisations as well as the shorter product lifespans (Keizer et al., 2002; O'Regan et al., 2006). Clearly, the ability to adapt to these changes is the key to survival for this sector. Hence, SMEs must embrace and balance strategic

approaches to drive and manage innovation pursuits to ensure long-term survival of the firm (Bessant, Lamming, Noke and Phillips, 2005; O'Regan et al., 2005). Most especially the high-tech sectors (Bagheri, 2007).

There are significant difference between large organisations and SMEs based on structure, policies and management (Ledwith and O'Dwyer, 2008; Nicholas et al., 2011). See Table 1.1. Furthermore, the competitive strategies employed by larger organizations and the ever-changing market conditions have increased the pressure on SMEs to engage in innovation and to focus on innovation capabilities and innovation management as source of competitive advantage and survival (Bagheri, 2017; McAdam, McConvery and Armstrong, 2004). Although, SMEs may be able to expedite innovation due to their flexible structure and flat hierarchy (Razeghi, 2008), SMEs struggle to meet demands and retain market share (Nicholas et al., 2011). Other advantages of SMEs which may foster innovative activities include rapid response to environmental change, low resistance to change, conducive innovative environment and creativity (Bartlett and Bukvič, 2001; Kaufmann and Tödtling, 2002).

1.8 The role of human capital in fostering innovation

Amongst several factors that drive innovation, considerable attention has been given to human capital attributes that foster innovative behaviors (Marcati, Guido and Peluso, 2008). These factors are usually related to the characteristics of innovative individuals, and they include the individual's wealth of experience, education, competencies, skills and knowledge (technical and managerial) garnered over time (Burt, 1992; Batjargal, 2007). Scholars posit that innovation is a product of both individual factors such as cognitive abilities, personality and motivation and contextual factors such as leadership and job characteristics (Hammond et al., 2011). In addition, some scholars have highlighted the importance of the role of employees in achieving innovation (Florida and Goodnight, 2005).

Reference is often made to the crucial role played by leaders in fostering innovation (e.g., Mumford et al., 2002; Hunter et al., 2011). Leaders are responsible for recognizing innovative opportunities and gathering the required innovative abilities (De Jong and Den Hartog, 2010). Leadership inspires and enables employee's work

behavior in many ways (Bagheri, 2017; Chen, Tang, Jin, Xie and Li, 2014). It is not the case that employee creativity and innovativeness are automatically produced; leaders must foster employee creativity and innovativeness using appropriate leadership behaviors (Tung and Yu, 2016).

Leadership is the art of influencing others. Today's organizations need effective leaders who understand the complexities of the rapidly changing global environment and the importance of innovation (Nahavandi, 2002). Researchers (e.g., Den Hartog and Verburg, 1997; Howell and Avolio, 1993) have reported that leaders positively influence the outcomes of innovation. Similarly, Dobni (2008) suggests that organisational leaders and managers play a key role in determining the innovation propensity of their organisation. In particular, leaders help to create and where necessary increase the capability and disposition of the organisation to innovate successfully by sharing an innovation promoting vision with their followers, hiring and supporting individuals who will champion innovation-orientated change and instilling a sense of strong innovation culture that rewards productive work (Hasen and Kahnweiler, 1997; Kanter, 1985). Additionally, Basu and Green (1997) observed that followers are more likely to engage in innovative pursuits successfully only if leaders provide required support. In summary, managing innovation and ambidexterity is a key responsibility; of not only leaders but also other workers in the organisation as employee characteristics play a huge role in the successful integration of tactics and strategies to manage innovation paradoxes (Andriopoulos and Lewis, 2009, 2010).

1.9 Leadership and innovation paradoxes

Although the exact definition of paradox is debated, most scholars agree that it involves entities with "oppositional tendencies" (Ford and Backoff, 1988, p. 89; Luscher and Lewis, 2008; Smith and Tushman, 2005). Tensions or paradoxes occur frequently in several aspects of organizational life (Bledow et al., 2011; Lewis, 2000; Luscher and Lewis, 2008). In regards to leading innovation endeavours within an organization, leaders must manage numerous tensions between individuals, teams and organizations. In particular, there is the huge task of managing the dual goals of

the creative and commercial process which is related to resolving issues of efficiency and profitability within typically ambiguous and badly defined organizational context (Bledow, Frese, Erez, Anderson, & Farr, 2009; DeFillippi, Grabher, & Jones, 2007).

Supporting creative individuals may require different methods because innovators prefer to be self-directed (Andriopoulos and Lewis, 2010). In contrast, organizations need to establish control in order to manage the available organisational resources and maximise profit (Leana and Barry, 2000). Therefore, leaders of creative and innovation endeavours must find ways to meet the needs of the individuals and those of the organization (Andriopoulos and Lewis, 2010).

Hunter et al., (2011) present four mutually inclusive categories of paradoxes encountered when leading for innovation. The first category represents the internal or localized paradoxes faced by the leader, such as obtaining both domain-specific and general leadership skills. The second category includes leader and team member paradoxes, such as the management of autonomous creative personalities within an increasingly team-oriented environment. The third category comprises tensions between teams and organizations, such as the desire for autonomy at the team-level, contrasted with the need for control at upper levels. Finally, the tensions associated with leaders and the context they face, such as the push for external collaboration contradicted by the need to protect ideas in competitive environments. These paradoxes are summarized in table 1.1 below.

Table 1. 2. Paradoxes of leading innovation

Categories	Leadership Resolution
Internal paradoxes	
1. Dual Expertise	Obtain domain expertise but also gain requisite leadership skills
2. Generation Evaluation	Be evaluative of pursuits but also generative of new ideas
Leadership and team-level paradoxes	

3. Creative Personality Cohesion	Develop team cohesion with a team of “creative” personalities
4. Vision Autonomy	Provide a vision and direction to team members but also allow for high levels of autonomy
5. Restriction Freedom	Offer time and resources but also provide pressure and restrictions required for performance
Leadership and organization-level paradoxes	
6. Insularity Cohesion	Facilitate team-level cohesion but not insularity within the organization
7. Champion Evaluator	Be evaluative within the team, but sell ideas to upper management and other organizational stakeholders
8. Creativity Cost	Pursue multiple ideas while keeping project and organizational costs low
9. Creativity Cost	Provide requisite time necessary for creative pursuits while keeping organizational costs low
Leadership and contextual paradoxes	
10. Intrinsic Extrinsic	Instill intrinsic motivation using more readily available extrinsic tools
11. Local Long-Term	Instill passion (intrinsic motivation) for single projects but also maintain a long term strategic orientation
12. Competition Collaboration	Facilitate openness with other organizations but protect the organization’s competitive advantage
13. Feedback Rigidity	Receive and use feedback from customers/ clients but not be dictated by such feedback
14. Failure Success	Develop an organizational culture that embraces risk and failure, yet is able to produce successful outcomes

Adapted from Hunter et al., 2011; p. 55. Paradoxes when leading for innovation

In practice, effective management of tensions by leaders has led to innovation success (Hunter et al., 2011). The Post-It note by 3M was created from a program at 3M where employees were given 15% of their weekly working hours to work in their own way. Taking the 15% rule up by 5%, Silicon Valley home of Google encourage employees to use one day a week to pursue creative and interesting projects as individuals or in self-selected teams. This program has given to the world gmail, GoogleNews and GoogleSky (Vise & Malseed, 2006). In the remaining working time (80% for Google) and (85% for 3M), employees pursue endeavours specified by the organisations.

1.10 Review of innovation and leadership studies

Rosing et al. (2011) carried out a meta-analysis of existing studies that have examined the relationship between leadership and innovation. Rosing and Colleagues find that the correlations between any particular leadership style and innovation often range from positive to negative correlations. The well-known transformational and transactional leadership theories and other leadership theories such as initiating structure, leader-member exchange (LMX), consideration and supervisor support were analyzed and integrated to the meta-analysis.

Transformational leadership is the leadership style that has been most examined in relation to innovation (see meta-analysis by Rosing et al., 2011). Transformational leadership in particular is regarded as a catalyst of innovation (Gardner and Avolio, 1998; Lowe, Kroeck & Sivasubramaniam, 1996) and several studies show a positive relationship between both constructs (e.g., Nemanich and Vera, 2009; Sosik, Avolio & Kahai, 1997). Bass (1999) define transformational leadership, as “moving the follower beyond immediate self-interests through idealized influence (charisma), inspiration, intellectual stimulation, or individualized consideration” (p.11) in order to motivate followers to perform beyond expectations (Northouse, 2013).

The dimensions of idealised influence and inspirational motivation help transformational leaders in transforming the behavior of their followers as leaders also act as role models and instil innovation values, followers look towards them and try to embrace these values as well (Yukl, 2009). For the dimension of intellectual

stimulation, leaders who are high on this dimension encourage diversity of opinion and the generation of creative ideas among followers (Bundy, 2002). Finally, leaders who show individualized consideration for their followers provide a safe environment where organizational members take risks and innovate (Nutt, 2002). From the foregoing, it appears reasonable to expect a positive relationship between transformational leadership and innovation.

Sosik et al. (1997) found transformational leadership to be essential in stimulating followers to challenge institutional learning as well as to adopt generative and explorative thinking processes. Therefore, a transformational leader is claimed to have a significant impact on enhancing exploration-type activities (Jansen et al., 2009) as well as on adopting generative thinking and pursuing explorative innovation (Jansen et al., 2008). In the same way, Nemanich and Vera (2009) found that transformational leadership positively facilitates the achievement of organizational ambidexterity directly or indirectly through the creation of a culture that encourages learning.

However, there is no universal agreement about the positive impact of transformational leadership on innovative outcome. For example, Van Knippenberg and Sitkin (2013) suggest that the transformational leadership lacks a conceptual definition, therefore it fails to precisely scope which dimensional conceptualizations best fosters innovation. Similarly, the study by Menguc, Auh and Shih (2007) did not find any significant relationship between transformational leadership and innovation. Overall, Rosing et al. (2011) report an aggregated correlation range of -.31 to .64 from the existing 31 studies that examined the association between transformational leadership and innovation.

In regards to transactional leadership, which refers to leadership behaviors that encourage routine maintenance and allocating rewards as well as exercising control (Northouse, 2012), there are not as many studies as there are with transformational leadership. There also mixed results regarding the relationship between transactional leadership and innovation (Rosing et al., 2011). In fact, when compared to transformational leadership, transactional leadership is less often associated with

successful innovation (Dess and Picken, 2000). Typically, transactional leadership is conceived as functioning contradictorily towards increasing variance and fostering experimentation therefore it is not expected to drive creativity and innovation (Rosing et al., 2011). Lee (2008) finds a negative relationship between innovativeness and transactional leadership. Similarly, Moriano, Molero, Topa and Levy Mangin (2014) report a significant negative effect of transactional leadership and intrapreneurial behavior. On the contrary, Elenkov and Manev (2005) found a positive effect of transactional leadership on innovation. Research suggests that transformational and transactional leadership styles complement each other to influence organisational performance (Waldman, Ramirez, House and Puranam, 2001); and Elenkov (2002) report that many leaders who exhibit transactional leadership style supplement their behavior with elements of transformational leadership. When leading, transactional leaders prefer to actively monitor the performance of followers on the basis of contingent reward (Jung, 2001).

Jansen et al. (2008) suggest that transactional behaviors can foster exploitative innovation because of its capability to facilitate the improvement of existing knowledge. While this suggests that transactional leadership may be counter-productive to explorative innovation as it reflects a high degree of structure that may not necessarily support creative tasks, the experimental studies by Sosik et al. (1997) and Kahai, Sosik, and Avolio (2003) discovered a stronger effect for transactional leadership on team creativity than for transformational leadership. Lowe et al., (1996) suggest that in light of the available literature, transactional leadership may support innovation although with less positive effect compared to transformational leadership and more positive effect compared laissez-faire leadership.

Table 1.3 presents some studies on the relationships of innovation with leadership styles.

Table 1.3 Innovation and leadership studies

	Author	Data Collection tool/Sampling	Analytical approach	Key finding	Journal
1.	Zacher and Wilden (2014) A daily diary study on ambidextrous leadership and self-reported employee innovation	Self-reported daily diary data provided by 113 employees across five work days	Multilevel modelling (MLM)	Employee innovation performance was highest when both daily opening and closing behaviors were high	Journal of Occupational and Organizational Psychology
2.	Zacher, Robinson and Rosing (2014) Ambidextrous Leadership and Employees' Self-Reported Innovative Performance: The Role of Exploration and Exploitation Behaviors	MTurk Online survey 388 employees	Hierarchical linear regression and simple slope analyses	Ambidextrous leadership as a possible way for leaders to enhance employee self reported innovative performance.	Journal of creative behavior
3.	Nemanich and Vera (2009) Transformational leadership and ambidexterity	71 teams from a large multinational firm	Structural equation modeling technique	Support for the association between transformational leadership and learning cultures	The Leadership Quarterly
4.	Jansen, Vera and Crossan (2009) Strategic leadership for exploration and exploitation	Questionnaires 305 senior team leaders from autonomous branches of a large European financial services firm	Regression analyses	Transformational leadership behaviors contribute significantly to adopting generative thinking and pursuing exploratory innovation. Transactional leadership behaviors, on the other hand, facilitate improving and extending existing knowledge and are associated with exploitative innovation.	The Leadership Quarterly
5.	Makri and Scandura (2010) Exploring the effects of creative CEO leadership on innovation in high-technology firms	77 high-technology firms	Multivariate regression	Creative and operational leadership are important antecedent of a firm's ability to innovate	The Leadership Quarterly
6.	Oke, Munshi and Walumba (2009) The Influence of Leadership on Innovation Processes and Activities	Not specified	Literature Review	Transformational leadership style will be more appropriate for exploratory innovation activities, while the	Organizational Dynamics

				transactional leadership style will be more appropriate for exploitative innovation activities	
7.	Chang, Bai and Li (2015) The influence of leadership on product and process innovations	Questionnaires 277 manufacturing firms	Hierarchical moderated regression analyses	Knowledge acquisition capability strengthens the effect of Transformational charismatic leadership on process innovation and that of transactional leadership on product innovation.	Industrial Marketing management
8.	Deichmann and Stam (2015) Leveraging transformational and transactional leadership to cultivate the generation of organization-focused ideas	Questionnaires 20 leaders 150 subordinates large multinational company	Hierarchical linear modelling (STATA)	Transformational and transactional leadership is effective in motivating followers to commit to the goals of an ideation program	The Leadership Quarterly
9.	Hotho and Champion (2011) Small businesses in the new creative industries: innovation as a people management challenge	Single case study/in-depth interviews	Thematic coding	As the company moves to the production of intellectual property work, the need for more effective duality management arises	Management Decision
10.	Kodama (2007) Innovation and knowledge creation through leadership-based strategic community	2 Case studies Long-term participant observation and interviews	Grounded theory approach	The synthesizing capability of the leadership-based strategic communities comprising leaders inside the networked strategic communities enabled innovation activities	Technovation
11.	Ryan and Tipu (2013) Leadership effects on innovation propensity: A two-factor full range leadership model	Questionnaire 548 English-speaking business professionals in small, medium and large firms from a variety of Pakistani organizations	Structural equation model tests; Descriptive statistics	Active leadership has a strong and significant positive effect on innovation propensity, while passive-avoidant leadership has a significant but weakly positive effect on innovation propensity	Journal of Business Research
12.	Rego, Sousa, Marques, Pina (2012) Authentic leadership promoting employees' psychological capital and creativity	201 employees, working in 33 commerce organizations	Structural equation modeling (LISREL)	Validates theoretical arguments that suggest integrating authentic leadership and psychological capital in research, and indicates that both may foster employees' creativity, a crucial resource for helping organizations to face competitive	Journal of business research

				challenges, take advantage of business opportunities, and improve organizational effectiveness.	
13.	Allen, Adomdza and Meyer (2015) Managing for innovation: Managerial control and employee level outcomes	104 members of product development teams	Descriptive statistics and regression	Use of control can have differing effects on motivation depending on the attributes of the knowledge involved	Journal of business research
14.	Qu, Janssen and Shi (2015) Transformational leadership and follower creativity	Questionnaires 420 employees 102 leaders White-collar employees from a large company in the energy	Multilevel regression analysis.	Follower relational identification with the leader mediates the transformational leadership-follower creativity relationship	The Leadership Quarterly
15.	Jaussi and Dionne (2003) Leading for Creativity: the role of the unconventional leader behavior	364 University Students Experimental tasks	Descriptive statistics and regression	Transformational leadership did not predict creative performance	The Leadership Quarterly

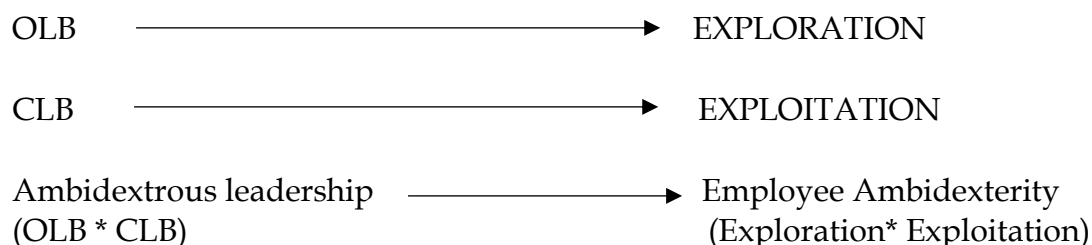
Largely, the findings of the meta-analysis revealed inconsistencies as wide range of correlations were found and in some cases mediating variables and moderating conditions were discovered (Rosing et al., 2011). From this review, it became increasingly clear that traditional leadership models may be deficient in capturing the dynamism of innovation.

Rosing et al. (2011) noted that a single set of traditional leadership behavior is insufficient to foster innovation ambidexterity given that these traditional leadership behaviors are broad and inflexible in nature and could account for several other organizational outcomes including working simultaneously to foster and hinder innovation. Therefore, (1) a complex leadership approach is needed to match the complexity and paradoxes activities and (2) complementary leadership behaviors are necessary as effective moderators for leading innovation successfully. In particular, the need to integrate both exploration and exploitation activities. It has also been recommended that leading innovation must be characterized by a functional approach that matches the complexity and pace of innovation (Ancona, Goodman, Lawrence and Tushman, 2001), as well as having the efficiency to adapt to the concept of duality inherent in innovation (Bledow et al., 2011). Therefore, organizational scholars have highlighted the prominence of ambidexterity in the innovation process suggesting that paying attention to the inherent ambidexterity in the process of innovation is crucial to elucidate the existing heterogeneous relationship between leadership and innovation and developing better models of innovation leadership (Bledow et al., 2011; Rosing et al., 2011).

Exploration and exploitation are fundamental activities inherent to creativity and innovation. Although organizational scholars have characterized exploration and exploitation activities as contradictory or even paradoxical (Gupta et al., 2006; March, 1991) the term “ambidexterity” to describe their role in driving innovation (Benner & Tushman, 2003; He & Wong, 2004; Tushman & O'Reilly, 1996). Ambidexterity – the ability of a firm to balance opposing activities could be describing paradoxical organizational processes such as continuity and change, radical and incremental innovation, creativity and implementation and specifically as is the case in our thesis

the exploration of new capabilities and exploitation of old certainties (He & Wong, 2004; Nemanich & Vera, 2009; Raisch & Birkinshaw, 2008; Tushman and O'Reilly, 1996). In other words, organizational ambidexterity describes an organization's ability to manage the existing demands of its ongoing business obligations whilst maintaining a flexible outlook to adapt aptly and swiftly to the changing business environment as well as future requirements (March, 1991; Raisch & Birkinshaw, 2008).

Rosing et al. (2011) extend the concept of ambidexterity to leadership by proposing *ambidextrous leadership theory* to leaders of innovation projects. Acknowledging that innovative performance requires ambidexterity, they posit that employees will be required to be ambidextrous in their exploration and exploitation behaviors by switching between both activities accordingly. Hence, an effective leader will have to exhibit two contradictory leadership behaviors—opening and closing leadership behaviors— to foster exploration and exploitation behaviors respectively in their followers. In addition, the leader will also be required to switch flexibly between both behaviors as may be required at different times during the innovation process.



Opening leadership behavior (OLB) is expected to foster explorative behaviors in the followers. OLB describes leadership behaviors that increase of variance in the behaviors of employees through activities such as encouraging error learning, risk taking and experimentation (Rosing et al., 2011). CLB reduces the variance in employee behavior (Rosing et al., 2011). CLB is expected to foster exploitation behaviors in the followers. Setting routines, intervening, taking corrective actions and monitoring goals are some examples of CLB (Rosing et al., 2011).

However, the essential task of an ambidextrous leader is not limited to the demonstration of OLB and CLB but the ability to exhibit temporally flexible leadership behavior(s) and switch between both OLB and CLB as may be required at different times during the innovation process (Rosing et al., 2011).

Table 1.4 Opening and closing leadership behaviors

Opening leadership behaviors	Closing leadership behaviors
Allowing different ways of accomplishing a task	Monitoring and controlling goal attainment
Encouraging experimentation with different ideas	Establishing routines
Motivating to take risks	Taking corrective action
Giving possibilities for independent thinking and acting	Controlling adherence to rules
Giving room for own ideas	Paying attention to uniform task accomplishment
Allowing errors	Sanctioning errors
Encouraging error learning	Sticking to plans

(Source: Rosing et al., 2011; p.967)

So far, only few studies have empirically tested the core proposition of ambidextrous leadership theory (including Zacher, Robinson and Rosing, 2014; Zacher and Rosing 2015; Zacher and Wilden, 2014) and none of these have been from the context of SMEs. Hence, the motivation of this study to examine this theory in UK SMEs given the economic significance and contributions of this context to the country. Studies that focus on how innovation can be improved in the sector will be greatly valuable (Hotho and Champion, 2011; Tajvidi and Karami, 2015).

Summary

This chapter has discussed the literature in details regarding the general literature surrounding the main research areas of this thesis. Innovation and leadership concepts have been properly defined and previous innovation leadership studies have been presented to show what we know about innovation leadership and to highlight

the gaps in our knowledge. The next section of the thesis will present the first paper in this thesis. This paper presents empirical evidence of ambidextrous leadership in UK SMEs.

References

- Allen, M. R., Adomdza, G. K., & Meyer, M. H. (2015). Managing for innovation: Managerial control and employee level outcomes. *Journal of Business Research*, 68(2), 371-379.
- Andriopoulos, C., & Lewis, M. W. (2010). Managing innovation paradoxes: Ambidexterity lessons from leading product design companies. *Long range planning*, 43(1), 104-122.
- Andriopoulos, C., & Lewis, M. W. (2009). Exploitation-exploration tensions and organizational ambidexterity: Managing paradoxes of innovation. *Organization Science*, 20(4), 696-717.
- Antonakis, J., Avolio, B. J., & Sivasubramaniam, N. (2003). Context and leadership: An examination of the nine-factor full-range leadership theory using the Multifactor Leadership Questionnaire. *The Leadership Quarterly*, 14(3), 261-295.
- Amabile, T., 1996. *Creativity in context*. Westview press.
- Ancona, D. G., Goodman, P. S., Lawrence, B. S., & Tushman, M. L. (2001). Time: A new research lens. *Academy of management Review*, 26(4), 645-663.
- Anderson, N., De Dreu, C. K., & Nijstad, B. A. (2004). The routinization of innovation research: A constructively critical review of the state-of-the-science. *Journal of organizational Behavior*, 25(2), 147-173.
- Anderson, N., Potočník, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of management*, 40(5), 1297-1333.
- Ardichvili, A., R. N. Cardozo, and A. Gasparishvili (1998). "Leadership Styles and Management Practices of Russian Entrepreneurs: Implications for Transferability of Western Hard Interventions," *Human Resource Development Quarterly* 9(2), 145-155.
- Avolio, B. J., Bass, B. M., & Jung, D. I. (1999). Re-examining the components of transformational and transactional leadership using the Multifactor Leadership. *Journal of occupational and organizational psychology*, 72(4), 441-462.
- Baer, M., & Frese, M. (2003). Innovation is not enough: Climates for initiative and psychological safety, process innovations, and firm performance. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 24(1), 45-68.
- Bagheri, A. (2017). The impact of entrepreneurial leadership on innovation work behavior and opportunity recognition in high-technology SMEs. *The Journal of High Technology Management Research*, 28(2), 159-166.

- Bagheri, A., & Akbari, M. (2018). The Impact of Entrepreneurial Leadership on Nurses' Innovation Behavior. *Journal of Nursing Scholarship*, 50(1), 28-35.
- Bamiatzi, V., Jones, S., Mitchelmore, S., and Nikolopoulos, K. (2015). The role of competencies in shaping the leadership style of female entrepreneurs: The case of North West of England, Yorkshire, and North Wales. *Journal of Small Business Management*, 53(3), 627-644
- Banbury, C. M., & Mitchell, W. (1995). The effect of introducing important incremental innovations on market share and business survival. *Strategic management journal*, 16(S1), 161-182.
- Batjargal, B. (2007). Internet entrepreneurship: Social capital, human capital, and performance of Internet ventures in China. *Research Policy*, 36(5), pp.605-618.
- Bass, B. M. (1990). Bass and Stogdill's handbook of leadership: A survey of theory and research. New York: Free Press.
- Bass, B. M. (1995). Theory of transformational leadership redux. *The Leadership Quarterly*, 6(4), 463-478.
- Bass, B. M., & Avolio, B. J. (2004). Multifactor Leadership Questionnaire: Manual and Sampler Set (3rd ed.). Redwood City, CA: Mind Garden.
- Basu, R., & Green, S. G. (1997). Leader-member exchange and transformational leadership: An empirical examination of innovative behaviors in leader-member dyads. *Journal of Applied Social Psychology*, 27(6), 477-499.
- Benner, M.J. and Tushman, M.L. (2003). Exploitation, exploration, and process management: The productivity dilemma revisited. *Academy of management review*, 28(2), 238-256.
- Berkhout, G. (2007) *The cyclic nature of innovation: connecting hard sciences with soft values*, Elsevier.
- Bessant, J., Lamming, R., Noke, H. and Phillips, W. (2005). "Managing innovation beyond the steady state", *Technovation*, Vol. 25, 1366-76.
- Bilton, C. (2007), *Management and Creativity: From Creative Industries to Creative Management*, Malden, Blackwell.
- Bledow, R., Frese, M., Erez, M., Anderson, N., & Farr, J., (2009). A dialectic perspective on innovation: Conflicting demands, multiple pathways, and ambidexterity. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 2(3), 305-337.
- Bledow, R., Frese, M., Mueller, V. (2011). Ambidextrous leadership for innovation: the influence of culture, in William H. Mobley, Ming Li, Ying Wang (ed.) *Advances in*
- Burt, Ronald S. (1992). *Structural Holes*. Cambridge: Harvard University Press.

Global Leadership (Advances in Global Leadership, Volume 6) Emerald Group Publishing Limited, pp.41 – 69

Bono, J. E., & Judge, T. A. (2004). Personality and transformational and transactional leadership: A meta-analysis. *Journal of Applied Psychology*, 89(5), 901–910.

Brush, C. G. (1992). "Research on Women Business Owners: Past Trends, a New Perspective and Future Directions," *Entrepreneurship Theory and Practice* 16(4), 5–30.

Bruque, S., & Moyano, J. (2007). Organisational determinants of information technology adoption and implementation in SMEs: The case of family and cooperative firms. *Technovation*, 27(5), 241–253.

Bryman, A. (1992). *Charisma and leadership in organizations*. London: Sage.

Bryman, A., Collinson, D., Grint, K., Jackson, G., Uhl-Bien, M. (Eds.). (2011). *The SAGE handbook of leadership*. London, UK: Sage.

Bundy, W. M. (2002). *Innovation, creativity, and discovery in modern organizations*. Westport, CT: Quorum Books.

Burns, P. (2011). *Entrepreneurship and small business*. (3rd ed.). Palgrave Macmillan.

Bycio, P., Hackett, R. D., & Allen, J. S. (1995). Further assessments of Bass's (1985) conceptualization of transactional and transformational leadership. *Journal of Applied Psychology*, 80(4), 468–478.

Chang, J., Bai, X., & Li, J. J. (2015). The influence of leadership on product and process innovations in China: The contingent role of knowledge acquisition capability. *Industrial marketing management*, 50, 18–29.

Chaston, I. (2008), "Small creative industry firms: a development dilemma?", *Management Decision*, Vol. 46 No. 6, pp. 819–31.

Chen, Y., Tang, G., Jin, J., Xie, Q., and Li, J. (2014). CEOs' transformational leadership and product innovation performance: The roles of corporate entrepreneurship and technology orientation. *Journal of Product Innovation Management*, 4(31), 2–17.

Crick, D., & Spence, M. (2005). The internationalisation of 'high performing' UK high-tech SMEs: a study of planned and unplanned strategies. *International business review*, 14(2), 167–185.

Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of management studies*, 47(6), 1154–1191.

Damanpour, F. (1996). Organizational complexity and innovation: developing and testing multiple contingency models. *Management science*, 42(5), 693–716.

Day, D. V., & Antonakis, J. (Eds.). (2012). *The nature of leadership* (2nd ed.). Thousand Oaks, CA: Sage.

DeFillippi, R., Grabher, G., & Jones, C. (2007). Introduction to paradoxes of creativity: managerial and organizational challenges in the cultural economy. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 28(5), 511-521.

De Jong, J. and Den Hartog, D. (2010). Measuring innovative work behavior. *Creativity and Innovation Management*, 19(1), 23-36.

Delahaye BL (2005) Human resource development: Adult learning and knowledge management. (2nd ed.), John Wiley & Sons Australia, Brisbane.

Den Hartog, D. N., & Verbarg, R. M. (1997). Charisma and rhetoric: Communicative techniques of international business leaders. *The Leadership Quarterly*, 8(4), 355-391.

Dess, G. G., & Picken, J. C. (2000). Changing roles: Leadership in the 21st century. *Organizational Dynamics*, 28(3), 18-34.

Deichmann, D., & Stam, D. (2015). Leveraging transformational and transactional leadership to cultivate the generation of organization-focused ideas. *The Leadership Quarterly*, 26(2), 204-219.

Dobni, C. B. (2008). Measuring innovation culture in organizations: The development of a generalized innovation culture construct using exploratory factor analysis. *European Journal of Innovation Management*, 11(4), 539-559.

Drucker, P. (1993), *Post-Capitalist Society*, HarperCollins, New York, NY.

Elenkov, D. S. (2002). Effects of leadership on organizational performance in Russian companies. *Journal of Business Research*, 55(6), 467-480.

Elenkov, D. S., & Manev, I. M. (2005). Top management leadership and influence on innovation: The role of sociocultural context. *Journal of management*, 31(3), 381-402.

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: what are they? *Strategic management journal*, 21(10-11), 1105-1121.

European Commission. (2008). *Analysis of the 2007 EU Industrial R&D Investment Scoreboard*. Luxemburg.

Fleishman, E. A., Mumford, M. D., Zaccaro, S. J., Levin, K. Y., Korotkin, A. L., & Hein, M. B. (1991). Taxonomic efforts in the description of leader behavior: A synthesis and functional interpretation. *Leadership Quarterly*, 2(4), 245-287.

Florida, R. and Goodnight, J. (2005). Managing for creativity. *Harvard business review*, 83(7), p.124.

Freel, M. S. (2003). Sectoral patterns of small firm innovation, networking and proximity. *Research policy*, 32(5), 751-770.

- Freeman, D., & Siegfried Jr, R. L. (2015). Entrepreneurial leadership in the context of company start-up and growth. *Journal of leadership studies*, 8(4), 35-39.
- Ford, J. D., & Backoff, R. W. (1988). *Organizational change in and out of dualities and paradox*. Ballinger Publishing Co/Harper & Row Publishers.
- Gardner, J. W. (1990). *On leadership*. New York: Free Press.
- Gardner, W. L., & Avolio, B. J. (1998). The charismatic relationship: A dramaturgical perspective. *Academy of management review*, 23(1), 32-58.
- Gedajlovic, E., Cao, Q., & Zhang, H. (2012). Corporate shareholdings and organizational ambidexterity in high-tech SMEs: Evidence from a transitional economy. *Journal of Business Venturing*, 27(6), 652-665.
- Gibson, C. B., & Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. *Academy of management Journal*, 47(2), 209-226.
- Gupta, A. K., Smith, K. G., & Shalley, C. E. (2006). The interplay between exploration and exploitation. *Academy of management journal*, 49(4), 693-706.
- Hammond D, Doxey J, Daniel S, Bansal-Travers M (2011). Impact of female-oriented cigarette packaging in the United States. *Nicotine & Tobacco Research* 13: 579-588.
- Hasen, C. D., & Kahnweiler, W. M. (1997). Executive managers: Cultural expectations through stories about work.
- Hayton, J. (2015). Leadership and Management Skills in SMEs: Measuring Associations with Management Practices and Performance. (Non-technical report) BIS Research paper number 211. Department for business, innovation and skills.
- He, Z. L., & Wong, P. K. (2004). Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis. *Organization science*, 15(4), 481-494.
- Hemphill, J. K. (1949). *Situational factors in leadership*. Columbus: Ohio State University, Bureau of Educational Research.
- Hernández-Espallardo, M., Sánchez-Pérez, M., & Segovia-López, C. (2011). Exploitation-and exploration-based innovations: the role of knowledge in inter-firm relationships with distributors. *Technovation*, 31(5-6), 203-215.
- Hickman, G. R. (Ed.). (2009). *Leading organizations: Perspectives for a new era* (2nd ed.). Thousand Oaks, CA: Sage.
- Hotho, S. and Champion, K. (2011). Small businesses in the new creative industries: innovation as a people management challenge. *Management Decision*, 49(1), pp.29-54.
- Howell, J. M., & Avolio, B. J. (1993). Transformational leadership, transactional leadership, locus of control, and support for innovation: Key predictors of consolidated-business-unit performance. *Journal of applied psychology*, 78(6), 891.

- Hunter, S.T., Thoroughgood, C.N., Myer, A.T. and Ligon, G.S. (2011). Paradoxes of leading innovative endeavors: Summary, solutions, and future directions. *Psychology of Aesthetics, creativity, and the arts*, 5(1), p.54.
- Jansen, J. J., Vera, D., & Crossan, M. (2009). Strategic leadership for exploration and exploitation: The moderating role of environmental dynamism. *The Leadership Quarterly*, 20(1), 5-18.
- Jung, D. (2001). Transformational and transactional leadership and their effects on creativity in groups. *Creativity Research Journal*, 13(2), 185-195.
- Jung, D., Wu, A., & Chow, C. W. (2008). Towards understanding the direct and indirect effects of CEOs' transformational leadership on firm innovation. *The Leadership Quarterly*, 19(5), 582-594.
- Kahai, S. S., Sosik, J. J., & Avolio, B. J. (2003). Effects of leadership style, anonymity, and rewards on creativity-relevant processes and outcomes in an electronic meeting system context. *The Leadership Quarterly*, 14(4-5), 499-524.
- Kanter, R. M. (1983). *The change masters: Binnovation and entrepreneurship in the American corporation*. Touchstone Book.
- Kanter, R. M. (1985). Supporting innovation and venture development in established companies. *Journal of Business Venturing*, 1(1), 47-60.
- Keizer, J.A., Dijkstra, L. and Halman, J.I. (2002). Explaining innovative efforts of SMEs.: An exploratory survey among SMEs in the mechanical and electrical engineering sector in The Netherlands. *Technovation*, 22(1), pp.1-13.
- Kodama, M. (2007). Innovation and knowledge creation through leadership-based strategic community: Case study on high-tech company in Japan. *Technovation*, 27(3), 115-132.
- King, N. (1992). Modelling the innovation process: An empirical comparison of approaches. *Journal of Occupational & Organizational Psychology*, 65(2), 89-100.
- Küpers, W., & Weibler, J. (2008). Inter-leadership: Why and how should we think of leadership and followership integrally? *Leadership*, 4(4), 443-475.
- Ladzani, W. M., & Van Vuuren, J. J. (2002). Entrepreneurship training for emerging SMEs in South Africa. *Journal of small business management*, 40(2), 154-161.
- Leana, C. R., & Barry, B. (2000). Stability and change as simultaneous experiences in organizational life. *Academy of Management Review*, 25(4), 753-759.
- Ledwith, A., & O'Dwyer, M. (2008). Product launch, product advantage and market orientation in SMEs. *Journal of Small Business and Enterprise Development*, 15(1), 96
- Lewis, M. W. (2000). Exploring paradox: Toward a more comprehensive guide. *Academy of Management Review*, 25, 760 -776.

- Levinthal, D. A., & March, J. G. (1993). The myopia of learning. *Strategic management journal*, 14(S2), 95-112.
- Lievens, F., Van Geit, P., & Coetsier, P. (1997). Identification of transformational leadership qualities: An examination of potential biases. *European Journal of Work & Organizational Psychology*, 6(4), 415-430.
- Lin, H.-E., McDonough, E. F., Lin, S.-J. and Lin, C. Y.-Y. (2013), Managing the Exploitation/Exploration Paradox: The Role of a Learning Capability and Innovation Ambidexterity. *J Prod Innov Manag*, 30, 262-278.
- Lowe, K. B., Kroeck, K. G., & Sivasubramaniam, N. (1996). Effectiveness correlates of transformational and transactional leadership: A meta-analytic review of the MLQ literature. *The leadership quarterly*, 7(3), 385-425.
- Lüscher, L. S., & Lewis, M. W. (2008). Organizational change and managerial sensemaking: Working through paradox. *Academy of management Journal*, 51(2), 221-240.
- Luthans, F., and C. M. Youssef (2007). "Emerging Positive Organizational Behavior," *Journal of Management* 33(3), 321- 349.
- Makri, M., & Scandura, T. A. (2010). Exploring the effects of creative CEO leadership on innovation in high-technology firms. *Leadership Quarterly*, 21(1), 75-88.
- Manz, C. C., Bastien, D. T., Hostager, T. J., & Shapiro, G. L. (1989). Leadership and innovation: A longitudinal process view. *Research on the management of innovation: The Minnesota studies*, 613-636.
- Marcati, A., Guido, G. and Peluso, A.M., 2008. The role of SME entrepreneurs' innovativeness and personality in the adoption of innovations. *Research Policy*, 37(9), pp.1579-1590.
- March, J.G. (1991), "Exploration and exploitation in organizational learning", *Organization Science*, Vol. 2 No. 1, pp. 71-87.
- Moriano, J. A., Molero, F., Topa, G., & Mangin, J. P. L. (2014). The influence of transformational leadership and organizational identification on intrapreneurship. *International Entrepreneurship and Management Journal*, 10(1), 103-119.
- McAdam, R., McConvery, T. and Armstrong, G. (2004), "Barriers to innovation within small firms in a peripheral location", *International Journal of Entrepreneurial Behavior & Research*, Vol. 10 No. 3, pp. 206-21.
- McGrath, R., and I. C. MacMillan (2000). *The Entrepreneurial Mindset: Strategies for Continuously Creating Opportunity in an Age of Uncertainty*, Vol. 184. Boston, MA: Harvard Business Press.

- Menguc, B., Auh, S., & Shih, E. (2007). Transformational leadership and market orientation: Implications for the implementation of competitive strategies and business unit performance. *Journal of business research*, 60(4), 314-321.
- Mumford, M. D., Scott, G. M., Gaddis, B., & Strange, J. M. (2002). Leading creative people: Orchestrating expertise and relationships. *The leadership quarterly*, 13(6), 705-750.
- Nahavandi, A. (2002). *The art and science of leadership* (3rd ed.). Upper Saddle River, nj: PrenticeHall.
- Nemanich, L. A., & Vera, D. (2009). Transformational leadership and ambidexterity in the context of an acquisition. *The Leadership Quarterly*, 20(1), 19-33.
- NESTA (2008), "Unlocking the potential of innovative firms", Policy paper, NESTA Policy and Research Unit, London.
- Nicholas, J., Ledwith, A., and Perks, H. (2011). New product development best practice in SME and large organisations: Theory vs practice. *European Journal of Innovation Management*, 14(2), 227-251.
- Nielsen, S. L., & Lassen, A. H. (2012). Images of entrepreneurship: Towards a new categorization of entrepreneurship. *The International Entrepreneurship and Management Journal*, 8(1), 35-53.
- Nooteboom, B., Van Haverbeke, W., Duysters, G., Gilsing, V., & Van den Oord, A. (2007). Optimal cognitive distance and absorptive capacity. *Research policy*, 36(7), 1016-1034.
- Northouse, P. G. (2013). *Leadership: Theory and Practice*. (6th ed.). Sage publications Inc.
- Nutt, P. C. (2002). *Why decisions fail: Avoiding the blunders and traps that lead to debacles*. San Francisco: Berrett-Koehler.
- Ohly, S., Sonnentag, S., & Pluntke, F. (2006). Routinization, work characteristics and their relationships with creative and proactive behaviors. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 27(3), 257-279.
- Oke, A., Munshi, N., Walumbwa F.O. The influence of leadership on innovation processes and activities. *Organizational Dynamics*, 38 (1) (2009), 64-72.
- O'Regan, N., Ghobadian, A. and Sims, M. (2006). Fast tracking innovation in manufacturing SMEs. *Technovation*, 26(2), pp.251-261.
- O'Reilly, C. A. I., & Tushman, M. L. (2004). The ambidextrous organization. *Harvard Business Review*, 82(4), 74-81.

