Leadership of Health Innovation: Building an Innovative Health Organisation
(A Mixed-Methods Study)

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Abstract

This thesis explores leadership styles associated with innovation in the National Health Service in England, drawing on a review of leadership theories and concepts, and comparing what is found with an organisation in the United States recognised as a high performer in this area. Although leadership has been studied extensively, most research has focused on the political and military spheres. More recent work has also examined the role of leadership in sectors such as manufacturing and technology, both areas where it is essential to encourage and nurture innovation. Yet, in the health sector, where innovation is now high on the health policy agenda in many countries, there is a paucity of research on how leadership can foster a culture of innovation. It cannot be assumed that leadership theories and concepts developed in other sectors will automatically apply to the health sector, given its many complexities and specificities, including multiple and sometimes competing objectives, such as the need to match technological advances with cost containment. Moreover, these objectives may vary in different settings, reflecting the contextual embeddedness of health systems.

This research asks what leadership styles have been adopted by those working at senior leadership and management levels in organisations created to support innovation within the NHS in England. To place these findings in a broader context, these findings will be compared with those obtained from a leading health sector organisation identified as a global leader in innovation that served as the US Pilot Study for this research. It will relate these findings to theory and previous empirical research on leadership for innovation while exploring the application of these findings to the health sector.

The research uses a mixed method approach, commencing with a review of the literature to identify leadership styles and critical appraisal of evidence associating different styles with the extent and nature of innovation, which in turn has informed development of an instrument to be used in a survey (quantitative element) of those in leadership roles. The instrument draws extensively on that used by Handy (1996) to assess organisational culture. The survey questions are linked to leadership theories and

concepts identified in the literature review and seek to identify the leadership styles adopted in the organisations studied. The findings inform the qualitative phase of the study, in which interviews with key informants are used to interpret and understand the quantitative results.

The study findings have been used to generate a 'Leadership Framework' for assessing leadership styles in organisations seeking to foster innovation in the NHS. This is based upon the leadership styles described in the literature and leadership theories and concepts driving health innovation and to a minor extent to those adopted in a successful innovator in the United States health sector. The research concludes by offering contextually appropriate recommendations based on theory and empirical evidence.

Declaration

This is to certify that the thesis comprises only my original work towards the DrPH, that due acknowledgement has been made in the text to all other material used and that the thesis is less than 50,000 words in length, including tables, figures, boxes, and footnotes; but excluding the list of references and appendices.

Acknowledgements

Many thanks go to all of my survey participants and interviewees; many of whom expressed a wish to contribute to the improvement of leadership of health innovation. Also, I would like to thank the members of my advisory committee for their expert assistance throughout my study, including: Dr Chris Streather, Hospital CEO at Royal Free Hospital and former Chief Medical Officer of HCA Healthcare UK and Dr Rifat Atun, Professor of Global Health Systems and Director of Global Health Systems Cluster at Harvard T.H. Chan School of Public Health. Last, I would like to thank my supervisor Professor Martin McKee for guiding my work towards a complete and structured field of study for my thesis, for his incisive analysis and insight, his efficiency, and most of all for his invaluable moral support.

Chapter 1 Introduction

This thesis is about three types of organisations created within the National Health Service in England to promote innovation. The idea arose from the Organisational and Policy Analysis I undertook as part of the degree of Doctor in Public Health, during which I was attached to one of them. This stimulated an interest in leadership, and specifically in the narrower field of leadership that promotes innovation. These health organisations are: Collaborations for Leadership in Applied Health Research and Care (CLAHRCs), Academic Health Science Centres (AHSCs), and Academic Health Science Networks (AHSNs).

Collectively, CLAHRCs, AHSCs and AHSNs are charged with finding solutions to the translation gap in health research. The translation gap in health research has "two dimensions: *"the translation of basic and clinical research into ideas and products, the so-called T1 gap; and concern for introducing those ideas and products into clinical practice, the so-called T2 gap"* (Currie, Lockett, & Enany, 2013, p 27). Some participants in this study referred to this translation gap as the delay in moving the results of health research from "*bench to bedside*." The roles of these organisations are described in more detail later in this chapter.

As the terms "leadership" and "innovation" are at the core of this thesis, it is essential to define them at the outset. For the purposes of this thesis, leadership is defined as *"the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives"* Yukl (2006) as cited in Deng, Bligh, Kohles, Schyns, and Hansbrough (2010), p.451. Innovation is defined as *"a broad set of activities involving the creation and implementation of concepts and products new to an organisation"* , Basu and Green (1997) as cited in Schermuly, Meyer, and Dammer (2013), p.133.

It is also important to state what this thesis is not about. The thesis concentrates on leadership *for* innovation, in other words where the primary goal is innovation. Clearly, innovation takes place

organically throughout the NHS, alongside other streams of work. These innovations relate to products, such as new medicines or technologies, processes, such as new models of care, positions, such as tele-surgery, and paradigms, such as the many changes in clinical practice that followed from the introduction of computerised tomography or minimally invasive surgery (Tidd & Bessant, 2013). New ideas are constantly emerging and being developed by those who identify better ways of performing their roles. However, the promotion of innovation is not their primary task. The specific focus of this thesis, on organisations whose primary purpose is promoting and implementing innovation, means that these roles and functions are not examined. Nor does it include parts of the NHS that have very specific responsibilities in narrow technical areas, such as NHS Genomic Medicine Centres, where the target audience is very narrowly circumscribed.

The scope of the thesis is also, necessarily, circumscribed in terms of the literature that it draws most directly on. There is a very large literature on leadership and on innovation *per se.,* Some of this relates to the characteristics of individual leaders, such as Great Man Theory (Borgatta, Bales, & Couch, 1954) or Trait Theory (Colbert, Judge, Choi, & Wang, 2012). Other writers have focused on leadership for change, which may but need not necessarily involve innovation, such as Lewin's (Lewin, Lippitt, & White, 1939) and Likert's (Likert, 1967) theories. Other work relates to achievement of organisational goals (Hersey, Blanchard, & Johnson, 2007; Vroom & Yetton, 1973), which again is important for any organisation, but not specifically to the promotion of innovation.