- Peters, T. J., & Waterman, R. H. (1982). *In search of excellence: Lessons from America's best-run companies*. New York: Warner Books.
- Pulakos, E. D., Arad, S., Donovan, M. A., & Plamondon, K. E. (2000). Adaptability in the workplace: Development of a taxonomy of adaptive performance. *Journal of applied psychology*, 85(4), 612.
- Qu, R., Janssen, O., and Shi, K. (2015). Transformational leadership and follower creativity: The mediating role of follower relational identification and the moderating role of leader creativity expectations. *The Leadership Quarterly*, 26(2), 286-299.
- Radas, S., & Božić, L. (2009). The antecedents of SME innovativeness in an emerging transition economy. *Technovation*, 29(6-7), 438-450.
- Raisch, S., & Birkinshaw, J. (2008). Organizational ambidexterity: Antecedents, outcomes, and moderators. *Journal of management*, 34(3), 375-409.
- Razeghi, A. J. (2008). *Innovating Through Recession*. Kellogg School of Management, Northwestern University, Evanston, IL.
- Rego, A., Sousa, F., Marques, C., & e Cunha, M. P. (2012). Authentic leadership promoting employees' psychological capital and creativity. *Journal of business research*, 65(3), 429-437.
- Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of business Venturing*, 26(4), 441-457.
- Rosing, K., Frese, M., & Bausch, A. (2011). Explaining the heterogeneity of the leadership-innovation relationship: Ambidextrous leadership. *The Leadership Quarterly*, 22(5), 956-974.
- Rost, J. C. (1991). *Leadership for the twenty-first century*. New York: Praeger.
- Ryan, J. C., & Tipu, S. A. (2013). Leadership effects on innovation propensity: A two-factor full range leadership model. *Journal of Business Research*, 66(10), 2116-2129.
- Schroeder, R. G., Van de Ven, A. H., Scudder, G. D and Polley, D. (1989). The development of innovation ideas. *Research on the management of innovation: The Minnesota studies*, 107-134.
- Schumpeter, J.A., (1934). *The theory of economic development*, (Harvard Economic Studies, Cambridge, Mass).
- Schumpeter, Joseph A. (1965). *The Theory of Economic Development: An Enquiry into Profits, Credit, interest and the Business Cycle* (Oxford: Oxford University Press, fourth printing, 1965) [originally published 1934].
- Schwartz, D., & Malach-Pines, A. (2007). High technology entrepreneurs versus small business owners in Israel. *The Journal of Entrepreneurship*, 16(1), 1-17.

- Seligman, M.E. and Csikszentmihalyi, M., 2000. *Positive psychology: An introduction* (Vol. 55, No. 1, p. 5). American Psychological Association.
- Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here?. *Journal of management*, 30(6), 933-958.
- Smith, W. K., & Tushman, M. L. (2005). Managing strategic contradictions: A top management model for managing innovation streams. *Organization science*, 16(5), 522-536.
- Sosik, J. J., Avolio, B. J., & Kahai, S. S. (1997). Effects of leadership style and anonymity on group potency and effectiveness in a group decision support system environment. *Journal of applied psychology*, 82(1), 89.
- Stogdill, R. M. (1974). *Handbook of leadership: A survey of theory and research*. New York: Free Press.
- Storey, D.J. (2005). Exploring the Link, Among Small Firms, Between Management Training and Firm Performance: A Comparison between the UK and Other OECD Countries. *The International Journal of Human Resource Management* 15(1):112-130.
- Tajvidi, M., and Karami, A., (2015). *Product Development Strategy, Innovation Capacity and Entrepreneurial Firm Performance in High-Tech SMEs*. Palgrave MacMillan, UK.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic management journal*, 18(7), 509-533.
- Tidd, J. (2001). Innovation management in context: environment, organization and performance. *International Journal of Management Reviews*, 3(3), 169-183.
- Tung, F.C. and Yu, T.W. (2016). Does innovation leadership enhance creativity in high-tech industries?. *Leadership & Organization Development Journal*, 37(5), 579-592.
- Tushman, M. L., & O'Reilly III, C. A. (1996). Ambidextrous organizations: Managing evolutionary and revolutionary change. *California management review*, 38(4), 8-29.
- Tracey, J. B., & Hinkin, T. R. (1998). Transformational leadership or effective managerial practices? *Group & Organization Management*, 23(3), 220-236.
- Uslu, T., Bülbül, I. A., & Çubuk, D. (2015). An investigation of the effects of open leadership to organizational innovativeness and corporate entrepreneurship. *Procedia-Social and Behavioral Sciences*, 195, 1166-1175.
- Van Gundy, A. (1987) "Organizational creativity and innovation", *Frontiers of creativity research*, vol. 358, pp. 379.

- Van de Vrande, V., De Jong, J. P., Vanhaverbeke, W., & De Rochemont, M. (2009). Open innovation in SMEs: Trends, motives and management challenges. *Technovation*, 29(6-7), 423-437.
- Van Knippenberg, D., & Sitkin, S. B. (2013). A critical assessment of charismatic – transformational leadership research: Back to the drawing board?. *The Academy of Management Annals*, 7(1), 1-60.
- Vise, D. A., & Malseed, M. (2006). *The Google story- inside the hottest business, media and technology success of our time*. London, Great Britain: Pan MacMillan Books.
- Waldman, D. A., Ramirez, G. G., House, R. J., & Puranam, P. (2001). Does leadership matter? CEO leadership attributes and profitability under conditions of perceived environmental uncertainty. *Academy of management journal*, 44(1), 134-143.
- West, M. A. (2002). Sparkling fountains or stagnant ponds: An integrative model of creativity and innovation implementation in work groups. *Applied Psychology: An International Review*, 51(3), 355-387.
- West, M.A. and Farr, J.L. (1990). Innovation and creativity at work: Psychology and organizational strategies.
- Yukl, G. (2009). Leading organizational learning: Reflections on theory and research. *The Leadership Quarterly*, 20(1), 49-53.
- Zacher, H., Robinson, A.J. and Rosing, K. (2014). Ambidextrous Leadership and Employees' Self-Reported Innovative Performance: The Role of Exploration and Exploitation Behaviors. *The Journal of Creative Behavior*.
- Zacher, H. and Rosing, K. (2015). Ambidextrous leadership and team innovation. *Leadership & Organization Development Journal*, 36(1), 54-68.
- Zacher, H. and Wilden, R.G. (2014). A daily diary study on ambidextrous leadership and self-reported employee innovation. *Journal of occupational and organizational psychology*, 87(4), 813-820.
- Zhao, H., & Seibert, S. E. (2006). The Big Five personality dimensions and entrepreneurial status: A meta-analytical review. *Journal of applied psychology*, 91(2), 259.

CHAPTER 2

Paper 1

LEADING INNOVATION: EMPIRICAL EVIDENCE FOR AMBIDEXTROUS LEADERSHIP FROM UK HIGH-TECH SMES

1.1 Introduction

In today's fast-paced, technology driven and ever-competitive business environment, innovation has become an essential strategy vital to firm performance, growth and survival (Bagheri, Mitchelmore, Bamiatzi and Nikolopoulos, 2018; Bagheri, 2017; Lin, McDonough, Lin and Lin, 2013). Many studies have demonstrated that ambidexterity, an organisation's ability to combine exploration and exploitation innovation is a more effective way of managing innovation and is crucial to improving performance and sustainable growth (Enkel, Heil, Hengstler and Wirth, 2017; He and Wong, 2004; O'Reilly and Tushman, 2008; Shibata, Baba, Kodama and Suzuki, 2018). However, little is known about how and what SMEs need to do to simultaneously foster exploration and exploitation innovation (Lin et al., 2013). The extant literature has tended to focus on larger firms, leaving a gap in our understanding (Lubatkin, Simsek, Ling, Veiga, 2006).

Leadership is one of the most important antecedents of innovation (Jansen, Vera, and Crossan, 2009). Considering the critical role of human agency within the organization (Birkinshaw, Hamel and Mol, 2008), leadership stimulates different aspects of employee's innovation work behaviors (Smith and Tushman, 2005; Vaccaro, Jansen, Van Den Bosch and Volberda, 2010). However, the contradictions and tensions typical to innovative undertakings especially in regards to balancing exploration and exploitation make leadership of innovation a daunting task (Gupta, Smith, & Shalley, 2006). Even though, SME leaders are considered as the key driving force of innovation (Marcati, Guido and Peluso, 2008; Schumpeter, 1965), little is known about which leadership behaviors best predict innovation ambidexterity in SMEs (Kang, Solomon and Choi, 2015; Tung and Yu, 2016). Moreover, research findings on the association between leadership and innovation show high heterogeneity (Rosing, Frese and Bausch, 2011).

Based on the understanding of the dual nature of innovation where conflicting activities of creativity/implementation and exploration/exploitation are best conceived as complementary innovation processes, ambidextrous leadership theory

has recently been proposed as a new approach to understand and manage the complexities associated with leading innovation. This development is coming after numerous varying results observed in studies that have examined the relationship between leadership and innovation (Bledow Frese and Mueller, 2011).

The theory suggests that to foster exploration and exploitation innovations, leaders need to show and flexibly switch between two paradoxical leadership behaviors. The first, *opening leadership behaviors* (OLB) is expected to foster exploration innovation behaviors in the followers by expanding their range of behaviors through activities such as risk taking and experimentation. The second, *closing leadership behaviors* (CLB) is expected to reduce the variance in employee behaviors by demonstrating leadership behaviors such as sanctioning errors and emphasizing control thereby encouraging exploitation behaviors in the followers. Furthermore, a leader's capability to switch between OLB and CLB during the innovation process will trigger ambidextrous behaviors (engagement in both exploration and exploitation) in followers (Rosing, Frese and Bausch, 2011; Rosing, Frese and Rosenbusch, 2010).

In spite of these theoretical developments, there are scanty empirical studies on ambidextrous leadership theory (except Zacher, Robinson and Rosing, 2014; Zacher and Rosing 2015; Zacher and Wilden, 2014). Similarly, ambidexterity as a leadership theory is yet to be explored in the SME literature. The leadership role performed in SMEs is a critical issue in our understanding of competitive advantage and economic development (Bagheri, 2017) particularly in the UK where they dominate the economy (Federation of Small Business Statistics, 2016). Yet, leadership in this context is largely undeveloped in extant literature as past research have placed more emphasis on the role of leadership in larger organisations (Bamiatzi, Jones, Mitchelmore and Nikolopoulos, 2015; Vecchio, 2003).

Hence, this paper bridges the gap on how leaders may foster innovation (and simultaneous exploration and exploitation) in the SME sector by specifically investigating and introducing ambidextrous leadership theory to the SME literature

and revealing one of the first empirical findings in a UK high-tech SME context. The capability for ambidexterity is particularly crucial to SMEs as a source of competitive advantage as SMEs are constantly faced with the challenge of adapting to environmental dynamism although unlike larger firms possessing restricted financial and human resources to do so (Lubatkin et al., 2006). Therefore, advancement in the SME literature can have direct implications for SME viability and growth (Paradkar, Knight and Hansen, 2015).

In particular, we ask: (1) How much influence does opening and closing leadership behaviors have on employee's exploration and exploitation work behaviors; and (2) how does the leader's capability to demonstrate adaptive/flexible leadership impact this association?

This paper contributes to literatures on SME leadership and innovation in two ways. Firstly, we provide empirical evidence for ambidextrous leadership theory from high-tech SMEs. Secondly, we elucidate the less understood issue of operationalizing leader's temporal flexibility required to switch between OLB and CLB by demonstrating the mediating effect of adaptive/flexible leadership behavior on the association between ambidextrous leadership and employee innovation behaviors. In doing this, we provide comprehensive insights for SME leaders on how to foster exploration and exploitation innovation simultaneously.

It is pertinent to establish that in this paper leadership is conceived within the SME sector using McGrath and MacMillan's definition of the entrepreneurial leader as one who creates "an organization that does things . . . as a matter of course" and achieves success through "continual search for new opportunities" (2000; p. 301).

The rest of the paper is structured as follows: the literature on innovation and ambidextrous leadership are explored then hypotheses are proposed. Further, we present the methodology and discuss the findings. Finally, the paper highlights the theoretical and practical implications and provides suggestions for further research.

2.1 Background to the study

2.1.1 Duality of innovation and Paradoxes of leading innovative pursuits

Innovation is the mutually inclusive processes of *creativity* and *implementation* (including commercialization) (West and Farr, 1990) which are characteristically linked to the multifaceted and complex organizational learning activities of exploration and exploitation respectively (March, 1991). Creativity involves generating ideas, which in some cases may even challenge the status quo. These ideas need scrutiny for their usefulness and feasibility. If these new ideas find enough support, their implementation needs planning and adequate resources (Farr, Sin and Tesluk, 2003). During the period of implementation, creative ideas may be refined and integrated into the standard routines of the organisation (Bledow et al., 2011).

There is a non-exhaustive list of activities underlying innovation including high degrees of coordination, attention to details and persistence, all within changing internal and external conditions (Hunter, Thoroughgood, Myer and Ligon, 2011). Hence, innovation requires integration of different often-contradictory activities (Berkhout, 2007). Moreover, contrary to how innovation models are often portrayed, innovation processes of *creativity* and *implementation* do not occur in a linear order starting with creativity and ending with implementation. In reality, both processes occur extemporaneously (Anderson, De Dreu, and Nijstad, 2004; Berkhout and Van Der Duin, 2007) and are ubiquitous in the innovation process regardless of whether an organization is more inclined to either exploration or exploitation undertakings. This creates tensions in the innovation process as well as a stiff competition for typically scarce resources (March, 1991).

Exploration and exploitation activities are distinct innovation strategies and are characterized by contradictory features as well (Gupta et al., 2006; March, 1991). Exploration innovation is driven by activities such as flexibility, experimentation, variance, taking risks and search whilst exploitation innovation is facilitated by activities such as refinement, choice, control, selection, efficiency, implementation and execution. (March, 1991; Levinthal and March, 1993). Based on the conflicting

requirements of both processes, March (1991) opined that exploration and exploitation could not be synchronized. However, other researchers (e.g. Mom, Van den Bosch, and Volberda, 2009; Rosing et al., 2011) have suggested that both exploration and exploitation are complementary innovation processes and could work together to facilitate innovation, thus “ambidexterity” is used to describe their role in driving innovation (He and Wong, 2004; Tushman and O’Reilly, 1996). Bledow, Frese, Anderson, Erez and Farr (2009) explained that exploitation activities ensure that there are sufficient resources available for exploration while exploration-type activities also ensure that new processes and products are created that can be exploited in the long term. Furthermore, poorly defined creative assignments may need exploitation activities to provide structure and direction (Bain, Mann, & Pirola-Merlo, 2001). In addition, exploration activities may be required to drive the implementation of new/radical ideas. Put together, exploration and exploitation are needed not only in specific phases but also within the whole process of innovation (Rosing et al., 2010).

The combination of exploration and exploitation have been found to be highly essential to innovation and optimal innovation are reported by firms that are able to engage in both exploration and exploitation (O’Reilly and Tushman, 2008; Zacher and Rosing, 2015). By engaging too much in exploitation, an organization stands at the risk of missing new knowledge; likewise, organizations that focus only on exploration risk losing incremental benefits from old certainties (Mom et al., 2009). This concept of the dual nature of innovation provides a better framework for understanding innovation leadership and management (Bledow et al., 2011).

Therefore, in pursuit of sustainable growth and competitive advantage, leaders have been challenged to become ambidextrous by fostering “sufficient” levels of exploration and exploitation innovation behaviors in their followers (Andriopoulos and Lewis, 2010; O’Reilly and Tushman, 2008). Throughout an organisation, the activities referred to by a duality such as exploration and exploitation need to be stimulated, balanced and integrated (Bledow et al., 2011). Nevertheless, the task of balancing both exploration and exploration is a challenging leadership endeavour

(Wang and Rafiq, 2014) as both innovation processes are fundamentally different, thus necessitating divergent knowledge processes and competing for typically limited resources (March, 1991). These challenges are greater for SMEs where their low economies of scale and insufficient resources limit access to external networks and adequate human and financial resources needed to foster innovation (Kaufmann and Tödtling, 2002; Tidd and Bessant, 2011). Consequently, SME leaders must adopt appropriate strategies and develop new leadership competencies which effectively direct the process of innovation and manage ambidexterity by aligning human capital to create maximum value for the business (Chen, Tang, Jin, Xie and Li, 2014; Tidd, Bessant and Pavitt, 2005). For this reason, a number of studies have highlighted the need for leadership styles and behaviors that significantly stimulate and foster innovation in SMEs as well as in dynamic and competitive environments (Freeman and Siegfried, 2015; Jansen et al., 2009; Vera and Crossan, 2009; Tushman and O'Reilly, 1996).

The challenge to balance both exploration and exploitation activities is amplified for SME leaders because SME leaders typically assume the crucial dual roles of operational and strategic managers (Aragón-Sánchez and Sánchez-Marín, 2005; Zhao and Seibert, 2006). One essential task for them includes managing oppositional tendencies of commercial and creative processes in order to ensure efficiency and profitability (Bledow et al., 2009). For example, while organizations tend to favour managing resources by establishing controls and making predictions (Leanna and Barry, 2000), creative employees prefer to be autonomous (Feist, 1998). Supporting creative individuals may require different methods because innovators prefer to be self-directed (Andriopoulos and Lewis, 2010). In contrast, organizations need to establish control in order to manage the available organisational resources and maximise profit (Leana and Barry, 2000).

Hunter et al. (2011) provide a comprehensive list of paradoxes that leaders face when leading for innovation and they provide suggestions on potential resolutions of these paradoxes (full list of paradoxes have been presented in the preceding chapter).

However, not much is known about the extent to which these resolutions can be realistically transferred to SME context (Edwards, Delbridge and Munday, 2005).

Although SMEs have greater allowance for flexibility due to their flat organisational structure (Aragón-Sánchez and Sánchez-Marín, 2005), and they could leverage this to achieve ambidexterity, this does not lead to the conclusion that the potential to promote ambidexterity is assured for all SMEs as levels/capability of flexibility may vary from one SME to another (Aragón-Sánchez and Sánchez-Marín, 2005).

2.1.2 SME leaders and innovation

Entrepreneurs have become heroes of economic development inspiring innovative undertakings successfully even in turbulent and competitive environments (Bagheri, 2017; Freeman and Siegfried, 2015). The paradigm of entrepreneurial leadership though not limited in scope to SME sector describes the key attributes and attitudes of SME leaders. This type of leaders are described as active individuals who have insatiable quest for new opportunities to continually achieve business success (McGrath and MacMillan, 2000).

Research studies on SME leadership suggest that the impact of the leader and leadership role is crucial for overall success or failure of the firm (Küpers and Weibler 2008). Due to the small size as well as flat structure of SMEs, SME leaders have increased direct effect on the behaviors of the employees and organizational outcomes (Uslu, Bülbül and Çubuk, 2015). Furthermore, the SME leader's orientation towards innovation significantly influences the firm's innovation efforts (McAdam et al., 2004). This is because the decision on whether or not to innovate and whether to focus on exploration or exploitation (strategic direction) are usually sole prerogative of the leader in smaller business contexts (Zhao and Seibert, 2006). Studies have suggested that owners/managers of SMEs tend to make strategic orientation decisions on whether to explore or exploit and how much involvement should be placed on both exploration and exploitation activities based on an innate sense that draws them to their 'comfort zone' (Hayton, 2015) rather than intentions for profit maximization as may be the popular opinion. In other words, the decision on whether to explore or

exploit and how much of involvement in both activities depends on the SME leader's personal preference.

Given this influential role played by SME leaders, the capabilities and personality of each SME leader may function to foster or hinder innovation ambidexterity (Ahn, Minshall and Mortara, 2017; Luthans and Youssef, 2007; Vaccaro et al., 2010). Many SME leaders are reported to have the ability for situational variability (Ardichvili et al., 1988), which is necessary to foster innovation (Rosing et al., 2011). However, there are reports that high-tech SME leaders show reluctance to engage in training and development programmes which in some cases has led to inadequate exploitation of innovation (NESTA, 2008, Chaston, 2008). Some studies have also demonstrated that SMEs face some challenges in managing innovation tasks especially those that require qualified HR and efficient management of technology and information (Freel, 2003; Lee, 2009).

Furthermore, innovation requires an empowerment culture, which increases variance in employee's behaviors and encourages employee participation, and democratization (Bilton, 2007; O'Regan et al., 2006). However, a study by Ardichvili, Cardozo, and Gasparishvili (1998) showed that SME leaders involve peers in decision making but not subordinates and that SME leaders demonstrate authoritarian leadership behaviors. Bamiatzi et al. (2015) also demonstrated that female SME leaders were not willing or ready to release control to their employees. Rather their leadership behaviors ranged from moderate to high autocratic approach and in some cases, they maintained a high bureaucratic stance. This is despite the fact that past studies show females to be participative and democratic in their management style (Brush, 1992). Although Bamiatzi et al., (2015) focused on female SME leaders; their results show the need to make leadership behavior assumptions with caution.

According to a CIPD report in 2012, UK SME leaders acknowledge their deficiency in leadership and management skills. Furthermore, these SME leaders acknowledged that they are constantly in search of ways to inspire creativity and innovation

behaviors of their employees. It has been noted that limited number of studies have focused on the subject of leading innovation in the SME sector (e.g., Bagheri, 2017; Hotho and Champion, 2011). Yukl (2009) have called for better approaches that investigate the effect of leadership on exploration and exploitation innovation activities. Similarly, Hotho and Champion (2011) called attention to the need to address how the sector can develop and foster ambidexterity as well as manage the tensions therein.

2.1.3 Employees and innovation

The source of innovation is the creativity and innovator capability of people (Hotho and Champion, 2011). In today's innovation focused economy, much emphasis is given to knowledge workers, their creativity, ability to create and share new knowledge and innovation capability (Drucker, 1993; Florida and Goodnight, 2005). Examining employee's innovative work behaviors is important as these behaviors indicate that an employee is functioning optimally (Seligman and Csikszentmihalyi, 2000). Employees' creativity and idea implementation capabilities have been recognized as important performance outcomes enabling organizations to adapt to unstable environmental conditions and take advantage of opportunities (Shalley, Zhou, and Oldham, 2004). Employee's activities are considered essential in the innovation process (Zacher and Rosing, 2015). Therefore, harnessing employee innovation work behavior is important for organizations in order to boost growth (Banbury and Mitchell, 1995) and realize much greater efficiencies and higher performance (Baer and Frese, 2003).

Consistent with the concept of ambidexterity, employees are required to demonstrate adaptability by adjusting their behaviors between explorative activities and exploitative activities accordingly (Pulakos, Arad, Donovan and Plamondon, 2000). Usually, the cue for what type of innovation behavior to engage in and when to switch between behaviors is received from the leader. Several studies have noted how leadership influences the innovation outputs of employees (this has been addressed in an earlier section of this thesis).

Therefore, an understanding of the required supporting mechanisms, systems and contexts required to foster and manage the creativity and innovation potential of employees is considered important in innovating firms (Mumford et al., 2002). Overall, intrinsic motivation (Storey, 2005); job autonomy (Ohly, Sonnentag and Pluntke, 2006) flexibility (Simon, 2006), error learning (Storey, 2005) high quality communication exchanges with leaders (Bilton, 2007) are acknowledged as important to leading and managing employees for innovation. However, the conventional leadership and management approaches used to foster creativity and innovation work behaviors in employees have been said to be inadequate (Drucker, 1993; Storey, 2005; Mumford et al., 2002) as leading and managing creative workers typically requires approaches that are considerably different from traditional forms of organizing and performing work (Tidd, 2001).

2.1.4 Ambidextrous leadership theory

Ambidexterity describes an organization's ability to manage the existing demands of its ongoing business obligations whilst maintaining a flexible outlook to adapt aptly and swiftly to the changing business environment (March, 1991; Raisch and Birkinshaw, 2008). Prior to ambidextrous leadership theory, empirical research findings on the association between leadership style and innovative behavior of employees were inconclusive (Chen, Li, and Leung, 2016). Accordingly, scholars have suggested that traditional forms of leadership and organizational management are deficient in directing employees' behavior toward innovation and managing ambidexterity because they are not primarily designed to do so (Rosing et al., 2011). In fact, the meta-analytical study by Rosing et al. (2011) recommended that (i) leading innovation is a complex and paradoxical task, thus requiring corresponding leadership styles; (ii) ambidexterity is a central feature of innovation that must be taken into account by innovation leadership theories. Summarily, the requirement for ambidexterity is what differentiates innovation performance from other forms of organizational performance.

Based on an understanding of the dualities of innovation and to act on this understanding, Rosing et al. (2011) propose ambidextrous leadership theory,

suggesting that to foster innovation ambidexterity, leaders need to show a combination of opening and closing leadership behaviors aimed at increasing and decreasing variance in employee behaviors respectively. Rosing and colleagues argue the best way to predict specific follower behavior is to predict it by specific leader behaviour. *Opening leadership behaviors* is hypothesized to foster exploration by increasing variance in employee behaviors. *Closing leadership behaviors* is hypothesized to foster exploitation by decreasing variance in employee behaviors. The examples of both leadership behaviors are presented in Table 2.1.

Table 2. 1. Examples of opening and closing leadership behaviors

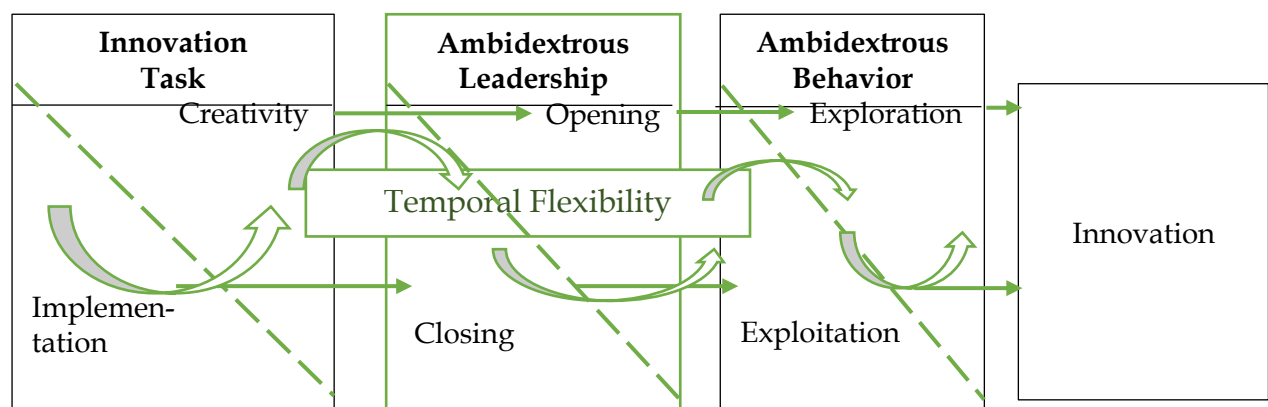
Opening leadership behaviors	Closing leadership behaviors
Allowing different ways of accomplishing a task	Monitoring and controlling goal attainment
Encouraging experimentation with different ideas	Establishing routines
Motivating to take risks	Taking corrective action
Giving possibilities for independent thinking and acting	Controlling adherence to rules
Giving room for own ideas	Paying attention to uniform task accomplishment
Allowing errors	Sanctioning errors
Encouraging error learning	Sticking to plans

(Source: Rosing et al., 2011; p.967)

The capability of a leader to switch flexibly between these two leadership behaviors according to the changing demands of innovation and the environment is expected to stimulate simultaneous exploration and exploitation innovation (Rosing et al., 2011). Ambidextrous leaders ensure an overall equilibrium of factors that support either part of the dualities underlying innovation (Bledow et al., 2011). Take for example, in a team where radical new product development is the goal; a leader may need to place more emphasis on OLB for motivation, intellectual stimulation and support of a conducive environment. While at a later stage, a leader may need to take action to establish a common focus that integrates the best ideas while the other ideas are discarded so that the team can move forward (Rosing, Rosenbusch and Frese, 2010).

Rosing et al. (2011) emphasized that the ability of a leader to merely demonstrate OLB and CLB is insufficient to drive ambidexterity. Both behaviors are usually demonstrated in a continuously extemporaneous manner during the innovation process. Therefore, the essential task of an ambidextrous leader is the ability to decipher when and how to exhibit temporal flexibility to adapt OLB and CLB to the specific requirements of innovation at the appropriate time, which will then trigger the appropriate innovation behaviors in the followers. The synergistic effects of both processes is expected to result in innovation performance above firms emphasizing either one of exploration or exploitation (He and Wong, 2004; Lewis, Andriopoulos and Smith, 2014; Lin and McDonough, 2011; Zacher and Wilden, 2014).

Figure 2. 1. **Model of ambidextrous leadership**



(Adapted from Rosing et al., 2011; p.966)

2.2 Hypothesis Development

2.2.1 Opening leadership behaviors and employee explorative behaviors

Opening leadership behaviors can support employee creativity by increasing variance and providing autonomy, which creative people require to work (Bledow et al., 2011). It is rarely the case that leaders have more information and knowledge available on all aspects of the innovation than their followers (Hunter et al., 2011). Typically expertise is distributed across employees and employees possess detailed knowledge about the innovation process (Hoegl and Parboteeah, 2006). Such workers therefore require high autonomy as this will facilitate exploration of new ideas (Shalley, Zhou and Oldham, 2004).

McGrath and MacMillan (2000) have demonstrated the importance of SME leaders in displaying empowering leadership behaviors including the promotion of opportunity thinking and shared goal setting with followers. Typically, SME leaders are less bureaucratic and their allowance for follower's discretion is considerably higher in comparison to those of larger organizations (Ensley, Hmieleski and Pearce, 2006). Oldham and Cummings (1996) in their study of personal and contextual factors that foster employee creativity found that leadership behaviors that were perceived as controlling were negatively related to employees' explorative behavior while supervision behaviors that were supportive were reported to be positively related to employee explorative behaviors. Additionally, SME leaders are often considered as innovators who challenge the status quo and do things unconventionally (Schumpeter, 1965). Therefore, employees may take cues from the leader's own unconventional behaviors (Mintzberg, 1979) and be motivated to demonstrate exploration behaviors.

Furthermore, based on the possibility for increased environmental dynamism in high-tech SMEs, employees may be more receptive to a leader's style or behavior that increases variance (Vera and Crossan, 2004). Leaders showing OLB are likely to encourage employees to perceive the changing environment as a source of opportunity and help create a conducive environment necessary to generate exploration (Jansen, et al., 2009). Moreover, Cooper, Peake and Watson (2016) found that leaders who showed greater levels of direction negatively influenced innovation efficacy. In addition, Zacher et al. (2014) found that OLB positively predicted employee exploration behaviors beyond control variables.

From the foregoing, it is hypothesized that: *Opening leadership behaviors foster employee explorative behaviors (hypothesis 1).*

2.2.2 Closing leadership behaviors and employee exploitative behaviors

A directive approach is required to ensure alignment and integration of employee's activities (Bledow et al., 2011). Leader's focus on decreasing variance in employee's behaviors would limit employee's efforts to pursue opportunities outside existing capabilities (Jansen et al., 2009). By reducing variation in employee behaviors, leaders

can ensure that the creativity and expertise of employees are utilised to result in high-quality innovation (Bledow et al., 2009). Also in situations where a leader has more knowledge and abilities for innovative tasks than their employees, it may be advisable to demonstrate leadership behaviors that reduce variance (Murphy, Blyth and Fiedler, 1992).

Although SMEs have been found to be more favourably disposed to exploration rather than exploitation (Zahra, Ireland and Hitt, 2000), there is evidence that SME leaders engage in behaviors that can reduce variance in employee's behaviors. Bamiatzi et al. (2015) demonstrated that SME leaders were autocratic in their leadership approach and in some cases showed high bureaucratic stance. In another study by Ardichvili, Cardozo and Gasparishvili (1998), SME leaders were reported to involve peers in decision making but not subordinates. Leaders need to engage in CLB because these behaviors are necessary to implement creative ideas (Bledow et al., 2011). Zacher et al. (2014) found that CLB positively predicted employee exploitation behavior above and beyond their control variables. From the foregoing, it is hypothesized that:

Closing leadership behaviors foster employee exploitative innovative behaviors (Hypothesis 2).

2.2.3 Ambidextrous leadership and employee ambidexterity

As much as tensions and trade-offs exist between exploration and exploitation, they are also intertwined and they both have functional values for innovation (Rosing et al., 2011). By conceptualizing exploration and exploitation as pairs in our concepts of dualities, the differences as well as the interdependence of both processes are emphasized (Bledow et al., 2011). The necessity of leaders to embrace both parts of the dualities and find the right balance in each context to deal with the tensions and facilitate successful innovation is also highlighted (Farjoun, 2010). Within the innovation process, conflicting activities need to be performed and integrated. For example, supporting creative thinking may require a set of leadership behavior for support at one point in time, while these set of behavior may be maladaptive to support routine or standardized tasks which may be required to facilitate innovation in an efficient manner at a later time (Bledow et al., 2011). Similarly, while an increase

in variance of employee behaviors could help to generate many ideas, employees may be pursuing ideas that are not compatible with the goals of the organisation and the activities of the employees may not be properly aligned (Gebert, Boerner and Lanwehr, 2003). Therefore, effective leadership of innovation cannot rely on one consistent fixed set of behavior.

The combination of OLB and CLB is critical to achieve ambidexterity. The concept of ambidextrous leadership suggests that strategies for increasing and decreasing variance in employee's behaviors can be combined in an overall leadership approach.

Besides, OLB and CLB have been found to amplify innovation performance such that OLB supplements the deficiencies of CLB and vice versa (Zacher and Wilden, 2014).

Achieving ambidexterity is particularly crucial to SMEs because larger organizations may be able to afford structural ambidexterity to balance exploration and exploitation processes by having different in-house teams and external units taking responsibility for exploitation and exploration (Tushman and Reilly, 1996). On the other hand, due to limited human and financial capital, smaller organizations may have to settle for contextual ambidexterity (Gibson and Birkinshaw, 2004) or sequential ambidexterity (Duncan, 1976), where same teams or units are responsible for both exploration and exploitation. Although some researchers have suggested open innovation as an approach for SMEs to heighten innovation (Dahlander and Gann, 2010; Van de Vrande et al., 2009), not much research has been carried out on the sustainability of such pursuits. Xia and Roper (2016) reported that success of such collaborations is still largely contingent on the internal resources of the firm. Several studies have confirmed that a strong emphasis on the internal resources of the firm such as internal organisational design and human resources add value in competitive environments (Peteraf 1993; Barney 1991). Compared with large firms, SMEs have greater allowance for management of flexibility due to their flat organisational structure (Aragón-Sánchez and Sánchez-Marín, 2005), and this capability for flexibility could be leveraged to achieve ambidexterity.

The combination of both leadership behaviors has also been linked to simultaneous exploration and exploitation innovation (Gibson and Birkinshaw, 2004; He and Wong, 2004; O'Reilly and Tushman, 2008; Zacher and Rosing, 2015). A study by Lee, Woo

and Joshi (2016) using polynomial regression and response surface analysis demonstrated that pro-innovation managerial and leadership practices promote ambidexterity, in particular new product development performance. Furthermore, Bledow et al. (2011) demonstrated that alternating between complementary leadership behaviors to meet the duality of innovation creates a synergy that is a more functional and effective approach to support exploration and exploitation innovation simultaneously. From the foregoing, it is hypothesized that:

*Ambidextrous leadership (OLB * CLB) will foster employee ambidexterity (Exploration* Exploitation innovative behaviors) (Hypothesis 3).*

2.2.4 The effect of Adaptive/flexible leadership behaviors on the association between ambidextrous leadership and Employee ambidexterity

The essential task of an ambidextrous leader is the capability to decipher when a switch is needed between OLB and CLB, and flexibly making this switch to meet the demands of fostering innovation at any point in time (Hooijberg, 1996; Rosing et al., 2011). In fact, Rosing et al. (2010) posit that flexibility and situational adaptability are the most important features of an ambidextrous leader. However, little is known on how to achieve this switch as operationalizing ambidexterity in practice is inconclusive (see meta-analytic review by Junni, Sarala, Taras and Tarba, 2013). As it is the case that there are no readily available systematic models that forecast the timing of exploration and exploitation during the innovation process (Rosing et al., 2011), an implication is that leaders must have intrinsic capabilities to evaluate risks, tolerate risks and adapt to changing conditions (Junni et al., 2013). Tushman and O'Reilly (1996) suggested that leaders rely on internal mechanisms that enable them hold information, select decision alternatives and resolve conflicts to drive ambidexterity. This requirement underscores adaptive/flexible leadership behaviors (AFB) — the capability to adjust one's leadership approach to suit different or changing contextual demands in a way that facilitates performance (Kaiser and Overfield, 2010).

A leader may need to not only flexibly switch from one strategy to another, from task to task, but also from employee to employee (Bledow et al., 2011). Recognizing that internal skills and personal competencies of the leader may be used to drive

ambidexterity (Ahn et al., 2017; Tushman and O'Reilly, 1996), we suggest that the leader's adaptive/flexible leadership behaviors is an essential factor that could influence the realization and effectiveness of ambidextrous leadership.

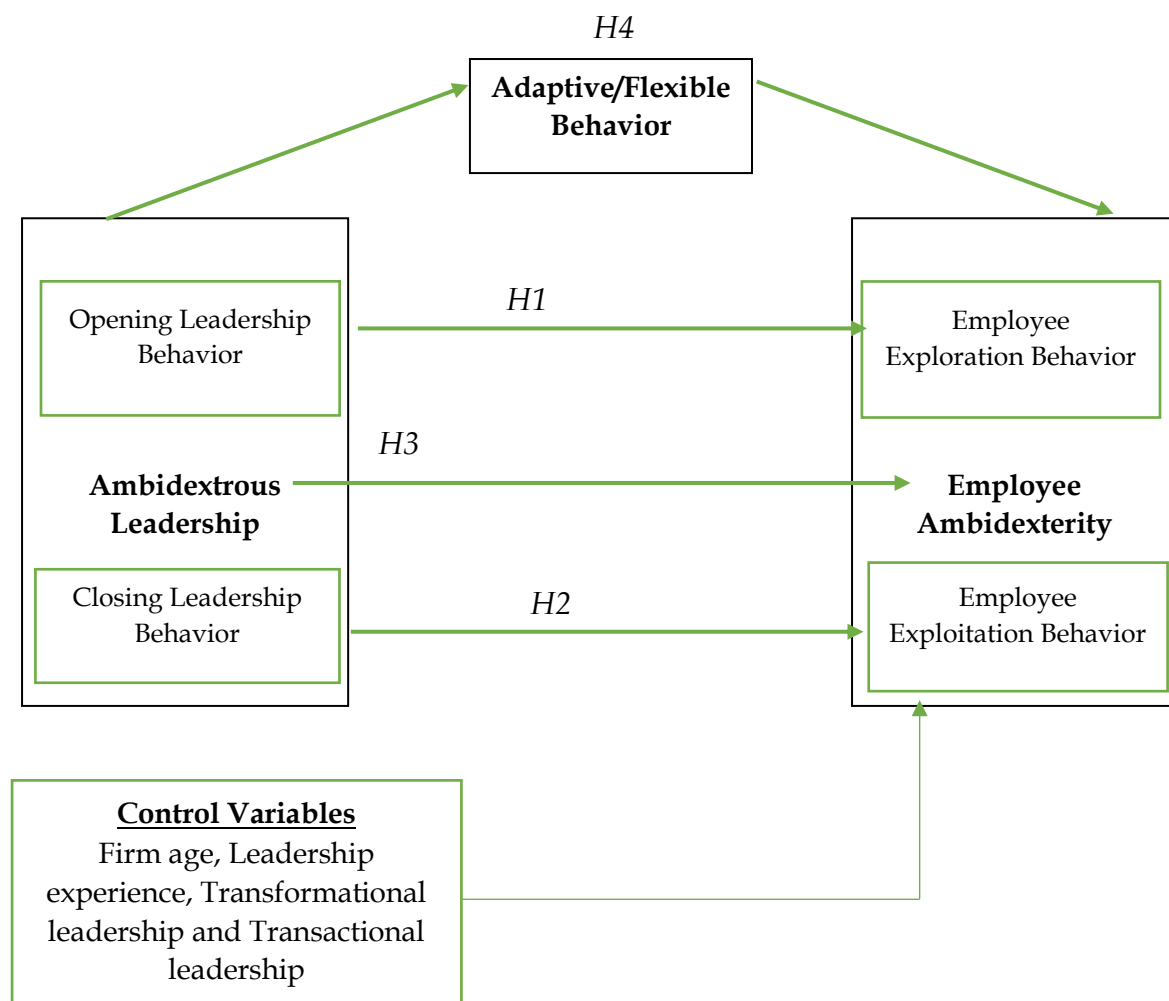
While ambidextrous leadership and AFB are both mindful and situationally aware approaches, it is pertinent to note that AFB is different from ambidextrous leadership in that ambidextrous leadership specifically relates to leadership of innovation efforts. Conversely, AFB is broader in scope and encompasses the leadership skill to approach emergencies or unpredictable work situations; solve problems creatively; handle work stress; engage in training and learning efforts; and demonstrate interpersonal adaptability (Charbonnier-Voirin and Roussel's, 2012; Yukl and Mahsud, 2010).

The leader's ability to adapt is the key to survival for SMEs (Bessant, Lamming, Noke and Phillips, 2005). More so, high-tech SMEs whose activities are fast-paced, highly creative, technology-driven and innovation focused (Damanpour, 1996). We suggest that adaptive/flexible leadership is crucial to ambidextrous leadership as the aptitude for behavioral flexibility of a leader could determine the degree of ambidexterity such that high levels of behavioral flexibility leads to high degrees of ambidexterity whilst lower levels of behavioral flexibility leads to lower degrees of ambidexterity.

Against the backdrop of the dual nature of innovation, it is plausible to make two assumptions about how to operationalise the switching between OLB and CLB. Firstly, leading innovation ambidexterity would require behavioral flexibility from the leader so that the leadership approach adopted at any point in time is one that matches the demands of innovation (Denison, Hooijberg and Quinn, 1995). Secondly, leader's capability for behavioral flexibility may elucidate necessary conditions or degree of flexibility required for ambidextrous leadership to have highest impact on employee ambidexterity (Bledow et al., 2011). Therefore, it is hypothesized that *adaptive and flexible leadership will influence the relationship between ambidextrous leadership and employee ambidexterity (hypothesis 4).*

From the discussion in the literature and the hypotheses formation, Fig. 2.2 is presented as a framework to illustrate the expected associations among the variables.

Figure 2. 2. Relationship between ambidextrous leadership and employee ambidexterity



3.1 Method

The conceptual model that served as a basis for the empirical study is summarised above. This research employs a hypothetico-deductive technique. This study uses existing multi-item scales (see Appendix) and verified them through various analyses as described in the following section.

3.2 Participants and procedure

Data for this study were collected from 98 high-tech SME leaders from the United Kingdom. This paper focuses on high-tech firms as these firms are most likely to be involved in higher volume of both exploration and exploitation innovation activities (Grinstein and Golman; 2006; Tajvidi and Karami, 2015). SMEs were initially identified through Company House database, and using purposive sampling we limited the search to eight high-tech firm which had already been identified by previous studies as having high innovative activities in the UK (Wang and Rafiq, 2014; Hooker and Achur, 2014). The business sectors in our sample encompassed pharmaceutical and biotechnology (21), manufacturing (15), energy (10), information technology (8), engineering and machinery (22), software and computer services (8), telecommunication services (8) and media, entertainment and games (6).

The questionnaires were distributed to respondents through e-mail (Survey Monkey link) or by post. Postal questionnaires were distributed in three batches and telephone calls were made to prompt responses. The questionnaire was to be completed by any individual leader whose job involved actively leading and supporting creative and innovative work teams (e.g., R&D units, production units). Leaders were asked to give their responses based on the last three years considering employees they have worked with in these units. To avoid errors, we adopted several strategies: we used brief, simple, specific and focused questions, ambiguous phrases were avoided and we checked each questionnaire for accurate completion.

Eight hundred and fifty (850) copies of the questionnaires were distributed and 112 copies of the questionnaire were returned from which 98 usable samples were obtained. This accounted for a response rate of 11.5%, which is within the typical 10%-12% range for surveys of firm leaders (Hambrick, Geletkanycz and Fredrickson, 1993). Fourteen questionnaires were rejected as incomplete.

3.3 Data Description

Table 2.2 presents a summary of the demographics of the leader and their firms. The majority of our respondents are male (N=70; 71.4%) while the female respondents were 28 (28.6%). With regards to age range of the respondents, 2 (2%) were 17-25; 11

(11.2%) were 26-35; 22 (22.4 %) were 36-45; 36 (36.7%) were 46-54 and 27 (27.6%) were over 55.

Table 2. 2. **Sample Description and Demographic characteristics**

Demographics of the Leader	<u>Frequency</u>	
	N	(%)
Respondents Age		
17-25	2	2.0
26-35	11	11.2
36-45	22	22.4
46-54	36	36.7
Over 55	27	27.6
Years of experience in present job		
Less than 1 year	10	10.2
1-5 years	24	24.5
6-10 years	17	17.3
11-15 years	16	16.3
More than 15 years	31	31.6
Gender		
Male	70	71.4
Female	28	28.6
Highest Academic qualification		
GCSE/Vocational Qualification	19	19.4
First level university degree	51	52.0
MBA/Masters/PhD	28	28.6
Age of the firm		
	<u>Frequency</u>	
	N	(%)
0-3 years	13	13.3
4-6 years	10	10.2
7-9 years	8	8.2
10 years and above	67	68.4

In terms of highest academic qualification 19 (19.4%) had GCSE/vocational qualification; 51 (52.0%) had at least a first degree and 28 (28.6%) had obtained postgraduate degree.

Majority of the firms in the sample 67 (68.4%) have been established between 10-12years; 8 (8.2%) have been established between 7-9 years; 10% (10.2%) have been established between 4-6 years and 13 (13.3%) had been established within 0-3 years. The number of employees in the firms were 1-20 (32.7%); 21-50 (15.3%); 51-100 (13.3%) and 101-250 (38.8%).

3.4 Measures

Our variables were measured using established multi-item scales. Scales were derived from extant studies and results from the pilot test with five business owners showed that meanings were clear with only a few adjustments made to improve the survey instrument.

3.4.1 Opening and closing leadership behaviors

These leadership behaviors were measured using two scales developed from the examples of opening and closing leadership behaviors provided by Rosing et al. (2011). The leaders rated themselves on a 5-point scale ranging from 1 (not at all) to 5 (frequently, if not always) according to how they engage in OLB and CLB. Examples of the items for OLB were "Allows different ways of accomplishing a task," "Encourages experimentation with different ideas," "Motivates risk taking". Cronbach's alpha for OLB scale was .80. Examples of items for CLB were "Monitors and controls goal attainment," "Established routines," "Takes corrective action". Cronbach's alpha for CLB scale was .71. Ambidextrous leadership was modelled as the multiplicative term of OLB and CLB, based on the argument that these two leadership behaviors are non-substitutable and complementary (Rosing et al., 2011). Other researchers have used this approach and have used the interaction term between opening and closing leadership behaviors as predictors of employee innovation behaviors (Zacher et al., 2014; Zacher and Wilden, 2014).

3.4.2 Employee exploration and exploitation behaviors

Exploration and exploitation behaviors were measured using scales developed by Mom et al. (2009). The leaders rated the extent to which their employees engaged in both exploration and exploitation behaviors. Examples of exploration behavior items were "Searching for new possibilities with respect to their work," "Evaluating diverse options with respect to their work," "Focusing on strong renewal of products/services or processes." Examples of exploitation behavior items were "Activities employees can properly conduct using their existing knowledge," and "Activities which clearly fit into existing company policy." Cronbach's alpha for these scales were .82 and .79 respectively. Following the approach of He and Wong, (2004); and Cao, Gedajlovic

and Zhang (2009), employee ambidexterity is presented as the multiplicative term of employee exploration and exploitation behaviors because the combination of exploration and exploitation is consistent with the concept of innovation ambidexterity (Wang and Rafiq, 2014; Zacher and Rosing, 2016). Although some other studies have modelled ambidexterity as the addition or absolute difference of exploration and exploitation values, a meta-analysis by Junni et al. (2013) revealed that using the product of exploration and exploitation was more strongly representative of ambidexterity as it implies that both exploration and exploitation constructs are independent but have a compensatory effect on each other.

3.4.3 Adaptive/ flexible behavior

The leader's adaptive/ flexible work behaviors were measured using Charbonnier-Voirin and Roussel's (2012) 19-item scale containing 5 dimensions of adaptive behavior. The original scale consisting of 8 dimensions was developed by Pulakos et al (2000) and has been reviewed and abridged by Charbonnier-Voirin and Roussel (2012). The leaders rated themselves on a 5-point scale ranging from 1 (not at all) to 5 (frequently, if not always). The dimensions are "solving problems creatively"; "demonstrating interpersonal adaptability"; "handling work stress"; "handling emergencies or unpredictable work situations"; and "training and learning effort". Cronbach's alpha for this scale was .81.

3.4.4 Demographic Variables and Control variables

The respondents reported their gender, age, education, leadership experience and firm age (reported in Table 2.4). Leadership experience and firm age were included as control variables in the analysis because prior studies have suggested that these factors can be highly influential to the effectiveness and outcomes of the organization (Cavazotte, Moreno and Hickman, 2012; Wu, Levitas and Priem, 2005). Additionally, Wadhwa and Kotha (2006) demonstrated that firm age may be associated with a firm's rate of innovation. Transformational and transactional leadership behaviors were also included as control variables.

Transformational leadership moves followers beyond immediate self-interests to perform above and beyond expectations (Bass, 1985). Transformational leadership is particularly relevant in SME context because of the dominant role occupied by the entrepreneur (Baum, Locke and Smith, 2001). Transformational leadership could help to create a conducive culture for exploration innovation through intrinsic task motivation (Shin and Zhou, 2003), relational identification (Qu, Janssen and Shi, 2015) and creative self-efficacy (Gong, Huang and Farh, 2009). Transformational leaders are likely to build energy around innovative ideas throughout the organization (Shamir, House, and Arthur, 1993).

Past research has identified transactional leadership as a set of leaders behavior that can have a positive impact on the innovation process because they can create stability for the innovation process and support the alignment of employees (Dayan, Di Benedetto and Colak, 2009; Keller, 2006). In addition, it may be useful to set expectations, allocate resources, and provide direction and structure for creative tasks and exploration activities (Bain, Mann, and Pirola-Merlo, 2001; Qu et al., 2015).

Transformational and transactional leadership were measured using the Multifactor Leadership Questionnaire (MLQ Form 5X short; Avolio and Bass, 2004). The MLQ is one of the most frequently used instruments in the leadership literature and is considered to be highly reliable and well validated. Items in the MLQ were answered on 5-point scale ranging from 1 (not at all) to 5 (frequently, if not always). MLQ is based on seven factors, measuring transformational versus transactional leadership attributes, namely Idealized Influence, Inspirational Motivation, Intellectual Stimulation, Individualized Consideration, Contingent Reward, Management-by-exception, and Laissez-faire. Cronbach's alpha for transformational leadership was .82, and transactional leadership .84.

3.4.5 Common-Method Bias

Because the use of a single survey for data collection creates the potential for common method bias, procedural steps were taken to reduce the risk of bias. Following the recommendation of (Podsakoff, MacKenzie, Lee, and Podsakoff, 2003), the order of

the survey items were randomized, ambiguity was eliminated, and there was emphasis made to respondents that their confidentiality protection was guaranteed and that there were no right or wrong answers. In addition, a Harman One-factor test was conducted (Podsakoff et al. (2003). No single factor was dominant. The highest variance explained by a single factor was 19.9%. Therefore, common method variance was not found to hold a serious threat to the findings.

4.1 Data Analysis and Results

Linear regression procedure was used to analyse the collected data and test the hypothesized relationships in the model.

4.2 Measurement validation

Convergence validity was examined through average variance extracted (AVE). AVE should be equal to or greater than 0.5 and scale reliability is satisfactory when it is above 0.7 (Fornell and Larcker, 1981). Table 2.4 shows satisfactory factor loadings, composite reliability and average variance extracted. Furthermore, all Cronbach's alphas exceeded 0.70 (Cronbach, 1951, Nunnally, 1978).

Table 2. 3. Means (M), Standard Deviations (SD), and Correlations of Variables

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Opening Leadership behaviors	3.8216	.57574	-										
2. Closing Leadership behaviors	3.5609	.50783	.095	-									
3. Transformational Leadership	3.6154	.49197	.423**	.166	-								
4. Transactional Leadership	3.4516	.39508	-.027	.326**	.361**	-							
5. Adaptive/Flexible behavior	3.8908	.33980	.389**	.169*	.334**	.180	-						
6. Employee Exploration	3.8923	.55256	.375**	.276**	.467**	.265**	.367**	-					
7. Employee Exploitation	4.0459	.51456	.184	.372**	.195	.301**	.129	.259**	-				
8. Leader's age	3.7653	1.0434	.141	.168	.084	.234*	.071	.176	.110	-			
9. Leadership experience	3.9490	1.3032	0.74	.334**	.115	.183	-.042	.065	-.016	.504**	-		
10. Firm Age	3.3163	1.1085	-.062	.025	-.101	.151.	-.110	-.108	.199	.204*	.002	-	
11. Gender	1.2857	.45408	.134	-.071	.066	-.152	.245*	.053	.160	-.346**	-.279**	-.125	-
12. Highest Academic Qualification	2.0918	.68994	-.005	.008	-.015	-.260**	.034	-.031	-.028	-.044	.065	-.025	-.021

**Correlation is significant at the 0.01 level (2-tailed). N=98

*Correlation is significant at the 0.05 level (2-tailed). N=98

Source: Data analysis

Table 2. 4. Reliability and Validity.

CONSTRUCT/INDICATORS	COMPOSITE RELIABILITY	FACTOR LOADING	AVE
Opening Leadership	0.812		0.62
Allowing different ways of accomplishing a task		.671	
Encouraging experimentation with different ideas		.718	
Motivating others to take risks		.457	
Giving possibilities for independent thinking and acting		.586	
Giving room for the ideas of others		.529	
Allowing errors		.693	
Encouraging error learning		.659	
Closing leadership	0.751		0.58
Monitoring goals and controls goal attainment		.548	
Establishing routines		.583	
Taking corrective action		.485	
Controlling adherence to rules		.616	
Sticking to plans		.617	
Paying attention to uniform task accomplishment		.621	
Employee Exploration	0.84		0.51
Searching for new possibilities with respect to their work		.690	
Evaluating diverse options with respect to their work		.652	
Focusing on strong renewal of products/services or processes		.743	
Actively engaging in activities requiring them to be adaptable		.735	
Actively engaging in activities requiring them to learn new skills or knowledge		.752	
Employee Exploitation	0.83		0.50
Actively engaging in activities in which they have accumulated a lot of experience		.602	
Actively engaging in activities in which they clearly know how to conduct		.782	
Actively engaging in activities that are primarily focused on achieving short-term goals		.536	
Actively engaging in activities in which they can properly conduct using their existing knowledge		.845	
Actively engaging in activities which clearly fit into existing company policy		.750	
Adaptive/Flexible behavior	0.91		0.43
I am able to achieve total focus on the situation to act quickly		.692	
I quickly decide on the actions to take to resolve problems		.751	
I analyse possible solutions and their ramifications quickly to select the most appropriate one		.701	
Developing good relationships with all my subordinates is an important factor of my effectiveness		.783	
I try to understand the viewpoints of my subordinates to improve my interaction with them		.757	
I learn new ways to do my job better in order to collaborate with others		.710	

I willingly adapt my behavior whenever I need to in order to work well with others		.676	
I undergo training on a regular basis at work or outside of work to keep my competencies up to date		.454	
I am on the lookout for the latest innovations related to my field of work to improve the way I work		.484	
I look for every opportunity that enables me to improve my performance (training, group projects, exchanges with colleagues or subordinates, etc)		.496	
Because of my self-control, my subordinates ask for my advice regularly when situations are difficult		.475	
I keep my cool in situations where I am required to make many decisions		.556	
I look for solutions by having a calm discussion with my subordinates		.540	
I do not hesitate to go against established ideas and propose an innovative solution		.840	
At work, subordinates rely on me to suggest new solutions		.692	
I use a variety of sources/types of information to come up with an innovative solution		.751	

Source: Data analysis

The scales were validated using factor analysis, in which as shown in table 2.4 the values for the factor loadings are about the threshold of 0.5 or higher, indicating the significant level of the factor loading and explicitness of factor composition. The exploratory factor analysis showed that the items had their highest factor loadings on their theoretically relevant factor. All values surpassed the threshold to justify validity and reliability.

Bartlett's sphericity test and Kaiser-Meyer-Olkin (KMO) test was applied to examine sampling adequacy for factor analysis. The Bartlett's Test of sphericity is significant ($0.000 < 0.05$); approx. Chi-square 2034.839; df = 666. An acceptable KMO of $0.66 > 0.5$ was obtained. Kaiser (1974) recommend 0.50 (value for KMO) as minimum. The results indicate that responses given with the sample are adequate and factors are well-correlated (Cerny and Kaiser, 1977).

Multicollinearity was examined by tolerance and variance inflation factor (VIF). Multicollinearity was not an important issue for the results as variables were centered and the maximum variance inflation factor (VIF) recorded in any of the models did not exceed 10, which is the general threshold for regression models (Kutner, Nachtsheim, and Neter, 2004).

Table 2. 5. **Sample characteristics of opening and closing leadership behaviors**

Survey item	Mean	S.D	Min	Median	Max	Low %	Moderate %	High %
Opening Leadership Behaviors								
1. Allowing different ways of accomplishing a task	3.8265	0.73254	2	4	5	3.1	27.6	69.4
2. Encouraging experimentation with different ideas	3.7551	0.82564	2	4	5	5.1	33.7	61.2
3. Motivating to take risks	3.6020	0.89373	1	4	5	10.2	30.6	59.2
4. Giving possibilities for independent thinking and acting	4.1224	0.78995	1	4	5	4.1	10.2	85.7
5. Giving room for own ideas	4.2245	0.65.62	2	4	5	1.0	9.2	89.8
6. Allowing errors	3.5612	0.96395	1	4	5	16.3	25.5	58.2
7. Encouraging error learning	3.7143	0.99483	1	4	5	10.2	21.4	68.4
Closing Leadership Behaviors								
1. Monitoring and controlling attainment goal	3.7653	0.91720	2	4	5	10.2	25.5	64.2
2. Establishing routines	3.6837	0.99065	1	4	5	10.2	26.5	63.3
3. Taking corrective action	4.0000	0.67350	2	4	5	1.0	19.4	79.6
4. Controlling adherence to rules	3.4898	0.86448	1	4	5	12.2	35.8	52.0
5. Sanctioning errors	2.7857	0.92223	1	3	5	37.8	41.8	20.4
6. Sticking to plans	3.6531	0.82615	1	4	5	8.2	26.5	65.3
7. Paying attention to uniform task accomplishment	3.5306	0.87584	1	4	5	13.3	29.6	57.1

1-2 Low; 3 Moderate; 4-5 High

Source: Data analysis

Table 2. 6. Sample characteristics of employee exploration and exploitation behaviors

Survey item	Mean	S.D	Min	Median	Max	Low %	Moderate%	High %
Employee exploration behaviors								
1. Searching for new possibilities with respect to their work	3.9490	0.66383	2	4	5	2.1	18.4	79.5
2. Evaluating diverse options with respect to their work	3.7755	0.76698	2	4	5	6.1	24.5	69.4
3. Focusing on strong renewal of products/services or processes	3.6633	0.84882	1	4	5	4.1	39.8	56.1
4. Actively engaging in activities requiring them to be adaptable	3.9592	0.70226	2	4	5	2.1	20.4	77.5
5. Actively engaging in activities requiring them to learn new skills or knowledge	3.9857	0.74016	2	4	5	3.1	19.3	77.6
Employee exploitation behaviors								
1. Actively engaging in activities in which they have accumulated a lot of experience	4.0714	0.66192	2	4	5	1.0	15.3	83.7
2. Actively engaging in activities in which they clearly know how to conduct	4.1429	0.70345	2	4	5	1.0	15.3	83.7
3. Actively engaging in activities that are primarily focused on achieving short-term goals	3.7857	0.77659	2	4	5	8.2	18.4	73.5
4. Actively engaging in activities in which they can properly conduct using their existing knowledge	4.1327	0.58570	3	4	5	0	11.2	88.8
5. Actively engaging in activities which clearly fit into existing company policy	4.0918	0.76099	1	4	5	1.0	21.4	77.6

1-2 Low; 3 Moderate; 4-5 High

Source: Data analysis

4.3 Test of Hypotheses

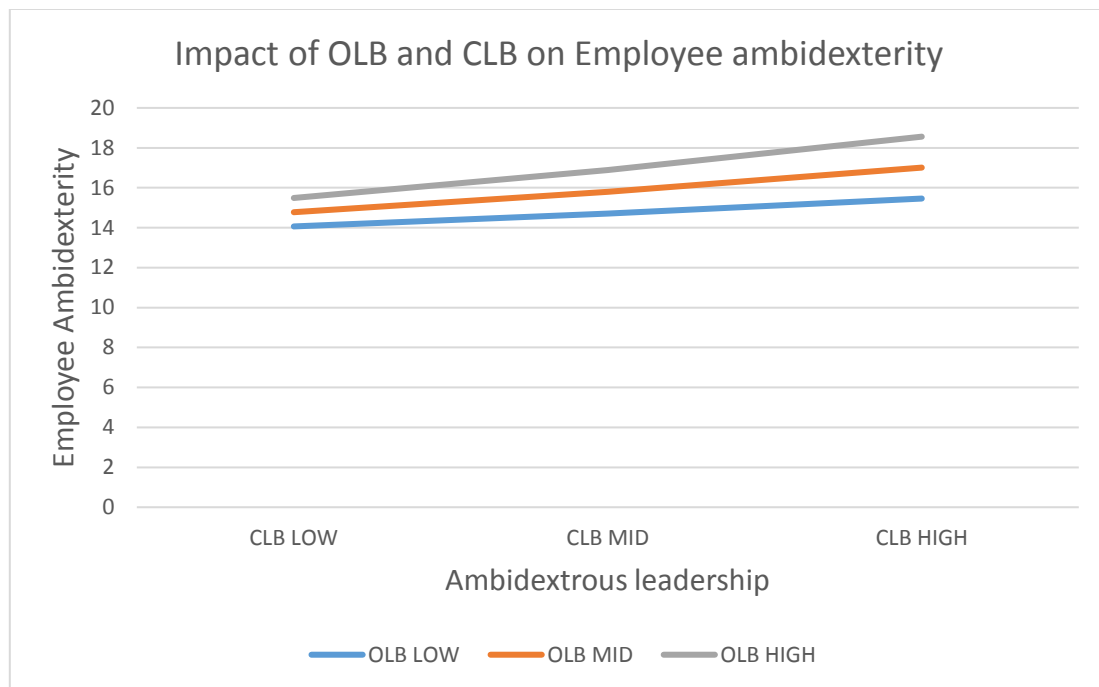
The hypotheses were tested using linear regression analyses on SPSS software version 22. The empirical strategy follows Fig 2.2. The control variables: Firm age leadership experience, transformational and transactional leadership were entered in the first step followed by the independent variables. Hypothesis 1 was supported with a positive and significant relationship between OLB and exploration ($\beta = .31, p < .000$). CLB did not predict exploration. As hypothesized, CLB was the only significant predictor of exploitation ($\beta = .28, p = .006$). This confirms hypothesis 2.

In confirmation of hypothesis 3, we found a positive and significant association between ambidextrous leadership and employee innovation ambidexterity ($\beta = .32, p = .016$). Figure 2.3 shows the effects of OLB, CLB and employee ambidexterity.

Hypotheses 1, 2 and 3 were all supported. When the predictor variables are added in the regression, holding other variables constant, the explanatory power of the models are significantly increased. The regression results are presented in Table 2.7.

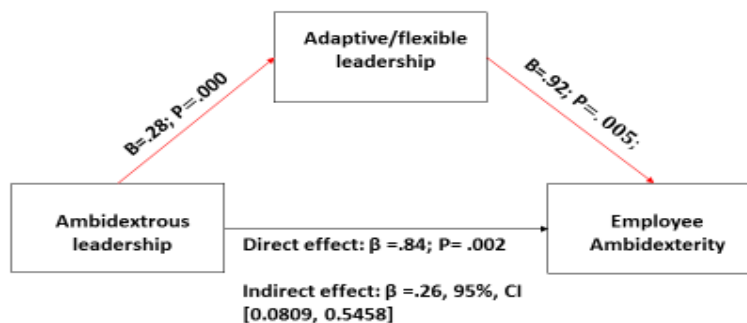
Hypothesis 4 was tested using the Hayes' (2013) PROCESS macro package for SPSS. First, the likelihood of a mediating effect was explored. Using the bootstrap estimation approach with 5000 samples (Shrout and Bolger, 2002), results show a significant indirect effect of ambidextrous leadership on employee ambidexterity through adaptive/flexible leadership, $\beta = 0.262$, 95% level of confidence, confidence interval [0.0809, 0.5458]. The completely standardized indirect effect coefficient is $\beta = 0.113$, confidence interval [0.032, 0.233]. The result shows that the direct effect of ambidextrous leadership on employee ambidexterity reduced in significance with the addition of adaptive/flexible leadership, consistent with partial mediation. Following the recommendation of Wen and Fan (2015), the effect size of this partial mediation is reported using the traditional mediation effect size measure of ratio of indirect effect to total effect of X on Y ($\beta = .2365$, 95%, CI .0700, .5121) This appears to be a large effect.

Figure 2.3. The effect of OLB and CLB on employee ambidexterity



Source: Data analysis

Figure 2.4. The mediating effect of Adaptive/flexible leadership



Source: Data analysis

Furthermore, we proceeded to examine if any moderating conditions existed between the variables. We found no support for this ($\beta = 0.459$, confidence interval $-.0536, 9726$).

Table 2. 7. Results of Regression Analyses

Predictor Variables	Employee Exploration		Employee Exploitation		Employee Ambidexterity		
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 3
Step 1 Firm Age	-.18 (.084)	-.17 (.087)	.09 (.426)	.10 (.365)	-.05 (.610)	-.04 (.637)	-.04 (.674)
Leadership experience	.19 (.070)	.19* (.050)	.06 (.573)	.03 (.810)	.20 (.044)	.19 (.061)	.16 (.098)
Transformational leadership	.25** (.005)	.17 (.105)	.11 (.337)	.08 (.467)	.40* (.000)	.28* (.013)	.29* (.012)
Transactional leadership	.18 (.095)	.19 (.060)	.23* (.042)	.17 (.128)	.17 (.113)	.07 (.684)	.06 (.691)
Step 2 Opening leadership behavior		.31*** (.000)		.099 (.311)		.21* (.034)	-.026 (.847)
Closing leadership behavior		.10 (.274)		.28** (.006)		.18 (.326)	.11 (.526)
Step 3 Ambidextrous leadership (OLB*CLB)							.32* (.016)
ΔR^2	.17	.25	.07	.14	.28	.30	.34
R^2	.21	.30	.12	.20	.31	.34	.39
F	5.97***	6.5***	3.1**	4.22**	10.22***	7.94***	8.04***
Sig. (P-value)	(.000)	(.000)	(.002)	(.002)	(.000)	(.000)	(.000)
N	98	98	98	98	98	98	98

Source: Data analysis

N = 98. Standardized regression coefficients (β s) are reported. * $p < .05$, ** $p < .01$, *** $p < .001$. Actual levels of significance reported in ().

5.1 Discussion

This study breaks new ground in SME research by providing initial evidence for ambidextrous leadership in the sector and suggesting how to maximise leadership behaviors to support employee's innovation behaviors. The study of entrepreneurs as leaders is an area where there is little knowledge both in the leadership and entrepreneurship literatures (Bamiatizi, et. al, 2015; Jensen and Luthans, 2006). Little agreement exists on how leadership can be developed and how theories on leadership can be transferred into practice (Bagheri, 2017, Iles and Preece, 2006). From those few studies that have considered leadership in the SME literature, they conclude that the impact of leaders and leadership is a crucial factor in the success or failure of SMEs (Lin et al., 2013; Matzler et al., 2008). This study responded to calls for studies that would better our understanding of how leaders may foster both exploration and exploitation in the SME sector (Bagheri, 2017; Herrmann and Felfe, 2014). This study reveals that ambidextrous leadership is important for SMEs seeking to enhance employee innovation behaviors as a capability to maximise both exploration and exploitative innovation.

First, the results provide support that OLB is effective to foster exploration innovation and CLB is effective to support exploitation innovation in SMEs. Zacher et al. (2014), Rosing et al., (2010) and Zacher and Wilden (2004) have reported similar patterns of results. However, these studies were based in the context of large organisations. Although there are contentions that leadership and management practices to support creativity and innovation are much likely to be the same in all contexts and organisational sizes (Amabile, Conti, Coon, Lazenby and Herron, 1996; Bommer and Jalajas, 2002); it is erroneous to conceive SMEs as mini versions of large firms. It has been well documented that SMEs differ from larger firms in several ways such as decision-making processes and operating environment (Hotho and Champion, 2011; Shrader, Mulford and Blackburn, 1989) which justifies the need for SME sector specific innovation leadership research.

The findings suggest that leaders who engage in OLB and CLB influence follower's behaviors in ways that are consistent with the leaders' behavior. Indeed, OLB could

create a psychologically conducive environment where creativity and learning thrives (Edmondson, 1999). On the other hand, by directing followers to focus on goal accomplishments using CLB, exploitation is encouraged (Zacher et al., 2014).

Consistent with the duality of innovation as an improved framework to manage innovation (Bledow et al., 2011), the results also demonstrate that OLB and CLB function interdependently to foster employee ambidexterity (He and Wong, 2004; Rosing et al., 2011). As shown in Figure 2.3, employee ambidexterity was highest when both OLB and CLB were high. In other words, OLB have complementary effect on each other such that the deficiencies of one of the leadership behaviors is managed by the other leadership behaviour to amplify innovation. Indeed, prior research have argued that conventional leadership and management approaches are inadequate to foster innovation ambidexterity. These studies have suggested the need for a combination of leadership behaviors to match the complexity and pace of innovation (Ancona, Goodman, Lawrence and Tushman, 2001; Bledow et al., 2009). Other scholars recommended that leading innovation must be characterized by a functional approach that matches the complexity and pace of innovation (Ancona, Goodman, Lawrence & Tushman, 2001), as well as having the efficiency to adapt to the concept of duality inherent in innovation (Bledow et al., 2011). The results provide insights about the specific leadership behaviors that SME leaders need to show to generate single and multiple types of innovation notwithstanding limited resources (Kaufmann and Tödtling, 2002) and innovation paradoxes (Hunter et al., 2011). This study extends research on ambidexterity at the team and organizational levels by showing that the combination of high OLB and CLB behaviours yields the highest level of employee ambidexterity.

This study sought to go beyond simply identifying the effect of OLB and CLB on employee innovation behaviors by investigating how adaptive/flexible leadership may affect the impact of ambidextrous leadership behaviors on employee ambidexterity. The study reveals that adaptive/flexible behaviors is a potential pathway through which ambidextrous leadership is operationalised. Consonant with

Rosing et al. (2010), the result shows that behavioural integration and flexibility of leaders is crucial to fostering innovation ambidexterity.

Indeed, a leader's capability for flexibility is a unique competence leading to competitive advantage and can function as a strategic asset to accomplish strategic operations such as innovation (Gupta & Cawthon, 1996; Norton, 2010). Based on the dimension of AFB to solve problems creatively and manage work stress effectively those leaders who are high on AFB may be able to manage the tensions and paradoxes of innovation better. Additionally, Because of their flexibility, leaders may be able to relate with different types of employees and switch their leadership behaviors according to the needs of different employees.

This study suggests that the inherent AFB of leaders can help to operationalise and /or manage when and how to switch between leadership behaviors in the innovation process, which at present is still a less understood aspect of leadership ambidexterity (Zacher and Rosing, 2015). Additionally, AFB may help in determining the most suitable leadership style for each changing situations (Larsson & Vinberg, 2010). The ever changing and dynamic environments in which high-tech SMEs operate stresses the importance of an adaptive workforce for the sector (Edwards & Morrison, 1994; Ilgen & Pulakos, 1999).

The result further demonstrates that it is a combination of different leadership behaviors, which drive innovation ambidexterity. Thus, our study supports the notion that leading innovation is a complex process and leaders need to be flexible and engage in complex, wide-ranging and sometimes opposing behaviors to facilitate innovation (Hunter et al., 2011, Rosing et al., 2011). If these broad leadership behaviors are well integrated, they could form a strong leadership competency to support ambidexterity (Lin et al., 2013; Rosing et al., 2010).

It was interesting to find that ambidextrous leadership predicted innovation above and beyond transformational and transactional leadership behaviors, which are the most examined leadership behaviors in relation to innovation. This same pattern had also been reported by Zacher et al. (2014) This further validates ambidextrous leadership theory for leading innovation, moreso in the context of SMEs.

While this study contributes to research, our findings contribute directly to practice by demonstrating that the more complex and integrated a leadership approach is, the greater its potential to drive innovation ambidexterity. In other words, to the extent that SME leaders can effectively combine appropriate leadership behaviors to create a complex and unique leadership approach to foster ambidexterity, they stand a greater chance of developing a valuable approach to drive employee innovative work behaviors (Barney and Wright, 1998; Jansen, et al., 2009).

5.2 Theoretical and Practical Implications

By examining the impact of ambidextrous leadership on employee innovation behaviors in SMEs, this study assists evolving theories on innovation and leadership in the SME sector. First, this study confirms that leading innovation is a dynamic task and that a complex relationship exists between leadership behaviors and employee behaviors required for innovation. Further, the findings suggest that the operationalization of ambidexterity needs clearer understanding at a theoretical and methodological level. For example, more knowledge is needed to understand the mechanisms for switching between both behaviors to achieve successful innovation leadership. This study already revealed that adaptive/flexible leadership behavior is a relevant factor.

This study extends ambidextrous leadership by suggesting adaptive/flexible leadership as one method to examine the temporal dynamics of integrating OLB and CLB. One theoretical implication is the need for more understanding of ambidexterity is at the individual level to advance research on how leaders manage the tensions and paradoxes required to be ambidextrous.

The findings of this paper have important implications for leadership selection, training and development in SME context. Current and potential SME leaders can improve the growth and competitiveness of their business by promoting OLB, CLB and the combination of leadership behaviors to foster exploration, exploitation and ambidexterity. A key practical implication is the need to educate leaders and

employees about the duality of innovation. SME leaders can use our findings to promote employee awareness about the complexities of the innovation process and build stronger relationships with their employees. Leaders and employees need to be sensitized about the roles of OLB, CLB and AFB in fostering innovation. Employees will also need to be educated on the requirement for them to be equally ambidextrous. Educators in this sector can apply our findings to their approach in training of SME leaders to understand the significance of ambidextrous leadership in fostering innovation with a view to assist them develop complex and well-integrated leadership behaviors to enhance their effectiveness in leading innovation in their businesses.

5.3 Limitations and Future Research

Despite the valuable new insights offered by our study, it does come with certain limitations, which need to be considered for future research. Firstly, the findings are country-specific. The UK context is an important one as SMEs are significant contributors to the health and wealth of the economy; nevertheless, focusing on one country can limit the generalizability of results. Future studies of SMEs in other countries would be of value, which would help evaluate the generalizability of the current findings.

Secondly, data was collected from the SME leader's perspective. This may lead to common method bias and self-report bias (Podsakoff et al., 2003) as leaders may not report their leadership behaviors accurately. However, several steps were taken to alleviate threats of common method bias as reported in the data analysis section and the results of Harman's one factor test suggests that common method variance is not a serious concern. It is recommended that future studies should include peers and employees as participants to improve the chances of generating unbiased ratings.

Thirdly, a larger sample and data from secondary sources could offer further validation of the findings, which are currently based on a relatively small sample of 98 high-tech SMEs. A greater sample size could decrease sampling error and reveal statistically significant effects.

This study examined the influence of ambidextrous leadership behaviors in the high-tech SME sector, looking at one specific sector provides valuable insights, however the generalizability of the findings are constrained. Since entrepreneurial leadership affects innovation in businesses of all sizes and nature (Renko, Tarabishy, Carsrud and Brännback, 2015), future research should be done in other business sectors. In particular, future research could examine whether the findings of this study are consistent across low-tech and non-tech SMEs. It will be valuable to the leadership literature to carry out studies that examine the effects of ambidextrous leadership in non-tech business contexts that are not necessarily innovation savvy. It would be interesting to see whether organizations with no innovation focus show similar results to our study. Tidd (2001) already raised the question as to whether SMEs in different industry sectors (e.g high-tech versus non high-tech; manufacturing versus non-manufacturing; product versus service) require different innovation leadership approaches.

It is suggested that SMEs would benefit from the findings of the future studies that examine the individual and contextual factors and/or barriers for ambidextrous leadership in SMEs. For example, it would be beneficial to know how the job characteristics of the employees may influence their innovation behaviors and performance because businesses differ in the extent to which employees are required to engage in exploration and exploitation behaviors (Shalley, Gilson and Blum, 2009). In addition, it would be beneficial if future studies could examine how innovation preferences of the leader (either exploration or exploitation) and industry characteristics (McAdam, McConvery and Armstrong, 2004) might affect their level of engagement with OLB and/or CLB. Another important factor to be considered is the organisational culture.

More studies are needed to understand the concept of ambidexterity at the individual level. This may provide insights on how to integrate OLB and CLB. In particular, identifying the antecedent behaviors and competencies such as personality traits and emotional intelligence may help to explain subtle characteristics required to be

ambidextrous. In this study, we have focused on the firm level, however we suggest that understanding leadership ambidexterity at the individual level is vital as an impetus for understanding the dynamics of ambidextrous leadership at the team, firm and organizational levels. Previous studies have focused on organizational and team levels of achieving ambidexterity by suggesting structural ambidexterity and contextual ambidexterity (Gibson and Birkinshaw, 2004; Tushman and O'Reilly, 1996). Only few studies have examined how to operationalise ambidexterity at the individual level (Rosing and Zacher, 2016; Visser, Faems and Top, 2011). It is suggested that understanding ambidexterity at the individual level and the conditions that may facilitate innovation ambidexterity.

Finally, this research is based on a cross-sectional analysis and the study design limits the researcher to draw conclusions about linear relationships. Experimental research, qualitative data collection methods, diary study and longitudinal study may be helpful to provide invaluable insight into the dynamics of leadership ambidexterity and may reveal non-linear associations as well as significant causal evidences. It is also important to investigate the direction of influence between employees and leaders in creative and innovative settings because of the preference of creative individuals to be self-led and have job autonomy. Hence, it is probable that although leadership is supposed to “be the process of influence” (Yukl, 2008), employees in innovative settings exert great influence on their leaders.

Summary

This study has provided support for ambidextrous leadership in high-tech SMEs and has discussed how SME leaders can use this proficiency to intensify employee innovation behaviors to improve innovation performance using opening and closing leadership. The study has also revealed that adaptive/flexible leadership mediates the relationship between ambidextrous leadership and employee ambidexterity.

The next part of this thesis will examine antecedent influences of ambidextrous leadership behaviors.

References

- Ahn, J. M., Minshall, T., & Mortara, L. (2017). Understanding the human side of openness: the fit between open innovation modes and CEO characteristics. *R&D Management*, 47(5), 727-740.
- Ancona, D.G., Goodman, P.S., Lawrence, B.S. and Tushman, M.L. (2001). Time: A new research lens. *Academy of management Review*, 26(4), 645-663.
- Anderson, N., De Dreu, C.K. and Nijstad, B.A. (2004). The routinization of innovation research: A constructively critical review of the state-of-the-science. *Journal of organizational Behavior*, 25(2), 147-173.
- Amabile, T.M., Conti, R., Coon, H., Lazenby, J. and Herron, M. (1996), "Assessing the work environment for creativity", *Academy of Management Journal*, Vol. 39 No. 5, pp. 1154-84.
- Ardichvili, A., Cardozo, R. N and Gasparishvili, A. (1998). "Leadership Styles and Management Practices of Russian Entrepreneurs: Implications for Transferability of Western Hard Interventions," *Human Resource Development Quarterly* 9(2), 145-155.
- Avolio, B. J., and Bass, B. M. (2004). MLQ - multifactor leadership questionnaire. Menlo Park, CA: Mind Garden.
- Bagheri, A. (2017). The impact of entrepreneurial leadership on innovation work behavior and opportunity recognition in high-technology SMEs. *The Journal of High Technology Management Research*, 28(2), 159-166.
- Bagheri, M., Mitchelmore, S., Bamiatzi, V., & Nikolopoulos, K. (2018). Internationalization Orientation in SMEs: The Mediating Role of Technological Innovation. *Journal of International Management*.
- Bain, P.G., Mann, L. and Pirola-Merlo, A. (2001). The Innovation Imperative. The Relationships between Team Climate, Innovation, and Performance in Research and Development Teams. *Small Group Research*, 32(1), 55-73.
- Bamiatzi, V., Jones, S., Mitchelmore, S., and Nikolopoulos, K. (2015). The role of competencies in shaping the leadership style of female entrepreneurs: The case of North West of England, Yorkshire, and North Wales. *Journal of Small Business Management*, 53(3), 627-644.
- Baum, J. R., Locke, E. A., and Smith, K. G. (2001). A multidimensional model of venture growth. *Academy of management journal*, 44(2), 292-303.
- Barney, J. B., and Wright, P. M. (1998). On becoming a strategic partner: The role of human resources in gaining competitive advantage. *Human Resource Management (1986-1998)*, 37(1), 31.
- Bass, B. M. (1985). Leadership and performance beyond expectations. New York: *The Free Press*.

- Bass, B. M. (1998). Transformational leadership: Industrial, military, and educational impact. Mahwah, NJ: Lawrence Erlbaum Associates.
- Berkhout, A.J. and Van Der Duin, P.A. (2007). New ways of innovation: an application of the cyclic innovation model to the mobile telecom industry. *International journal of technology management*, 40(4), 294-309.
- Bessant, J., Lamming, R., Noke, H. and Phillips, W. (2005), "Managing innovation beyond the steady state", *Technovation*, Vol. 25, 1366-76.
- Birkinshaw, J., Hamel, G., and Mol, M. J. (2008). Management innovation. *Academy of management Review*, 33(4), 825-845.
- Bledow, R., Frese, M., Anderson, N. R., Erez, M., and Farr, J. L. (2009). A dialectic perspective on innovation: Conflicting demands, multiple pathways, and ambidexterity. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 2(3), 305-337.
- Bommer, M., and Jalajas, D. (2002). The innovation work environment of high-tech SMEs in the USA and Canada. *R&D Management*, 32(5), 379-386.
- Cavazotte, F., Moreno, V., and Hickmann, M. (2012). Effects of leader intelligence, personality and emotional intelligence on transformational leadership and managerial performance. *The Leadership Quarterly*, 23, 443-455.
- Cao, Q., Gedajlovic, E., and Zhang, H. (2009). Unpacking organizational ambidexterity: Dimensions, contingencies, and synergistic effects. *Organization Science*, 20(4), 781-796.
- Cerny, C.A., and Kaiser, H.F. (1977). A study of a measure of sampling adequacy for factor-analytic correlation matrices. *Multivariate Behavioral Research*, 12(1), 43-47.
- Chen, T., Li, F., and Leung, K. (2016). When does supervisor support encourage innovative behavior? Opposite moderating effects of general self-efficacy and internal locus of control. *Personnel Psychology*, 69, 123-158.
- Chen, Y., Tang, G., Jin, J., Xie, Q., and Li, J. (2014). CEOs' transformational leadership and product innovation performance: The roles of corporate entrepreneurship and technology orientation. *Journal of Product Innovation Management*, 4(31), 2-17.
- Cooper, D., Peake, W. and Watson, W. (2016), Seizing Opportunities: The Moderating Role of Managerial Characteristics on the Relationship between Opportunity-Seeking and Innovation Efficacy in Small Businesses. *Journal of Small Business Management*, 54: 1038-1058.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *psychometrika*, 16(3), 297-334.
- Damanpour, F. (1996). "Organizational complexity and innovation", *Management Science*, Vol. 42 No. 5, 693-716.