Nor does it explore the extensive literature on theories of innovation, such as the debate on radical versus incremental innovation, ideas of creative destruction (Schumpeter, 2010), the extent to which organisations focus inwards or outwards (Chesbrough, Vanhaverbeke, & West, 2006), the role of innovation of components or linkages (Henderson & Clark, 1990), or the substantial research on diffusion of innovation (Rogers, 2010). However, in both cases, while not directly relevant to my thesis, this literature has informed my thinking.

The research for this thesis was undertaken in one US organisation, an Academic Health Science Center, and in six British organisations, one Academic Health Science Centre (AHSC) and its associated Academic Health Science Network (AHSN), and five Collaborations for Leadership and Applied Health Research and Care (CLAHRCs).

AHSCs in the UK were established following a 2007 review of healthcare in London led by Lord Darzi. The expectation is that they will draw on their world-class research and health education to improve patient care and healthcare delivery. In particular, they are to translate scientific discoveries from the laboratory to the bedside, to enable more patients to benefit from innovative treatments. The first to be established was at Imperial College, in London, which merged with the Hammersmith Hospital and St Mary's NHS trusts. This model was rolled out across the NHS in England in 2013. The structure adopted by individual AHSCs is a matter for local decision making, but the goal is to support health and care improvements for large populations in different parts of the country. There are currently seven in England and two in Scotland.

AHSNs connect NHS and academic organisations, local authorities, non-governmental organisations, and industry, acting as catalysts to create the conditions to facilitate change across entire health and social care economies. They have an explicit focus on improving outcomes for patients. They are expected to identify and spread health innovation at pace and scale, driving the adoption and spread of innovative ideas and technologies across large populations.

CLAHRCs are *"collaborative partnerships between a university and the surrounding NHS organisations, focused on improving patient outcomes through the conduct and application of applied health research"* (CLAHRC Partnership Programme, 2014)**,** (p.1). Practically, this involves collaborations between local providers of NHS services and NHS commissioners, universities, other relevant local organisations and the relevant Academic Health Science Network.

Thirteen CLAHRCs have been established. Their main focus is on research targeted at chronic

disease and public health interventions. Specifically, their goals are to (NIHR, 2018):

- develop and conduct applied health research relevant across the NHS and translate research findings into improved outcomes for patients;
- create a distributed model for the conduct and application of applied health research that links those who conduct applied health research with all those who use it in practice across the health community;
- create and embed approaches to research and its dissemination that are specifically designed to take account of the way that healthcare is delivered across the local Academic Health Science Network;
- increase the country's capacity to conduct high quality applied health research focused on the needs of patients;
- improve patient outcomes locally and across the wider NHS; and
- contribute to the country's growth by working with the life sciences industry.

CLAHRCS are funded and accountable to the National Institute of Health Research, the research and development organisation established by the Department of Health and Social Care to support the National Health Service in England and ultimately to the Department of Health and Social Care, through annual reviews and are funded on a five year cycle, with continuation conditional on a successful reapplication. Figure 1 shows the financing and accountability flows for AHSCs (left panel) and AHSNs (right panel) that involve NHS and academic bodies, although as noted, there are also relationships with various other entities, including industry and local government.

These organisations have complementary roles. At the risk of simplification, the AHSCs are engaged in basic sciences and their translation into clinical practice, CLAHRCs are engaged in applied health research, including the development of new means of assessing health needs and implementing new models of care, and AHSNs are responsible for scaling up innovations.

Figure 1 Funding and Accountability flows in the NHS

Figure 1 The "unlinked partners" model of academic-clinical relationships in England, 2014. The left and right panels represent funding and accountability relationships in the academic and clinical enterprises of AHSCs and AHSNs, respectively. Solid arrowed lines (——►) indicate major funding flows; arrowed dash lines (— — ►) indicate accountability relationships. Adapted from: Ovseiko et al. [7] and Department of Health: Equity and Excellence: Liberating the NHS. London: Department of Health; 2010.

Note: As discussed, this structure is still evolving. For example, as noted by this study's interviewees, "*since 2016, the 'Monitor' is now part of 'NHS Improvement' and the 'Department for Business Innovation and Skills' is now called the 'Department for Business, Energy & Industrial Strategy'. In addition, Public Health England which reports to the Department of Health, oversees local authorities* and which supports NHS *England, is not depicted in Figure 1."*
Source: Ovseiko et al. (2014), p.3.

As noted above, the origins of this thesis lie in my experience in undertaking the Organisational

and Policy Analysis (OPA) component of my professional doctorate. As will be explained more fully in

Chapter: 8, the Integrating Statement, this was undertaken in an AHSN; an organisation charged with

fostering innovation and spreading service improvement in the National Health Service (NHS)[1] in

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[1] The United Kingdom's National Health Service is comprised of four National Health Services, including, England, Northern Ireland, Scotland and Wales. Reference to the 'NHS' is this thesis refers to the English National Health Service (NHS) unless otherwise noted.

England, in which I was embedded in for approximately three months in 2015. I selected an AHSN

because of my background in the private sector in the United States of America (US or USA), and,

specifically, in innovator organisations. I chose that specific AHSN because it was one of the first to be

established, was nearing the end of its second year of operation and was transitioning from a funding

model based on a core operating grant to a partially self-financing model. This transition was planned to

take place over a five-year time span.

　　　　The AHSN's management and statements by those working in the wider NHS seemed to agree

that leadership was the key to health innovation (Ferlie et al., 2017; NHS England, 2011, December 5,

p.1), but there was no practical framework to guide leadership development that aligned the leadership

styles of senior leadership and management (leaders/managers) responsible for health innovation with

empirically supported leadership theories and concepts of health innovation (Weintraub, 2016).

　　　　The leadership theories and concepts driving health innovation discussed in this DrPH thesis

(henceforth the thesis) are supported by quantitative and qualitative literature in the health and other

industrial sectors. As described by Creswell (2014b), management theories should be predictive of

phenomena (i.e., health innovation in this instance). However, there is no guarantee that they will lead

to the predicted results under all circumstances. Therefore, health sector leaders/managers need to

exercise due diligence in the application of these leadership theories and concepts. They should

especially consider the organisational '**Context**' in which these leadership theories and concepts are

applied. In certain instances, leadership is the "*emergent property of the interaction between the*

leader/manager, the organization member and the situation" (V. Iles

Personal Communication, 13 May 2018).