- Dayan, M., Di Benedetto, C. A., and Colak, M. (2009). Managerial trust in new product development projects: Its antecedents and consequences. *R&D Management*, 39(1), 21-37.
- Denison, D. R., Hooijberg, R., & Quinn, R. E. (1995). Paradox and performance: Toward a theory of behavioral complexity in managerial leadership. *Organization Science*, 6(5), 524-540.
- Edwards, T., Delbridge, R. and Munday, M. (2005). "Understanding innovation in small and medium-sized enterprises: a process manifest", *Technovation*, Vol. 25, 1119-27.
- Farjoun, M. (2010). Beyond dualism: Stability and change as a duality. *Academy of Management Review*, 35(2), 202-225.
- Farr, J. L., Sin, H. P., & Tesluk, P. E. (2003). Knowledge management processes and work group innovation. In *The international handbook on innovation* (pp. 574-586).
- Federation of Small Business Statistics (2016). Available online on <http://www.fsb.org.uk/media-centre/small-business-statistics>. Accessed on October 10, 2017.
- Feist, G. J. (1998). A meta-analysis of personality in scientific and artistic creativity. *Personality and Social Psychological Review*, 2, 290-309.
- Fornell, C. and Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, 18(3), 382-388.
- Gebert, D., Boerner, S., & Lanwehr, R. (2003). The risks of autonomy: Empirical evidence for the necessity of a balance management in promoting organizational innovativeness. *Creativity and innovation management*, 12(1), 41-49.
- Gibson, C.B. and Birkinshaw, J. (2004), "The antecedents, consequences, and mediating role of organizational ambidexterity", *Academy of Management Journal*, Vol. 47 No. 2, 209-226.
- Grinstein, A., and Goldman, A. (2006). Characterizing the technology firm: An exploratory study. *Research Policy*, 35(1), 121-143.
- Hambrick, D. C., Geletkanycz, M. A., & Fredrickson, J. W. (1993). Top executive commitment to the status quo: Some tests of its determinants. *Strategic Management Journal*, 14(6), 401-418.
- Hayes, A. F. (2013). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper].
- He, Z.L. and Wong, P.K (2004). Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis. *Organization science*, 15(4), 481-494.

- Hoegl, M., & Parboteeah, K. P. (2006). Team reflexivity in innovative projects. *R&D Management*, 36(2), 113-125.
- Hooijberg, R. (1996). A multidirectional approach toward leadership: An extension of the concept of behavioral complexity. *Human Relations*, 49(7), 917-946.
- Hooker, H., and Achur, J. (2014). First findings from the UK Innovation survey 2013. Department for business innovation and skills (BIS), London.
- Hunter, S.T., Thoroughgood, C.N., Myer, A.T. and Ligon, G.S. (2011). Paradoxes of leading innovative endeavors: Summary, solutions, and future directions. *Psychology of Aesthetics, creativity, and the arts*, 5(1), 54.
- Jaussi, K. S., & Dionne, S. D. (2003). Leading for creativity: The role of unconventional leader behavior. *The Leadership Quarterly*, 14(4-5), 475-498.
- Jansen, J., Vera, D. and Crossan, M. (2009). Strategic leadership for exploration and exploitation: The moderating role of environmental dynamism. *The Leadership Quarterly*, 20(1), 5-18.
- Junni, P., Sarala, R. M., Taras, V., and Tarba, S. Y. (2013). Organizational ambidexterity and performance: A meta-analysis. *The Academy of Management Perspectives*, 27(4), 299-312.
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39, 31-36.
- Kaiser, R. B., and Overfield, D. V. (2010). Assessing flexible leadership as a mastery of opposites. *Consulting Psychology Journal: Practice and Research*, 62, 105-118.
- Kang, J.H., Solomon, G.T. and Choi, D.Y. (2015). CEOs' leadership styles and managers' innovative behavior: Investigation of intervening effects in an entrepreneurial context. *Journal of Management Studies*, 52(4), 531-554.
- Kaufmann, A. and Tödtling, F. (2002). How effective is innovation support for SMEs? An analysis of the region of Upper Austria. *Technovation*, 22(3), 147-159.
- Keller, R. T. (2006). Transformational leadership, initiating structure, and substitutes for leadership: a longitudinal study of research and development project team performance. *Journal of applied psychology*, 91(1), 202.
- Leanna, C., and Barry, B. (2000). Stability and change as simultaneous experiences in organizational life, *Academy of Management Review*, 25, 753-759.
- Lee, K., Woo, H. G., & Joshi, K. (2017). Pro-innovation culture, ambidexterity and new product development performance: Polynomial regression and response surface analysis. *European Management Journal*, 35(2), 249-260.
- Levinthal, D.A. and March, J.G. (1993). The myopia of learning. *Strategic management journal*, 14(S2), 95-112.

- Lewis, M.W., Andriopoulos, C., and Smith, W (2014). 'Paradoxical leadership to enable strategic agility', *California Management Review*, 56(3), p.58-77.
- Lin, H.-E., & McDonough III, E. F. (2011). Investigating the Role of Leadership and Organizational Culture in Fostering Innovation Ambidexterity. *IEEE Transactions on Engineering Management*, 58(3), 497-509.
- Lin, H.-E., McDonough, E. F., Lin, S.-J. and Lin, C. Y.-Y. (2013), Managing the Exploitation/Exploration Paradox: The Role of a Learning Capability and Innovation Ambidexterity. *J Prod Innov Manag*, 30, 262-278.
- Lubatkin, M.H, Simsek, Z., Ling, Y., Veiga, J. F. (2006). Ambidexterity and Performance in Small-to Medium-Sized Firms: The Pivotal Role of Top Management Team Behavioral Integration *Journal of Management*, Vol. 32 No. 5.
- Marcati, A., Guido, G. and Peluso, A.M., (2008). The role of SME entrepreneurs' innovativeness and personality in the adoption of innovations. *Research Policy*, 37(9), pp.1579-1590.
- March, J.G. (1991). Exploration and exploitation in organizational learning, *Organization Science*, Vol. 2 No. 1, 71-87.
- Matzler, K., Schwarz, E., Deutinger, N., and Harms, R. (2008). The relationship between transformational leadership, product innovation and performance in SMEs. *Journal of Small Business & Entrepreneurship*, 21(2), 139-151.
- McAdam, R., McConvery, T. and Armstrong, G. (2004). Barriers to innovation within small firms in a peripheral location. *International Journal of Entrepreneurial Behavior & Research*, 10(3), 206-221.
- McGrath, R., and I. C. MacMillan (2000). *The Entrepreneurial Mindset: Strategies for Continuously Creating Opportunity in an Age of Uncertainty*, Vol. 184. Boston, MA: Harvard Business Press.
- Mintzberg, H. (1979). *The structuring of organizations*. Englewood-Cliffs, NJ: Prentice-Hall.
- Mom, T.J., Van Den Bosch, F.A. and Volberda, H.W. (2009). Understanding variation in managers' ambidexterity: Investigating direct and interaction effects of formal structural and personal coordination mechanisms. *Organization Science*, 20(4), 812-828.
- Murphy, S. E., Blyth, D., & Fiedler, F. E. (1992). Cognitive resource theory and the utilization of the leader's and group members' technical competence. *The leadership quarterly*, 3(3), 237-255.
- Oldham, G.R. and Cummings, A. (1996), "Employee creativity: personal and contextual factors at work", *Academy of Management Journal*, Vol. 39 No. 3, pp. 607-34.

O'Reilly, C.A. and Tushman, M.L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in organizational behavior*, 28, 185-206.

Paradkar, A., Knight, J., & Hansen, P. (2015). Innovation in start-ups: Ideas filling the void or ideas devoid of resources and capabilities?. *Technovation*, 41, 1-10.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., and Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903.

Pulakos, E. D., Arad, S., Donovan, M. A., & Plamondon, K. E. (2000). Adaptability in the work place: Development of taxonomy of adaptive performance. *Journal of Applied Psychology*, 85(4), 612-624.

Qu, R., Janssen, O., and Shi, K. (2015). Transformational leadership and follower creativity: The mediating role of follower relational identification and the moderating role of leader creativity expectations. *The Leadership Quarterly*, 26(2), 286-299.

Renko, A.E.L. Tarabishy, A.L. Carsrud, M. Brännback (2015). Understanding and measuring entrepreneurial leadership style. *Journal of Small Business Management*, 53 (1), 54-74.

Rosing, K., Frese, M., and Bausch, A. (2011). Explaining the heterogeneity of the leadership-innovation relationship: Ambidextrous leadership. *The Leadership Quarterly*, 22(5), 956-974.

Rosing, K., Rosenbusch, N., and Frese, M. (2010). Ambidextrous leadership in the innovation process. In *Innovation and international corporate growth* (pp. 191-204). Springer, Berlin, Heidelberg.

Schumpeter, Joseph A. (1965). *The Theory of Economic Development: An Enquiry into Profits, Credit, interest and the Business Cycle* (Oxford: Oxford University Press, fourth printing, [originally published 1934]).

Schwartz, D., and Malach-Pines, A. (2007). High technology entrepreneurs versus small business owners in Israel. *The Journal of Entrepreneurship*, 16(1), 1-17.

Shalley, C. E. (1991). Effects of productivity goals, creativity goals, and personal discretion on individual creativity. *Journal of Applied psychology*, 76(2), 179.

Shalley, C. E., Gilson, L. L., & Blum, T. C. (2009). Interactive effects of growth need strength, work context, and job complexity on self-reported creative performance. *Academy of Management Journal*, 52(3), 489-505.

Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here?. *Journal of management*, 30(6), 933-958.

- Shamir, B., House, R. J., and Arthur, M. B. (1993). The motivational effects of charismatic leadership: A self-concept based theory. *Organization science*, 4(4), 577-594.
- Shrader, C.B., Mulford, C.L. and Blackburn, V.L., 1989. Strategic and operational planning, uncertainty, and performance in small firms. *Journal of Small Business Management*, 27(4), p.45.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: new procedures and recommendations. *Psychological methods*, 7(4), 422.
- Shibata, T., Baba, Y., Kodama, M., & Suzuki, J. (2018). Managing ambidextrous organizations for corporate transformation: a case study of Fujifilm. *R&D Management*.
- Smith, W.K. and Tushman, M.L. (2005). Managing strategic contradictions: A top management model for managing innovation streams. *Organization science*, 16(5), 522-536.
- Tajvidi, M., and Karami, A., (2015). Product Development Strategy, Innovation Capacity and Entrepreneurial Firm Performance in High-Tech SMEs. Palgrave MacMillan, UK.
- Tidd, J. (2001), "Innovation management in context: environment, organization and performance", *International Journal of Management Review*, Vol. 3 No. 3, pp. 169-83.
- Tidd, J. and Bessant, J. (2011). *Managing Innovation: Integrating Technological, Market and Organizational Change*. Chichester: John Wiley & Sons.
- Tidd, J., Bessant, J., and Pavitt, K. (2005). *Managing Innovation: Integrating Technological, Market and Organizational Change* (third edition). Chichester: Wiley
- Tushman, M.L. and O'Reilly, C.A. (1996). "The ambidextrous organization: managing evolutionary and revolutionary change", *California Management Review*, Vol. 38, 1-23.
- Tung, F.C. and Yu, T.W. (2016). Does innovation leadership enhance creativity in high-tech industries? *Leadership & Organization Development Journal*, 37(5), 579-592.
- Vaccaro, I. G., Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2012). Management innovation and leadership: The moderating role of organizational size. *Journal of Management Studies*, 49(1), 28-51.
- Van Knippenberg, D., De Dreu, C. K., & Homan, A. C. (2004). Work group diversity and group performance: an integrative model and research agenda. *Journal of applied psychology*, 89(6), 1008.
- Vera, D. and Crossan, M. (2004), "Strategic leadership and organizational learning", *Academy of Management Review*, Vol. 29 No. 2, 222-240.
- Vecchio, R. P. (2003). "Entrepreneurship and Leadership: Common Trends and Common Threads," *Human Resource Management Review* 13(2), 303-327.
- Visser, M., Faems, D., and Top, P. (2011). Exploration and exploitation within SMES: connecting the CEO's cognitive style to product innovation performance.

- Wadhwa, A., & Kotha, S. (2006). Knowledge creation through external venturing: Evidence from the telecommunications equipment manufacturing industry. *Academy of Management Journal*, 49(2006), 819-835.
- Wang C. L., Rafiq M. (2014). Ambidextrous organizational culture, contextual ambidexterity and new product innovation: A comparative study of UK and Chinese high-tech firms. *British Journal of Management*, 25, 58-76.
- Wen, Z., & Fan, X. (2015). Monotonicity of effect sizes: Questioning kappa-squared as mediation effect size measure. *Psychological methods*, 20(2), 193.
- West, M.A. and Farr, J.L., (1990). Innovation and creativity at work: Psychology and organizational strategies.
- Wu, S., Levitas, E., & Priem, R. L. (2005). CEO tenure and company invention under differing levels of technological dynamism. *Academy of Management Journal*, 48(5), 859-873.
- Yukl, G. (2008). *Leadership in Organizations*. Upper Saddle River, NJ: Prentice Hall.
- Yukl, G. A., and Mahsud, R. (2010). Why flexible and adaptive leadership is essential. *Consulting Psychology Journal: Practice and Research*, 62, 81-93.
- Zacher, H., Robinson, A.J. and Rosing, K. (2014). Ambidextrous Leadership and Employees' Self-Reported Innovative Performance: The Role of Exploration and Exploitation Behaviors. *The Journal of Creative Behavior*.
- Zacher, H. and Rosing, K. (2015). Ambidextrous leadership and team innovation. *Leadership & Organization Development Journal*, 36(1), 54-68.
- Rosing, K., and Zacher, H. (2016). A New Perspective on Individual Ambidexterity and its Relationship with Innovative Performance. In *Academy of Management Proceedings* (Vol. 2016 (1), p. 14293). Academy of Management.
- Zacher, H. and Wilden, R.G. (2014). A daily diary study on ambidextrous leadership and self-reported employee innovation. *Journal of occupational and organizational psychology*, 87(4), 813-820.
- Zahra, S., Ireland, R., and Hitt, M. (2000). International Expansion by New Venture Firms: International Diversity, Mode of Market Entry, Technological Learning, and Performance. *The Academy of Management Journal*, 43(5), 925-950.
- Zhao, H. and Seibert, S.E. (2006). The big five personality dimensions and entrepreneurial status: a meta-analytical review. *Journal of Applied Psychology*, 91(2), 25.

CHAPTER 3

Paper 2

**ANTECEDENT INFLUENCES FOR EFFECTIVE AMBIDEXTROUS
LEADERSHIP: WHAT ROLES DO PERSONALITY TRAITS,
EMOTIONAL INTELLIGENCE, ADAPTIVE/FLEXIBLE
LEADERSHIP AND TRANSFORMATIONAL LEADERSHIP PLAY?**

1.1 Introduction

In the new economy, the focus of competition has shifted from knowledge to creativity and innovation in order to match the demands of customers and the constantly changing and very dynamic business environment (Bagheri, 2017). To sustain long-term success, firms must maintain a balance between exploiting their old and current capabilities (Exploitation innovation) and exploring new possibilities (Exploration innovation) (Raisch and Birkinshaw, 2008). This dual competency which helps to generate multiple innovation—organizational ambidexterity, which has become a crucial and persistent theme in organizational and management literatures (Bledow, Frese, Anderson, Erez, and Farr, 2009; Gibson and Birkinshaw, 2004; Lin, McDonough, Yang and Wang, 2017; Lin and McDonough, 2011). Firms that pursue ambidextrous strategies have been reported to be very successful (Raisch and Birkinshaw, 2008).

Whereas, earlier research considered the achievement of ambidexterity insurmountable, recent studies have put forward a range of recommendations to understand and enhance ambidexterity. One of such is the tactical use leadership to influence the behaviors of employees (Bagheri, 2017) and to strategically control other organisational resources (Bledow, Frese, and Müller, 2011). Evidently, leadership has been recognised as a key element to gain and keep business competitiveness and growth (Lin et al., 2017; Oke, Munshi and Walumbwa, 2009). In particular, leadership has been recognised as a crucial driver of innovation (Mumford, Scott, Gaddis and Strange, 2002) and many studies have demonstrated that leadership significantly fosters innovation (Bagheri, 2017; De Jong and Den Hartog, 2010).

Nevertheless, the leadership of innovation can be very challenging due to conceptual differences in exploration and exploitation (March, 1991); and organisation scholars have reported varying results in their study of the association between leadership and innovation. Based on the reasoned arguments of Bledow et al. (2011), effective leaders of innovation and ambidexterity are those who understand the dual nature of innovation and possess the capability to switch between broad ranges of leadership behaviors and alter their leadership approaches according to contextual demands.

Therefore, Rosing, Frese and Bausch (2011) proposed that leaders can influence ambidexterity and innovation behaviors through the demonstration of ambidextrous leadership behaviors. Rosing and colleagues describe ambidextrous leadership theory as the demonstration and flexibly switching between two complementary leadership behaviors – opening and closing leadership. Opening leadership behavior (OLB) is aimed at increasing variance in how employee's engage in exploration innovation by encouraging creativity boosters such as error learning, autonomy and experimentation. Closing leadership behavior (CLB) on the other hand aims at decreasing variance in employee's behaviors and fostering implementation process of innovation by sanctioning errors and establishing standard and procedures for work thereby propelling exploitation innovation.

Evidence to support the propositions of this theory is quite young but is gathering momentum (Zacher, Robinson and Rosing, 2014; Zacher and Rosing 2015; Zacher and Wilden, 2014). For example, Gilson, Mathieu, Shalley and Ruddy (2005) reported that teams which received support of organisational leaders to engage in creative problem solving undertakings as well as standardised procedure and established routines recorded higher level of team effectiveness by benefitting from the synergized effect of both processes. Similarly, Zacher and Rosing (2015) reported that leaders who switch between and balance different leadership behaviors to increase and decrease variance in employee behaviors recorded higher performance and innovation.

While the concept of ambidextrous leadership is gaining popularity in organisational research (Baškarada, Watson and Cromarty, 2016; Jansen, Vera and Crossan, 2009; O'Reilly and Tushman, 2007), very limited empirical guidelines exist on its practicality, operationalisation and antecedents, thus limiting a holistic understanding of the concept. Therefore, this study sought to fill this gap by identifying the crucial competences and behaviors that nurture opening leadership behaviors, closing leadership behaviors and the combination of both behaviors (Ambidextrous leadership). In particular, this study is seeking answers to the questions 'what discrete skills/competencies and leadership behaviors foster opening and closing leadership?;

and, what leadership competencies or behaviors may support leaders in maximizing Ambidextrous leadership?’

Organizational scholars have noted that achieving practices to excel concurrently at differing innovation processes and activities are difficult, and switching between innovation routines are equally challenging (Gupta, Smith and Shalley, 2006; March, 1991) due to the fact that the knowledge processes and resources required to foster innovation processes and activities differ significantly (March, 1991). As such, there have been suggestions that capabilities for ambidextrous leadership will involve tapping from a wide repertoire of leadership behaviors and competences (Bledow et al., 2009; Rosing et al., 2011).

Against this backdrop, this study examines the association between a wide range of leadership attributes and behaviors (including leader’s personality traits, emotional intelligence, adaptive /flexible leadership, transformational leadership and transactional leadership) on opening leadership behaviors, closing leadership behaviors and ambidextrous leadership. Our independent variables cover internal level capabilities, interpersonal level capabilities and social level capabilities of leadership. This study expects that these factors will provide a comprehensive outlook of the lower level origins of ambidextrous leadership, which would provide insights about training and development of leadership ambidexterity. Furthermore, these leadership attributes and behaviors have enjoyed substantial research attention and have been generally reported to have associations with other leadership behaviors and leadership effectiveness (Allen, Shankman, and Miguel, 2012; Barrick and Mount, 1991; Bono and Judge, 2004; Rajah, Song and Arvey, 2011; Yukl and Lepsinger, 2004).

The research purpose is to identify the antecedents of ambidextrous leadership behaviors, thereby contribute to the theory and practice of ambidextrous leadership by providing new insights linking traditional leadership competences with contemporary ambidextrous leadership behavior. However, it is not the objective of this study to prove or show causality between the independent and dependent

variables as the researcher acknowledges that there may be an inexhaustible list of leadership, followership, contextual and organisational factors which may account for causality. Nevertheless, the researcher agrees with Luthan and Youssef (2007) that identifying leadership capabilities are crucial for organizational success and sustainable competitive advantage. In particular, the researcher posits that it is crucial to identify the linkages between discrete leadership styles and ambidextrous leadership behaviors as this could foster our understanding of how best to deploy leadership behaviors to support the realisation of innovation ambidexterity. More so, it is crucial for leadership training purposes as well as incremental validity of ambidextrous leadership theory. In addition, the researcher considers this as essential as there is considerably low focus on the discussion and analysis of leadership and leadership development (Leitch, McMullan and Harrison, 2013). Therefore, this paper answers calls for identification of the indicators of capabilities required to foster innovation ambidexterity (e.g., Bledow et al., 2009; Gupta et al., 2006; Lin et al., 2017).

The structure of the paper is as follows. First, leadership and innovation literature are explored. Further, the hypotheses are developed and this is followed by the research methodology and data analysis. Then, the presentation of the research findings. Finally, the paper finishes with a discussion of the implications of the findings and provides suggestions for future research.

2.1 Ambidextrous leadership for innovation

Exploration innovation is about introducing “novelty” into the market, customers, ideas and opportunities while exploitation innovation typically focuses on making incremental changes to existing products (Kollmann and Stockmann, 2014).

Early models of innovation presented the innovation process in a simplistic linear sequence showing a clear commencement with creativity and ending with implementation. Compelling arguments have surfaced to prove the complex and paradoxical nature of innovation (e.g., Hunter, Thoroughgood, Myer and Ligon, 2011; Mumford & Licuanan, 2004; West, 2002) making such linear models unpopular. Subsequently, innovation models have been proposed showing continuous improvements which take into account organisational learning processes and

adaptive processes (Berkhout and Van Der Duin, 2007; Paulus, 2002; Senge et al., 1994). Such models have also emphasized the cyclic nature of innovation showing no clear division between the occurrence of exploration (creativity) and exploitation (implementation) (Berkhout and Van Der Duin, 2007; Cheng and Van de Ven, 1996).

Consequently, this explains the heterogeneous results, which have been reported by organization scholars who have examined the relationship between innovation and leadership using varying methods (Axtell, Holman, Unsworth, Wall, Waterson and Harrington, 2000; Basu and Green, 1997; Lee, 2008; Moss and Ritossa, 2007; Oldham and Cummings, 1996; Williams, 2004). The meta-analytical study by Rosing et al. (2011) on leadership and innovation sheds more light on the topic by demonstrating that there is no one universal leadership model which fosters innovation because of the differing processes (creativity and implementation) and activities (exploration and exploitation) involved in innovation efforts (March, 1991).

Rosing and colleague's meta-analysis of these heterogeneous results revealed three vital points. Firstly, the relationship between any one leadership style and innovation becomes inconsistent in the presence of third party variables; secondly, general leadership models are too wide to foster innovation; and thirdly, it is implausible for any single leadership style to foster innovation. Therefore, complementary leadership behaviors will need to be demonstrated by leaders to lead innovation (Bledow et al., 2011; Rosing et al., 2011) whilst taking into consideration the pace and the complexity of innovation process (Ancona, Goodman, Lawrence and Tushman, 2001).

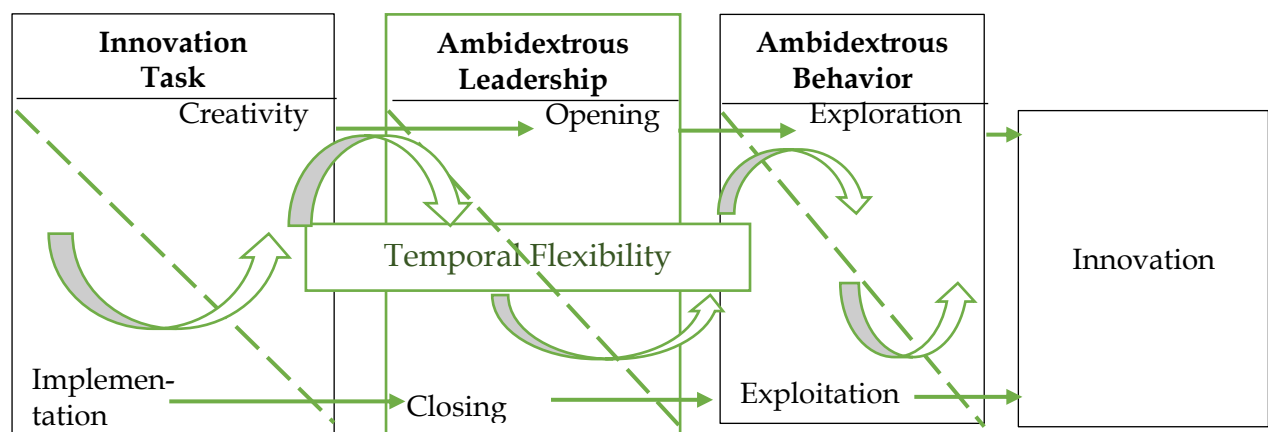
However, with both processes of creativity and implementation having conflicting requirements, yet considered as both crucial for optimum performance, ambidexterity becomes essential to the innovation process. In essence, a combination of different leadership behaviors adapted to the frequently changing nature of the innovation process of exploration and exploitation is more effective to foster innovation (Rosing et al., 2011). Therefore, the crucial feature of leadership for innovation is flexibly switching between complementary behaviors that support exploration via the increase in the variance of follower behaviors and exploitation via reduction in the

variance of follower behaviors. This competency has been termed ambidextrous leadership (Rosing et al., 2011).

Ambidextrous leadership proposes that opening and closing leadership behaviors are complementary behaviors because each of them corresponds to the innovation requirements that the other is unable to meet. OLB specifically matches the requirements faced by team and individuals to engage in exploration activities and creative tasks. OLB describes “allowing different ways of accomplishing a task, encouraging experimentation with different ideas, motivating to take risks, giving possibilities for independent thinking and acting, giving room for own ideas, allowing errors and encouraging error learning”. Demonstrating these behaviors increases variance in follower behaviors and help to stimulate creativity and exploration. By “opening” up leadership behaviors, standard routines are broken down and new ways of thinking and doing things are encouraged.

CLB describes “establishing routines, monitoring and controlling goal attainment, taking corrective action, controlling adherence to rules, giving room for own ideas, paying attention to uniform task accomplishment and sanctioning errors. Leaders who demonstrate these behaviors will encourage the reduction of variance in the follower’s behavior and implementation task of innovation and exploitation. While closing and opening leadership behaviors will foster exploitation and exploration respectively, the ability to switch between both behaviors as may be required by the current situation of the innovation marks out the ambidextrous leader (Lewis, Welsh, Dehler, & Green, 2002). The capability for this temporal flexibility is unique as it is not an easy task to predict the timing for opening leadership behavior and closing leadership behavior (Bledow, et al., 2011). The three major elements of ambidextrous leadership are represented in the figure below.

Figure 3 .1: Model of ambidextrous leadership



(Adapted from Rosing et al., 2011; p.967)

According to Bledow et al. (2009) *the effectiveness of leadership depends on how functional or dysfunctional the behavior of a leader is in stimulating and balancing the activities underlying innovation* (p 3-4). This new and functional perspective on leadership for innovation presents leaders as ubiquitous persons who not only lead but also complement the efforts of employees (McGrath, 1962). At the creativity stage of the innovation process, even though it may be implausible for a leader to improve their follower's creativity directly, the leader may stimulate creativity by sending out appropriate stimuli and helping to create a culture and environment in which creativity will blossom (Oke et al., 2009). In addition, when leaders meet the higher order needs of the employees, the mental state of the employees can be influenced to become more creative (Hunter et al., 2011). For example, the 15% rule in 3M and the 20% rule in Google introduced by leaders of both companies to encourage employees use this amount of time to undertake personal creative endeavors have generated profitable innovations such as the stick it note, Gmail, Google news and so on. Behaviors of charismatic leaders who communicate a strong vision and possess charisma have often been reported to have positive effects on creativity and exploration (Rosing et al., 2011; Oke et al., 2009).

At the latter stages of innovation, the leader's role may require greater management of systems and supervision of processes so that the creative ideas are efficiently converted to profitable products or services. At this stage, order and efficiency are required to mitigate the chances of failure and instill discipline and timeliness (Oke,

et al., 2009). Transactional leadership, which assumes that followers are motivated through punishments and rewards (Bass & Avolio, 1993), has been closely linked to the implementation stage and exploitation activity of innovation (Baškarada et al., 2016; Oke et al., 2009).

Whether as strategic leaders responsible for running the affairs of an entire organisation, or as supervisory leaders of innovative projects, leaders exert influence on employee's behaviors as leadership is a social process occurring in a group context through which the leader influences followers towards achieving desired organisational goals (Northouse, 2012). Yukl (2008) acknowledged three forms of influence which leaders purposefully utilise for effectiveness. The first is using specific leadership behaviors during interactions with peers, subordinates and outsiders. The second form of influence is making strategic decisions about organizational structure, and management systems. The third form of influence pertains to making decisions about the competitive strategy, which would drive the organisation. The present study is more associated with the former – leadership influence which takes place during interactions.

The leader-member exchange (LMX) theory of leadership provides details of how the quality of interaction between leaders and followers drives performance (Graen & Uhl-Bien, 1995). Also, implicit leadership theory describes how follower's expectations and idealism of leaders when met facilitates a positive environment for social exchanges that drives performance (Epitropaki & Martin, 2004). Furthermore, scholarly research of strategic decisions, organisational change and strategic human resource management (e.g., Beer & Nohria, 2000; Hitt & Ireland, 2002; Mintzberg, Raisinghani, & Théorêt, 1976) provide report of how leaders influence organisational processes and activities.

Leaders who recognize the dual nature of innovation are able to understand that exploration and exploitation innovation are mutually dependent activities and are more likely to demonstrate the best leadership behaviors that can help to manage the process of innovation (Bledow et al 2009; Farjoun, 2010). Undoubtedly, demonstrating appropriate leadership behaviors is necessary to drive either radical innovation that

changes the status quo or improves an existing product or service (Oke et al., 2009). Examples abound of organizations (Apple, General Electric, Virgin Group Ltd, 3M and Google) whose innovation success have been influenced by unique leadership capabilities of their leaders.

In their empirical test of the propositions of ambidextrous leadership, using multisource data collected from 33 team leaders of architectural and interior designs firms and 90 of their employees, Zacher and Rosing (2014) found support for the interaction between opening and closing leadership as predictors of team innovation even after controlling for transformational leadership behaviors of the leaders.

Zacher and Wilden (2014) also reported from their 5-day diary study of 113 workers that ambidextrous leadership (the interaction between opening and closing leadership) positively influenced the daily self-reported innovative performance of workers. In addition, self-reported innovative performance of workers were highest when both opening and closing leadership behaviors were high. Similarly, Zacher, Robinson and Rosing (2015) reported that ambidextrous leadership significantly predicted employee self-reported innovative performance beyond opening leadership behaviors, closing leadership behaviors and other control variables.

These scholars have made suggestions that studies which examine the practical aspect and development process of the theory should be conducted. The researcher reasons that holistic understanding of the practicality of ambidextrous leadership behavior needs to be preceded by studies, which identifies the antecedents of ambidextrous leadership. Hence, our study to contributes to this line of research.

2.2 Hypotheses development

2.2.1 Personality traits and ambidextrous leadership

In the early 20th century and before that, leadership research and theory focused on stable traits (e.g., height and fluency) as indicators of leadership success. The traits approach of leadership proposed that leaders are born and not made, which meant that leadership skills are inherited and fixed. Thus, an individual could not learn or improve their traits (Galton, 1869). The traits approach however regressed upon discovery that certain traits could be learned (Funder, 1991) in addition to reports of

the reviews by Mann (1959) and Stogdill (1948) which concluded that there is little or no association between leadership and personality. This shifted the focus of leadership studies from personality traits to leadership behaviors with more attention given to situational factors that affect leadership effectiveness.

A reanalysis of traits approach by DeVader and Alliger (1986) exposed methodological flaws and conceptual misinterpretations which had led to the unfair and misguided judgement of personality traits. Recently, there have been renewed interests in the traits approach following assimilations of leadership traits' propositions in transformational/visionary leadership and charismatic leadership (Bass, 1990; Nadler & Tushman, 1989; Zaccaro, 2007; House, 1977). Nevertheless, some researchers still posit that personality traits are stable qualities. Such scholars have also reported that "stable" leadership traits are a crucial part of explaining leadership behaviors and outcomes (Eagly, 2007; Garzia, 2011; Judge, Ilies, Bono, & Gerhardt, 2002; Zaccaro, 2007). Similarly, some leadership studies now suggest that the influence exerted by traits on leadership behavior is contingent on the situation (Kenrick & Funder, 1988; Yukl & Van Fleet, 1992).

Personality traits can be described as ways people respond to their environment through how they think, feel and behave in a particular manner (Roberts, 2006). As such, attributes such as thoughts, emotions, patterns of behavior, temperament, motives and values are used as synonyms for personality traits (Zaccaro, Kemp and Bader, 2004).

Studies which have examined the effect of personality traits on performance and leadership outcomes suggest that there are certain features that are crucial to possessing and exerting leadership influence (Bono & Judge, 2004; Judge, Piccolo, & Kosalka, 2009). Also, Hogan (2007) reports that leader's personality traits have a direct influence on overall organizational effectiveness. However, limited empirical work is available examining the association between personality traits and leadership behaviors despite the conceptual relationship between both constructs (Kaiser and Hogan, 2011).

The Big Five-factor personality model (including conscientiousness, extraversion, neuroticism, agreeableness and openness) form the basic factors which make up personality and are widely used as a taxonomy of leadership traits to provide conceptual guidance and interpret results (Goldberg, 1990). The Big 5 traits consists of extraversion, agreeableness, conscientiousness, openness to experiences and neuroticism (Costa & McCrae, 1992; Goldberg, 1990). Although there are no clearly defined hypotheses with regards to personality traits, certain traits are considered as essential to exerting influence and effective leadership (Bass and Bass, 2008, Bono and Judge, 2004; Yukl, 2010). Judge, Ilies and Colbert (2004) in their meta-analysis found that there is a multiple correlation of .48 between personality and leadership, thus making personality a very strong indicator of individual peculiarities associated to leadership (Hogan and Kaiser, 2010).

Conscientious individuals have a strong focus on direction and goal achievement (Costa and McCrae, 1992). Conscientious leaders tend to clearly define roles (Bass, 1985) and may set rewards when goals are met (Bono and Judge, 2004). This trait tends to be positively associated with job performance (Barrick and Mount, 1991). However, conscientious leader may be unable to handle stress associated with deadlines, workload, and crises. As such, conscientious leader may be too critical of the performance of their employees and inflexible to change (LePine, Colquitt, and Erez, 2000) and this could lead to missing out on new business opportunities or poor firm performance. This could also be poorly connected with creative and innovative endeavours.

Extraversion describes individuals who are energetic, optimistic, assertive and active (Costa & McCrae, 1992). Extraverts are able to emerge as leaders due to their optimistic nature (Judge, Erez et al., 2002) and they are able to demonstrate leadership behaviors that are consistent with transformational leadership behaviors (Bono & Judge, 2004). Extraverted individuals may be overconfident and aggressive and they may have superfluous believe in their abilities (Hogan and Hogan, 2001). In addition, extraverted individuals tend to jump from one discussion to another, thus, they may fail to provide detailed instructions and strategic direction to their followers

(Beauducel, Brocke and Leue, 2006). In addition, extraverted leaders may make hasty decisions about pursuing or withdrawing from business projects therefore may use firm resources to produce many uncompleted projects.

Agreeable individuals are described as helpful, trustworthy, modest and trusting (Costa and McCrae, 1992; Hurtz and Donovan, 2000). Agreeable leaders are characterised as kind, empathetic, cooperative very involved in personal relationships with employees (Graziano and Eisenberg, 1997). Agreeable leaders tend to avoid conflict (Graziano, Jensen-Campbell and Hair, 1996) and have genuine interest in the well-being and development of their followers. Although some empirical evidence suggest a weak link between agreeableness and leadership effectiveness (Judge, Bono et al., 2002), Bono and Judge (2004) suggested that agreeable leaders are likely to be seen as role models and will be able to score high easily on idealised influence dimension of transformational leadership. Agreeable people tend to avoid conflicts. Therefore, while attempting to avoid conflicts with followers, agreeable leaders may fail to give accurate report on employee performance (Bernadin, Cooke, Villanova, 2000). Agreeable leaders may be unsuited to propose or support creative and innovative processes as they perform better in positions where they can help to ensure adherence to procedures and conventions (Judge et al., 2009).

Openness to experience describes individuals who are introspective, creative, resourceful, intellectually curious and imaginative (McCrae, 1996). Leaders who are high in openness to experience score highly on inspirational motivation and intellectual stimulation because they are able to engage in divergent thinking, clear imagination and are able to challenge and change conventional status quo (Bono and Judge, 2004). On the other hand, individuals who score highly on openness to experience may be carried away with trying short-term activities and may be unable to focus on corporate objectives. This could threaten corporate values and the long-term stability of the firm (Judge and LePine, 2007). Further, followers who need specialised consideration and simple clear instruction on how to go about work may find it difficult to work with open leaders.

Neuroticism describes the expression of negative emotion such as jealousy, anxiety and lack of emotional stability (Judge and LePine, 2007). This trait is detrimental to work. Emotional stability is associated with effective leadership (Northouse, 1997) as leaders who are emotionally stable can manage organisational change better and remain calm during crisis. Leaders who express genuine emotions are regarded as credible and are able to exert influence meaningfully on their followers (Kouzes and Posner, 2003).

Leaders/managers perform relatively complex roles due to the demanding nature of their jobs which are also typically ambiguously structured (Zaccaro, 2001). The pressure exerted on psychological resources to gain control of self-regulation needed to perform in these managerial roles therefore makes it very likely for personality to influence leadership behaviors (Baumeister, Muraven, and Tice, 2000). Furthermore, because managers are able to work with lesser restrictions and are allowed higher autonomy at work, their personality traits may greatly influence their leadership behaviors (Kaiser and Hogan, 2007).

From the foregoing, we posit that leaders' personality traits will have varying degrees of positive relationships with OLB, CLB and ambidextrous leadership with the exception of neuroticism. Therefore, it is hypothesized that

H1. Extraversion of a leader is positively related to OLB, CLB and Ambidextrous leadership

H2. Agreeableness of a leader is positively related to OLB, CLB and Ambidextrous leadership

H3. Conscientiousness of a leader is positively related to OLB, CLB and Ambidextrous leadership

H4. Openness to experiences of a leader is positively related to OLB, CLB and Ambidextrous leadership

H5. Neuroticism of a leader is negatively related to OLB, CLB and Ambidextrous leadership

2.2.1 Emotional Intelligence and Ambidextrous leadership

Emotional intelligence (EI) is concerned with both emotions (affective domain) and thinking (cognitive domain), and the interaction between the two (Wong and Law, 2002). EI is different from intelligence in the sense that intelligence is concerned with

knowledge and ability to apply information to life tasks, while EI is the set of competencies or cognitive intelligences used to process emotions which are then applied to emerging situations (Salovey and Grewal, 2005; Salovey and Mayer, 1990). Mayer and Salovey (1997) define EI as the ability to use one's intelligence to accurately perceive, appraise, and express emotion; understand emotions in thought, understand emotional knowledge; and effectively manage emotions within oneself and in relationships with others. EI has been widely studied by researchers and many practitioners are interested in the concept as well (Mayer, Caruso, and Salovey, 2000; Shankman and Allen, 2008) because of its appeal to training, education and leadership development (Allen et al., 2012).

Typically, organisational settings are embedded in a social context, thus interpersonal interactions are required to function properly. Leadership is embedded in this social context; therefore, leadership is naturally an emotional process (House and Arditia, 1997; Dasborough and Ashkanasy, 2002). The day-to-day interactions that leaders have with their followers involves the display of emotions by leaders as well as the invocation of emotions in followers (Dasborough and Ashkansay, 2002). Emotions have been reported to influence leadership decisions, behaviors and effectiveness given the social interaction between leaders and followers and the contagion effect which leaders have on their followers (Bono and Ilies, 2006; Gilkey, Caceda and Kilts (2010; Humphrey, 2008).

Because emotions are intense temporal mental responses to a specific occurrences and are usually directed to a specific target (Frijda, 1988; 1993), the mental processes required for cognitive evaluation of affective events that trigger emotions are processed differently by individuals and can either regulate or disrupt feelings, behaviors and actions (Weiss and Cropanzano, 1996). Hence, the capability for EI is important for leaders to properly process their emotions and emotional information (Mayer and Salovey, 1997). In fact, Van Rooy and Viswesvaran (2004) reported that EI is a more important predictor of leadership success than personality traits. Attempts have been made to develop a new theory combining EI and leadership. This theory is called emotional intelligence leadership theory and it is defined as *"...intentional focus on context, self and others...to facilitate the attainment of desired*

outcomes. The ... capacities equip individuals with knowledge, skills, abilities, and other characteristics to achieve desired results (Allen et al., 2012; p. 187).

However, there are research scholars who question the validity of EI as a construct and its relevance for leadership (e.g., Antonakis, Ashkanasy and Dasborough, 2009; Locke, 2005). On the contrary, Day and Carroll (2004) argue that work activities (such as innovation) that require interactions or exchanges between people will need to be led by emotionally intelligent people who can perceive their own emotions and understand the impact of these emotions on their actions and on those of others. Similarly, Shankman and Allen (2008) demonstrated that leaders who are sensitive to how their emotions affect self, others and the context are more effective leaders.

The streams of research on emotions and leadership largely describe the emotional competencies of leaders around areas of emotional expressiveness, emotional regulation and emotional intelligence (Rajah et al., 2011). Firstly, the ability to express emotions is a crucial emotional skill for effective leadership (Bass, 1990; Riggio and Reichard, 2008). For leaders that are able to regulate their emotions to be sensitive to the situation and the followers, a reciprocal transfer of emotion occurs, leading to effective results (Riggio and Reichard, 2008). Although the expression of positive emotions is desirable for a conducive working climate, Rajah et al. (2011) suggest that a leader's ability to express and balance both positive and negative emotions is necessary for efficiency. This capability resonates with the notion of ambidexterity: the ability to balance opposing tendencies. The capability for EI to regulate emotions becomes increasingly important therefore as leaders are expected to behave rationally (Ladkin and Taylor, 2009). At the same time, leaders who are caught suppressing or faking emotions are perceived as less authentic leaders (Avolio and Gardner, 2005).

A good taxonomy of EI was proposed by Mayer and Salovey (1997) consisting of four dimensions: Self emotional appraisal, other's emotional appraisal, regulation of emotion and use of emotion.

Self-emotional appraisal (SEA) relates to the individual's ability to sense and acknowledge deep emotions in self and be able to express these emotions naturally.

Others' emotional appraisal (OEA) relates to sensitivity to the feelings and emotions of others.

Regulation of emotion in the self (ROE). This relates to the ability of people to regulate their emotions, which will enable a more rapid recovery from psychological distress.

Use of emotion (UOE). This relates to the ability of individuals to regulate and direct emotions towards constructive activities and achieving performance.

According to George (2000), EI advances effective leadership by aiding the process of developing collective goals and objectives; helping others to develop an appreciation of the importance of work activities; creation of enthusiasm, confidence, optimism, cooperation and trust, allowing flexible decision making and change, and the creation and maintenance of a strong identity for the organization. Empirical studies (e.g. Gardner and Stough, 2002; Wong and Law, 2002) have generally found a positive association between leadership and EI. In regards to performance, research shows that individuals with higher EI levels perform better at work (Goleman, 2001). EI has been reported to have direct influence on the enhancement of successful leadership attributes (Riggio, 2010). In addition, effective leaders have been found to demonstrate significant degrees of EI at work and in business settings (Allen et al., 2012).

In regards to emotional intelligence and ambidextrous leadership, we suggest that there will be a positive association. Emotions have a direct influence on an individual's thoughts, behaviors and decisions (Allen et al., 2012). We consider that the capability to understand and monitor one's emotions whilst being aware of the emotional reactions invoked on others and the context is essential to ambidextrous leadership.

In their book, *Emotionally Intelligent Leadership*, Shankman and Allen (2008) emphasize that leadership is all about relationships. Relationships are a fundamental aspect of leadership. A leader's ability to appraise what is appropriate without disruption by uncontrollable emotions and the ability to maintain good relationships is an indication of emotional maturity, which would be helpful in building the necessary relationship needed to lead creative and innovative employees. Therefore, an emotionally intelligent person is likely to be suited for leadership of innovation and ambidexterity.

In addition, in the face of the complexity of innovation and the need to constantly switch between complementary leadership behaviors in order to resolve oppositional tendencies of exploration and exploitation, leaders will be required to process and regulate myriad emotions for information processing and decision-making (Allen, et al., 2012). EI will serve leaders well in regulating their own emotions to avoid emotional stress such as sharp mood swings, which could cause their followers to panic (Zaccaro, Foti and Kenny, 1991). This dimension of emotional regulation may be of great importance to ambidextrous leaders who may have to demonstrate varying leadership behaviors during the innovation process. EI also includes empathy for others and sensitivity, which are capabilities could help leaders to decide on the best way to influence and motivate their followers (Mayer and Salovey, 1997). Furthermore, EI will help leaders to work well with others and adapt to the challenges and opportunities of the dynamic business environment as they come (Allen et al., 2012).

H6. Emotional intelligence of a leader is positively related to OLB, CLB and Ambidextrous leadership.

2.2.3 Adaptive/flexible leadership and ambidextrous leadership

Yukl (2008) describes adaptive and flexible leadership as the ability of leaders to purposefully and accurately vary their behavior according to the requirements of the situation, the nature of the task and the needs of followers. Due to constant changes which occur in the business environment, in addition to factors such as diverse workforce, technological changes and innovation, leaders have to be agile, versatile, flexible and adaptive (Burke and Cooper, 2004).

The complex and paradoxical nature of the innovation process exhibited as the trade-off between exploration and exploitation suggests that effective leadership of innovation involves the combination and flexible application of different leadership behaviors to the changing requirements of the innovation process (Ancona et al., 2001; Rosing et al., 2011). To operationalise ambidextrous leadership, a leader must be able to diagnose a situation, decide on appropriate leadership behaviors, switch between and balance these different leadership behaviors according to the changing

requirements of innovation. Contingency theories of leadership provide strong insights on how best to assess a situation and identify the best form of leadership behavior (Yukl and Mahsud, 2010).

In the absence of any accurate model to forecast when and how to switch between opening and closing leadership behaviors, ambidextrous leadership theory has an underlying assumption that leaders possess inherent capabilities to adapt their leadership behavior based on peculiarities of each follower, nature of the situation and the timing of events in the innovation cycle (Rosing et al., 2011). From the foregoing, leaders of innovation are expected to inherently possess the capability for adaptive and flexible leadership to accurately appraise a situation and vary their behavior accordingly (Yukl and Mahsud, 2010).

According to Yukl and Lepsinger (2004), adaptive and flexible leadership involves searching for and utilising ways to deal with emerging opportunities and threats. This definition clearly shows how adaptive and flexible leadership is conceptually similar to ambidextrous leadership with regards to balancing the opposing processes of exploration and exploitation (Kaiser and Overfield, 2010). We reason that the ability and the extent to which a leader is flexible and adaptive in making appropriate changes in behavior can help to foster the transition between opening leadership behaviors and closing leadership behaviors.

Flexible and adaptive leaders are able to utilise strategic decisions, appropriate leadership behaviors, structures, procedures and systems to suit situational changes (Yukl, 2008). We reason that adaptive and flexible leaders may engage in learning and planning (forecasting) and may employ additional resources to scan the environment (Mumford et al., 2002) to anticipate when opening and closing leadership behaviors may be situationally required.

With particular reference to ambidextrous leadership, we expect adaptive and flexible leadership behaviors to elucidate on the capability for temporal flexibility to switch between opening and closing leadership behaviors, which cannot be explained by stable traditional leadership concepts and traits.

H7. *Adaptive /flexible leadership is positively related to OLB, CLB and ambidextrous leadership.*

2.2.4 Transformational leadership and ambidextrous leadership

Transformational leadership stimulates followers to perform beyond expectations (Avolio, Bass, and Jung, 1999). Bass (1999) defined transformational leadership as the ability to “move followers beyond immediate self-interests through idealized influence (charisma), motivational inspiration, intellectual stimulation, or individualized consideration” (p.11). Transformational leadership is the most frequently investigated leadership style in relation to innovation. Leaders who demonstrate transformational leadership behaviors are likely to champion innovation pursuits (Howell and Higgins, 1990), as they are able to identify innovative ideas, build energy around these ideas, and share the vision for the innovation throughout the organization.

Transformational leadership has four dimensions: intellectual stimulation, individualized consideration, idealized influence, and inspirational motivation (Avolio, Bass and Jung, 1999). Intellectual stimulation describes the extent to which leaders stimulate their employees' effort to be innovative and creative. They achieve this by questioning assumptions, looking at problems from different angles, and finding new approaches to addressing old procedures (Bass, Avolio, Jung and Berson, 2003). Individualized consideration is concerned with how leaders pay attention to each employee's need for growth, personal development and achievement. Based on individual needs of the employee, leaders assume the position of coach and mentor to support each employee as necessary. Idealized influence describes the extent to which employees admire, trust and respect the leader. This is contingent upon the charismatic behaviors demonstrated by the leaders, which make the followers identify with the leader. Inspirational motivation represents the degree to which leaders communicate a clear and appealing vision and motivate their followers by helping them find meaning in their work (Bass et al., 2003).

The examples of OLB are conceptually similar to the core of transformational leadership. Therefore, it is reasonable to expect a positive relationship between transformational leadership and opening leadership behaviors. By showing opening leadership behaviors, leaders encourage increased variance in employee behaviors. Opening leadership behaviors include encouraging doing things differently and experimenting, giving room for independent thinking and acting, and supporting attempts to challenge established approaches. Similarly, transformational leadership enhances motivation and may encourage/stimulate followers to get involved in work activities that would lead to creativity and radical innovation (Keller, 2006). In addition, transformational leaders are likely to encourage their followers to think outside the box and challenge the status quo by experimenting and sharing creative insights (Bass, 1998). Further, the individualised consideration aspect of transformational leadership will help leaders to identify with employees on an individual and personal basis and this is important in highlighting how the characteristics and identities of each employee aligns with the identity and vision of the organization. This resonates with characteristics of creative individuals who prefer to work in environment where their skills are allowed to thrive (Hunter et al., 2011). We posit that the demonstration of these behaviors underscore opening leadership behaviors and when demonstrated by leaders will influence employee behaviors by increasing variance in employee behaviors and fostering creativity and exploration-type activities. In regards to transformational leadership and closing leadership behaviors, we expect a negative association because whereas closing leadership behaviors is concerned with decreasing variance in employee behaviors, transformational leadership communicates a strong vision and supports employees to go beyond the status quo in realising these visions. Although transformational leadership could play a huge role in motivating employees and facilitating efficiency, we reason that high levels of transformational leadership may oppose closing leadership behaviors. Hence, it is hypothesized that

H8. Transformational leadership is positively related to OLB and AL but will have a negative relationship with CLB

2.2.5 Transactional leadership and ambidextrous leadership

In contrast to transformational leadership, transactional leadership describes an exchange-based relationship that stresses clarification of goals, rewarding goal achievement, and leadership intervention only when necessary (Bass, 1999). Contingent reward and active management by exception are the main dimensions of transactional leadership. Transactional leaders negotiate acceptable standards with their followers and agree to give rewards when the standards are met. Through active management by exception, leaders remove themselves from followers' work situations and remain passive until they are needed to take reactive actions (Avolio et al., 1999). In essence, transactional leaders anticipate mistakes and they sanction errors as necessary (Howell and Avolio, 1993).

From the foregoing, it is plausible to expect a positive relationship between transactional leadership and closing leadership behaviors. Closing leadership behaviors and transactional leadership share conceptual similarities as closing leadership behaviors involve taking corrective action, setting specific guidelines, and monitoring goal achievement (Rosing et al., 2011).

Since the essential feature of closing leadership behaviors is reduction of variance (Gupta et al., 2006; March, 1991), the characteristics of transactional leaders to assume a maintenance role and maximise existing procedures and strategies (Vera and Crossan, 2004) will limit the degree of variance in followers' work behavior. However, this can help to foster consistency, efficiency necessary to drive incremental innovation (Bass, 1998).

Transactional leadership is not expected to foster opening leadership behaviors because it does not stimulate creativity nor does it encourage experimentation. In fact, the exchange based and rigid nature of transactional leadership may have damaging effects on radical innovation and exploration-type activities such as experimentation and error learning because creativity and exploration are unpredictable and requires flexibility, capturing opportunities as well as having an adaptive outlook (Caldwell and O'Reilly, 2003). Furthermore, leaders who demonstrate high transactional leadership behaviors may be unable to create and support a conducive work environment for creative employees. Hence, it is hypothesized that

H9. Transactional leadership is positively related to CLB and AL but will have a negative relationship with OLB.

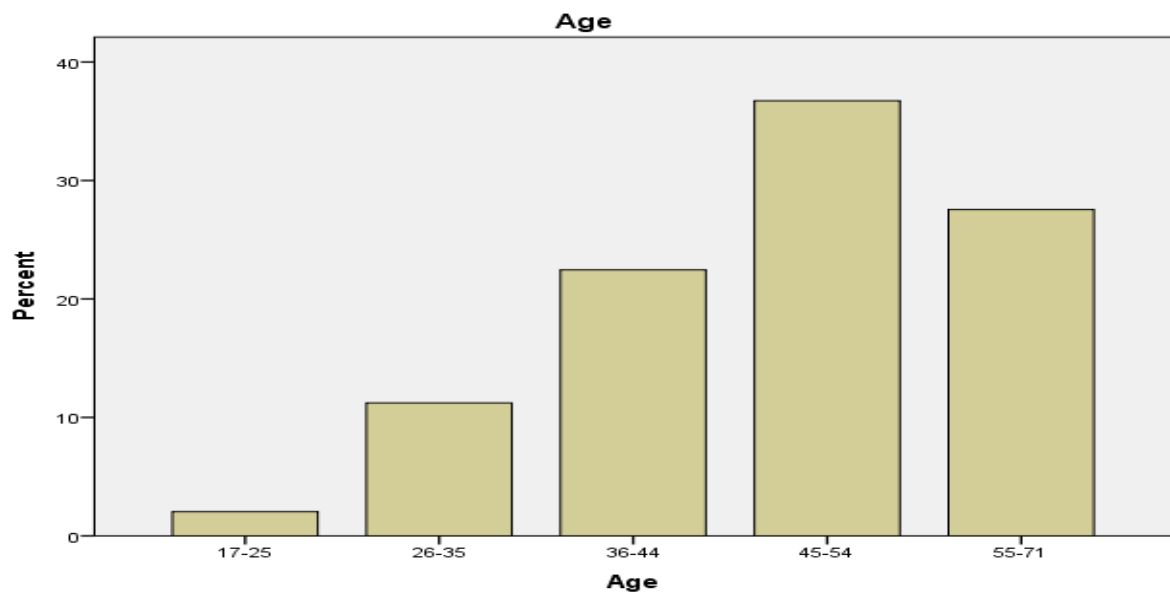
3.1 Methodology

3.2 Data collection and procedure

The data analyzed in this study were collected from SME leaders of 98 high tech firms in England and Wales. Eleven variables were considered in this study: the five personality traits (openness to experience, extraversion, conscientiousness, agreeableness and neuroticism), adaptive/flexible leadership, emotional intelligence, transformational leadership, transactional leadership, opening leadership behaviors and closing leadership behaviors. Data collection was done through questionnaires. We identified SMEs through Company House database. Thereafter we limited the search to high-tech firms from which our sample was then drawn due to the interest of these firms in innovative activities. A total of 850 questions were sent by post and via email using Survey Monkey link. Overall, 112 completed copies of the questionnaire were received from which ninety-eight usable responses were found. This accounted for a response rate of 11.5%. Respondent's age ranged from 17-25 category to 55 years and above. The mode category was 46-54 years with 36.7%. In regards to education, nineteen of the leaders (19.4%) had GCSE/vocational qualification; fifty-one (52.0%) had at least a first degree and twenty eight (28.6%) had obtained post graduate degree. Seventy of the respondents were men and 28 were women. Most of the firms in the sample (68.4%) had been in existence for at least 10 years.

Some descriptive statistics are herein presented.

Figure 3.2. Respondent's Age



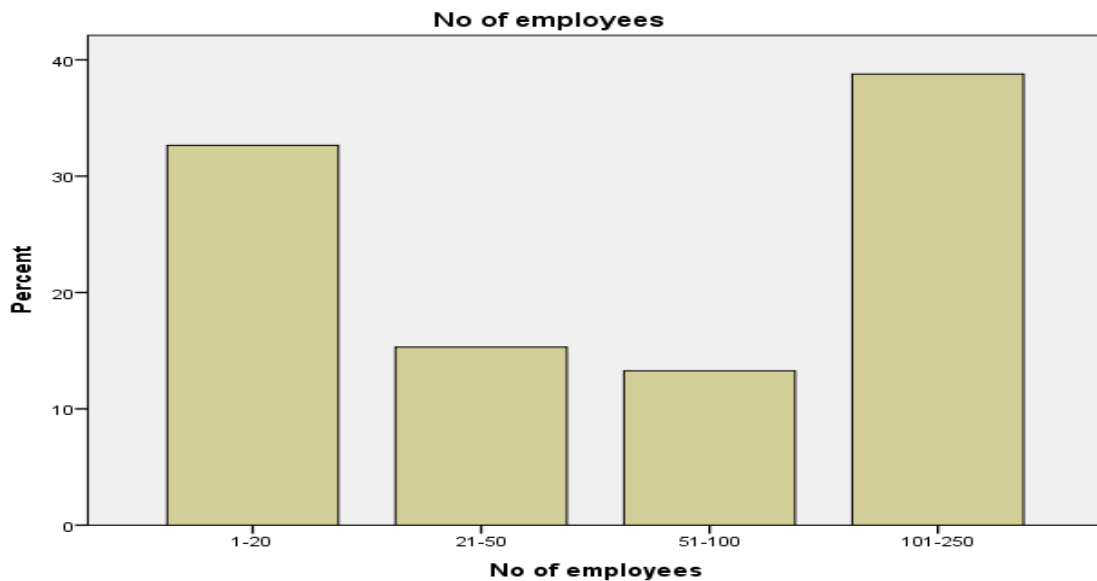
Source: Data analysis

Figure 3.3. Years of Experience



Source: Data analysis

Figure 3.4. Number of employees



Source: Data analysis

3.3 Measures

Personality traits of the respondents is evaluated using the scale proposed by Goldberg (1999) for the five factors. The items were measured by a five-point Likert scale. The Cronbach alpha values calculated for each factor were: extraversion=0.66; conscientiousness=0.65; agreeableness=0.84; openness to new experiences=0.65; and neuroticism=0.65. Substantial research supports the validity and generalizability of the big five scale across different types of assessments, languages, and cultures (Goldberg, 1993; McCrae and Costa, 1997).

The scale developed by Wong and Law (2002) is used to measure emotional intelligence. This scale contains four sub-divisions of emotional intelligence including: (1) perception of one's own emotions; (2) perception of emotions of other individuals; (3) use of emotions; and (4) regulation or control of emotions. The items were evaluated on a five-point Likert scale. The Cronbach alpha obtained was 0.80.

The leader's flexible/adaptive work behaviors were measured using Charbonnier-Voirin and Roussel's (2012) 19-item scale that assesses five dimensions of adaptive behavior. The five dimensions are: handling emergencies or unpredictable work

situations; solving problems creatively; handling work stress; training and learning effort; demonstrating interpersonal adaptability. Cronbach's alpha for this scale was 0.78.

Transformational and transactional leadership behaviors were measured using the Multifactor Leadership Questionnaire (MLQ Form 5X short; Avolio and Bass, 2004). The MLQ is one of the most frequently used instruments in the leadership literature and is considered highly reliable and well validated. Items in the MLQ were answered on 5-point Likert scale. The sub-dimensions of transformational; leadership consists of idealized influence, inspirational motivation, individualized consideration and intellectual stimulation. The Cronbach's alpha was=0.78.

The sub-dimensions for transactional leadership are contingent reward, active management by exception and passive management by exception. Cronbach's alpha for the scale was=0.80.

Ambidextrous leadership behaviors were measured using two scales developed from the examples of opening and closing leadership behaviors provided by Rosing et al. (2011). The business leaders were asked to rate themselves on a 5-point likert scale. Cronbach's alpha for OLB was 0.88 while the Cronbach's alpha for CLB was =0.81.

Ambidextrous leadership was modelled as the multiplicative interaction between OLB and CLB, reflecting the argument that these two leadership behaviors are non-substitutable and complementary (Rosing et al., 2011). The variables were centered to avoid multicollinearity. This method was also used in a similar study by Rosing and Zacher (2016). Firm age and years of leadership experience were included as control variables as these constructs could influence leadership behavior and leadership effectiveness (Cavazotte et al., 2012).

4.1 Data Analysis and Results

The exploratory factor analysis found no general factor and items had their highest factor loadings on their theoretically relevant factor. Results of the composite reliability and average variance extracted are good and shown in Table 3.1 below

(Fornell and Larcker, 1981). Cronbach's alpha for all scales are above the threshold of 0.7. From the foregoing, it can be seen that our measures are valid and reliable.

Table 3. 1. Results of Reliability and validity

Variables	Composite Reliability (CR)	Average Variance Extracted (AVE)
Openness	0.779	0.471
Extraversion	0.789	0.557
Agreeableness	0.827	0.545
Neuroticism	0.806	0.582
Conscientiousness	0.794	0.493
OLB	0.893	0.626
CLB	0.872	0.577
AFB	0.814	0.526
Transformational leadership	0.766	0.522
Transactional leadership	0.833	0.625
Emotional intelligence	0.835	0.630

Source: Data analysis

To mitigate common method bias, a pilot test with five business owners was done which showed no major problems with the survey instrument. In addition, a cover letter was added to the questionnaire to explain the intent of the survey and the researcher promised absolute confidentiality to respondents. Additionally, a Harman One-factor test (Podsakoff et al., 2003) conducted. The highest variance explained by a single factor was 17.0%. Therefore common method variance (CMV) is not a serious threat in this study.

Table 3. 2. Descriptive statistics and Correlation matrix

Table 3.2. Descriptive statistics and Correlation matrix

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Firm Age	3.31	1.11	1												
2.Leadership Experience	3.94	1.30	0.002	1											
3. Openness	3.73	0.70	-0.130	0.032	1										
4. Conscientiousness	3.74	0.80	0.057	0.024	0.044	1									
5. Neuroticism	2.72	0.73	-0.031	-0.047	0.017	-0.104	1								
6. Extraversion	3.38	0.75	0.164	0.196	0.33**	-0.095	-0.090	1							
7. Agreeableness	3.80	0.71	-0.014	0.044	0.215*	0.029	0.048	0.075	1						
8.Emotional Intelligence	4.11	0.43	0.098	0.089	0.274**	0.234*	-0.329**	.0315**	0.204*	1					
9.Adaptive/Flexible Leadership	3.89	0.33	-0.052	0.047	0.149	0.032	-0.136	0.050	0.397**	0.331**	1				
10.Transformational Leadership	3.61	0.49	-0.116	0.068	0.228*	0.043	-0.072	0.200*	0.266**	0.288**	0.334**	1			
11.Transactiona Leadership	3.45	0.39	0.157	0.183	-0.021	0.109	-0.84	0.015	0.136	0.165	0.180	.361**	1		
12.Opening Leadership Behaviors	3.82	0.57	-0.074	-0.064	0.113	-0.126	0.059	-0.065	0.162	0.108*	0.389**	0.423**	-.027	1	
13.Closing Leadership Behaviors	3.56	0.50	0.036	0.334**	-0.154	0.165	-0.156	-0.083	0.031	0.200*	0.169*	0.166	0.326**	0.095	1
14.Ambidextrous Leadership (OLB × CLB)	13.84	3.25	-0.20	0.073	-0.021	0.034	-0.046	-0.098	0.132	0.206*	0.272**	0.200*	0.201*	0.764**	0.705**

Source: Data analysis [N=98. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed)]

The correlation results are presented in Table 3.2, and it shows a pattern that is consistent with our hypothesis. With regards to OLB, all five personality traits were non-significant, while adaptive/flexible leadership, emotional intelligence and transformational leadership showed significant correlations to OLB.

With regards to CLB, emotional intelligence, adaptive/flexible leadership and transactional leadership showed positive associations. Again, all five personality traits indicated no significant associations to CLB.

Emotional intelligence, adaptive/flexible leadership, transformational leadership and transactional leadership showed positive and significant associations with AL while all five personality traits were non-significantly correlated to AL.

As hypothesized, transformational leadership showed no significant association with CLB and transactional leadership was negatively related to OLB. Firm age did not appear to have any significant relationship with OLB, CLB and ambidextrous leadership but leadership experience showed significant correlation with CLB. Neuroticism was negatively correlated to all the outcome variables except OLB.

Hypotheses Test

Hypotheses were tested using multiple regression analysis technique on SPSS. In the regression, the control variables (firm age and leadership experience) were entered first. Then the independent variables including personality traits, emotional intelligence, adaptive/flexible leadership, transformational and transactional leadership were entered next. Following the recommendation of Cohen, Cohen, West and Aiken (2003), the variables were mean centred. This method helps to reduce the potential effects of multicollinearity (Aiken and West, 1991). Multicollinearity was assessed by examining the tolerance and variance inflation factor (VIF). The results show that the study is free from multicollinearity issues as the maximum variance

inflation factor (VIF) recorded in any of the models did not exceed 10, which is the general rule for regression models (Belsey, Kuh and Welsch, 1980; Kutner, Nachtsheim, and Neter, 2004).

The study found that all the personality traits showed non-significant effects on OLB, CLB and ambidextrous leadership except conscientiousness which showed a positive and significant relationship with closing leadership behavior ($\beta = .22$, $p = 0.029$) thereby partially supporting H3. As hypothesized, neuroticism was negatively related to OLB, CLB and AL confirming hypothesis 5. Altogether, H1, H2, and H4 were not supported while H3 was partially supported.

Hypothesis 6 was also partially supported with emotional intelligence having a positive and significant effect on AL ($\beta = .22$, $p = 0.03$). Low significant result was observed in relation to EI's association with OLB ($\beta = .19$, $p = 0.07$) and no significant result in relation to CLB ($\beta = .13$, $p = 0.19$).

Adaptive/flexible leadership had a high significant positive effect on OLB ($\beta = .42$, $p < 0.000$) and AL ($\beta = .41$, $p < 0.000$) but a low significance was found in relation to CLB ($\beta = .19$, $p = 0.062$) thus H7 is also partially supported.

In addition, transformational leadership showed a positive and significant relationship with OLB ($\beta = .41$, $p < 0.000$) and ambidextrous leadership ($\beta = .41$, $p < 0.000$). Although a negative relationship between transformational leadership and CLB was predicted, a low significant positive relationship ($\beta = .19$, $p = 0.062$) was observed. Thus, H8 was partially supported.

It was hypothesized that transactional leadership will be negatively related to OLB. However, the result shows a non-significant association ($\beta = .06$, $p = 0.556$) rather than a negative association. Consistent with the hypothesis, transactional leadership is positively related to CLB ($\beta = .31$, $p = 0.003$) and AL ($\beta = .25$, $p = 0.020$) thus partly supporting H9. Regression results are reported in Table 3. 3.

Table 3. 3. Regression analysis results

Variables	MODEL 1			MODEL 2			MODEL 3			MODEL 4			MODEL 5			MODEL 6		
	OLB	CLB	AL	OLB	CLB	AL	OLB	CLB	AL	OLB	CLB	AL	OLB	CLB	AL	OLB	CLB	AL
Firm age	-0.09 (0.444)	-0.04 (0.732)	-0.09 (0.423)	-0.04 (0.739)	-0.07 (0.519)	-0.08 (0.488)	-0.10 (0.371)	-0.05 (0.667)	-0.11 (0.337)	-0.03 (0.745)	-0.14 (0.898)	-0.39 (0.711)	-0.02 (0.857)	-0.01 (0.949)	-0.02 (0.828)	-0.09 (0.448)	-0.03 (0.738)	-0.08 (0.423)
Leadership experience	0.01 (0.936)	0.21 (0.073)	0.13 (0.227)	-0.05 (0.823)	0.21 (0.061)	0.13 (0.241)	-0.00 (0.990)	0.19 (0.83)	0.12 (0.264)	-0.02 (0.836)	0.18 (0.091)	0.11 (0.305)	-0.02 (0.839)	0.19 (0.091)	0.10 (0.305)	-0.01 (0.941)	0.11 (0.301)	0.07 (0.555)
Openness				0.14 (0.209)	-0.16 (0.152)	-0.00 (0.986)												
Conscientiousness				-0.12 (.0233)	0.22* (0.029)	0.07 (0.481)												
Extra-version				-0.11 (0.314)	-0.02 (0.856)	-0.08 (0.433)												
Neuroticism				-0.07 (0.500)	-0.12 (0.229)	-0.13 (0.219)												
Agreeableness				0.15 (0.170)	0.15 (0.127)	.019 (0.062)												
Emotional intelligence							0.19 (0.072)	0.13 (0.195)	0.22* (0.031)									
Adaptive/ flexible										0.42*** (0.000)	0.19 (0.062)	0.41*** (0.000)						

Transform- ational													0.41***	0.19	0.41***			
													(0.000)	(0.062)	(0.000)			
Transact- ional																0.06	0.31**	0.25*
																(0.556)	(0.003)	(0.020)
ΔR ²	-0.01	0.02	-0.00	-0.00	0.08	0.01	.010	0.23	.034	.152	.041	.154	.149	.041	.157	-0.02	0.10	0.04
R ²	0.01	0.04	0.02	0.07	0.14	0.08	.041	.053	.064	.178	.071	.180	.175	.071	.183	0.01	0.12	0.72
F	.332	1.7	0.8	0.9	2.1	1.1	1.3	1.7	2.1	6.8***	2.4	6.9***	6.6***	2.4	7.0	0.3	4.4	2.4
Sig. (P-value)	.718	.178	.46	.518	.049	.351	.269	.163	.101	.000	.073	.000	.000	.073	.000	.799	.006	.070
N	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98

N = 98. Standardized regression coefficients (βs) are reported. *p < .05, **p < .01, ***p < .001. Actual levels of significance reported in ().

Source: Data analysis

5.1 Discussion

The long-term viability of many firms is contingent on innovation. Leadership plays a crucial role in facilitating innovation (Chen, Lin, Lin and McDonough, 2012; Makri and Scandura, 2010). A growing number of research have shown that ambidextrous leadership is related to a variety of positive innovation outcomes. Similarly, it is becoming clearer that leading innovation requires a unique individual who is astute and understands his or her own strengths and weaknesses as well as how these strengths and weaknesses may promote or hinder their ability to lead innovative people and innovative work contexts. Accordingly, in this study, the researcher sought leadership attributes and behaviors that are associated with ambidextrous leadership. To the best of the researcher's knowledge, this study is one of the few studies to explore the antecedents of ambidextrous leadership.

In line with the position that diverse leadership behaviors are required to support ambidexterity, this study found that all the independent variables: emotional intelligence, adaptive/flexible leadership, transformational leadership and transactional leadership showed significant correlations with ambidextrous leadership except the five personality traits.

While the other four personality traits showed no association with OLB, CLB or AL, only conscientiousness demonstrated some association with CLB. A similar result was demonstrated in a past study where conscientiousness was found to be positively correlated with job performance (Barrick and Mount, 1991). Leaders with high conscientiousness are goal oriented and highly organized individuals (Marcati et al., 2008). They may use these characteristic to influence the reduction in variance of employee behaviors by demonstrating CLB such as setting routines, giving deadlines, insisting on specific procedures, punishing for errors and engaging in close monitoring of goal attainment to ensure job performance. Highly conscientious individuals are also likely to be over analytical and not willing to take risks or engage in exploratory innovation (Hogan and Hogan, 2001).

As predicted, neuroticism showed negative relation to OLB, CLB and AL. This is similar to the study by Cavazotte et al. (2012) where neuroticism showed direct

negative associations to leadership effectiveness and managerial performance. This suggests that leaders who express fear, anger and frustration may disrupt the conducive environment needed to foster innovative employee behaviors.

Nevertheless, there are previous studies which have found personality traits to be influential to leadership emergence and effectiveness (such as Cavazotte, Moreno and Hickman, 2012; Marcati, Guido and Pelusso, 2008). However, there are researchers who have questioned the extent to which the static nature of personality traits may account for dynamic processes and situational contingencies inherent in leadership processes (Xu et al., 2014). Therefore, it may be the case that although personality traits may be influential to some aspects of leadership, other flexible leadership competences may be better to capture the dynamic process of leading innovative undertakings.

In agreement with Judge, Piccolo and Kosalka (2009), while personality traits may be influential to leadership emergence, personality traits may not necessarily guarantee leadership effectiveness as the effectiveness of any given leadership traits may be contingent on the context and ability of the leader to adapt to emerging circumstances (Judge et al., 2009; Kenrick and Funder, 1988). It is also plausible that contextual variables may shape the relationship between any particular personality (Anderson, Potočnik and Zhou, 2014) and leadership behaviors. In fact, given the dynamics involved in the innovation process, it is not very clear how personality traits may influence ambidextrous leadership. Thus, except researchers are able to add some dynamism to the trait model to perhaps understand the evolution and expression of traits in individuals (Xu et al., 2014), understanding leadership of innovation endeavors will be better explored by other dynamic leadership behaviors and a stable cluster of personality traits.

Further, the study shows that emotional intelligence, adaptive/flexible leadership, transformational leadership and transactional leadership demonstrated positive and significant associations with ambidextrous leadership. It is pertinent to mention that in the correlation results, adaptive/ flexible leadership and emotional intelligence

showed consistent positive and significant association with all of OLB, CLB and ambidextrous leadership.

However, a crucial observation in the results is that no single independent variable showed consistent association with OLB, CLB and AL simultaneously despite emotional intelligence and adaptive/flexible leadership showing consistent associations with all three variables in the correlation analysis. As aforementioned, the researcher did not intend to prove causality in our research; rather the researcher aimed to show plausible associations between the independent and dependent variables. Indeed, in order to prove causality, significant correlation coefficients must be recorded and it must be proven that no other variables can explain the relationship between the dependent and independent variable (Antonakis, Bendahan, Jacquart and Lalive, 2010).

Based on the findings, all the independent variables (emotional intelligence, adaptive/flexible leadership, transformational leadership and transactional leadership) are very essential to maximizing ambidextrous leadership. Furthermore, EI, AFB and transformational leadership appear to be more influential to OLB while EI, AFB and transactional leadership appear to be more influential to CLB.

The study revealed that emotional intelligence is associated to ambidextrous leadership. This is similar to the finding of Zhou and George (2003), who demonstrated that EI enables leaders to understand and channel the emotions of followers connected to the innovation process. Indeed EI, may help to be sensitive to what kind of leader behaviors are called for in any given situation (Rosing et al., 2010). However, Cavazotte et al., (2012) found that when considered in isolation, emotional intelligence was statistically significant, but the effect became non-significant in the presence of control variables.

In regards to transformational and transactional leadership and their association with OLB and CLB respectively in this study, such relationships could be expected because of the conceptual similarity between the leadership behaviors. Previous studies already demonstrated that transformational leadership could help to create a conducive culture that increases variance in employee behaviors for innovation

innovation tasks through intrinsic task motivation (Shin and Zhou, 2003), relational identification (Qu, Janssen and Shi, 2015) and creative self-efficacy (Gong, Huang and Farh, 2009). Transformational leaders are likely to build energy around innovative ideas throughout the organization (Shamir, House, and Arthur, 1993), and could encourage employees to undertake activities that challenge the status quo and drive experimentation without the fear of punishments (Bass, 1985; Vera and Crossan, 2004).

Transactional leadership underscore an exchange-based relationship that emphasizes clarification of goals and rewarding goal achievement (Bass, 1998) which could limit the variance in behaviors encouraged. Similar to the result obtained in this study, Vera and Crossan found that transactional leaders assume a maintenance role and maximise existing procedures and strategies (Vera and Crossan, 2004). This pattern of behaviour can limit the degree of variance in followers' work behavior but will foster consistency and efficiency and also help to drive incremental innovation/exploitation (Bass, 1998). However, as noted by Rosing et al. (2011), the main difference between the behaviors is that opening and closing leadership primarily function to influence the increase and decrease of variance in follower behaviors (Rosing et al., 2011) to support innovative undertakings, while transformational and transactional leadership are wider in scope and not limited to leading innovative undertakings.

Based on the pattern of the findings in this study, the table below is provided to suggest the following antecedents of ambidextrous leadership behaviors as well as their level of association.

Table 3.4. Suggested ambidextrous leadership antecedents in our study

Level of association	Opening leadership behavior	Closing leadership behavior	Ambidextrous leadership
Personality Traits	Low	Low	Low
Emotional intelligence	Medium	Low	High
Adaptive/flexible leadership	High	Medium	High
Transformational leadership	High	Medium	High
Transactional Leadership	Low	High	High

Source: Data Analysis

Clearly, more research is needed to understand the factors that are influential in making the temporally flexible switch between OLB and CLB. This complex relationship could not be captured with the current design, but needs to be investigated in future research. The researcher suggests that objective and longitudinal studies may help to shed more light on this area to identify how individual leaders adapt their leadership behaviors to specific contexts and individual needs of the employees. It is recommended that leadership teaching and training should be introduced to establish the components of AL stressing that OLB and CLB are complementary leadership behaviors. Further, the need to have and balance different behaviors should be emphasized especially in work contexts where exploration and exploitation innovation activities are essential. Such trainings must emphasize the duality nature and complexities of the innovation process, the importance of matching this process with an equally complex leadership approach and the importance of leadership flexibility.

5.2 Limitations and Future research

This study has some limitations. First, the generalizability of the results may be limited due to two reasons (1) the data was collected from high-tech firms from the United Kingdom only, and (2) there are more male respondents in our sample than female respondents. We suggest that future research could include samples from other countries in their study as this could provide insights on variations across countries. In addition, data collection methods can be used strategically to draw a more gender balanced sample.

Secondly, the study focused only on the views of leaders and did not collect data from other organizational members. By collecting data from other organizational members (through questionnaires and/or interviews), the reports of leaders can be verified and this can help to mitigate common method bias and generate more insights about the antecedents of ambidextrous leadership. Furthermore, the control variables were limited. Future research could consider including other relevant control variables such as employee motivation, organization culture, leader-member relationship and self-efficacy.

Additionally, qualitative and longitudinal studies may be suitable to produce rich explanations about the factors that facilitate the development of ambidextrous leadership at individual, team and organizational levels. In addition to this, future research will benefit from taking contextual factors and timing into consideration because leadership behaviors may vary across time and contexts. Finally, future research that are based on sound metrics and research designs may be needed to prove causality by uncovering what leadership behaviors and to what extent these leadership behaviors contribute to and/or predict OLB, CLB and ambidextrous leadership.

6.1 Conclusion

Although prior research has investigated the effects of some leadership behaviors on innovation, it has paid negligible attention to the antecedents of leadership ambidexterity. This study has contributed to the discussion of ambidextrous leadership by investigating some leadership behaviors and attributes as possible antecedent influences of OLB, CLB and ambidextrous leadership. The study corroborates suggestions that capabilities to lead innovation encompasses many different leadership attributes and behaviors. Thus, today's leaders must be willing to develop a wide range of leadership skills and direct their behaviors to fit differing situations, as this is beneficial to their leadership success. This study particularly demonstrates that adaptive/flexible leadership behavior, transformational leadership, transactional leadership and emotional intelligence are crucial to ambidextrous leadership. Further, the results provide insights for further research that will lead to incremental validity of ambidextrous leadership theory. The research also breaks the ground for future studies that will explore ways to understand how leadership capabilities should be deployed for effective realisation of innovation ambidexterity. Finally, the researcher hopes that practitioners will find the results helpful for the purpose of creating developmental programmes and selection into strategic leadership positions.

Summary

This chapter has explored the antecedent influences of ambidextrous leadership using personality traits, emotional intelligence, adaptive/flexible leadership, transformational leadership and transactional leadership. Varying relationships have been found between these leadership antecedents and ambidextrous leadership. Finding that personality traits showed no association to ambidextrous leadership was unexpected and the discussion section has explored plausible reasons for this.

Overall, this study has provided insights to antecedents influences of ambidextrous leadership, one which other researchers can build on to add knowledge to research and practice of ambidextrous leadership.

References

- Aiken, L. S., & West, S. G. (1991). Multiple regression: Testing and interpreting interactions. Newbury Park: Sage.
- Allen, S. J., Shankman, M. L., & Miguel, R. F. (2012). Emotionally Intelligent Leadership: An Integrative, Process-Oriented Theory of Student Leadership. *Journal of Leadership Education*, 11(1).
- Ancona, D. G., Goodman, P. S., Lawrence, B. S., & Tushman, M. L. (2001). Time: A new research lens. *Academy of Management Review*, 26(4), 645–663.
- Anderson, N., Potočník, K., & Zhou J. (2014). Innovation and Creativity in Organizations: A State-of-the-Science Review, Prospective Commentary, and Guiding Framework. *Journal of Management*, 40(5), 1297-1333.
- Antonakis, J., Ashkanasy, N.M., & Dasborough, M.T. (2009). Does leadership need emotional intelligence? *The Leadership Quarterly*, 20(2), 247–261.
- Antonakis, J., Bendahan, S., Jacquart, P., & Lalive, R. (2010). On making causal claims: A review and recommendations. *The Leadership Quarterly*, 21(6), 1086-1120.
- Ashkanasy, N., & Daus, C. (2005). Rumors of the death of emotional intelligence in organizational behavior are greatly exaggerated. *Journal of Organizational Behavior*, 26, 441–452.
- Avolio, B. J., & Bass, B. M. (2004). MLQ – multifactor leadership questionnaire. Menlo Park, CA: Mind Garden.
- Avolio, B. J., Bass, B. M., & Jung, D. I. (1999). Re-examining the components of transformational and transactional leadership using the Multifactor Leadership Questionnaire. *Journal of Occupational and Organizational Psychology*, 72, 441–462.
- Avolio, B. J., & Gardner, W. L. (2005). Authentic leadership development: Getting to the root of positive forms of leadership. *Leadership Quarterly*, 16, 315-338.
- Axtell, C. M., Holman, D. J., Unsworth, K. L., Wall, T. D., Waterson, P. E., & Harrington, E. (2000). Shopfloor innovation: Facilitating the suggestion and implementation of ideas. *Journal of Occupational and Organizational Psychology*, 73(3), 265–285.
- Belsey, D. A., Kuh, E., & Welsch, R. E. (1980). Regression diagnostics, identifying influential data and sources of collinearity.
- Bagheri, A. (2017). The impact of entrepreneurial leadership on innovation work behavior and opportunity recognition in high-technology SMEs. *The Journal of High Technology Management Research*, 28(2), 159-166.
- Barrick, M. R., & Mount, M. K. (1991). The Big Five personal dimensions and job performance: A meta-analysis. *Personnel Psychology*, 44, 1–26.