Unlike in natural sciences, social science theories are rarely, or never, according to some, universally applicable (Gorton, 2012). This view has been endorsed in relation to management theories by Miller & Tsang (2010), who note *"some challenges to testing management theories … inherent to the complex, open and changing nature of organisations and their contexts"* (p.139).

Many of the organisations established by the NHS in England explicitly draw on models of health innovation adopted in the US, and specifically the American Academic Health Science Centers (AHSCs). These bring together universities, medical schools, teaching hospitals, translational medical facilities, business development units and, in some cases, venture capital facilities. However, so far, the learning process has been informed mainly by study of published materials on the US centres and, especially, study visits. There has not, as far as can be ascertained, been any explicit attempt to compare aspects of these ostensibly similar organisations in the two countries.

As an American, with both financial and operational leadership experience in the US health system, I was struck by many important differences between the UK National Health Service and the US health system in ideas, concepts, and discourses. Consequently, while the primary focus of my research is on organisations in the UK, as a subsidiary research aim I plan to take advantage of this comparative perspective to the extent that is possible within the limited scope of a DrPH thesis.

1.1 Background to the Research Study

1.1.1 Different Contexts, Similar Challenges

The UK's National Health Service operates within what is, in international terms, a financially highly constrained situation. In 2013, public and private healthcare spending in the UK was approximately £127.5 billion and £25.5 billion, respectively, which amounted to 8.5% of Gross Domestic Product (Nuffield Trust, 2016).

Leaders of the NHS, which provides universal health coverage in England, have recognized that, if it is

to improve patient outcomes while meeting Treasury demands for annual savings due to a projected

budgetary shortfall, estimated at *"£60 billion by 2025"*, it will require innovative leadership. That is innovative

leadership leading to *"a fundamental change to the way in which people currently work. At the heart of*

this is strong leadership – both clinical and managerial at all levels in the system. It will require all

leaders to identify and tackle the behaviours and cultures that can stand in the way of innovation. We

will need to align system incentives to support and encourage innovation" (NHS England, 2011,

December 5, p.1).

The US health system, while very much more generously funded, also sees improved leadership of

health innovation as a means of improving health outcomes and reducing health system costs. For example,

the National Science Foundation (NSF) has formed the NSF Innovation Corps (I-Corps™), in collaboration with

the National Institutes of Health, to train researchers in health innovation leadership (National Science

Foundation, 2014, June 14).

Today, the UK and the US health systems are also similarly challenged by the estimated 17 years

required to translate scientific discoveries into health actions (Brownson, Kreuter, Arrington, & True, 2006;

Morris, Wooding, & Grant, 2011). However, the US health system differs from the NHS in many respects.

For example, the US health system is one of a few in the world which depends, to a substantial extent,

on market-based private health insurance, while government funded health coverage (as in the NHS)

plays a much smaller role, covering selected groups in the population, such as the elderly (Medicare),

the poor (Medicaid), and military veterans (US Department of Veterans Affairs). Since the end of World

War II, large US employers and, later, the US federal government, have favoured preserving the role of

private health insurance companies in managing payments for services through the administration of

healthcare group purchasing plans. The implementation of the Patient Protection and Affordable Care

Act (ACA), signed into law in March 2010 by President Barack Obama, builds upon the expansion of

market-based private insurance to increase accessibility of health insurance, including measures such as

mandatory requirements to purchase coverage.[2]

Another particular characteristic of the US health system is that households, who are the principals (i.e., customers/patients) in a principal-agent relationship with healthcare providers, generally view their relationships, first with their provider agents (e.g., physicians, hospitals, pharmacies, private urgent care centres) and, second with financial intermediaries which may include: 1.) private health insurers (e.g., BlueCross BlueShield); 2.) federal government (e.g., Medicare for the elderly); 3.) states (e.g., Medicaid recipient coverage for the poor funded jointly by the federal government and the states); and 4.) local government (e.g., county health department clinics; healthcare districts). However, it is principally the financial intermediaries, except for self-pay patients, that are contractually responsible to remit the amounts due by households to health providers.

According to the Organisation for Economic Co-Operation and Development [OECD] (2015, March 13), the US health system was the most costly among 13 high income countries and also reported poorer health outcomes (The Commonwealth Fund, 2015, October 8). Yet, despite the differences between the US and UK health systems, the leadership of both has recognized that at least part of the solution to their common cost and health outcome problems depends on improving the leadership of health innovation.

1.1.2 The Innovation Process

The innovation process has been depicted by Tidd and Bessant (Figure 2) as a multi-stage process in which, if all of the elements are present, should allow an organisation to search, select, implement and capture innovative ideas (Tidd & Bessant, 2013). Although developed as a generic model, drawing on insights from many sectors, there is no reason to believe that it would not be applicable in a public or private health organisation.

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[2] Since the inauguration of Donald J. Trump as the 45th President of the United States on 20 January 2017, actions by the new President may lead to changes and possible repeal of the ACA. In particular, the new President objects to the mandatory requirement to purchase coverage.

Figure 2 The Innovation Process
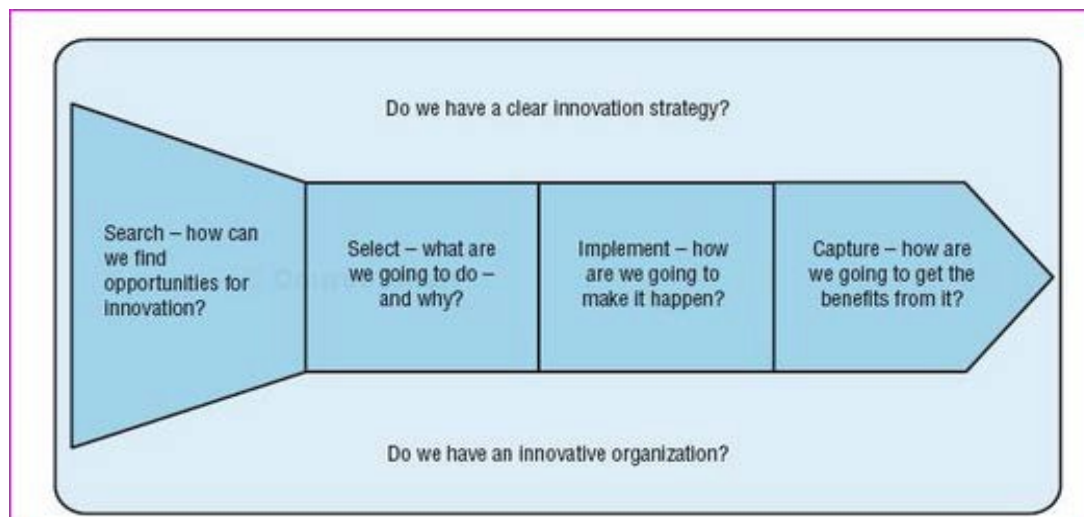
Source: Tidd and Bessant (2013), p.60.