- Baumeister, R. F., Muraven, M., & Tice, D. M. (2000). Ego depletion: A resource model of volition, self-regulation, and controlled processing. *Social Cognition*, 18, 130–150.
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York: Free Press.
- Bass, B. M. (1990). *Bass and Stogdill's handbook of leadership*, (3rd ed.). New York: Free Press.
- Bass, B. M. (1998). *Transformational leadership: Industry, military, and educational impact*. Mahwah, NJ: Erlbaum.
- Bass, B. M. (1999). Two decades of research and development in transformational leadership. *European Journal of Work and Organizational Psychology*, 8(1), 9–32.
- Bass, B. M., & Avolio, B. J. (1993). Transformational leadership: A response to critiques. In M. M. Chemers & R. Ayman (Eds.), *Leadership theory and research: Perspectives and directions* (pp. 49–80). San Diego, CA: Academic Press.
- Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2003). Prediction unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology*, 88(2), 207–218.
- Bass, B.M., & Bass, B.M. (2008). *The Bass handbook of leadership: Theory, research and managerial applications*. N.Y.: Free Press.
- Basu, R., & Green, S. G. (1997). Leader-member exchange and transformational leadership: An empirical examination of innovative behaviors in leader-member dyads. *Journal of Applied Social Psychology*, 27(6), 477–499.
- Baškarada, S., Jamie Watson, J., Cromarty, J. (2016). Leadership and organizational ambidexterity. *Journal of Management Development*, 35 (6), 778-788.
- Beer, M. and Nohria, N. (2000) Cracking the code of change. *Harvard Business Review*, Vol.78, Issue.3. 133-141.
- Beauducel, A., Brocke, B., & Leue, A. (2006). Energetical bases of extraversion: Effort, arousal, EEG, and performance. *International Journal of Psychophysiology*, 85, 232–236.
- Berkhout, A. J. & Van der Duin, P. (2007). New ways of Innovation: an application of the cyclic innovation model to the mobile telecom industry', *International Journal of Technology Management*.
- Bernardin, H. J., Cooke, D. K., & Villanova, P. (2000). Conscientiousness and agreeableness as predictors of rating leniency. *Journal of Applied Psychology*, 85, 232–236.

- Bledow, R., Frese, M., Anderson, N. R., Erez, M., & Farr, J. L. (2009). A dialectic perspective on innovation: Conflicting demands, multiple pathways, and ambidexterity. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 2(3), 305–337.
- Bledow, R., Frese, M., & Müller, V. (2011). Ambidextrous leadership for innovation: The influence of culture. In W. H. Mobley M. Li & Y. Wang (Eds.), *Advances in global leadership*, Vol. 6 (pp. 41–69) Bingley, UK: Emerald Group Publishing.
- Bono, J. E., & Ilies, R. (2006). Charisma, positive emotions and mood contagion. *The Leadership Quarterly*, 17, 317–334.
- Bono, J. E., & Judge, T. A. P. (2004). Personality and transformational and transactional leadership: A meta-analysis. *Journal of Applied Psychology*, 89(5), 901–910.
- Burke, R. J., & Cooper, C. L. (2004). *Leading in turbulent times: Managing in the new world of work*. Malden, MA: Blackwell Publishing.
- Caldwell, D. & O'Reilly, C.A. 2003. "The determinants of team-based innovation in organizations: The role of social influence." *Small Group Research*, 34: 497-517.
- Cavazotte, F., Moreno, V., & Hickmann, M. (2012). Effects of leader intelligence, personality and emotional intelligence on transformational leadership and managerial performance. *The Leadership Quarterly*, 23, 443-455.
- Charbonnier-Voirin, A. and Roussel, P. (2012). Adaptive performance: A new scale to measure individual performance in organizations. *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration*, 29(3), pp.280-293.
- Chen, M. Y. C., Lin, C. Y. Y., Lin, H. E., & McDonough, E. F. (2012). Does transformational leadership facilitate technological innovation? The moderating roles of innovative culture and incentive compensation. *Asia Pacific Journal of Management*, 29(2), 239-264.
- Cheng, Y. & Van de Ven, A.H. (1996). Learning the innovation journey: order out of chaos? *Organization Science*. 7(6), 593-614.
- Cohen, J., Cohen, P., West, S.G., & Aiken, L.S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd Edition). Mahwah, NJ: Lawrence Erlbaum Associates
- Costa, P. T., & McCrae, R. R. (1992). Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI): Professional manual. Odessa, FL: Psychological Assessment Resources.
- Dasborough, M. T. and Ashkanasy, N. M. (2002): 'Emotion and attribution of intentionality in leader-member relationships', *The Leadership Quarterly*, Vol. 13, 615–634.

- Day, A.L., & Carroll, S.A. (2004). Using an ability-based measure of emotional intelligence to predict individual performance, group performance, and group citizenship behaviors. *Personality and individual differences*, 36, 1443-1458.
- De Jong, J., & Den Hartog, D. (2010). Measuring innovative work behavior. *Creativity and Innovation Management*, 19(1), 23-36.
- Eagly, A. H. (2007). Female leadership advantage and disadvantage: Resolving the contradictions. *Psychology of Women Quarterly*, 31(1), 1-12.
- Epitropaki, O., & Martin, R. (2004). Implicit leadership theories in applied settings: factor structure, generalizability, and stability over time. *Journal of Applied Psychology*, 89(2), 293.
- Farjoun, M. (2010). Beyond dualism: Stability and change as a duality. *Academy of Management Review*. 35(2). 202-225.
- Frijda, N. H. (1988). The laws of emotion. *The American Psychologist*, 43, 349-358.
- Frijda, N. H. (1993). The place of appraisal in emotion. *Cognitive Emotions*, 7, 357-387.
- Funder, D.C. (1991). Global traits: A neo-allportian approach to personality. *Psychological Science*, 2(1), 31-39.
- Galton, F. (1889). *Natural inheritance*. London: Macmillan.
- Gardner, L., & Stough, C. (2002). Examining the relationship between leadership and emotional intelligence in senior level managers. *Leadership and Organization Development Journal*, 23, 68-78.
- Garzia, D. (2011). The personalization of politics in Western democracies: Causes and consequences on leader-follower relationships. *The Leadership Quarterly*, 22(4), 697-709.
- George, J. M. (2000). Emotions and leadership: The role of emotional intelligence. *Human Relations*, 53, 1027-1055.
- Gibson, C.B., & Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. *Academy of Management Journal*, 47, 209-226.
- Gilkey, R., Caceda, R., & Kilts, C. (2010). When emotional reasoning triumphs over IQ. *Harvard Business Review*, 88(9), 27.
- Gilson, L., Mathieu, J., Shalley, C., & Ruddy, T. (2005). Creativity and Standardization: Complementary or Conflicting Drivers of Team Effectiveness? *The Academy of Management Journal*, 48(3), 521-531.
- Goleman, D. (2001). Emotional intelligence: Issues in paradigm building. In C. Cherniss & D. Goleman (Eds.), *The emotionally intelligent workplace: How to select for,*

measure, and improve emotional intelligence in individuals, Groups, and Organizations (pp. 13-26). Jossey-Bass: San Francisco.

Goldberg, L. R. (1990). An alternative “description of personality”: The big-five factor structure. *Journal of Personality and Social Psychology*, 59, 1216–1229.

Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American psychologist*, 48(1), 26.

Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly*, 6(2), 219–247.

Graziano, W. G., & Eisenberg, N. H. (1997). Agreeableness: A dimension of personality. In R. Hogan, J. A. Johnson, & S. R. Briggs (Eds.), *Handbook of personality psychology*. 767–793. San Diego, CA: Academic Press.

Graziano, W. G., Jensen-Campbell, L. A., & Hair, E. C. (1996). Perceiving interpersonal conflict and reacting to it: The case for agreeableness. *Journal of Personality and Social Psychology*, 70, 820–835

Gupta AK, Smith KG, Shalley CE. (2006). The interplay between exploration and exploitation. *Academy of Management Journal*. 49(4): 693–706.

He, Z. L., & Wong, P.-K. (2004). Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis. *Organization Science*, 15, 481–494.

Hitt, M. A., & Ireland, R. D. (2002). The essence of strategic leadership: Managing human and social capital. *Journal of Leadership & Organizational Studies*, 9(1), 3–14.

Hogan, R. (2007). *Personality and the fate of organizations*. Hillsdale, NJ: Erlbaum.

Hogan, R., & Hogan, J. (2001). Assessing leadership: A view from the dark side. *International Journal of Selection and Assessment*, 9, 12–23.

Hogan, R., & Kaiser, R. B. (2010). Personality. In J. C. Scott & D. H. Reynolds (Eds.), *Handbook of workplace assessment* (pp. 81–108). San Francisco, CA: Jossey-Bass.

House, R. J. (1977). A 1976 theory of charismatic leadership. In J. G. Hunt & L. L. Larson (Eds.), *Leadership: The cutting edge* (pp. 189–207). Carbondale, IL: South Illinois University Press.

House, R. J., & Arditya, R. N. (1997). The social scientific study of leadership: Quo Vadis? *Journal of management*, 23(3). 409-473.

Howell, J. M., & Avolio, B. J. (1993). Transformational leadership, transactional leadership, locus of control, and support for innovation: Key predictors of consolidated business-unit performance. *Journal of Applied Psychology*, 78, 891–902.

- Howell, J. M., & Higgins, C. A. (1990). Champions of technological innovation. *Administrative Science Quarterly*, 35, 317–341.
- Hunter, S.T., Thoroughgood, C.N., Myer, A.T. and Ligon, G.S. (2011). Paradoxes of leading innovative endeavors: Summary, solutions, and future directions. *Psychology of Aesthetics, creativity, and the arts*, 5(1), p.54.
- Humphrey, R. H. (Ed.). (2008). *Affect and emotion: New directions in management, theory and research*. USA: Information Age Publishing.
- Hurtz, G. M., & Donovan, J. J. (2000). Personality and job performance: The Big Five revisited. *Journal of Applied Psychology*, 85, 869–879.
- Jansen, J.J.P., Vera, D., & Crossan, M. (2009). Strategic leadership for exploration and exploitation: The moderating role of environmental dynamism. *Leadership Quarterly*, 20, 5–18.
- Judge, T.A., Bono, J.E., Ilies, R., & Gerhardt, M. (2002). Personality and leadership: A qualitative and quantitative review. *Journal of Applied Psychology*, 87(4), 765–780.
- Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2002). Discriminant and incremental validity of four personality traits: Are measures of self-esteem, neuroticism, locus of control, and generalized self-efficacy indicators of a common core construct? *Journal of Personality and Social Psychology*, 83, 693–710.
- Judge, T. A., Ilies, R., & Colbert, A. E. (2004). Intelligence and leadership: A quantitative review and test of theoretical propositions. *Journal of Applied Psychology*, 89, 542–552.
- Judge, T. A., & LePine, J. A. (2007). The bright and dark sides of personality: Implications for personnel selection in individual and team contexts. In J. Langan-Fox, C. Cooper, & R. Klimoski (Eds.), *Research companion to the dysfunctional workplace: Management challenges and symptoms* (pp. 332–355). Cheltenham, UK: Edward Elgar Publishing.
- Judge, T. A., Piccolo, R. F., & Kosalka, T. (2009). The bright and dark sides of leader traits, A review and theoretical extension of the leader trait paradigm. *The Leadership Quarterly*, 20(6), 855–875.
- Judge, T. A., Piccolo, R. F., & Kosalka, T. (2009). The bright and dark sides of leader traits: A review and theoretical extension of the leader trait paradigm. *The Leadership Quarterly*, 20(6), 855–875.
- Kaiser, R. B., & Hogan, R. (2007). The dark side of discretion. In R. Hooijberg, J. Hunt, J. Antonakis, K. Boal, & N. Lane (Eds.), *Being there even when you are not: Leading through strategy, systems and structures* (Vol. 4, pp. 177–197). London: Elsevier Science.

- Kaiser, R. B., & Hogan, J. (2011). Personality, leader behavior, and overdoing it. *Consulting Psychology Journal: Practice and Research*, 63, 219–242.
- Kaiser, R. B., & Overfield, D. V. (2011). Strengths, strengths overused, and lopsided leadership. *Consulting Psychology Journal: Practice and Research*, 63, 89–109.
- Keller, R. T. (2006). Transformational leadership, initiating structure, and substitutes for leadership: A longitudinal study of research and development project team performance. *Journal of Applied Psychology*, 91(1), 202–210.
- Kenrick, D.T., & Funder, D.C. (1988). Profiting from controversy: Lessons from the person-situation debate. *American Psychologist*, 43(1), 23–34.
- Kollmann, T., & Stöckmann, C. (2014). Filling the Entrepreneurial Orientation Performance Gap: the Mediating Effects of Exploratory and Exploitative Innovations. *Entrepreneurship: Theory & Practice*. 38(5), 1001-1026.
- Kouzes, J. M., & Posner, B. Z. (2003). *Credibility: How leaders gain and lose it, why people demand it*. San Francisco, CA: John Wiley & Sons, Inc.
- Kutner, M. H., C. Nachtsheim, and J. Neter (2004). *Applied linear regression models* (4th ed.). Boston: McGraw-Hill Irwin, Inc.
- Ladkin, D., & Taylor, S. S. (2009). Enacting the ‘true self’: Towards a theory of embodied authentic leadership. *The Leadership Quarterly*, 2, 64–74.
- Lee, J. (2008). Effects of leadership and leader-member exchange on innovativeness. *Journal of Managerial Psychology*, 23(6), 670–687.
- Leitch, C. M., C. McMullan, and R. T. Harrison (2013). “The Development of Entrepreneurial Leadership: The Role of Human, Social and Institutional Capital,” *British Journal of Management* 24(3), 347–366.
- LePine, J. A., Colquitt, J. A., & Erez, A. (2000). Adaptability to changing task contexts: Effects of general cognitive ability, conscientiousness, and openness to experience. *Personnel Psychology*, 53, 563–593.
- Lewis, M. W., Welsh, M. A., Dehler, G., & Green, S. G. (2002). Product development tensions: Exploring contrasting styles of project management. *Academy of Management Journal*, 45(3), 546–564.
- Lin, Hsing-Er & F. McDonough III, Edward. (2011). Investigating the Role of Leadership and Organizational Culture in Fostering Innovation Ambidexterity. *IEEE Transactions on Engineering Management - IEEE TRANS ENG MANAGE*. 58. 497-509.
- Lin, H. E., McDonough, E. F., Yang, J., & Wang, C. (2017). Aligning Knowledge Assets for Exploitation, Exploration, and Ambidexterity: A Study of Companies in High-Tech Parks in China. *Journal of Product Innovation Management*, 34(2), 122-140.

- Locke, E.A. (2005). Why emotional intelligence is an invalid concept. *Journal of organizational behavior*, 26(4), 1099-1379.
- Luthans, F., and C. M. Youssef (2007). "Emerging Positive Organizational Behavior," *Journal of Management* 33(3), 321-349.
- Makri, M., & Scandura, T. A. (2010). Exploring the effects of creative CEO leadership on innovation in high-technology firms. *Leadership Quarterly*, 21(1), 75-88.
- Mann, R. D. (1959). A review of the relationship between personality and performance in small groups. *Psychological Bulletin*, 56, 241-270.
- Marcati, A., Guido, G. and Peluso, A. (2008). The role of SME entrepreneurs' innovativeness and personality in the adoption of innovations. *Research Policy*, 37(9), pp.1579-1590.
- March, J.G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2, 71-87.
- Mayer, J. D., Caruso, D. R., & Salovey, P. (2000). Emotional intelligence meets traditional standards for an intelligence. *Intelligence*, 27, 267-298.
- Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. J. Sluyter (Eds.), *Emotional development and emotional intelligence*, 3-31. New York: Basic Books.
- Mayer, J.D., & Stevens, A. (1994). An emerging understanding of the reflective (meta) experience of mood. *Journal of Research in Personality*, 28, 351-373.
- McCrae, R. R. (1996). Social consequences of experiential openness. *Psychological Bulletin*, 120, 323-337.
- McCrae, R. R., & Costa Jr, P. T. (1997). Personality trait structure as a human universal. *American psychologist*, 52(5), 509.
- Mintzberg, H., Raisinghani, D. and Théorêt, A. (1976) The structure of "unstructured" decision processes. *Administrative Science Quarterly*, 21, 246 - 275.
- Moss, S. A., & Ritossa, D. A. (2007). The impact of goal orientation on the association between leadership style and follower performance, creativity and work attitudes. *Leadership*, 3(4), 433-456.
- Mumford, M. D., & Licuanan, B. (2004). Leading for innovation: Conclusions, issues, and directions. *The Leadership Quarterly*, 15(1), 163-171.
- Mumford, M.D., Scott, G.M., Gaddis, B. and Strange, J.M. (2002). Leading creative people: Orchestrating expertise and relationships. *The Leadership Quarterly*, 13(6), 705-750.

- Nadler, D. A. and M. L. Tushman (1989). "Organisational Frame Bending: Principles for Managing Reorientation." *Academy of Management Executive* 3(3): 194-204.
- Northouse, P. G. (1997). *Leadership: Theory and practice*. Thousand Oaks, CA: Sage.
- Northouse, P.G. (2012). *Leadership: Theory and Practice*. SAGE.
- Oke, A., Munshi, N., Walumbwa F.O. The influence of leadership on innovation processes and activities. *Organizational Dynamics*, 38 (1) (2009), 64-72.
- Oldham, G. R., & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy of Management Journal*, 39(3), 607-634.
- O'Reilly, C. A., & Tushman, M. L. (2004). The ambidextrous organization. *Harvard Business Review*, 82(4), 74-81.
- O'Reilly C. A., & Tushman, M. L. (2007). Ambidexterity as a dynamic capability: resolving the innovator's dilemma. (March 2007).
- Paulus, P. B. (2002). Different ponds for different fish: A contrasting perspective on team innovation. *Applied Psychology: An International Review*, 51: 394-399.
- Podsakoff, P.M., MacKenzie, S.B., Jeong-Yeon, L., & Podsakoff, N.P. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *Journal of Applied Psychology*, 88(5): 879-903.
- Rajah, R., Song, Z., & Arvey, R. D. (2011). Emotionality and leadership: Taking stock of the past decade of research. *The Leadership Quarterly*, 22(6), 1107-1119.
- Raisch, S. and Birkinshaw, J. (2008). Organizational ambidexterity: Antecedents, outcomes, and moderators. *Journal of management*. 34 (3), 375-405.
- Riggio, R. E. (2010). Before Emotional Intelligence: Research on Nonverbal, Emotional, and Social Competences. *Industrial and Organizational Psychology*, 3: 178-182.
- Riggio, R. E., & Reichard, R. J. (2008). The emotional and social intelligences of effective leadership: An emotional and social skill approach. *Journal of Managerial Psychology*, 23, 169-185.
- Roberts, B. W. (2006). Personality development and organizational behavior. In B. M. Staw (Ed.), *Research on organizational behavior* (pp. 1-41). Elsevier Science/JAI Press.
- Rosing, K., Frese, M., & Bausch, A. (2011). Explaining the heterogeneity of the leadership-innovation relationship: Ambidextrous leadership. *Leadership Quarterly*, 22, 956-974.
- Rosing, K., & Zacher, H. (2016): Individual ambidexterity: The duality of exploration and exploitation and its relationship with innovative performance, *European Journal of Work and Organizational Psychology*.

- Salovey, P., & Grewal, D. (2005). The science of emotional intelligence. *Current Directions in Psychological Science*, 14, 281–285.
- Salovey, p., & Mayer (1990). Emotional Intelligence. *Imagination, Cognition, and Personality*, 9, 185-211.
- Shankman, M. L., & Allen, S. J. (2008). Emotionally intelligent leadership: A guide for college students. San Francisco, CA: Jossey-Bass.
- Senge, P. et. al. (1994). *The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization*.
- Stogdill, R. M. (1948). Personal factors associated with leadership: A survey of the literature. *Journal of Psychology*, 25, 35–71.
- Van Rooy, D., & Viswesvaran, C. (2004). Emotional intelligence: A meta-analytic investigation of predictive validity and nomological net. *Journal of Vocational Behavior*, 65, 71–95.
- Vera, D., & Crossan, M. (2004) 'Strategic leadership and organizational learning', *Academy of Management Review*, 29: 222-240.
- Weiss, H. M., & Cropanzano, R. (1996). In R. I. Sutton & B. M. Staw (Eds.), *Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. Research in Organizational Behavior*, vol. 18. (pp. 1–74) Greenwich, CT: JAI Press.
- West, M. A. (2002). Sparkling fountains or stagnant ponds: An integrative model of creativity and innovation implementation in work groups. *Applied Psychology: An International Review*, 51(3), 355–387.
- Williams, S. D. (2004). Personality, attitude, and leader influences on divergent thinking and creativity in organizations. *European Journal of Innovation Management*, 7(3), 187–204.
- Wong, C. S., & Law, K. S. (2002). The effects of leader and follower emotional intelligence on performance and attitude: An exploratory study. *The Leadership Quarterly*, 13(3), 243–274.
- Xu, L., Fu, P., Xi, Y., Zhang, L., Zhao, X., Cao, C., Liao, Y. Li, G., Xue, X., Ge, J. (2014). Adding dynamics to a static theory: How leader traits evolve and how they are expressed. *The Leadership Quarterly*, 2014, 25(6): 1095–1119.
- Yukl, G. (2008). *Leadership in Organizations*. Upper Saddle River, NJ: Prentice Hall.
- Yukl, G. (2009). Leading organizational learning: Reflections on theory and research. *The Leadership Quarterly*, 20(1), pp. 49–53.
- Yukl, G. (2010). *Leadership in organizations* (7th ed.). Prentice Hall.

- Yukl, G., & Lepsinger, R. (2004). *Flexible leadership: Creating value by balancing multiple challenges and choices*. San Francisco: Jossey-Bass.
- Yukl, G. & Mahsud, R. (2010). Why flexible and adaptive leadership is essential. *Consulting Psychology Journal: Practice and Research*. 62 (2), 81-93.
- Yukl, G., & Van Fleet, D.D. (1992). Theory and research on leadership in organizations. In M.D. Dunnette, & L.M. Hough (Eds.), *Handbook of industrial and organizational psychology*, Vol. 3. (pp. 147-197). Palo Alto, CA: Consulting Psychologists Press.
- Zaccaro, S. J. (2001). The nature of executive leadership: A conceptual and empirical analysis of success. Washington, DC: American Psychological Association.
- Zaccaro, S.J. (2007). Trait-based perspectives of leadership. *American Psychologist*, 62(1), 6-16.
- Zaccaro, S. J., Foti, R. J., & Kenny, D. A. (1991). Self-monitoring and trait-based variance in leadership: An investigation of leader flexibility across multiple group situations. *Journal of Applied Psychology*, 76, 308-315.
- Zaccaro, S. J., Kemp, C., & Bader, P. (2004). Leader traits and attributes. In J. Antonakis, A. T. Cianciolo, & R. J. Sternberg (Eds.), *Nature of leadership*. Thousand Oaks: Sage Publications.
- Zacher, H., Robinson, A.J. and Rosing, K. (2014). Ambidextrous Leadership and Employees' Self-Reported Innovative Performance: The Role of Exploration and Exploitation Behaviors. *The Journal of Creative Behavior*.
- Zacher, H. and Rosing, K. (2015). Ambidextrous leadership and team innovation. *Leadership & Organization Development Journal*, 36(1), pp.54-68.
- Zacher, H. and Wilden, R.G., (2014). A daily diary study on ambidextrous leadership and self-reported employee innovation. *Journal of occupational and organizational psychology*, 87(4), pp.813-820.
- Zhou, J., & George, J. M. (2003). *Awakening employee creativity: The role of leader emotional intelligence*. *Leadership Quarterly*, 14(4-5), 545-568.

CHAPTER 4

Paper 3

GENDER ROLE IDENTITY AND AMBIDEXTROUS LEADERSHIP BEHAVIOR IN FEMALE ENTREPRENEURS: A QUALITATIVE STUDY

1.1 Introduction

Changes in organization's economic, demographic, technological and cultural environments have necessitated alternative perspectives to leadership and management that suggests that traditional leadership and management concepts are less effective (Eagly and Carli, 2003). In the past and even to some extent today, the ideal leader was perceived as possessing stereotypical masculine qualities (agentic traits) such as independence, dominance, rationality and confidence (Schein, 1973). Stereotypical female qualities (Communal traits) such as nurturing and compassionate were considered as less valuable and contradictory to success in leadership positions, thus forcing women to deal with the notion of perceived incongruity between their gender role and leader role (Eagly and Karau, 2002; Powell and Graves, 2003).

A growing trend in literature asserts that leadership and management is becoming more feminine (Duehr and Bono, 2006; McDowell, 1997). Several observations have been made that although masculine traits are considered as prevalent for leadership, organisational goals cannot be achieved exclusively by either masculine traits or feminine traits (Eagly and Karau, 1991). Many authors argue that in order to succeed in today's dynamic organization, there is a need to demonstrate not only agentic traits but also communal traits that support openness, collaboration, interpersonal sensitivity, and investment in employees development programmes (Eagle and Carli, 2003; Fletcher, 2004).

Therefore, a growing number of organizational scholars have highlighted the importance of integrating leadership behaviors and capabilities previously conceived to be incongruous or less valuable (Park, 1997; Rosing, Frese and Bausch, 2011). Rather than a polarization of masculine (agentic) and feminine (communal) traits, there is a call for contemporary models of leadership to give more value to communal characteristics hitherto stereotyped as feminine behaviors and embrace an androgynous outlook— the integration of both communal (feminine) and agentic (masculine) traits for leadership (Koenig, Eagly, Mitchell and Ristikari, 2011; Park, 1997). Apart from giving more flexibility and advantage to leaders (Hall, Workman

and Marchioro, 1998), this competence is reported to guarantee maximum and effective utilisation of organisational resources in order to remain competitive in the face of changing customer demands, new technology and globalisation (Waldman and Bowen, 2016). Furthermore, a shift towards androgynous leadership perspectives may mitigate the role incongruity challenge faced by female leaders including the paradox of fulfilling the leadership role requirements by demonstrating agentic behaviors and meeting expectations of gender role by behaving in a communal manner (Kark and Carli, 2010). A meta-analytical study reveals evidence for increasing androgyny of the leader stereotype over the last four decades (Koenig et al., 2011).

One of these contemporary concepts of leadership with an androgynous outlook is ambidextrous leadership, which consists of opening and closing leadership behaviors that are related to communal and agentic gender roles respectively. Opening leadership behaviors include communal-type behaviors such as risk allowance, error learning, risk motivation, job autonomy and variance in task accomplishment. On the other hand, closing leadership behaviors include agentic-type behaviors such as error sanctioning, controlling adherence to rules, controlling goal attainment, sticking to standard plans and establishing routines (Rosing et al., 2011; Bledow Frese and Müller).

Opening and closing leadership behaviors are to be strategically geared towards increasing and decreasing variation in employee behaviors as may be required for performance. To the best of the researcher's knowledge, no research scholar has examined ambidextrous leadership behaviors among female entrepreneurs and this presents wide gaps in the female entrepreneurship and leadership literature. In the UK, female entrepreneurs have become central to economy as women are increasingly becoming active participants in the labour force and creating more businesses (Minniti and Naude, 2010). Between 2002 and 2015, women set up almost 1.2million businesses in the UK (Labour Force Survey, Office of National Statistics 2016). In 2015, female entrepreneurs contributed £3.15 billion to the overall UK economy. At present, female businesses account for a third of all private businesses in the UK (Jones, 2017). OECD

report in 2003 particularly noted that women have great potentials for innovation and entrepreneurial talent.

However, despite the recognition given to female entrepreneurs for their contribution to the economy, many talents remain unrealised based on several factors including gender related barriers (Coleman and Robb, 2012; Marlow and Carter, 2006). Yet, research efforts to support growth and leadership development of this sector remains limited as very little research has focused on female entrepreneurs as a research group and very few research efforts exist on understanding leadership in the context of female entrepreneurship (Bamiatzi, Jones, Mitchelmore and Nikolopoulos, 2015). In the absence of ample studies on females as a research group, there is an assumption that this group is homogeneous as the literature is lacking on dynamics of gendered complexities and differing approaches to leadership among female entrepreneurs (Stempel, Rigotti and Mohr, 2015).

Given that entrepreneurship is considered a male type (agentic) career (Gupta, Goktan and Gunay, 2014), it is vital to investigate the dynamics of ambidextrous leadership in the context of female entrepreneurs with particular interest in the plausibility of female entrepreneurs demonstrating leadership behaviors that align with prescriptive and descriptive gender roles (Rudman and Glick, 2001). Considerations for the above leads us to the motivating question of this paper: Do gender roles influence female business owner's demonstration of ambidextrous leadership? In what way, and to what extent? Given the underexplored nature of our question, we adopted an exploratory, qualitative approach guided by *a priori* themes.

This exploratory study offers several contributions and implications for the female entrepreneurial leadership literature. The study stimulates the discussion of ambidextrous leadership among female leaders in two ways. Firstly, using qualitative method, the study provides insights that allow us have fuller understanding of plausible gendered processes involved in demonstrating ambidextrous leadership behaviors among female entrepreneurs, one which does not seek to compare with men groups, but gain deeper understanding of the females as an explicit research group.

Secondly, by exploring leader's own perception of their leadership behaviors, the study provides insights into female leaders' implicit beliefs about their gender roles and leadership roles. Additionally, the study explores how these beliefs may be associated to their leadership behaviors in relation to ambidextrous leadership. This is particularly pertinent because while several studies have evaluated other's perception of leaders and recommended a need for reorientation of beliefs to reduce bias against female leaders, not very many studies have focused on how female leader's own self-perceptions could influence actual leadership behaviors (Brush, Edelman, Manolova and Welter, 2018).

Thirdly, this study extends the concept of ambidextrous leadership to low-tech performing business settings as this could help to advance knowledge about ambidextrous leadership theory and practice. Overall, the study reveals the participant's own interpretation of their leadership experiences and circumstances in their businesses, thus contributing hard data to the diminutive proportion of studies available on ambidextrous leadership in the area, from which theoretical and policy implications can be drawn. As stated by OECD report (2016) it is evident that scholarly undertakings are required to nurture the potentials and support the activities of female business owners as well as strengthen women's position as entrepreneurs and leaders.

In this paper, the terms leader and entrepreneurs are used interchangeably. Although a distinction between both constructs may be useful in some contexts, it was not necessary to do that in the present paper particularly as the study draws on leadership theory and explores this on a sample of female entrepreneurs.

Furthermore, in this paper the term sex is used to denote grouping of people into male and female categories. Similarly, the terms feminine/communal and masculine/agentive are used interchangeably to refer to the meanings that societies and individuals ascribe to female and male categories. However, consonant with Kark and Waisel-Manor, (2005), the researcher understands that these concepts are not fixed constructs that portray daily reality, but are socially constructed stereotypical assumptions about gender and are dynamic and can change over time.

The structure of this paper is as follows: first, the background to the study is presented followed by the research methodology. The analysis of the data is described next, followed by a presentation of the research findings. Finally, the findings are discussed, their theoretical contributions and practical/policy implications are highlighted, and suggestions for further research are provided.

2.1 Background to the study

2.1.1 Social roles and Gender roles

Gender roles are grounded in social roles and they are consensual beliefs about the attributes of men and women—describing qualities or behaviors believed to be appropriate for each sex in certain social positions or members of a particular social group (Biddle, 1979; Eagly, 1987). More than race and age, sex provides a strong basis for categorization (Stangor, Lynch, Duan and Glass, 1992), and social perceivers in a social group automatically activate stereotypes about men and women (Blair & Banaji, 1996). These set of beliefs encompass descriptive *norms* about what men and women do, as well as *injunctive norms* about how men and women ought to behave (Cialdini and Trost, 1998; Heilman, 2001). According to the social role theory, perceivers assume that the type of actions people engage in are influenced by their inner dispositions. Thus, gender stereotypes are labels from the activities that men and women commonly engage in linked to the personal qualities that are required to perform those activities (Eagly, Wood & Diekmann, 2000).

Social role theory proposes that beliefs about sexes pertains largely to two attributes: *communal* traits and *agentic* traits (Eagly, 1987). Communal traits (the traits of submission) are strongly credited to women and these set of traits describe a nurturing attitude and concern about the wellbeing of others such as being gentle, sympathetic, affectionate, kind and helpful. On the other hand, agentic traits are commonly attributed to men and these traits contain two components- *competence* and *dominance*- and includes behaviors such as being competitive, aggressive, overconfident, forceful, controlling and assertive (Eagly and Karau, 2002; Williams and Best, 1990).

Observations of people in sex-typical social roles lead to the conclusion that men have the higher status role and occupy the position of breadwinner while women have the

lower status role and occupy the position of the homemaker (Eagly et al., 2000). Beliefs about gender roles are pervasive but could have stronger or lesser hold in different societies (Eagly and Karau, 2002). Also, in each social group, there are sanctions against antithetical gender role behaviors and females are more likely than males to be sanctioned for demonstrating gender role-defying behaviors (Eagly and Karau, 2002; Rudman and Glick, 2001).

2.1.2 Leadership and gender roles

Researchers have consistently reported that in work related settings, gender stereotypes tend to work to the disadvantage of women (Carli and Eagly, 1999) especially in relation to paid work hours, occupational decisions, months of full-time employment and opportunity for leadership positions (Corrigall and Konrad, 2007; Marlow and McAdam, 2013; Yang and Aldrich, 2014).

Traditional view of leadership and gender roles emphasize masculine characteristics and agentic attributes as requisites for potentially attaining leadership positions and performing successfully in leadership roles (Powell and Butterfield, 1979). This view characterises females as possessing greater communal traits such as nurturing, kind, affectionate and gentle, and lesser agentic traits including competitive, confident, self-sufficient and willingness to take risks, and men as having lesser communal traits and greater agentic traits which are considered as crucial leadership qualities (Eagly et al., 2000; Koenig et al. 2011). In all sectors of the society – military, religious, corporate, political and others, leadership has principally been a male prerogative and till present leadership qualities are described using mostly agentic/masculine terms.

Now in the corporate world, women are increasingly gaining access to middle-level leadership positions but access to higher level leadership positions remains difficult. The metaphor “glass ceiling” has been used repeatedly to explain this phenomenon of bias preventing women from reaching top-level leadership positions in the corporate world (Morrison, White and Van Velsor, 1987).

Although, women are becoming more active in the labour force and attaining higher levels of leadership position, it is not simply the case, however, that women are perceived as having both agentic and communal traits—being androgynous. Spence

and Buckner's (2000) data show that changes over the past 20 years in self-perceptions of women's agency have occurred mainly for specific traits (e.g., self-reliant, individualistic, and ambitious) that can be characterized as reflecting agentic competence. By contrast, women continue to rate themselves as lower than men on the agentic traits of competitiveness, decisiveness, aggressiveness, and forcefulness, which can be characterized as reflecting social dominance. The authors conclude that whereas women are now "encouraged to become more self-assertive . . . to face life's challenges rather than being helpless and dependent," they are still "discouraged from advancing their interests at the expense of others or from activities that threaten . . . the well-being of others" (p. 49). While sanctions for female competence may now be softened (Hacker, 1951; Spence and Helmreich, 1972), women are still not allowed to exhibit social dominance, which conflicts with the prescription to be communal. As a result, backlash against agentic women is less likely to be due to perceptions of their competence but more that such women are dominative (and therefore not communally oriented as they should be).

Women, then, remain in a bind. Any attempt to conform to their gender role could result to failure in meeting the requirements for their leadership role, while at the same time; female leader's attempt to conform to their leadership role could result in violation of their gender roles and unfavourable evaluations from people who endorse such gender roles (Eagly and Karau, 2002). Furthermore, engaging in agentic behaviors may allow them to overcome descriptive stereotypes of lesser competence (Rudman, 1998), but demonstrating dominative agentic traits, such as being forceful, directive, and competitive, are incompatible with a prescribed communal orientation.

This perceived disconnection between inherent female gender roles and leadership expectations is captured by the role congruity theory. Role congruity theory describes congruity between social roles and leadership roles specifying factors that influence the perceptions of congruity as well as the consequences for prejudice (Eagly and Karau, 2002). In their proposition of role congruity theory of prejudice towards female leaders, Eagly and Karau (2002) posit that there are two forms of prejudice towards female leaders. The first prejudice centres on evaluation of women as less favourable

than men in potentially occupying leadership positions because beliefs about leadership are more synonymous with masculine/agentic traits. In other words, communal traits, which are predominant in women, are not perceived as essential for leadership roles like agentic traits. The second form of prejudice towards female leaders is the hostile evaluation of female leaders as they are believed to be non-conformists and demonstrating behaviors that are unbecoming of a woman. Furthermore, the greater the inconsistency between the female gender roles and the leadership role, the greater the perception that females are less qualified for such leadership roles (Eagly and Karau, 2002).

For the reason that stereotypes are convenient to use in making categorizations, they have become an enduring phenomenon in different cultures (Fiske, 1998). In fact, it is generally assumed that it is easier for a person to maintain a stereotype than to change it (Hilton and von Hippel, 1996). Evidence abounds that men and women alike tend to describe successful leaders and managers in masculine terms (Powell and Butterfield, 1979; Schein, Mueller, Lituchy and Liu, 1996). On the contrary, women who were described as “successful” leaders were also regarded as less rational, hostile, devious, selfish and bitter (Heilman, Block and Martell, 1995). Therefore, to avoid negative evaluations, female leaders may be inclined to demonstrate leadership behaviors that align with feminine roles (Rudman and Glick, 2001). Indeed, there appears to be some unwillingness to violate gender role behavior among some women. For example, some researchers have reported that women who described themselves as feminists or being inclined to agentic traits often feel the need to clarify what they mean in order to avoid negative views (Roy and Weibust, 2007; Abowitz, 2008).

Women are also reported to be underrepresented and less effective than men in leadership in fields that are masculine or male dominated (Bowen, Swim, and Jacobs, 2000; Eagly, 2007). Women in highly masculine domains often have to contend with expectations and criticisms that they lack the toughness and competitiveness needed to succeed (Silvestri, 2003). Consistent with these results, it has been observed that the underrepresentation of women in certain sectors is related to the field of study as

many women tend to obtain their degree in humanities and health than STEM fields of study – Science, Technology, Engineering and Mathematics. Hence, there is a low representation of women in certain sectors such as engineering, manufacturing and construction while in other sectors such as education, health and public administration, female leaders are usually well represented. In fact, in the UK female leadership in such sectors account for about 43% (Briefing paper, House of Commons Library, 2016).

Therefore, it is not uncommon to find that women are likely to create businesses in fields that are considered less masculine (Eagly, 2007). For example, research suggests that while men may be more inclined to be involved in commercial entrepreneurship, women are expected to be more inclined to social entrepreneurship as this conforms to their gender roles respectively (Hechavarria and Ingram, 2016). It is also the case that female entrepreneurs often feel the need to hire human capital to complement their deficiencies in regards to certain aspects of their business (Bamiatzi et al., 2015).

2.1.3 Female Entrepreneurs as Leaders

There has been mixed evidence about the relative leadership styles and leadership effectiveness of men and women (Butterfield and Grinnell, 1999; Eagly, 2007; Eagly, Karau and Makhijani, 1995). Some authors construe men and women as quite different in the ways that they lead, with men relying on a somewhat antiquated leadership style that does not fit the needs of most contemporary organizations. Indeed, it has been suggested that the leadership style adopted by women are more suitable for the contemporary nature of today's work conditions (Eagly and Carli, 2003).

Hechavarria and Ingram (2016) demonstrated that women leaders prefer to be associated with leading with communal traits than agentic traits. Similarly, Rosener (1995) labelled women's leadership as interactive, involving collaboration and empowerment of employees, and men's leadership as command-and-control, involving the assertion of authority and the accumulation of power.

A meta-analysis by Eagly et al. (2003) suggests that women are likely to favour leadership styles such as transformational leadership as this tends to be effective and consistent with the female gender role. Eagly et al. (2003) reported in their meta-

analysis that women leaders used transformational leadership style and contingent reward more than men while men used more laissez-faire and management-by-exception strategies more than women. Eagly and Karau (2002) suggest that women might particularly prefer to use transformational leadership style because this behavior is considered more congruent with their female gender role, thus role congruity can be mitigated (Alimo-Metcalfe, 1995). Indeed, the sub-facets of transformational leadership including *intellectual stimulation*, *individualised consideration* and *idealised influence* encompass behaviors that emphasize communal traits such as common purpose, care and participation.

Similarly, Bamiatzi et al. (2015) found that female entrepreneurs showed great interest in the well-being and personal development of their staff as well as making efforts to create a conducive environment of trust, faith and respect. These female leaders also focused on developing a culture that supported creative thinking and innovation.

However, the stereotype of the entrepreneur whether male or female is perceived to be agentic in many settings (Brush et al., 2018). In contrast to general belief that females are more participative and communal in their leadership style, Bamiatzi et al. (2015) demonstrated that female entrepreneurs were autocratic in their leadership style and unwilling to release control of their firms. This pattern of behavior was observed particularly in relation to making strategic decisions. This suggests that the profile of female entrepreneurs may significantly differ from those of other females in other work or business contexts. Therefore, the perception of homogeneity within this group should be challenged.