In the '***Search***" phase of the innovation process depicted in Figure 2, leaders/managers need to establish clear pathways and processes to bring new ideas/opportunities to the attention of senior leadership. In health organisations, this is broader than just tapping into an organisational network or relational assets of the senior leadership. It includes pulling ideas from patients and a myriad of other stakeholders while involving multiple levels of leaders/managers. As described by the NHS, "*we will need to create 'pull' for new ideas from patients and the NHS, rather than relying on the traditional top down 'push'*"(NHS England, 2011, December 5, p.1).

To '***Select'*** among a continuous flow of ideas/opportunities, a health organisation must have a strategic plan to guide leaders/managers to select from what is often a choice among these myriad ideas/opportunities, most of which will seem, at least at first glance, plausible and which are based on the best of human intentions. To move forward without a strategic plan would risk losing focus and using scarce resources in an inconsistent and possibly unproductive manner.

In the '***Implementation'*** phase***,*** the idea/opportunity is brought into reality. This may be in the form of: 1.) *Product Innovation* (e.g., new drug therapy); 2.) *Process Innovation* (which can range from new and complex models of care or even simple measures such as using volunteers to feed inpatients);

3.) *Position Innovation* (e.g., perform remote electronic monitoring of patient formerly admitted to

hospital); and *Paradigm Innovation* (e.g., patients driving idea/opportunity generation within the health

organisation)(Tidd & Bessant, 2013).

To *'Capture'* the organisational benefits of an innovation strategy including "Health & Wealth"

as described by NHS England (2011, December 5) requires deployment of the accumulated leadership

and management knowledge and administrative/technical skills acquired in the prior three innovation

phases depicted in Figure 2, plus the capacity to launch and sustain the innovation. With respect to

health organisations, particularly those that are part of the NHS, often this involves the acquisition of a

new and different set of leadership and management knowledge as well as administrative, technical,

and financial skills combined with hands-on experience regarding issues arising with innovative start-up

organisations (collectively herein referred to as resources). These resources, which in the past have been

more often associated (rightly or wrongly) with the private sector of the economy, are essential for

capturing the value of an organisation's innovation strategy. As described by Mazzucato (2015), venture

capital firms in the US have succeeded because these entities brought more than money. They

possessed other resources necessary to '*Capture '*the benefits of an innovation strategy.

Mazzucato (2015) argues that there is widespread acceptance in major developed countries

that:

> *"The State's role is not just to create knowledge through national labs and universities, but also*
> *to mobilize resources that allow knowledge and innovations to diffuse broadly across sectors of*
> *the economy. It does this by rallying innovation existing networks of by facilitating the*
> *development of new ones that bring together a diverse group of stakeholders. However, having*
> *a national system of innovation… is not sufficient. The State must also lead the process…" (p.40)*

With regards to the preceding viewpoint, government health agencies and health organisations

have much to learn from the experiences of other sectors and, to the extent feasible, could incorporate

a number of these private sector participants in their innovation strategy (Tidd & Bessant, 2013, pp 24-

28).

Leadership of innovation has been viewed by Storey and Holti (2013) as key to innovative health research, education and improvements in high-quality care. Yet while leadership of innovation *per se* has been researched extensively, particularly in the manufacturing and technology sectors, there is a paucity of studies within the health sector. As described by Antes, Mart, and DuBois (2016) in a qualitative study of National Institutes of Health (NIH-US) funded genetic researchers, "*leadership and management roles in research have received scant empirical examination*" (p.1).There are also few studies on the role of senior health leadership (i.e., senior administrative leadership) and management in fostering innovation (Goffin & Mitchell, 2010; Ovseiko et al., 2014; Weberg, 2009; M. West, Armit, Eckert, West, & Lee, 2015).

As described in this thesis, leadership is key to health innovation. So why are there no studies of leadership of health innovation that explicitly seek to develop a practical framework that aligns the leadership styles adopted by health organisation leaders/managers with empirically supported leadership theories and concepts that, collectively, may contribute to successful health innovation? The existing literature on innovation leadership includes frameworks developed to measure leadership styles, such as those applying the 'Full Range Leadership Model' and those more narrowly focused on one of the four phases (e.g., ***'Implementation'*** phase as described in Figure 2) of the innovation process, using the 'Innovation Implementation Framework' (Aarons, Ehrhart, Farahnak, & Hurlburt, 2015; Antonakis, Avolio, & Sivasubramaniam, 2003; Avolio, 2010; Kirkbride, 2006). Another example is the 'Learning and Innovation' model approach proposed by Deng et al. (2010). This builds upon the 'Full Range Leadership Model' and has been tested by Yan et al. (2014). Deng et al. (2010) aligns each of the five leadership styles, described in Table 1 (page 16), ranging from positive leadership styles (Authentic, Transformational and Transactional styles) to negative leadership styles (including Laissez-faire and Aversive styles) with the leadership theory that addresses Employee Mindset (i.e., a growth versus fixed orientation, which will be described in Chapter 2, which presents the review of the literature undertaken for this thesis).

Consequently, there are established survey questionnaires developed to test for leadership styles among leaders/managers which may incorporate , as noted previously, selected leadership theories and concepts that drive innovation (e.g., Bass and Avolio's Multifactor Leadership Questionnaire [MLQ-Form 5X]) , Antonakis et al. (2003). However, I have been unable to find any survey questionnaire that has been developed specifically to test for the alignment of leadership styles adopted by health organisation leaders/managers with empirically supported leadership theories and concepts which, collectively, as will be described in my literature review, may contribute to successful health innovations. This required me to develop a survey questionnaire, based on a range of theories and concepts to accomplish the aim and objectives of this study.

The NHS has developed its own leadership model, now being taught in its 'Leadership Academy', which is focused on improving the NHS' customer service and meeting community needs by: 1.) providing and justifying purpose and contribution[3]; 2.) team motivation; and 3.) improving system performance (Storey & Holti, 2013). However, it is not apparent that its leadership model explicitly seeks to align the leadership of health leaders/managers with empirically supported leadership theories and concepts shown to be favourable to health innovation.

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[3] As described by Storey and Holti (2013) leaders in the NHS should *"focus explicitly on the needs and experiences of service users, continually reinforcing an inspiring vision of the mission and social contribution of the organisation or unit…"*

Table 1: The Continuum of Leadership Style

Leadership Style	Description	Citations
Authentic	Authentic leadership is a positive form of leadership by example. An authentic leader possesses a high-degree of confidence and self-awareness. The authentic leader believes every person has something positive to deliver and can be developed to reach their full potential by modeling the behavior of the leader. For example, authentic leaders/managers may be more tolerant of employee errors and consider it part of the self-development process. The Transformation style of leadership may incorporate many of the attributes of this style.	(Deng et al. , 2010; Yan et al., 2014)
Transformational	Transformational leadership is a positive form of leadership which is distinctive because it is inspiring and motivational. It encourages followers to achieve the mission/vision/values set by the leader by going above and beyond achievement of their job description.	(Caridi-Zahavi et al. , 2015; Deng et al. , 2010;2; Jung et al., 2003; Schermuly, et al., 2013; Weng, Huang, Chen & Chang ,2013; Yan et al., 2014)
Transactional	Transactional leadership is defined by a focus on following organizational policies and procedures. However, this is a positive form of leadership especially when it accompanies a Transformational leadership style. This form of leadership is focused on organisational process and can turn the Transformational leaders inspiration into corporate actions. There is little emphasis on innovation under this leadership style singly rather a focus on goverance and process. This leadership style is commonly found in industries that view themselves as stable and not changing.	(Deng et al. , 2010; Yan et al., 2014)
Aversive	Aversive leadership is a negative form of leadership and is intolerant of errors promoting a risk-averse culture. Under this negative form of leadership, the follower faces harsh treatment for not achieving the dictates from the leader.	(Deng et al. , 2010; Tidd & Bessant, 2013; Yan et al., 2014)
Laissez-faire	The Laissez-faire style of leadership is a negative and delegated style of leadership (i.e., can be described as passive-aggressive) where organization members may be given considerable latitude to make decisions, but with little support. Leaders/managers with a Laissez-faire style of leadership generally have a callous disregard for developing followers or setting themselves as a role model.	(Deng et al. , 2010; Yan et al., 2014)

1.1.3 Innovation in the NHS

Innovation and entrepreneurism became prominent in the lexicon of the NHS following the publication of *Best Research for Best Health*, which included the goal to "*establish the NHS as an internationally recognized centre of research and excellence*". This was followed by *High quality care for all: NHS next stage review final report* which recommended the formation of "*Academic Health Science Centres … to bring together a small number of health and academic partners to focus on world-class research, teaching and patient care*" (Directorate, 2006, p. 2), and (Darzi, 2008, p. 57). In 2009, the first AHSCs were created *"to foster medical innovation and high-quality care throughout hospitals"* (Ovseiko et al., 2014, p.4). In 2011, expenditure on health research in the UK amounted to approximately £8 billion annually with the government providing approximately 24% of this amount, with its share growing (Walshe & Davies, 2013).

Beginning in October 2008, the National Institute for Health Research (NIHR) funded nine CLAHRCs as pilots for five years. A second wave followed and, at present, there are 13 CLAHRCs which are "*collaborative partnerships between a university and the surrounding NHS organisations, focused on improving patient outcomes through the conduct and application of applied health research" (CLAHRC Partnership Programme, 2014)*, p.1. The *"CLAHRCs have three key interlinked functions: conducting high-quality applied health research; implementing the findings from research in clinical practice; and increasing the capacity of NHS organizations to engage with and apply research. CLAHRCs are regional with their agendas determined by the partnering organizations and tailored to health care needs in their areas"* (Currie et al., 2013, p 28).

The NHS recognizes the importance of the diffusion and spread of research innovation as a means to improve health outcomes. This is considered key to meeting the health challenges posed by, among other factors, an aging UK population. In 2012, this recognition led to the invitation to form AHSNs as organisations to network with the AHSCs, CLAHRCs and all parts of the NHS and the local

community to improve health and wealth (NHS England, 2011, December 5, 2012, June 20, 2015).

Walshe & Davies (2013) described the primary mission of the AHSNs as *"knowledge mobilization"* (p.7) while Fish (2013) commented that the success of the AHSNs, "*depends on shared values, strong working partnerships, local leadership and energy…"* (e18).

Concurrently, with the preceding developments in research in the UK, the NHS was substantially reorganized following the Health and Social Care Act 2012. The resulting complex structure, which is still evolving. As described by Alderwick, Dunn, McKenna, Walsh, and Ham (2016), since the passage of the Health and Social Care Act 2012, the NHS has abolished Strategic Health Authorities and, after several other changes, have given rise to Sustainability and Transformation Plans (STPs).The current STP plans completed in 2016 were located in 44 local areas throughout England with responsibility for all areas of NHS spending "*from 2016/17 to 2020/21"* (Alderwick et al., 2016 , p 7)*.* While the Health and Social Care Act 2012 *"sought to strengthen the role of competition within the health system, NHS organisations are now being told to dampen the competition and collaborate to plan and provide local services. This strategy is being called place based-planning… The introduction of STPs reflects a growing consensus that more co-ordinated action is needed to meet the challenges facing the NHS and social services* (Alderwick et al., 2016 pp., p 7-16)*.*

1.2 Research Questions

In this research study, I am asking one main question and one subsidiary question.

1.   Do the styles of leadership adopted by leaders/managers in organisations charged with innovation in the health sector in the UK align with leadership theories and concepts empirically shown to encourage innovation?

2.   How do the leadership styles adopted by leaders/managers in these UK organisations compare with those seen in an organisation adopting similar roles in the US that many of them aspire to emulate?