Additionally, female leaders were also rated highly on *inspirational motivation* (Eagly et al., 2003) which is the only facet of transformational leadership that embraces agentic characteristics with its orientation on goals and performance (Vinkenbureg, Van Engen, Eagly and Johannesen-Schmidt, 2011). Furthermore, other studies indicate that in comparison to other females, female entrepreneurs appear to be firmer and may be more likely to defy the assumptions of female stereotypes of leadership (Ahl, 2006). Thus, for female entrepreneurs, a negative bias could exist for demonstrating

agentic behaviors and/or for acting in contrast to the expected gendered stereotype behavior (Balachandra, Briggs, Eddleston, and Brush, 2017; Rudman and Glick, 2001).

2.1.4 Ambidextrous leadership: A proposition for androgynous leaders?

Leadership has been defined in many ways. Most definitions of leadership suggest that leadership is a process of influence where by a leader intentionally exerts influence over followers (Northouse, 2010; Yukl, 1981). Some researchers place great emphasis on basic leader characteristics/traits (Blake and Mouton 1964; Bowers and seashore, 1966). Studies about how gender roles influence leadership styles are part of this classification.

The concept of leadership has undergone considerable changes with new challenges in working life demanding new requirements in terms of leadership. A number of organizational scholars (e.g., Grant, 1988; Helgesen, 1990; Loden, 1985; Rosener, 1990, 1995) have argued that organizations need to place greater emphasis on feminine characteristics associated with women leaders (e.g., caring, compassionate, understanding, collaborative) to be successful in an increasingly diverse and competitive economic environment. For this reason, contemporary views of what constitutes “good leadership” now involve not only masculine/agentic traits, but also communal traits/female characteristics such as empowering, supporting and engaging workers in a healthy work context (Hammer and Champy, 1994; Goleman, Boyatzis and McKee, 2002).

Furthermore, there is increased consideration for the influence of situational variability in leadership (Yukl and Mahshud, 2010). For example, given that leaders' effectiveness depends on contexts (Bledow, Frese and Müller, 2011), it is reasonable to expect that stereotypically feminine qualities of cooperation, mentoring, and collaboration are important to leadership, certainly in some contexts and perhaps increasingly in contemporary organizations (Eagly and Carli, 2003).

New standards regarding agentic and communal leadership traits have also developed (Koenig et al., 2011). Bem (1974, 1975) directly challenged the traditional assumptions and beliefs that males were supposed to be masculine, females were supposed to be feminine, and anyone who fell in the middle or at the “wrong” end of the scale was maladjusted and in need of help (Broverman, Vogel, Broverman, Clarkson and Rosenkrantz, 1972). Bem argued that masculinity and femininity should be regarded as independent dimensions rather than as opposite ends of the same dimension and that the concept of androgyny, defined as a high propensity toward both feminine and masculine characteristics, offered a more appropriate standard for both sexes than did the traditional standard for each sex. An association between androgyny and more effective leadership behavior has been observed in a variety of settings (e.g., Bem, 1975; Bem and Lenney, 1976; Spence, Helmreich and Stapp, 1975). Furthermore, Powell, Butterfield and Parent (2002) argue that leadership and managerial roles should not be perceived as a sex-based occupation especially because the statistics of male and female leadership have changed over the years. In addition, social-cultural values are changing and there are government legislations about sex discrimination in workplaces (Park, 1997). According to Eagly and Karau (2002), the evaluation of women as less qualified for leadership positions can reduce or even disappear based on the extent to which leadership roles become androgynous such that emphasis are placed not only on agentic traits but also on communal traits.

Indeed, organizational scholars have suggested new leadership perspectives that endorse communal traits in leadership roles. For example, a crucial dimension of transformational leadership—*individualised consideration* stresses the need for leaders to act as supporters and advisers to their employees (Bass, 1990). Likewise, authentic leadership theory advocates the need for leaders to be true with their feelings, genuine in their dealings, selfless, flexible and fair (Avolio and Gardner, 2005). These leadership theories which have androgynous leadership outlook further emphasize participatory decision-making, team-based leadership, democratic relationships and these factors have been found to foster organizational effectiveness (Garvin, 1993; Senge, 1990).

The general premise of leadership behaviors with androgynous outlook suggests that androgynous leaders will have a wider choice of possible reactions for any situation and be able to select the most appropriate leadership behavior in each case (Kark, Waisel-Manor and Shamir, 2012). Consequently, androgynous leaders are expected to have greater success in their leadership endeavours than other leaders (Park, 1997). This type of leadership also suggests the need for leadership flexibility to change behaviors in appropriate ways as the situation changes (Yukl and Mahsud, 2010). As situational theorists of leadership contend (Ayman, 2004), the appropriateness of particular types of leader behaviors depends on the context with considerations for features such as societal values, the culture of organizations, the nature of the task, and the characteristics of followers.

Ambidextrous leadership is one of the leadership styles with an androgynous stance. Capturing the communal traits, opening leadership behaviors (OLB) sets out to increase variance in employee behaviors by “giving room for the ideas of others”, “encouraging error learning” and “encouraging experimentation”. This set of leadership support tends to inspire exploration undertakings and creative endeavours in employees. On the other hand and more closely related to agentic traits, closing leadership behaviors (CLB) decreases variance in employee behaviors by “punishing errors”, “monitoring goals attainment closely” and “setting strict routines” thereby encouraging employees to be exploitative by intensifying efforts on refining and developing existing knowledge of the organisation (Rosing et al., 2011). It is therefore the task of a leader to assess the situation and decide which leadership behavior to demonstrate and to switch between both leadership behavior as necessary. This interaction between both leadership behaviors is assumed to foster improved performance in employees’ behaviors in relation to exploration and exploitation activities (Rosing et al., 2011).

Indeed, results from empirical studies on ambidextrous leadership show that leaders who are able to situationally vary their leadership behaviors between opening and closing leadership behaviors were successful in increasing their employee’s

explorative and exploitative behaviors (Zacher, Robinson and Rosing, 2014; Zacher and Rosing 2015; Zacher and Wilden, 2014).

Acknowledging the huge role of female entrepreneurs, we focus on how this group demonstrate ambidextrous leadership behaviors and how this may be linked to their gender role identities.

3.1 Method

This study was done using a qualitative method to collect data. One of the many strengths of qualitative research is that it facilitates the understanding of meanings, patterns, and relationships between variables (Anderson, 2009). We conducted semi-structured interviews with 14 female entrepreneurs. The interview participants were recruited through the ION Leadership Programme, Bangor Business School. The ION leadership programme is sponsored by the European Social Fund and its objective is to raise skills and improve productivity and turnover in small and medium sized enterprises (SMEs) as well as in larger companies. The course runs within a six months period and includes 9 days of classroom interactions. Included in the teaching curriculum are: effective leadership and motivation, culture and values, performance management and leading change.

E-mails were sent by the project coordinator to a total of 50 female entrepreneurs who have graduated and/or current students on the course, inviting the female entrepreneurs to participate in the research. A total of 14 female entrepreneurs agreed to be interviewed for the research. The other female entrepreneurs were mostly unable to fit the interview into their busy work schedules.

The female entrepreneurs were engaged in different businesses including Educational services (3), Healthcare Services (2), Goods distribution (2), Food manufacturing (2), Social services, Legal practice, Business Consulting, IT services, and Events planning.

Verbal consent was obtained from the participants at the start of the interview regarding voluntary participation, permission to record the interviews, confidentiality, and freedom to pull out at any time.

All interviews lasted between 20 to 50 minutes with an average of 35 minutes. The interview questions included both close-ended and open-ended questions which allowed the respondents to provide more detailed responses about their leadership experiences. Where necessary, the researcher asked follow-up questions to prompt or probe for further details.

Consistent with our research question, we sought answers to the following questions:

- ❖ How do female entrepreneurs describe their engagement with communal and agentic traits at work?
- ❖ How do female entrepreneurs describe their demonstration of opening leadership behaviors and closing leadership behaviors at work?
- ❖ What gender specific challenges do female entrepreneurs experience at work?
- ❖ How do female entrepreneurs manage such challenges?

A brief description of the research was presented to the respondents and some terms were defined for clarification and contextualisation purposes. The interview was divided to three parts. The first part of the interview focused on understanding if the leaders reported themselves as demonstrating communal traits or agentic traits. The descriptions and examples of both communal and agentic traits (Eagly and Karau, 2002) were presented and the leaders were asked to state the traits that describe them more at work and give examples of instances where they would demonstrate either of both traits if they could.

The second part of the interview sought how the leaders perceived their leadership style. Using examples of opening leadership behaviors and closing leadership behaviors (Rosing et al., 2011), the leaders were asked to state the set of leadership behavior that best describes their leadership approach. The third part of the interview sought to know about any gender specific challenges (if any) that the entrepreneurs encounter in the course of their work and how they tackle such challenges. Open-ended questions were also asked about the general leadership styles of the leaders.

The interview followed a semi-structured format and the schedule was followed fairly strictly although the order in which questions were asked varied from one interview to the other and in some cases additional questions were introduced as appropriate to find out further details or to check that the researcher completely understood what the participant was saying. This was done by either asking for examples or by summarising the participant's responses for validation. For each interview, the researcher endeavoured to focus only on the content of the research to avoid bias and this was also taken into account when analysing the data so as to present a fair report of the interviews. All the interviews were recorded using a smart voice recorder with the permission of the participants and were transcribed afterwards.

Data were analysed using a flexible form of thematic analysis—template analysis. Template analysis emphasizes the use of hierarchical coding in analysing textual data, and offers a high level of structure and allows flexibility for adaptation to suit the needs of a particular study (Brooks, McCluskey, Turley and King, 2015). No coding levels were created in advance, themes were developed according to the richness of the data and this ensured that no important parts of the data were lost. Following the recommendation by King (2012), the researcher read through all interview transcripts and highlighted anything at all in the text that might contribute to the research objectives of the study. The emerging themes were organised into meaningful clusters and the researcher then sought to define how the themes are related to each other with the formulation of hierarchical relationships having narrower themes under wider themes. Lower themes are constructed in this way to represent participants' views that are similar or different to the *a priori* themes. The arrangement of codes in a hierarchy is an important feature of the template analysis. This is because while the higher order codes provide an overview of the direction of the interview, the lower order codes allow the researcher to distinguish easily between cases (King and Brooks, 2016).

An initial coding template was developed after the first six transcripts were coded and the template was defined and modified as necessary to include new themes or sub themes until all transcripts were analysed.

Based on the research objectives, three *a priori* themes guided the data analysis.

The *a priori* themes include:

- ❖ communal traits versus agentic traits
- ❖ Engaging in opening leadership behaviors or closing leadership behaviors
- ❖ Perceptions of role incongruity and how to manage such challenges

Frequency of common themes were noted to explore the majority and minority views in order to identify emerging patterns and this helped to balance selectivity and openness in analysing themes as noted by King and Brooks (2016). In presenting the researcher's findings, themes were identified and summarised and relevant quotes were drawn from the transcripts to aid the understanding of specific points and where necessary to clarify the way two themes differ.

3.2 Reliability and Validity

In qualitative research, trustworthiness and authenticity have been suggested as suitable terms instead of reliability and validity since the primary aim of qualitative study is not to quantify (Guba and Lincoln, 1994).

Trustworthiness consists of four constructs which are similar to the constructs of quantitative research. They are credibility, transferability, dependability and conformability. To ensure credibility (the construct parallel to internal validity), the researcher thoroughly studied the research methods and undertook immediate validation during the interviews through probes, prompts and checks to endorse and check their understanding of participant's responses. Further, the email sent to the participants before the interview was endorsed by the research supervisors and research ethics of the University, this helped to build credibility.

Transferability is parallel to external validity in qualitative research. As the research is more focused on depth rather than breadth, a well-structured copy of findings will be presented to the participants. This may be useful to others for making decisions in related business settings. We admit that given that this is a qualitative study with very little sample size, our results may not be generalizable to other settings.

Dependability in qualitative research is similar to reliability and is preoccupied with 'auditing' the process of data collection and analysis by ensuring safe record keeping of all phases of the research process. The researcher ensured safekeeping of all records from the research. Conformability is about ensuring objectivity. Given that complete objectivity is difficult in qualitative research, the researcher ensured as far as possible that their personal values and theoretical inclinations did not influence how the research was conducted and how the findings were analysed. In addition, the researcher ensured that only one interview was conducted per day and there was at least one day between the interviews.

Authenticity is the second major criterion proposed by Guba and Lincoln (1994) to ensure that the research fairly represents different viewpoints of the participants and that the research is beneficial to the participants. For authenticity, a draft report of this research will be sent to the participating entrepreneurs so that they see how well their views have been presented in the research.

3.3 Ethical considerations

The main areas of research ethics are informed consent, no deception, participants' right to withdraw, debriefing and confidentiality (Bryman and Bell, 2011). To ensure that ethical principles were adhered to, the interviewer described the nature and the purpose of the research at the start of the interview and obtained verbal consent. Participants had a choice to take part in or to withdraw from the research at any time without giving a reason and without detriment to themselves. They were only interviewed after they agreed to be interviewed.

No harm was brought to participants. Confidentiality and anonymity were maintained as data were collected anonymously and real names of the participants were not presented in the research report. Participants were identified with codes (e.g., Participant A noted that; while Participant D commented on...). Moreover, the data collected was used strictly for the purpose of the research.

4.0 Results

Female entrepreneurs and gender roles (Communal and agentic traits)

One of the objectives of this research was to discover how female entrepreneurs describe their use of communal and agentic traits at work. This was to enable us gain insights about how gender role identity may influence female entrepreneur's leadership behaviors in regards to ambidextrous leadership. The first major finding reveals that the female entrepreneurs in our study are androgynous. All the female entrepreneurs in the study reported that they combined both communal and agentic behaviors at work albeit to varying degrees.

Majority (10 out of all 14) of the female entrepreneurs talked about demonstrating a fair balance of both set of both traits.

I have looked at every single one and I am 50% on each single one. I am completely split between the two. (Participant B, Health and safety equipment supplier)

I sit right in the middle of them. I am an entrepreneur so I have to have the ability to lead, but I also work in a nurturing environment so it is not one of the other for me, so I might be one of the people that are messing with the two" (Participant D, Educational Services Provider)

I'm a mixture; I tend to be self-sufficient, sympathetic and nurturing. (Participant J, Health services provider)

To explain this pattern of result, some of the leaders explained that as entrepreneurs it is crucial to be able to demonstrate both behaviors so that they can balance the different requirements of the job and achieve results.

" In a work environment, there would have to be a balance of both if there is sort of any, because you have to be aggressive and assertive, but you would have to be sympathetic at the same time because sometimes if you want something in particular you would need to take on a nurturing and gentle role even though you need a competitive stance particularly for those working in the sales environment" (Participant B, Health and safety equipment supplier)

As a business leader, whether as a woman or as a man, you need to have both traits really... Sometimes I am happy to use my male traits because the situation demands that and

at other times I am happy to stay in my female traits because the situation demands that and I am very capable of bringing both of them to the desk (Participant J, Health services provider)

However, we observed some variance in the degree of engagement with the traits. For example, two entrepreneurs spoke about being more inclined to communal traits but also pointed out that they would not hesitate to demonstrate agentic traits as may be required of them. The first entrepreneur hinted that her personal competency is to be communal.

I am naturally comfortable in my female energy but I can step up when I need to step up and I have to step up a lot. It is not what I naturally do but I am happy to do that if I have to. (Participant H, Educational Services Provider)

I am more on the communal side. But if I am in an environment where that is the norm and I need to demonstrate agentic traits then I am quite happy to do that (Participant F, Events coordinator)

In contrast, two entrepreneurs described their behaviors as very agentic. One entrepreneur explained that communal traits are not appropriate behaviors at work. In response to the question about her communal and agentic traits, she responded,

Very much the agentic ones, because I feel you need to be fully in control of what you are doing... The only one there that really occurred to me for work was nurturing, I am supportive of training and bringing on juniors properly so that they can do the job better. All those other traits are not things I am supposed to do in the work context. I am FAIR but not overly affectionate. (Participant A, Legal practitioner)

The other entrepreneur explained that

I am more inclined to the agentic traits. That may be because I am a woman entrepreneur. I don't know if there is any other women inventor in this industry in the UK who runs this kind of business. I mean I am not selling flowers, I am not baking cake. We deal with Siemens and people who don't mess about and there are not many female leaders, so when people come they need to know that I am very serious about what I do (Participant E, IT Services Provider).

In explaining the variability observed in the leader's traits, the entrepreneurs cited a myriad of factors that could be responsible for their choice of traits and degree of engagement with any behavior/trait demonstrated at any point in time. The researcher observed that contextual and situational issues relating to the business rather than gender roles are more likely to determine the choice of the leader's behaviors in any given situation. From the excerpts above, it is clear that the business industry/sector may influence the gender role identity of the entrepreneurs such that female entrepreneurs in certain business sectors may be more inclined to agentic traits. For example, the lawyer and inventor described in the excerpts above. On the other hand, business sectors that fall under the nurturing category such as Social, Education and Health services may be more inclined to communal traits.

Other factors mentioned include considerations about whether it is a male dominated or female dominated type of industry, country of operation, desired goals, organisation culture and individual needs of the employees.

Direct quotes from some of the entrepreneurs are presented below on what factors they consider when determining what traits to emphasize

Different situations in business require different traits. I supply health and safety equipment in France, Germany, Denmark, all companies over in Europe. So I find that how you deal with people abroad is different to how you treat people in the UK. In Europe I have found that so far you are able to get the job done, no one seems to care about your gender. But it can be a bit different in the UK, sometimes you have ... so maybe I supply a company that has lots of engineers sometimes older men and there is not many women so if I go to that kind of company they may think what does a woman know about what we are talking about (Participant B, Health and safety equipment supplier)

Depends entirely on the circumstance and people. If someone is not used to working with me, or lazy, they need more of a directional style as they can misunderstand my politeness for total relaxation (Participant K, Food Manufacturer)

If I am looking at helping somebody, I am going to be affectionate and kind to them, but if I want things done and I want it done now, I am going to be on the agentic side (Participant F, Events coordinator)

I think it would be depending on what I was dealing with, who I was dealing with and in what environment and what I wanted to get out of it and then determine what the balance would be because I am all of communal but I can be all of agentic as well (Participant L, Healthcare Service provider)

Contrary to assumptions, most of the female entrepreneurs seemed comfortable to use agentic traits. They particularly attributed this to be an essential skill needed to reinforce ownership and control of their business.

Some of the entrepreneurs said

... I run a business and I have got to make sure that business keeps on running and sometimes they expect you to be more sympathetic because you are woman but I am not" (Participant B, Health and safety equipment supplier)

If I want something I would go for it regardless, so far I get the outcome I won't be bothered about if I trampled on anybody's toes. (Participant E, IT Services Provider)

I am a control freak. I mean I need to do that in my business, it's my business, it's my credibility, and it is my name on the line and it's my brand so I am very hands on with that and again I think you will find that most entrepreneurs are (Participant F, Events Coordinator)

I feel you need to be fully in control of what you are doing. The results are what matter, you could only be so nice and affectionate to someone, if you are nice to someone and their work is rubbish it is no good. We have to focus on results and satisfying the clients. (Participant A, Legal practitioner)

This pattern of result indicates greater focus on credibility, goal achievement and business performance than other factors such as gender role expectations.

While all the entrepreneurs agree that they demonstrate some degree of agentic traits, they did not always agree with the labels or examples of agentic traits. Some of the entrepreneurs substituted these labels with other words or phrases when describing their own behaviors.

I may not necessarily demonstrate all the behaviors on the list. It is difficult because I don't associate with working aggressively, I am assertive but I am not aggressive, I am a bit controlling but I am not competitive, I am self-self-sufficient and I am a risk taker. I am also sympathetic, gentle... not sure. I am quite uncomfortable; I feel I have to have both of those although I don't like some of the words (Participant D, Educational Services Provider)

...if I judge someone needs it, I may be more directional and authoritarian". (Participant K, Food Manufacturer)

Emphasizing the stereotype of communal characteristics as feminine behaviors, one of the female entrepreneurs stated that the communal traits are natural to women and that it is assumed that women should demonstrate these traits at work.

Communal traits would be a fair description of the females that I come in contact with on a daily basis rather than male traits. (Participant N, Business Consulting)

Hinting that stereotypes may not necessarily always work to the disadvantage of women, two entrepreneurs opined that women could use communal traits to their advantage

I am very assertive about what I want but I recognise that the way to get that is to use my female energy (Participant H, Educational Services Provider)

But I do actually use it to my advantage sometimes because say for I once went into a meeting with my sales guy and it was so funny because the buyer would automatically think that the boss is my sales guy and so he would just talk to him but its fine because while he is concentrating on him, I get to learn a lot more information than I normally would so you know you can't really moan because you get somethings out of it ... as far as inventing is concerned people are really surprised that...oh you are woman... I think you can use it to your gain (Participant E, IT Services Provider)

Female entrepreneurs and ambidextrous leadership (opening and closing leadership)

In describing their leadership behaviors, eleven (11) of the female entrepreneurs felt they demonstrated a balance of both leadership behaviors while three (3) of the

entrepreneurs described themselves as more inclined to opening leadership behaviors. No female entrepreneurs described themselves as more inclined to demonstrating closing leadership behaviors.

It would be a balance of both because you want to engage in activities where they have a lot of experience because you want to exploit that, but then you want to look at the possibilities that those skills can take you forward with and offer to develop people because that is what we are about (Participant D, Educational Services Provider)

Both! I am happy to exploit skills and experience but will also expect staff to take advantage of opportunities to think differently about things. By the very nature of our business many things have to be done to a standard, in a standard way. I'd say I am pretty tolerant of mistakes but if the person continues to make them, or tries to cover them up, I'm on it. Also, remember my previous point on having to do certain things in a certain way (Participant E, IT Services Provider).

I am willing to entertain or allow others as they may possess knowledge that will boost the business. Also, I am always close by with an eye on things to ensure that there is still an alignment to objectives and vision/mission (Participant F, Events Coordinator)

All my staff have independence to try out new ways of doing things, but everyone also has targets to reach (Participant A, Legal practitioner).

From the excerpts above, it appears that the entrepreneurs are willing to demonstrate opening leadership behaviors to encourage employee participation in achieving business objectives especially for the reason that employees may possess certain skills/knowledge that may boost the business if allowed some latitude. However, it seems the entrepreneurs are always close by with an eye on things to ensure that there is still an alignment to objectives and vision/mission of the business. This could be one way to continually emphasize ownership and control of their business.

In regards to the three entrepreneurs who described their inclination to opening leadership behaviors, these entrepreneurs also mentioned that they believe that CLB

is very essential at work for efficiency and performance and that where necessary, they would be willing to employ staff to fill in their deficient skills.

OLB is me in a nutshell. But again, I recognise that the CLB contributes massively to making a business successful, somebody has to deliver, actually make things happen. I demonstrate CLB to a lesser degree. CLB helps in establishing a routine which is important (Participant H, Educational Services Provider).

I am definitely more of an OLB leader but that does not mean that I disregard the other side, I don't. I would never simply encourage one side of that because that doesn't work, there are enough people at my board level who I bounce ideas of who I can delegate to do some of that. The people that are working with me on the operational level I am employing them to fill in the gaps that I don't naturally have (Participant J, Healthcare services provider).

I engage in OLB more while engaging a little in CLB without being restrictive because that could affect the flow of productivity if you put too much of that in place. One needs to engage in CLB otherwise everything will be all over the place and nothing would get finished. (Participant F, Events Coordinator).

From the excerpts above, it is demonstrated that the female entrepreneurs recognize that CLB is very influential to establishing and achieving organisational goals and objectives. One significant revelation is that the two entrepreneurs who had stated that were more inclined to communal traits consistently showed associations to opening leadership behaviors.

Furthermore, the researcher observed that deciding how to engage in OLB or CLB is contingent on some factors. The female entrepreneurs highlighted some of these factors including type of business sector, trust, length of working relationship with staff and training.

I am more inclined to use opening leadership. This is on the basis of 'if we always do what we have done, then we will always get what we have got' therefore development and improvement is stunted. I work in the health sector, encouraging patients to modify what they do so they have improved outcomes (Participant J, Healthcare services provider)

Trust is key. How much do I trust the employee with the task? It takes a long time before I give people a difficult task, the overall delegation of work is difficult because what I do is quite difficult. Except I have great confidence in someone I find it difficult to hand over tasks to them. I have to be with someone for a long time to trust in their ability (Participant A, Legal practitioner).

It would be difficult for someone that is new and 20 years behind me to work directly with me. I would find it so difficult to trust anything they did because there will be all sorts of questions they are asking etc. So we have created an organisation to which they are being trained by someone nearer to their ability level (Participant E, IT Services Provider).

It appears that majority of the female entrepreneurs demonstrate a balance of both leadership behaviors subject to situational contingencies in their respective businesses.

Challenges experienced by female entrepreneurs

In response to whether the female entrepreneurs experience challenges at work based on gender, some of the entrepreneurs agreed that there were some gender specific challenges at work but most of the entrepreneurs did not feel that in their present jobs as entrepreneurs they have faced such challenges (8). Some of the entrepreneurs however noted that in their previous jobs (before they became entrepreneurs), they had experienced some form of gender related challenges. One entrepreneur shared her belief that the notion of role incongruity or negative bias towards female leaders does not exist.

Three themes emerged from this. The first theme is that “gender issues exist but I have not experienced it in my present role as an entrepreneur/leader.

I have seen it and experienced it in different roles within my working history, but not in my present position (Participant N, Social Services).

The last time I worked with somebody which was a long time ago, I was in my 20s when I was in the corporate world. In that role, I would definitely have experienced challenges because of my gender (Participant F, Events Coordinator)

At one time that was it, you never got past a middle management job because you are a female and that was the case and that was the experience years ago and I had to leave

the job because I couldn't move any further without having to relocate completely or it would be a man's job anyway above that (Participant H, Educational Services Provider).

One of the female entrepreneur noted that women who have such experiences may do so because they are not operating in a sector that is feminine friendly

I think also it depends on the industry, maybe why a lot of women are complaining about the glass ceiling is because a lot of women are going into industry where men are more involved e.g engineering or any sort of male orientated industry ... In other environments, women succeed fantastically well because it is not perceived to be a man only environment (Participant D, Educational Services Provider).

From the above excerpt, this line of reasoning suggests that staying compliant to a gender friendly industry could reduce or completely remove perceptions of role incongruity.

In what I do, leading an organisation XXX, there is no way a man will do that better than me, I am in a position I created for myself here and clearly it is a female leading position and I created that and I have always created my own career choices if you like. (Participant H, Educational Services Provider).

This particular female entrepreneur went further to cite the gender issues that women face at work is a key motivator for creating their own business. This is consonant with the perspective of entrepreneurship as emancipation

...I knew I had had enough and that I was exhausted. And I knew it was time to go and do my own thing. I wanted to be my own boss, I came up with lots of reasons but actually, the real reason was that I was forced to be in my male energy and I think that is the situation with a lot of women. They need to find what their normal is, it is not that they are not good enough or that they can't play the game, the game is so male driven and sometimes women feel like they can't play the game, it is quite a tough thing to get a woman to say that I am out of my natural place. I now know that I can be who I am which is a mix of both things really, it's not that I don't use my male energy, I really do, but I don't live there, it's not where I live, it's not my natural place (Participant H, Educational Services Provider).

There is also a suggestion that challenging the situation by speaking out about it could be helpful

it's a personal issue as well because I would challenge it and put myself forward whereas other women might not because they have not got the experience or the confidence to do that so a lot of it comes with old age and attitude (Participant N, Business Consulting)

The second theme is that “gender-specific challenges exists and I have experienced it”
(2). One female entrepreneur expressed said

I deal with companies in Europe and they don't care if I am a woman or not. In the UK it's different. I work with guys in Germany and Denmark and other parts of Europe, they are professional, they don't give a rat ass if I am a woman or not they just want to know- do I know my stuff and we are 100% on the same level. In the UK, it's a lot different, there is definitely a perception there but I think like I said before once people realise what you are talking about the perception changes (Participant E, IT Services Provider).

From the excerpt above it appears that female entrepreneurs may have to put extra efforts to show they are competent so that any perceptions of role incongruity can be erased.

Similarly, while acknowledging the presence of role incongruity, the other female entrepreneur was keen to mention that the way they have tackled gender related bias has been to demonstrate their competence.

Do a good job and be honest. Be confident (Participant K, Food Manufacturer)

The third theme observed shows that there are female entrepreneurs who believe that gender specific challenges do not exist. In this study, only one female entrepreneur expressed this opinion. However, she made herself clear that

It does not exist. The underachieving women are the ones who would create a glass ceiling. They created that kind of ceiling themselves. You are allowing yourself to hit something that you created rather than it being there (Participant A, Legal practitioner).

This female leader also suggested that it is important to be competent in one's field, as tangible results will overthrow any perceptions of incongruity. The issue of

competence was recurring as there had been suggestions about the role of competence from other female entrepreneurs in previous excerpts.

... because I have been there and done it, they know that I am good at what I am doing. It's about responsibility and results, people need to take responsibilities to their statements and then expect to get results to the statements they planned to achieve. As long as they do that its completely irrelevant whether they are male or female. They will be judged on their results and the responsibilities they are taking (Participant A, Legal practitioner).

Non-gender specific challenges

One female entrepreneur was keen to talk about the non-gender specific challenges they faced at work

The challenges I face are non-gender specific, skills such as engineering & accountancy skills are required. We have taken the view that we need to employ people who are more skilled so this is inevitable (Participant B, Health and safety equipment supplier).

Leadership and management styles in broad terms

When asked about leadership qualities in general, confident, firm, competent, goal oriented, and knowledgeable emerged as strong themes. Patience, fairness supportive, inclusive and inspirational were also cited as key characteristics.

I will have to say Supporting but stretching (Participant D, Educational Services Provider)

Lead by example, set the pace, raise the bar (Participant A, Legal practitioner)

Forward looking, learn and reflect to develop (Participant N, Business Consulting)

I am goal orientated, inspirational, inclusive, action orientated, I am fast paced eager about what is next, I have always got an eye on the next thing and I am fun (Participant H, Educational Services Provider).

Looking beyond gender issues, one of the entrepreneurs talked about fairness as the way to lead effectively.

I look beyond the gender, be fair to people, have an open door policy. My guys here, I praise them. I am exceptionally proud of the team that I have got here but I couldn't do what I do without the backup of the guys here. And they are brilliant, they are fantastic, they are really good at what they do but I think because I respect them, they respect me back because I treat them like I want to be treated I think it works really well. I look after 'em. And if you look after good people, good people look after you don't they? (Participant E, IT Services Provider)

5.1 Interpretation

This study examines the underlying stereotypically gendered connotations of leadership in relation to ambidextrous leadership behaviors among female entrepreneurs. The first goal of the paper was to gain insights to female entrepreneurs' demonstration of communal and agentic traits at work. In general, the findings show that most of the female entrepreneurs in our study are androgynous, drawing on both communal and agentic traits to drive employee performance. Most of the female entrepreneurs in our study described themselves as demonstrating balanced levels of both communal and agentic traits. Only a few female entrepreneurs described themselves as being inclined to either more of agentic or communal traits and no female entrepreneur described herself as displaying only one set of the traits exclusively. Both traits were considered as essential and the entrepreneurs explained that certain job requirements require agentic traits while other aspects of work need to be facilitated by communal traits. This demonstrates that no one set of traits can exclusively support all aspects of leadership requirements. This finding lends support to (Kark et al., 2012; Park 1997) who suggested that the reality of leadership is androgynous and both agentic and communal traits are valuable to leadership effectiveness.

Contrary to past studies on leadership and gender role expectations that show that female entrepreneurs are likely to demonstrate communal traits more than agentic traits (Alimo-Metcalfe 1995; Bass 1990), the researcher did not find support for this in

this study. Furthermore, in contrast to Langowitz and Minniti (2007), the female business owners in this study did not in any way perceive themselves to be in a position of leadership disadvantage. If anything, they perceived themselves as strong, confident, knowledgeable, capable and best at what they do. Rather than gender stereotypes, it appears that other contextual and situational factors may influence their choice of traits. In fact, the study shows that female entrepreneurs readily demonstrate agentic traits as may be necessary to facilitate their business especially in relation to protecting their name and their business interest. This finding is consonant with Chaganti (1986) who suggested that regardless of gender, agentic traits are necessary attributes that successful leaders need to demonstrate. Similarly, there are studies that have reported that women business leaders are firmer and more agentic compared to women in general (Rudman and Glick, 2001; Strøm, D'Espallier and Mersland, 2014).

In relation to the second objective of this study, the researcher found that female entrepreneurs are ambidextrous, drawing on both opening and closing leadership behaviors. All the female leaders who favoured a combination of communal and agentic traits also demonstrated an integration of opening and closing leadership behaviors. It is plausible that due the typically small firm size of SMEs and the thin line between leadership and management role within this context, these female entrepreneurs play the roles of both strategic and operational leaders. As such, they are required to demonstrate varying set of leadership behaviors to support their roles. Hence, the need to demonstrate and balance between different leadership behaviors. Furthermore, the researcher observed that the two female entrepreneurs who were inclined to communal traits consistently showed associations to opening leadership behaviors.

This pattern of result suggests that there may be an association between gender role identification and ambidextrous leadership behaviors. One crucial point we observed was that all the female entrepreneurs identified the importance of both traits and leadership behaviors and were willing to step up where and when necessary or employ people who possessed the skills they lacked.

The female entrepreneurs had rare occurrences of gender specific challenges in their current roles. We suggest three factors to explain the pattern of results we observed here. These include *form of leadership emergence, position power and business ownership*. Firstly, due to the participants being owners of their businesses, they have taken steps to become leaders showing self-confidence, ambition and ability to lead. Thus, creating their own career story and eliminating the challenge of “glass ceiling” which other females in different work contexts may face in the quest to breakthrough and attain top leadership positions. These female entrepreneurs do not have to contend with male or female counterparts for top-level leadership positions as they already occupy the highest leadership position in their organisation. Therefore, it is plausible that the perception of women who lead their own businesses is more of “being a leader” and less of “being a woman” (Eagly and Carli, 2003).

Also related to this is the position power occupied by the female entrepreneurs. With the highest level of authority resting with these female entrepreneurs, any questions about the leader’s abilities may not be openly expressed by staff. Employees may not be willing to challenge the leadership and management abilities of their boss. However, while these concerns may not be openly disclosed, there is a possibility of women leaders putting themselves under a low key pressure to perform excellently in order to erase any notion of role incongruity.

In relation to leadership emergence, the notion of “entrepreneurship as emancipation” readily comes to mind. Rindova, Barry and Ketchen (2009) noted that entrepreneurial endeavours are undertaken by individuals as efforts to gain freedom from cultural, economic, social, technological limitations. In developed countries, it is more likely to find entrepreneurs seeking liberation from conventional structures of authority and income generation (Rindova et al, 2009); while in less developed economic regions, entrepreneurs may be seeking freedom from societal problems such as abject poverty. The literature on women’s entrepreneurship abounds with descriptions of businesses created as a result of frustration and discontent with corporate life such as the proverbial glass ceiling that restricts the opportunity for career advancement or dual

management of work and family (Heilman and Chen, 2003; Winn, 2004). Given that emancipation from constrictive norms is usually a motivation for female entrepreneurs to create their business, it can be expected that generic assumptions about gender roles may not be supported in this context.

While the female entrepreneurs do not perceive gender as a big issue that hinders them from performing their roles as leaders, they clearly stress that competency skills, confidence and knowledge are crucial elements for success in their roles. These were actually the areas that the female leaders emphasized when talking about their agentic traits. Spence and Buckner (2000) have observed similar result pattern that when referring to their agentic traits, female leaders tend to place a lot of emphasis on the *competency* facet of agentic traits while the *dominance* facet of agentic traits were less favoured. For this reason, it is suggested that it may be important to examine the effect of the dominance facet of agentic traits to leadership effectiveness and determine whether it could be advantageous or not to female leaders to endeavour to demonstrate dominance agentic behaviors.

Although this study did not set out to identify how female leaders flexibly switch between traits and behaviors, it is observed that the dynamics of switching between traits and behaviors appears to be contingent on situational and contextual factors. This underscores a very important feature of leadership ambidexterity and are generally explained by Fiedler's contingency theory (1967) and path-goal theory (House, 1971). These two theories explain which leadership style is the most appropriate for discrete work environments. As suggested by Rosing and colleagues (2011), it is imperative that leaders have a very wide set of leadership skills and capabilities because different situations/contexts will require the leaders to customise their leadership behaviors. For this reason, attempts to understand how leaders flexibly switch traits and behaviors may be rather difficult. Therefore, the reseracher suggests that studies that aim to understand how this temporal flexibility occurs need to take into account situational variability in discrete contexts and consider the

individual capability of each leader to be adaptive as well as the characteristics of subordinates and working conditions.

Contrary to previous studies which have reported that females have lower capabilities perceptions than men (Xavier, Kelley, Kew, Herrington and Vorderwulbecke, 2012), this study did not find the women in this study believing they were inadequate for their leadership positions. However, the researcher acknowledges that because the female leaders who were recruited for this study had undergone leadership development courses, this could influence the pattern of result demonstrated. Indeed, studies suggest that women who had undergone leadership and entrepreneurship training are twice likely to be more confident about their skills (Minniti, Bygrave and Autio, 2005). This pattern of results also suggests that in relation to women, leadership in entrepreneurial settings may differ from leadership in other work settings (Johnson and Winterton, 1999; Küpers and Weibler 2008) especially for women who have had some form of training.

From this study, there is suggestive evidence that the nature of business/industry may influence leadership traits of the leaders. For example, the two female entrepreneurs who perceived themselves to be inclined to communal traits operate in business sectors that are nurturing while the two female entrepreneurs who perceived themselves to be agentic operated in more agentic sectors- IT sector and legal profession respectively. However, due to the very small sample size and other plausible explanations, this suggestion is made with caution.

5.2 Implications

The findings offer suggestive evidence that leadership in the context of SMEs particularly among females may be different from larger firms as the roles of leaders and managers are not mutually exclusive in smaller entrepreneurial settings. It appears that entrepreneurial leaders have full impact on all aspects of business functions and to a large extent do not allow prescriptions and descriptions of gender roles to dictate their leadership behaviors. Ahl (2006) reported that female business

owners are non-conformists who do not live by the traditional feminine stereotypes of leadership. Therefore, the reality of leadership behaviors for female business owners can be said to be significantly different from those of other women. An implication of this observation would be the need to conduct a comparative study between women leaders of SMEs, large sectors and women in general to examine if varying results will be reported from these groups.

This study also reveals that the value of androgyny may resolve the double bind paradox and can help female leaders to overcome the negative bias that may be encountered when demonstrating agentic behaviors to fulfil their leadership roles. As androgynous and ambidextrous leaders, females are able to fulfil their leadership duties that require either communal or agentic characteristics and avoid negative bias that may come from demonstrating agentic traits. In fact, Kark et al. (2012) noted that when women are not androgynous, they pay a higher penalty than men.

We have shown in this study that self- perceptions regarding gender roles may have a significant impact on the ambidextrous leadership style perhaps beyond other's perceptions in the case of female entrepreneurs. It is observed from the results that perception plays a key role. For example, if female entrepreneurs perceive that only CLB is influential, then only CLB would be emphasized, which could result to missing out on positive outcomes OLB could facilitate. At the same time, if there is a perception that both OLB and CLB work better together, it is more likely that ambidexterity will be developed, as it was the case in this study. Hence, practical steps should be taken by policy makers to help correct perceptions about leadership and gender roles through subject taught in schools or development and self-actualisation programmes. This will be very beneficial to the girl-child.

Furthermore, if we assume that ambidextrous leadership provides a better narrative of leadership behaviors, not just for female entrepreneurs but leaders in general, policymakers could allocate resources to develop programs for the enhancement of the competencies associated to ambidextrous leadership styles such as capability for

adaptability and flexibility, error learning, risk motivation, and setting standard procedures.

Overall, leadership labels need to be reconceptualised and described in androgynous terms rather than masculine terms as this is not the reality of demonstrated leadership behaviors. The researcher calls for more models that describe leadership in androgynous terms as this is a step towards having a better view of leadership and an attempt to lessen the perception that females are not adequately equipped for leadership.

6.1 Conclusions, Limitations and Further Research

The researcher acknowledges that using existing theory to drive a qualitative investigation can compromise the researcher's ability to pay attention to the respondent's wider point of view thus limiting the extent to which the investigation is inductive. However, these losses can be minimised and can be compensated by gains in other areas. What really matters is how the researcher used the methods and the data collected. Overall, with the data collection methods the researcher was able to meet the research objectives. The researcher was able to maintain focus on the research topic and appreciate and take into account insights provided by the participant's which were not initially included in the research objectives. The researcher has taken measures to ensure that as much as possible, their biases are not reflected in the results.

As with any type of qualitative study, the findings may have limited generalizability especially considering the limited study sample from Wales, United Kingdom.

Another limitation of this study is that leadership characteristics and behaviors are measured by self-report. However, the aim was to uncover the leadership experiences of female leaders from their own personal point of view. This is not to suggest that evaluations from others should be completely overlooked, as this can provide insights for greater improvements as well. The researcher encourages future studies to design

their research methodology to accommodate views of both leaders and employees. the researcher agrees that such research designs may benefit from obtaining views and comments from employees for a more rounded understanding of the research area.

Finally, this study is limited by the lack of a comparison group, which could have been men entrepreneurs or female leaders in other work settings. However, this research was conducted to shed light on female entrepreneurs' leadership ambidexterity behaviors and how this is influenced by how they identify with gender roles, not to compare and contrast with other groups. The results can serve as a foundation on which future studies may build on to compare results with other sample groups.