1.3 Aim and Objectives

Following from these research questions, the overarching aim of my study is to ascertain the leadership styles of health leaders/managers of organisations charged with driving innovation in the UK and a selected high-performing comparator in the US and assess how these adopted styles align with empirically supported leadership theories and concepts considered most likely to drive much needed health innovation.[4] When culture and other differences are taken into account, comparative international research studies, as in this instance, provide valuable global insights regarding health leadership (Ardichvili & Kuchinke, 2002).

The objectives that flow from this aim and the methods used are set out in Table 2. As can be seen from Table 2, a single research design (i.e., either quantitative or qualitative approach) will not singly achieve the objectives of this research study. As explained by Greene and colleagues "*if the research purpose requires development, or using the results from the first method to inform the use of the second*

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[4] In connection with the survey questionnaire described in Appendix A, the Authentic and Transformational leadership styles have been combined in the statements to each question. As described by Ardichvili and Kuchinke (2002), Transformational leaders incorporate many of the attributes of Authentic leaders.

method; or expansion, adding breath and scope to a study (Greene, Caracelli, & Graham, 1989) as cited in Onwuegbuzie & Collins (2007), *and the research question"* (p.284) then the time line of the study will require a Mixed-Methods (Explanatory) Sequential research design (Creswell, 2014b). As described in this thesis, this research design will allow qualitative methods (e.g., qualitative interviews) to explain the quantitative (e.g., survey) results. In addition, the qualitative methods will enable assessment of the reliability and validity of the survey results.

Although it is common in qualitative research to indicate certain characteristics of those individuals that are quoted, such as their role in an organisation, this was not done in this thesis. This was because of the small number of organisations from which the sample was drawn and the small number of people they each employ. Consequently, it would be very difficult to prevent their identification. This issue was raised as a concern when the protocol was presented within LSHTM for approval and, consequently, it was included when the ethical approval was being sought. It soon became clear that the guarantee of anonymity was considered important by interviewees as they were willing to discuss quite sensitive issues with me, something that I believe would have been unlikely if they felt they could be identified. However, I do recognise that this makes it more difficult for the reader to interpret the data.

Table 2: Objectives of the Research

Objectives	Corresponding methods	Thesis Reference
1.) Identify empirically tested concepts and theories that should promote health innovation	Literature review	Chapter 2.3.1: Leadership Theories and Concepts Relevant to Health Innovation
2.) Map the leadership styles adopted by leaders/managers in the UK and US organisations promoting innovation onto the theories and concepts identified in the literature review.	Quantitative survey	UK Health Organisations: Chapter 4.2.2 Quantitative Data Collection, Table 18; US Pilot Study: Chapter 4.1.2: Quantitative Data Collection, Table 12
3.) Assess the extent to which leaders/managers' leadership styles in these organisations align with the leadership styles of lower levels of leaders/managers of the same organisations.	Quantitative survey	UK Health Organisations: Chapter 4.2.2; Quantitative Data Collection, Table 18; US Pilot Study: Chapter 4.1.2: Quantitative Data Collection, Table 12
4.) Assess the extent to which the survey instrument captures the leadership styles of the organisations.	Comparison of quantitative and qualitative findings	UK Health Organisations: Chapter 4.2.4 Mixed-Methods Analysis & Discussion; US Pilot Study: Chapter 4.1.4 Mixed-Methods Analysis & Discussion, Table 14
5.) Identify the ways in which the leadership styles adopted either promote or inhibit innovation in each of the organisations and the extent to which this varies in the different contexts in the two countries.	Qualitative interviews	UK Health Organisations: Chapter 4.2.3: Qualitative Data Collection; US Pilot Study: Chapter: 4.1.3 Qualitative Data Collection
6.) Compare and contrast leadership styles in each country to critically assess the potential to impact on innovation.	Literature review, quantitative survey, qualitative interviews	Chapter 5: Discussion

In the following chapter, I present my review of the literature on leadership and innovation, seeking to identify relevant concepts and theories.

Chapter 2 Literature Review

I conducted a literature review to identify studies that had examined leadership and innovation in the health and other sectors and to identify empirically supported concepts and theories that should promote health innovation. The studies identified in my literature review were consistent with the focus of this study on specific health organisations with respect to leadership of health innovation including CLAHRCs, AHSCs, and AHSNs which were formed as a solution to the translation gap in health research.

The results of the literature review were also used to gain a better understanding of the **'Context'** with respect to leadership of health-related research and development activities within the UK and US. In addition, the literature review was instrumental in structuring the survey questionnaire and initial interview questions.

I extracted information from the papers reviewed by applying the PEO/PIO (Population, Exposure [Issue], Outcome) or PICO (Population, Patient, Problem, Intervention, Comparison, Outcome) structure as appropriate for the type of study, in four phases (described in Chapter 2.2: Results of the Literature Review) to identify studies of the leadership styles of health leaders/managers that are most likely to drive much needed health innovation.

A keyword search string was prepared using a selection of electronic databases, including MEDLINE, PsycEXTRA, Econlit, and Embase. A full description of the databases, years searched, and search strategy, is provided in Appendix G.

In addition, an Internet search using the Google search engine was performed to identify any documents published online by a government agency or other organisations providing relevant information and to update the results of earlier searches. Also, I performed extensive hand searching of references in papers identified in the searches described above (articles/studies) even if those source papers were subsequently excluded from this review. The specific inclusion and exclusion criteria used in the review are summarized in Table 3.

Table 3: Specific Inclusion and Exclusion Criteria

Inclusion	Exclusion
1. Published articles/books/studies providing information and evidence relevant to leadership styles and characteristics of leaders/managers most likely to drive health innovation. 2. Articles/studies/documents published solely online by a government agency or other organisation providing information and relevant evidence.	3. Published articles/books/studies or government/other organisation documents that are not specifically addressing the leadership/management of innovation that were consistent with the focus of this study on specific health organisations with respect to leadership of health innovation including CLAHRCs, AHSCs, and AHSNs which were formed as a solution to the translation gap in health research. 4. Published articles/books/studies or government/other organisation documents that are not specifically addressing a subject relevant to the leadership of innovation or excluding mention of innovation altogether.

No published or other articles/studies were excluded from the three searches based upon the methodology, published date, geographical location or language of journal publication. Quality assessment of the papers included was performed using a standardized tool (Center for Evidence Based Management, n.d.). This is similar to other widely recognized tools for the assessment of qualitative and other studies.

2.1 Synthesis of Extracted Evidence

To perform the literature review , I applied the Matrix Method adapted from Garrard (2014). As used in this thesis, this has four components, including a:

1.) Paper Trail Folder-to document the process of undertaking the literature review;

2.) Documents Folder-for retaining documents for review;

3.) Review Matrix Folder-a spreadsheet format used to abstract each document included in the thesis; and a

4.) Synthesis Folder- this folder is an expansion of the preceding spreadsheet where I

commented on each reference. As described previously, the quality of references in this

thesis was assessed using a standardized tool (Center for Evidence Based Management,

n.d.). The headings of this spreadsheet are illustrated in Table 4.

Table 4: Illustration of Matrix Method Spreadsheet

Author, Title, Journal	Year Published	Purpose	Type of Study	Study Themes	Study Questions- Theory	Literature Review Comments- Narrative Synthesis	Hypothesis Tested- Including sample framework

Source: Adapted from Garrard (2014).

As described by Popay et al. (2006), a narrative synthesis approach was used to synthesize the

data extracted from the selected studies. The objective of this approach was to give more weight to the

collective synthesis of the selected studies than would be achieved with an analysis solely based on a

singular view of each study (i.e., the sum of the parts [of the individual studies selected] would

contribute more, collectively, to the questions posed than the studies read and analysed singly).

2.2 Results of the Literature Review

As depicted in Figure 3, a total of 3,643 results were obtained in the four phases of electronic

data searches using the Ovid search engine. The first phase used the search string of innovation* and

health* and networks* and United Kingdom. It was based upon the experience I had gained during my

work on the OPA report. This yielded 840 results, net of 19 duplicates. The second search phase used

the search string of innovation* and health* and networks* and leadership*. This phase yielded 2,660

results, net of 38 duplicates. The third search phase used the search string combining innovation* and

health* and leadership* and the search string of health* and leadership styles* and characteristics*.

This yielded 64 results. The final and fourth phase used the search string of Social Capital* and health

leaders* and yielded 17 results, net of 5 duplicates. An additional 115 books/articles/publications were

obtained from hand/Google Internet engine searching of references to the studies where the full text

was assessed. After reviewing the abstract of the records or summary of the records, a total of 3,467

records were excluded as not relevant to this research study. A total of 229 full-text records were read

and analysed and 109 of these records were excluded based on the criteria in Table 3. This resulted in

120 records that were included in the reference list.

Figure 3: PRISMA Flow Diagram
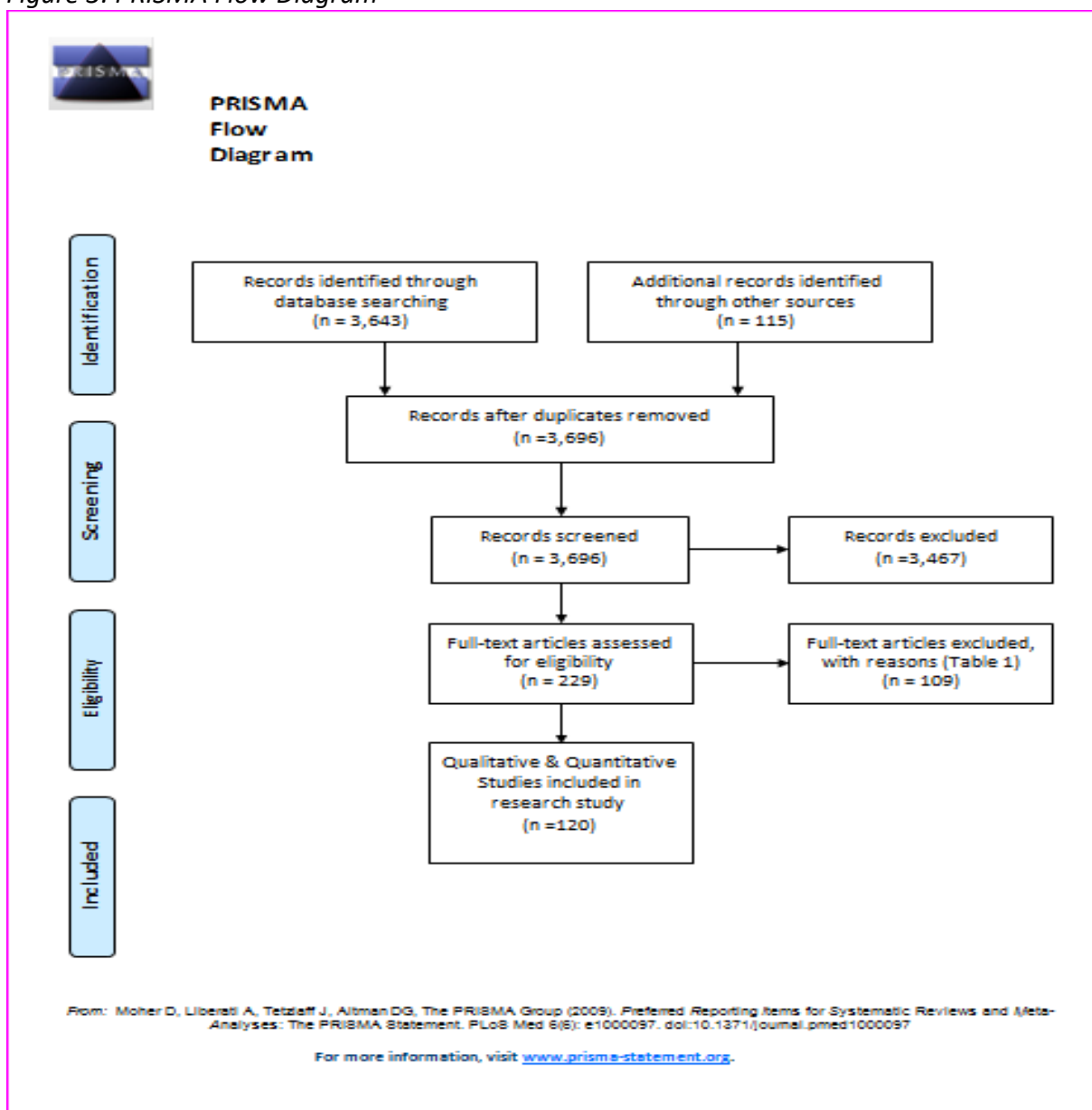
2.3 Relevant Literature

Throughout the study, follow-up literature searches were performed, focusing on the results

emerging from the analysis of the survey questionnaire and the themes[5] identified in interviews. The

documents identified are cited throughout my thesis and listed in the References.