The aim of this research was to explore the dynamics of ambidextrous leadership behaviors in a sample of female entrepreneurs. In doing so, the study sought to identify how gender roles may influence the demonstration of ambidextrous leadership. The findings reveal that most of the entrepreneurs in the study sample are androgynous and ambidextrous. It is also shown that the female entrepreneurs in the study though may not primarily describe themselves in agentic terms (especially those that fall under the dominance facet), are ready and willing to demonstrate agentic behaviors to drive the success of their business. Situational and contextual factors tend to play a huge role in determining how much emphasis is placed on any trait or behavior and the perception of prejudice towards female entrepreneurs seems to be marginal. The researcher encourages future researchers to carry out studies that will provide more insights on this issue.

Overall, consonant with Eagly and Karau (2002), the researcher suggests that it is beneficial for female leaders to balance the communal qualities appropriate for their feminine role, with the masculine/agentic qualities appropriate for their leadership role as this is most likely to drive leadership effectiveness and overcome gender related challenges pertaining to their leadership abilities.

Summary

This chapter has presented a study of gender role identity and ambidextrous leadership. The study uses semi-structured interviews for data collection and finds that female entrepreneurs in this study favour a combination of communal and agentic traits and a combination of opening and closing leadership behaviors. Put differently, these female leaders are androgynous and ambidextrous.

However, situational and work contexts may play a big role in determining the leadership behaviors that are emphasized at any point in time. The study suggests that leadership labels that glorify agentic traits be lessened and females to be encouraged to demonstrate leadership behaviors that drive task accomplishment and business performance.

References

- Abowitz, D. A. (2008). The campus "f" word: feminist self-identification (and not) among undergraduates. *International Journal of Sociology of the Family*, 43-63.
- Ahl, H. (2006). Why research on women entrepreneurs needs new directions. *Entrepreneurship theory and practice*, 30(5), 595-621.
- Alimo-Metcalfe, B. (1995). An investigation of female and male constructs of leadership and empowerment. *Women in Management Review*, 10(2), 3-8.
- Avolio, B. J., & Gardner, W. L. (2005). Authentic leadership development: Getting to the root of positive forms of leadership. *The leadership quarterly*, 16(3), 315-338.
- Ayman, R. (2004). Situational and contingency approaches to leadership. In J. Antonakis, A. T. Cianciolo, & R. J. Sternberg (Eds.), *The nature of leadership* (pp. 148-170). Thousand Oaks, CA, US: Sage Publications, Inc.
- Balachandra, L., Briggs, T., Eddleston, K., & Brush, C. (2017). Don't pitch like a girl! How gender stereotypes influence investor decisions. *Entrepreneurship Theory and Practice*, 1042258717728028.
- Bamiatzi, V., Jones, S., Mitchelmore, S., & Nikolopoulos, K. (2015). The Role of Competencies in Shaping the Leadership Style of Female Entrepreneurs: The Case of North West of England, Yorkshire, and North Wales. *Journal of Small Business Management*, 53(3), 627-644.
- Bass, B.M. (1990). Bass and Stogdill's handbook of leadership. New York: Free Press.
- Bem, S. L. (1974). The measurement of psychological androgyny. *Journal of consulting and clinical psychology*, 42(2), 155.
- Bem, S. L. (1975). Androgyny vs tight little lives of fluffy women and chesty men. *Psychology Today*, 9(4), 58.
- Bem, S. L., & Lenney, E. (1976). Sex typing and the avoidance of cross-sex behavior. *Journal of personality and social psychology*, 33(1), 48.
- Biddle, B. J. (1986). Recent developments in role theory. *Annual review of sociology*, 12(1), 67-92.
- Blair, I. V., & Banaji, M. R. (1996). Automatic and controlled processes in stereotype priming. *Journal of personality and social psychology*, 70(6), 1142.
- Blake, R. R., & Mouton, J. S. (1964). *The new managerial grid: strategic new insights into a proven system for increasing organization productivity and individual effectiveness, plus a revealing examination of how your managerial style can affect your mental and physical health*. Gulf Pub. Co.

- Bledow, R., Frese, M., & Müller, V. (2011). Ambidextrous leadership for innovation: The influence of culture. In W. H. Mobley M. Li & Y. Wang (Eds.), *Advances in global leadership*, Vol. 6 (pp. 41–69) Bingley, UK: Emerald Group Publishing.
- Bowen, C. C., Swim, J. K., & Jacobs, R. R. (2000). Evaluating Gender Biases on Actual Job Performance of Real People: A Meta-Analysis 1. *Journal of Applied Social Psychology*, 30(10), 2194-2215.
- Bowers, D. G., & Seashore, S. E. (1966). Predicting organizational effectiveness with a four-factor theory of leadership. *Administrative Science Quarterly*, 238-263.
- Brooks, J., McCluskey, S., Turley, E., & King, N. (2015). The utility of template analysis in qualitative psychology research. *Qualitative Research in Psychology*, 12(2), 202-222.
- Broverman, I. K., Vogel, S. R., Broverman, D. M., Clarkson, F. E., & Rosenkrantz, P. S. (1972). Sex-role stereotypes: A current appraisal1. *Journal of Social issues*, 28(2), 59-78.
- Brush, C. G. (1992). "Research on Women Business Owners: Past Trends, a New Perspective and Future Directions," *Entrepreneurship Theory and Practice* 16(4), 5–30.
- Brush, C., Edelman, L. F., Manolova, T., & Welter, F. (2018). A gendered look at entrepreneurship ecosystems. *Small Business Economics*, 1-16.
- Bryman, A., & Bell, E. (2011). Ethics in business research. *Business Research Methods*.
- Butterfield, D. A., & Grinnell, J. P. (1999). Gender influences on performance evaluations. *Handbook of gender at work*, 223-238.
- Carli, L. L., & Eagly, A. H. (1999). Gender effects on social influence and emergent leadership. In G. N. Powell (Ed.), *Handbook of gender and work* (pp. 203-222). Thousand Oaks, CA, US: Sage Publications, Inc.
- Chaganti, R. (1986). Management in women-owned enterprises. *Journal of small business management*, 24, 18.
- Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (pp. 151-192). New York, NY, US: McGraw-Hill
- Coleman, S., & Robb, A. (2012). *A rising tide: Financing strategies for women-owned firms*. Stanford University Press.
- Corrigall, E. A., & Konrad, A. M. (2007). Gender role attitudes and careers: A longitudinal study. *Sex Roles*, 56(11-12), 847-855.
- Duehr, E. E., & Bono, J. E. (2006). Men, women, and managers: are stereotypes finally changing?. *Personnel psychology*, 59(4), 815-846.
- Eagly, A. H. (1987). Reporting sex differences. *American Psychologist*, 42(7), 756-757.

- Eagly, A. H. (2007). Female leadership advantage and disadvantage: Resolving the contradictions. *Psychology of women quarterly*, 31(1), 1-12.
- Eagly, A. H., and L. L. Carli (2003). "The Female Leadership Advantage: An Evaluation of the Evidence," *The Leadership Quarterly* 14(6), 807-834.
- Eagly, A. H., Johannesen-Schmidt, M. C., & Van Engen, M. L. (2003). Transformational, transactional, and laissez-faire leadership styles: A meta-analysis comparing women and men. *Psychological bulletin*, 129(4), 569.
- Eagly, A. H., & Karau, S. J. (1991). Gender and the emergence of leaders: A meta-analysis. *Journal of personality and social psychology*, 60(5), 685.
- Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological review*, 109(3), 573.
- Eagly, A. H., Karau, S. J., & Makhijani, M. G. (1995). Gender and the effectiveness of leaders: A meta-analysis. *Psychological bulletin*, 117(1), 125.
- Eagly, A. H., & Wood, W. Diekman, AB (2000). Social role theory of sex differences and similarities: a current appraisal. *The developmental social psychology of gender*, 123-174.
- Fiedler, F. E. (1967). Style of leadership and performance of coacting groups. *Zeitschrift für Experimentelle und Angewandte Psychologie*, 14(2), 200-217.
- Fiske, S. T. (1998). Stereotyping, prejudice, and discrimination. *The handbook of social psychology*, 2, 357-411.
- Fletcher, J. K. (2004). The paradox of postheroic leadership: An essay on gender, power, and transformational change. *The leadership quarterly*, 15(5), 647-661.
- Garvin, D. A. (1993). *Building a learning organization* (Vol. 71, No. 4, pp. 78-91). July-August: Harvard Business Review.
- Grant J. (1988), "Women as managers: what they can offer to organizations", *Organizational Dynamics*, Winter, pp. 56-63.
- Goleman, D., Boyatzis, R. E., & McKee, A. (2002). *The new leaders: Transforming the art of leadership into the science of results* (p. 14). London: Little, Brown.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research*, 2(163-194), 105.

Gupta, V. K., Goktan, A. B., & Gunay, G. (2014). Gender differences in evaluation of new business opportunity: A stereotype threat perspective. *Journal of Business Venturing*, 29(2), 273-288.

Hacker, H. M. (1951). Women as a minority group. *Social forces*, 60-69.

Hall, R. J., Workman, J. W., & Marchioro, C. A. (1998). Sex, task, and behavioral flexibility effects on leadership perceptions. *Organizational Behavior and Human Decision Processes*, 74(1), 1-32.

Hammer, M. C. & Champy, J. (1994). *Reengineering the Corporation: A Manifesto for business Revolution*. New York: Harpers Collins.

Hechavarria, D. M., & Ingram, A. E. (2016). The entrepreneurial gender divide: Hegemonic masculinity, emphasized femininity and organizational forms. *International Journal of Gender and Entrepreneurship*, 8(3), 242-281.

Heilman, M. E. (2001). Description and prescription: How gender stereotypes prevent women's ascent up the organizational ladder. *Journal of social issues*, 57(4), 657-674.

Heilman, M. E., Block, C. J., & Martell, R. F. (1995). Sex stereotypes: Do they influence perceptions of managers?. *Journal of Social behavior and Personality*, 10(4), 237.

Hilton, J. L., & Von Hippel, W. (1996). Stereotypes. *Annual review of psychology*, 47(1), 237-271.

Heilman, M. E., & Chen, J. J. (2003). Entrepreneurship as a solution: the allure of self-employment for women and minorities. *Human Resource Management Review*, 13(2), 347-364.

Helgesen, S. (1990), *The Female Advantage: Women's Ways of Leadership*, Doubleday, New York, NY.

House, R. J. (1971). A path goal theory of leader effectiveness. *Administrative science quarterly*, 321-339.

House of Commons Library (2016). *Budget 2016: a summary*. Briefing Paper. Number 7536. 18 March 2016.

Hunter, S. T., Thoroughgood, C. N., Myer, A. T., & Ligon, G. S. (2011). Paradoxes of leading innovative endeavors: Summary, solutions, and future directions. *Psychology of Aesthetics, Creativity, and the Arts*, 5(1), 54-66.

Johnson, S. and Winterton, J. (1999). *Management skills*. Skills Task Force Research Paper 3.

Kark, R., & Eagly, A. H. (2010). Gender and leadership: Negotiating the labyrinth. In *Handbook of gender research in psychology* (pp. 443-468). Springer, New York, NY.

Kark, R., & Waismel-Manor, R. (2005). Organizational citizenship behavior: What's gender got to do with it?. *Organization*, 12(6), 889-917.

Kark, R., Waismel-Manor, R., & Shamir, B. (2012). Does valuing androgyny and femininity lead to a female advantage? The relationship between gender-role, transformational leadership and identification. *The Leadership Quarterly*, 23(3), 620-640

Küpers, W., and J. Weibler (2008). "Inter-Leadership: Why and How Should We Think of Leadership and Followership Integrally?," *Leadership* 4(4), 443-475

King, N., & Brooks, J. M. (2016). *Template analysis for business and management students*. Sage.

Koenig, A. M., Eagly, A. H., Mitchell, A. A., & Ristikari, T. (2011). Are leader stereotypes masculine? A meta-analysis of three research paradigms. *Psychological Bulletin*, 137(4), 616-642.

Langowitz, N., & Minniti, M. (2007). The entrepreneurial propensity of women. *Entrepreneurship theory and practice*, 31(3), 341-364.

Loden, M. (1985), *Feminine Leadership, or How to Succeed in Business without Being One of the Boys*, Times Books, New York, NY.

Marlow, S., & Carter, S. (2006, May). If you don't ask you don't get! Women, selfemployment and finance. In *Warwick Business School Small Firms Finance Conference*, May, Coventry.

Marlow, S., & McAdam, M. (2013). Gender and entrepreneurship: Advancing debate and challenging myths; exploring the mystery of the under-performing female entrepreneur. *International Journal of Entrepreneurial Behavior & Research*, 19(1), 114-124.

McDowell, L. (1997). Women/gender/feminisms: doing feminist geography. *Journal of Geography in Higher Education*, 21(3), 381-400.

Minniti, M., & Naudé, W. (2010). What do we know about the patterns and determinants of female entrepreneurship across countries?

Minniti, M., Bygrave, W., and Autio, E. (2005). Global entrepreneurship monitor. Executive Report. GEM

Morrison, A. M., White, R. P., & Van Velsor, E. (1987). *Breaking The Glass Ceiling: Can Women Reach The Top Of America's Largest corporations?*. Pearson Education.

Northouse, P. G. (2010). *Leadership: Theory and Practice*.

The organisation for economic co-operation and development (OECD) Annual report (2003). Available on <https://www.oecd.org/about/2506789.pdf>

OECD/UNDP (2016). *Making Development Co-operation More Effective: 2016 Progress Report*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264266261-en>

Office for National Statistics. UK Labour Market (2016). Estimates of employment, unemployment, economic inactivity and other employment related statistics for the UK. Accessed on July 23rd, 2018. <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/uklabourmarket/march2018#employment>

Park, D. (1997). Androgynous leadership style: An integration rather than a polarization. *Leadership & Organization Development Journal*, 18(3), 166-171.

Powell, G. N., & Graves, L. M. (2003). *Women and men in management*. Sage.

Powell, G. N., & Butterfield, D. A. (1979). The "good manager": Masculine or androgynous?. *Academy of Management Journal*, 22(2), 395-403.

Powell, G. N., Butterfield, D. A., & Parent, J. D. (2002). Gender and managerial stereotypes: have the times changed?. *Journal of management*, 28(2), 177-193.

Rindova, V., Barry, D., & Ketchen Jr, D. J. (2009). Entrepreneurship as emancipation. *Academy of management review*, 34(3), 477-491.

Rosener, J.B. (1990), "Ways women lead", *Harvard Business Review*, Vol. 68, pp. 119-25.

Rosener, J.B. (1995), *America's Competitive Secret: Utilizing Women as a Management Strategy*, Oxford University Press, New York, NY.

Rosing, K., Frese, M., & Bausch, A. (2011). Explaining the heterogeneity of the leadership-innovation relationship: Ambidextrous leadership. *The leadership quarterly*, 22(5), 956-974.

Roy, R. E., Weibust, K. S., & Miller, C. T. (2007). Effects of stereotypes about feminists on feminist self-identification. *Psychology of women quarterly*, 31(2), 146-156.

Rudman, L. A. (1998). Self-promotion as a risk factor for women: the costs and benefits of counterstereotypical impression management. *Journal of personality and social psychology*, 74(3), 629.

Rudman, L. A., & Glick, P. (2001). Prescriptive gender stereotypes and backlash toward agentic women. *Journal of social issues*, 57(4), 743-762.

Schein, V. E. (1973). The relationship between sex role stereotypes and requisite management characteristics. *Journal of applied psychology*, 57(2), 95.

Schein, V. E., Mueller, R., Lituchy, T., & Liu, J. (1996). Think manager – think male: A global phenomenon?. *Journal of organizational behavior*, 17(1), 33-41.

Senge, P. (1990). Peter Senge and the learning organization. *Rcuperado de*.

Silvestri, M. 2003. *Women in Charge: Policing, Gender and Leadership*, Cullumpton: Willan

Spence, J. T., & Buckner, C. E. (2000). Instrumental and expressive traits, trait stereotypes, and sexist attitudes: What do they signify?. *Psychology of women quarterly*, 24(1), 44-53.

Spence, J. T., & Helmreich, R. (1972). Who Likes Competent Women? Competence, Sex-Role Congruence of Interests, and Subjects' Attitudes Toward Women as Determinants of Interpersonal Attraction 1. *Journal of Applied Social Psychology*, 2(3), 197-213.

Spence, J. T., Helmreich, R., & Stapp, J. (1975). Ratings of self and peers on sex role attributes and their relation to self-esteem and conceptions of masculinity and femininity. *Journal of personality and social psychology*, 32(1), 29.

Stangor, C., Lynch, L., Duan, C., & Glas, B. (1992). Categorization of individuals on the basis of multiple social features. *Journal of Personality and Social Psychology*, 62(2), 207.

Stempel, C. R., Rigotti, T., & Mohr, G. (2015). Think transformational leadership–Think female?. *Leadership*, 11(3), 259-280.

Strøm, R. Ø., D'Espallier, B., & Mersland, R. (2014). Female leadership, performance, and governance in microfinance institutions. *Journal of Banking & Finance*, 42, 60-75.

Vinkenbunrg, C. J., Van Engen, M. L., Eagly, A. H., & Johannesen-Schmidt, M. C. (2011). An exploration of stereotypical beliefs about leadership styles: Is transformational leadership a route to women's promotion?. *The Leadership Quarterly*, 22(1), 10-21.

Waldman, D. A., & Bowen, D. E. (2016). Learning to be a paradox-savvy leader. *Academy of Management Perspectives*, 30(3), 316-327.

Williams, J. E., & Best, D. L. (1990). *Measuring sex stereotypes: A multination study*, Rev. Sage Publications, Inc.

Winn, J. (2004). Entrepreneurship: Not an easy path to top management for women. *Women in Management Review*, 19(3), 143-153.

Xavier, S.R., Kelley, D., Kew, Herrington, M. and Vorderwulbecke. (2012). *Global entrepreneurship monitor*. Global Report.

Yang, T., & Aldrich, H. E. (2014). Who's the boss? Explaining gender inequality in entrepreneurial teams. *American Sociological Review*, 79(2), 303-327.

Yukl, G.A. (1981). *Leadership in organizations*, Prentice-Hall, Englewood Cliffs, NJ.

Yukl, G., & Mahsud, R. (2010). Why flexible and adaptive leadership is essential. *Consulting Psychology Journal: Practice and Research*, 62(2), 81.

Zacher, H., Robinson, A.J. and Rosing, K. (2014). Ambidextrous Leadership and Employees' Self-Reported Innovative Performance: The Role of Exploration and Exploitation Behaviors. *The Journal of Creative Behavior*.

Zacher, H. and Rosing, K. (2015). Ambidextrous leadership and team innovation. *Leadership & Organization Development Journal*, 36(1), pp.54-68.

Zacher, H. and Wilden, R.G., (2014). A daily diary study on ambidextrous leadership and self-reported employee innovation. *Journal of occupational and organizational psychology*, 87(4), pp.813-820.

CHAPTER 5

1.1 Summary of the three papers and conclusion

In this thesis, we explored ambidextrous leadership behavior among entrepreneurial leaders. The first paper in this study reports on ambidextrous leadership behaviors in SMEs. This study was prompted by the recognition of the need to identify the dynamics of ambidextrous leadership behaviors in SMEs and to the best of our knowledge; this paper is one of the first attempts to do so.

The research objective for this study was to provide empirical evidence for ambidexterity leadership in SMEs. The research questions for this study were

- (1) How much influence does opening and closing leadership behaviors have on employee's exploration and exploitation work behaviors?
- (2) How does the leader's capability to demonstrate adaptive/flexible leadership impact this association?

The proposed hypotheses were

- (1) *Opening leadership behaviors foster employee explorative behaviors*
- (2) *Closing leadership behaviors foster employee exploitative innovative behaviors*
- (3) *Ambidextrous leadership (OLB * CLB) will foster employee ambidexterity (Exploration* Exploitation innovative behaviors)*
- (4) *Adaptive and flexible leadership will influence the relationship between ambidextrous leadership and employee ambidexterity*

The findings reveal that

- Opening leadership behavior fosters employee exploration innovation.
- Closing leadership behavior fosters exploitation innovation.
- A combination of opening and closing leadership behaviors fosters employee ambidexterity.
- Finally, the impact of ambidextrous leadership on employee ambidexterity was partially mediated by adaptive/flexible leadership.

This study proposes that ambidextrous leadership is important for SME leaders as a means of enhancing employee innovation behavior. In particular, adaptive and flexible leadership is demonstrated as a competence that could help facilitate ambidextrous leadership behaviors.

Based on the heterogeneous results that had been reported in other innovation leadership studies, and the acknowledgement of the dual nature of innovation, several suggestions have been made that leadership behaviors required to support innovative undertakings would be extensive. Having identified that ambidextrous leadership could help improve employee's innovation behaviors from the first paper, the second paper sought to identify antecedents of ambidextrous leadership.

The objective of this paper was to reveal the effects of personality traits, emotional intelligence, adaptive and flexible leadership, transformational leadership and transactional leadership on ambidextrous leadership behavior. This could provide insights on how to develop and maximise effective ambidextrous leadership behaviors.

The research questions that guided the research were

- (1) What discrete skills/competencies and leadership behaviors foster opening and closing leadership?
- (2) What leadership competencies or behaviors may support leaders in maximizing ambidextrous leadership?

The tested hypotheses included:

- (1) *Extraversion of a leader is positively related to OLB, CLB and Ambidextrous leadership.*
- (2) *Agreeableness of a leader is positively related to OLB, CLB and Ambidextrous leadership.*
- (3) *Conscientiousness of a leader is positively related to OLB, CLB and Ambidextrous leadership.*
- (4) *Openness to experiences of a leader is positively related to OLB, CLB and Ambidextrous leadership.*

(5) Neuroticism of a leader is negatively related to OLB, CLB and Ambidextrous leadership.

This study found varying associations between emotional intelligence, adaptive/flexible leadership, emotional intelligence, transformational leadership and transactional leaders and OLB, CLB and AL. However, personality traits did not show any association to ambidextrous leadership in this study. Plausible reasons for this pattern of result have been provided in the discussion section of chapter 3.

Narrowing down to the context of female business leaders, the third paper qualitatively explores ambidextrous leadership behaviors in female entrepreneurs through the lens of gender role identity.

The research objective of this paper was to investigate the dynamics of ambidextrous leadership in the context of female entrepreneurs with particular interest in the plausibility of female entrepreneurs demonstrating leadership behaviors that align with prescriptive and descriptive gender roles.

The research questions asked were

- (1) Do gender roles influence female business owner's demonstration of ambidextrous leadership?
- (2) In what way, and to what extent?

This paper reveals that

- (1) The female leaders in our study are mostly androgynous and ambidextrous
- (2) The female entrepreneurs understand the importance of varying their leadership behaviors accordingly to meet the changing work demand
- (3) The female entrepreneurs have little or no consideration for gender stereotypes in performing their leadership duties. Rather, greater focus is placed on demonstrating their competence using traits and leadership behaviors that drive goal accomplishment including the integration of stereotypic masculine and feminine leadership behaviors as considered necessary.

- (4) The choice of leadership behavior/trait that is emphasized at any point in time is contingent on contextual or situational demands of work as well as individual competencies of the entrepreneur.

This study suggest that ambidextrous leadership behavior is essential to leadership effectiveness and could lessen the role congruity perception against women where women are in a dilemma to demonstrate leadership behaviors that do not align with gender roles. This study also provides evidence for ambidextrous leadership from business sectors that are not primarily innovation-focused.

The papers in this study may have limited generalisability for their low sample size in the case of the first two papers and for the choice of qualitative study suing interviews with 14 entrepreneurs in Wales for the third paper. However, these studies have collectively advanced the literature on ambidextrous leadership in UK SMEs.

Conclusion

Overall, this thesis provides empirical evidence for ambidextrous leadership in the SME context and suggests how ambidextrous leadership behavior can be used to promote employee innovation behaviors effectively. From our papers, it is clear that leading innovation can be a challenging task. Furthermore, there is no one single way or strategy to foster innovation. Leaders must consider various factors including but not limited to those examined in this thesis such as the pace/timing of innovation, organisational culture, employee's abilities and needs, leader's own competencies and capability for adaptability. Furthermore, leaders must engage in a number of complex social, technical, and decision-making activities. Thus, leading for innovation should be considered as a learning process for leaders.

We suggest that to the extent that leaders acknowledge the dual nature of innovation and harness multiple competencies to manoeuvre through the tensions and paradoxes of innovation process, leaders of creative and innovative efforts will lead and manage innovation more successfully.

Appendices



College of Business, Law, Education and Social Sciences, Bangor University
Hen Goleg, Bangor University, College Road, Bangor, LL57 2DG

Tel: (01248) 388 220
Registered charity 1141565



The Manager,
Dear Sir/Madam,

Leading innovation in SMEs: Empirical evidence for ambidextrous leadership from UK SMEs

We write to invite you to take part in a research examining the leadership styles that foster innovation behaviours in employees by completing the attached survey.

As the business environment becomes more turbulent, complex and dynamic; effective entrepreneurial leadership and innovation are increasingly viewed as sources of competitive advantage for business success. However, very little is known about the process of leading innovation effectively. We seek to investigate this issue with the view of supporting SMEs to grow and survive in the complex ever changing business environment.

The project is being carried out by *Tolulope Busola Oluwafemi*, a PhD student of Bangor Business School, Bangor University, under the supervision of Professor Konstantinos Nikolopoulos and Dr. Siwan Mitchelmore.

We understand that you are extremely busy. The survey should take no more than 10-15 minutes of your time. Your response is very important to the success of this research. Any information provided by you would be treated as **strictly confidential** such that you would not be identified in any reports or outputs produced from this research.

If you have any questions or would like to know more about this work, please contact *Tolulope Busola Oluwafemi* by email (abp65a@bangor.ac.uk) or via telephone on 07443159301.

Please leave your contact details should you require a copy of the study.

Thank you for taking the time to read this letter. We look forward to hearing from you.

Yours faithfully,

Tolulope Busola Oluwafemi
Researcher
Bangor Business School
Bangor University

Dr Siwan Mitchelmore
Project Supervisor & Lecturer in BBS
Bangor Business School (BBS)
Bangor University

Questionnaire

The questionnaire is to be completed by any individual leader whose job involves actively leading and supporting creative and innovative work teams (e.g., R&D units, production units). Kindly give your responses based on the last three years considering employees you have worked with in these units.

1. Please indicate your age range

☐ 17 – 25 ☐ 26 – 35 ☐ 36 – 44 ☐ 45 – 54 ☐ 55 and over

2. Please indicate your gender

☐ Female ☐ Male

3. Please indicate the age of your business:

☐ 0 – 3 years ☐ 4 – 6 years ☐ 7 – 9 years ☐ 10 – 12 years ☐ 13 years and over

4. Please indicate the number of employees in your firm

☐ 1 – 19 ☐ 20 – 49 ☐ 50 – 99 ☐ 100 – 249 ☐ 250 and over

5. Please indicate your qualification (Select all that apply):

☐ GCSE ☐ A level ☐ Vocational Qualification ☐ HNC, HND
☐ University Degree ☐ Post graduate degree (e.g., MA, MSc, PhD)
☐ Business Related Degree (e.g. MBA) ☐ Relevant Professional Qualification (e.g. Diploma in Marketing) ☐ others

6. Please indicate your years of experience in your present job:

☐ 0 years ☐ 5 years or less ☐ 6–10 years ☐ 11–15 years
☐ 16–20 years ☐ 21–25 years ☐ 26 years plus

7. Which of the following best describes the sector in which your business operates?

☐ Pharmaceuticals & Biotechnology ☐ Manufacturing ☐ Energy
☐ information technology ☐ Engineering & Machinery ☐ Software & Computer services
☐ Media, entertainment and games ☐ telecommunication services
☐ Other Services

8. Personality

This section of the questionnaire provides a description of your personality. Remember there are no wrong answers

Using the scale below, please indicate the extent to which you agree or disagree with the following statement's description of your behaviour

Strongly disagree	Disagree	Neither agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

		1	2	3	4	5
	I get chores done right away					
	I often forget to put things back in their proper place					
	I like order					
	I make a mess of things					
	I am the life of the party					
	I don't talk a lot					
	I talk to a lot of people at parties					
	I keep in the background					
	I sympathize with others' feelings					
	I am not interested in other people's problems					
	I feel others' emotions					
	I am not really interested in others					
	I get chores done right away					
	I often forget to put things back in their proper place					
	I like order					
	I make a mess of things					
	I have frequent mood swings					
	I am relaxed most of the time					
	I get upset easily					
	I seldom feel blue					
	I have a vivid imagination					
	I am not interested in abstract ideas					
	I have difficulty understanding abstract ideas					
	I do not have a good imagination					

9. Adaptive/flexible Behavior

This section of the questionnaire asks about your leadership and work behaviors. Remember there are no wrong answers.

Using the scale below, please indicate the extent to which you agree or disagree with the following statement's description of your behavior

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	2	3	4	5

	1	2	3	4	5
I do not hesitate to go against established ideas and propose an innovative solution					
At work, subordinates rely on me to suggest new solutions					
I use a variety of sources/types of information to come up with an innovative solution					
I develop new tools and methods to resolve new problems					
I am able to achieve total focus on the situation to act quickly					
I quickly decide on the actions to take to resolve problems					
I analyse possible solutions and their ramifications quickly to select the most appropriate one					
I easily reorganise my work and the work of my subordinates to adapt to the new circumstances					
Developing good relationships with all my subordinates is an important factor of my effectiveness					
I try to understand the viewpoints of my subordinates to improve my interaction with them					
I learn new ways to do my job better in order to collaborate with others					
I willingly adapt my behavior whenever I need to in order to work well with others					
I undergo training on a regular basis at work or outside of work to keep my competencies up to date					
I am on the lookout for the latest innovations related to my field of work to improve the way I work					
I look for every opportunity that enables me to improve my performance (training, group projects, exchanges with colleagues or subordinates, etc)					
I prepare for change by participating in every project or assignment that enables me to do so					
I keep my cool in situations where I am required to make many decisions					
I look for solutions by having a calm discussion with my subordinates					
Because of my self-control, my subordinates ask for my advice regularly when situations are difficult					

10. Ambidextrous leadership

Using the scale below, please indicate the frequency in which you engage in the leadership behaviors below

Not at all	Once in a while	Sometimes	Fairly often	Frequently if not always
1	2	3	4	5

	1	2	3	4	5
Allowing different ways of accomplishing a task					
Encouraging experimentation with different ideas					
Motivating others to take risks					
Giving possibilities for independent thinking and acting					
Giving room for the ideas of others					
Allowing errors					
Encouraging error learning					
Monitoring goals and controls goal attainment					
Establishing routines					
Taking corrective action					
Controlling adherence to rules					
Sanctioning errors					
Sticking to plans					
Paying attention to uniform task accomplishment					

11. Employee Innovation behaviors

This section of the questionnaire provides a description of the innovation behaviors of your subordinates or employees. Remember there are no wrong words.

Using the scale below, please indicate the extent to which you agree that your subordinates engage in the behaviors below

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	2	3	4	5

	1	2	3	4	5
Searching for new possibilities with respect to their work					
Evaluating diverse options with respect to their work					
Focusing on strong renewal of products/services or processes					
Actively engaging in activities requiring them to be adaptable					
Actively engaging in activities requiring them to learn new skills or knowledge					
Actively engaging in activities in which they have accumulated a lot of experience					
Actively engaging in activities in which they clearly know how to conduct					

	Actively engaging in activities that are primarily focused on achieving short-term goals					
	Actively engaging in activities in which they can properly conduct using their existing knowledge					
	Actively engaging in activities which clearly fit into existing company policy					
	Others (Please specify)					

12. Transformational leadership

Please judge how well each statement fits you and select the appropriate key. The word "others" may mean your followers, clients, or group members.

Strongly disagree	Moderately Disagree	Neither agree nor Disagree	Moderately Agree	Strongly Agree
1	2	3	4	5

		1	2	3	4	5
	I make others feel good to be around me.					
	I express with a few simple words what we could and should do.					
	I enable others to think about old problems in new ways.					
	I help others develop themselves					
	I tell others what to do if they want to be rewarded for their work.					
	I am satisfied when others meet agreed-upon standards.					
	I am content to let others continue working in the same way as always.					
	Others have complete faith in me.					
	I provide appealing images about what we can do.					
	I provide others with new ways of looking at puzzling things.					
	I let others know how I think they are doing.					
	I provide recognition/rewards when others reach their goals.					
	As long as things are working, I do not try to change anything.					
	Whatever others want to do is O.K. with me.					
	Others are proud to be associated with me.					
	I help others find meaning in their work.					
	I get others to rethink ideas that they had never questioned before.					
	I give personal attention to others who seem rejected.					
	I call attention to what others can get for what they accomplish.					
	I tell others the standards they have to know to carry out their work.					
	I ask no more of others than what is absolutely essential.					

13. Transactional leadership

For each of the statements below, please select the number that indicates the degree to which you agree or disagree. Please give us your immediate impressions.

Strongly disagree	Moderately Disagree	Neither agree nor Disagree	Moderately Agree	Strongly Agree
1	2	3	4	5

		1	2	3	4	5
	It is often necessary to make decisions without consulting others due to time pressures upon the task at hand.					
	Teams operate best within a clear and structured framework of procedures.					
	I have learnt that people will never fail to positively surprise you if you leave them alone.					
	Half of people are intrinsically hard working, but the other half need to be pushed into completing work to a high enough standard.					
	People constantly challenge my ideas and strategies because they know they are welcome when they do so.					
	Cost savings can be made if everybody does exactly what they're told, and don't try to over-engineer solutions.					
	I try to delegate as many tasks as possible in their complete entirety.					
	I let people get back to me when they decide to, rather than getting in touch myself.					

13. Emotional Intelligence

This section of the questionnaire provides a description of emotional intelligence.

For each of the statements below, please select the number that indicates the degree to which you agree or disagree. Please give us your immediate impressions.

Strongly disagree	Moderately Disagree	Neither agree nor Disagree	Moderately Agree	Strongly Agree
1	2	3	4	5

		1	2	3	4	5
	I know my friend's emotions from their behavior					
	I am a good observer of the emotions of others					
	I am sensitive to the feelings and the emotions of others					
	I have a good understanding of the emotions of the people around me					
	I am able to control my temper and handle difficulties rationally					
	I am quite capable of controlling my own emotions					
	I can always calm down quickly when I am very angry					
	I have good control of my own emotions					

	I have a good sense of why I have certain feelings most of the time						
	I have good understanding of my own emotions						
	I really understand what I feel						
	I always know whether or not I am happy						
	I always tell myself that I am a competent person						
	I am a self-motivated person						
	I would always encourage myself to try my best						



Dear Madam,

Invitation to research interview

We write to invite you to take part in an interview for a research that is exploring leadership behaviors and gender role identity amongst female entrepreneurs.

This research project is being carried out by *Tolulope Busola Oluwafemi*, a 3rd year PhD student of Bangor Business School, Bangor. Tolulope is being supervised by Professor Konstantinos Nikolopoulos and Dr Siwan Mitchelmore.

We understand that you are extremely busy. The interview will take no more than 25 to 40 minutes and will be held in a location most convenient for you (perhaps your office). Your participation is very important to the success of this research. We plan to have the interviews from 21st August to 17th September. Please let us know what day and time is most convenient for you.

Any information collected during this research will be treated as strictly confidential and a report of our findings will be provided for you.

If you have any questions or would like to know more about this research, please contact *Tolulope Busola Oluwafemi* by email (abp65a@bangor.ac.uk) or via telephone on 07422599355.

Thank you for taking the time to read this letter. We look forward to hearing from you.

Tolulope Busola Oluwafemi
Researcher
Bangor Business School (BBS)
Bangor University

Dr Siwan Mitchelmore
Project Supervisor & Lecturer in BBS
Bangor Business School (BBS)
Bangor University

Interview questions

Communal vs agentic traits (Questions 1 and 2)

Communal traits	Agentic traits
Affectionate, helpful, kind, sympathetic, interpersonally sensitive, nurturing and gentle	Assertive, aggressive, competitive, controlling, self-sufficient and prone to act as a leader, willingness to take risks, independent

1. At work, which set of traits do you engaged in more? Please give example(s) if you can
2. In your experience, which of these two categories of traits have you found to be most helpful to achieving results?

Ambidextrous leadership (Questions 3 and 4)

Opening leader behaviors	Closing leader behaviors
Allowing different ways of accomplishing a task	Controlling adherence to rules
Encouraging experimentation with different ideas	Paying attention to uniform task accomplishment
Motivating to take risks	Sanctioning errors
Giving possibilities for independent thinking and acting	Sticking to plans
Giving room for own ideas	Monitoring and controlling goal attainment
Allowing errors	Establishing routines
Encouraging error learning	Taking corrective action

3. Which set of leadership behavior (opening or closing) best describes your leadership approach?
4. What determines your choice of behavior and to what extent do you engage in each set of behavior?

Challenges at work

5. In your opinion, do you face any gender specific challenges at work? (Please give examples)
6. How do you cope with such challenges?
7. In general, how would you describe your leadership/management style?
8. Are there other things you would like to add?

Interview Transcript

T: communal and agentic traits

R: I have looked at every single one and I am 50% on each single one. I am completely split between the two. In a work environment, there would have to be a balance of both if there is sort of any because you have to be aggressive and assertive but you would have to be sympathetic at the same time because sometimes if you want something in particular you would need to take on a nurturing and gentle role even though you need a competitive stance particularly for those working in the sales environment because obviously you have got an agenda for the business which needs to be met.

T: Question 2

R: So, I think it would be depending on what I was dealing with, who I was dealing with and in what environment and what I wanted to get out of it and then determine what the balance would be because I am all of communal but I can be all of agentic as well. You need the balance, you got to be careful about the people you meet on the way up because you are going to meet them on the way back down

T: Question 2 probe

R: Different situations in business require different traits. I supply health and safety equipment in France, Germany, Denmark, all companies over in Europe. So I find that how you deal with people abroad is different to how you treat people in the UK. In Europe I have found that so far you are able to get the job done, no one seems to care about your gender. But it can be a bit different in the UK, sometimes you have ... so maybe I supply a company that has lots of engineers sometimes older men and there is not many women so if I go to that kind of company they may think what does a woman know about what we are talking about

T: To what extent would you be communal just because you are expected to be?

R: It would to a certain degree but if I want something I would go for it regardless so far I get the outcome I won't be bothered about if I trampled on anybody's toes. ... I run a business and I have got to make sure that business keeps on running and sometimes they expect you to be more sympathetic because you are woman but I am not

T: Question 3

R: OLB describes me well.

T: Question 4

I don't do adherence to rules because rules are meant to be bent, I do risk taking. Paying attention to uniform task accomplishment would have to be to a degree. You have to do a lot of taking corrective action because I do a lot of OLB. I am quite open,

I encourage people to come with new ideas. You have got to make mistakes to learn what you do. Once you have done that then you can say that is not right, then you can go on to correct it. But you need to engage in CLB otherwise nothing would get finished if you put too much of OLB in place.

T: Explains the theory of AL and gender identity then asks Question 5

R: Yes, there are gender issues at work. I was involved in a team that was led by a guy who was weak but hid behind strong members of his team who happened to be guys and couldn't deal with women at all, couldn't give them a role within the team, couldn't give them anything of any significance because it would have exposed his weaknesses and it wasn't till before he was taken to a tribunal in the end by 2 men not women, strangely enough that he started to change his ways. It is an environmental thing because I was involved in a group that was set up since 1984 where the majority on the board but one are all guys and that's from that time and they have not moved on. Now, you would not see that, the way in which they have witnessed things in their own growth is different

T: Question 6

R: I am sure that there are women that do feel that way but not me personally. I can't think of any of those challenges in my role. I don't think that people preferring to have a man as their boss is not an issue anymore. I think it was an expectation at one time to always have male bosses. 30 years ago, a man was a manager everywhere. When my mom was younger, when she got married she was asked from her job because it was perceived that when women got married they had kids and therefore in a bank, she could work anymore. That is not so long ago in our history just because we are women. At one time it would have been expected rather than preferred but I don't think that is not the case anymore.

T: Question 7

R: Erm, I encourage people to work on the same level, I would encourage people to be open which a lot of guys can't, whereas women can. In fact I am not very good at being a manager because if anything I am too busy getting involved whereas you need to step away and demonstrating some of these closing behaviors like monitoring and controlling behaviors. I need to be managed rather than me managing people basically, if I am honest.

T: Any additions?

R: yes, the challenges I face are non-gender specific, skills such as engineering & accountancy skills are required. We have taken the view that we need to employ people who are more skilled so this is inevitable.

Template

Female entrepreneurs and gender roles

1. Androgynous (10)
2. Communal (2)
3. Agentic (2)

Reasons for variability in traits

1. Type of industry
2. Country of operation
3. Organisational culture

Factors determining choice of traits

1. Desired goals
2. Employee's needs
3. Need to reinforce control and maintain credibility

More emphasis on competence rather than dominance

Female entrepreneurs and ambidextrous leadership

1. Ambidextrous (11)
2. Opening leadership behaviors (3)
3. Closing leadership behavior (0)

Factors determining choice of leadership behavior

1. Type of business sector
2. Trust
3. Length of working relationship with staff
4. Training

Emerging situations will largely determine leadership behavior

Challenges experienced by female entrepreneurs

1. It exists but no experience in my present job (8)
2. I have experienced it my present job (2)
3. Gender bias does not exist (1)

Why females experience challenges

Working in a non-friendly female environment cause challenges

Positive aspects

Challenges motivate females to become entrepreneurs

Competence will mitigate challenges

Leadership and management styles in broad terms

Confident, firm, competent, goal oriented, knowledgeable, patience, fairness
supportive, inclusive and inspirational