Based upon the application of the Matrix Method described in Table 4, the literature review

identified the following leadership theories and concepts favourable to health innovation:

1. Creating a Psychological Climate for Innovation
2. Leader-Member Exchange (LM X)
3. Social Capital Promotes Innovation
4. Leadership Clarity
5. Supporting Team Reflectivity
6. An Appropriate Employee Mindset
7. Organisational Culture and Innovation
8. Role of the Chief Executive Officer (CEO) (i.e., A Chief Executive Officer who is a leader)

I included only those leadership theories and concepts proposed as drivers of health innovation

if they were supported by empirical research. Others, which were more speculative, proposing but not

testing theories and concepts, were excluded.

In the following sections, I describe these leadership theories and concepts in more detail,

setting out their potential applicability to leadership for innovation.

2.3.1 Leadership Theories and Concepts Relevant to Health Innovation

1) Creating a Psychological Climate for Innovation

The Psychological Climate of an organisation includes the: 1.) level of leadership support; 2.)

extent to which innovation is championed; 3.) setting of expectations for innovation and 4.) use of rewards.

These elements of the Psychological Climate have, as described below, been shown to be directly related

to the organisation's effectiveness in implementing innovation (Jacobs et al., 2015; Wisdom, Chor, Hoagwood,

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5 The themes are based upon the Methods (Qualitative Data Collection and Analysis) described in my
thesis (Creswell, 2014b; Green & Thorogood, 2013).

& Horwitz, 2014). R.-H. Weng, Huang, Chen, and Chang (2015) believed that a supportive organisation encouraged employees to turn "*creative ideas into innovative outputs*" (p.428). As described by R. H. Weng, Huang, Huang, and Wang (2012), in a quantitative study of 439 Taiwanese nurses in four hospitals, a supportive organisational climate encouraged creativity of the nurses studied and led to innovative behaviour.

Jacobs et al. (2015) described how the Psychological Climate influenced innovation and implementation by individual physicians participating in the US National Cancer Institute's Community Clinical Oncology Program. In this study, the physicians' perception of the Psychological Climate had a positive effect on the '*Implementation'* phase as depicted in Figure 2. Jacobs et al. (2015) describe *"the direct relationship between implementation climate and implementation effectiveness"* as one of the most important findings from their study (p.12). However, this cross- sectional study was limited to oncologists participating in the program, was focused solely at the individual level, and did not consider a wider organisational perspective.

Helfrich, Weiner, McKinney, and Minasian (2007) describe a framework for the adoption of complex innovations to be used in health organisations based on one first studied in a manufacturing environment. Helfrich et al. (2007) concluded that the successful implementation of complex innovations was dependent on *"management support and innovation-values fit, which contribute to an organizational 'climate' for implementation"* (p.279).

A supportive Psychological Climate is not, on its own, a guarantee of success in innovation and requires that the attention of leaders/managers is devoted to both organisational and individual concerns (i.e., '**Context**' and '**Group Cohesiveness**'). James et al. (1990) as cited in Scott and Bruce (1994, p. 582), examined Psychological Climate in a mixed methods study of engineers, scientists and technicians in a research and development facility of a major US manufacturing company. The researchers hypothesized that success at the '*Implementation'* phase as depicted in Figure 2 was dependent on

individual cognitive interpretation of an organisation's Psychological Climate.

2). Leader Member-Exchange (LM X)

LMX refers to the quality of a leader/manager's relationship with employees, especially when it is accompanied by employee psychological empowerment. In other words, the quality of the LMX relationship is the extent to which employees perceive their leadership is "*acting in their best interest, caring, supportive, loyal and reliable*" (Schermuly et al., 2013), (p.133) . These LMX relationships have been identified as a driver of organisational innovation (Scott & Bruce, 1994).

Quality LMX, when it is accompanied by psychological empowerment and leadership support, has also been found to be associated with greater effectiveness in all phases of the innovation process depicted in Figure 2 (Bucciarelli, 2015; Schermuly et al., 2013; Wisdom et al., 2014). Leadership support for LMX and innovation, according to West and Anderson's (1996) quantitative study of 27 hospital senior management teams in the United Kingdom, was the main predictor of innovation. Resources provided to the senior management teams beyond a minimum to accomplish a task did not predict innovation. Ultimately, it was the relationship between the leaders/managers and members of the organisations studied which was critical to health innovation.

3). Social Capital Promotes Innovation

It is beyond the scope of this review to cover the now extensive literature on Social Capital, the networks of relationships among people who live and work in a particular society, enabling that society to function effectively, which has been reviewed in detail elsewhere (Grootaert & Van Bastelaer, 2002). Here, I focus on the Social Capital that links leaders/managers through relational and network assets such academic organisations, clinical commissioning groups, governmental and related agencies, non-governmental organisations, and industry and professional groups. The strength of these relationships has been identified as an important contributor to effective innovation in an organisation.

For example, in a quantitative study in the US, Baker et al. (2015) surveyed 1,978 respondents from a

cross-section of manufacturing and service companies regarding their use of external network assets. This study provided empirical support for the proposition that learning through external networks disproportionately benefits conservative, risk-averse firms, findings that may be especially applicable to the NHS and the health sector (Weintraub, 2016).

Landry, Amara, and Lamari (2002) performed a quantitative study of 440 respondents from the manufacturing sector, evaluating the impact of Social Capital on innovation. Included in the study were explanatory variables such as *"business network assets, information network assets, research network assets, participation assets and relational assets and one form of cognitive Social Capital (reciprocal trust)"* (p.2). Landry et al. (2002) concluded that these forms of Social Capital "*contribute to a larger extent to explain both the decision to innovate or not and the decision to undertake more or less radical innovations"* (p.15).

In the 21st century, there has been an exponential expansion of information available to organisations through multiple channels (e.g., the Internet). Local knowledge that exists in such networks, which is especially likely to be contextually relevant, can help leaders/managers to interpret and use information from all sources to innovate. This may be especially true in conservative sectors, such as the health sector, where professional hierarchies can impede the transfer of knowledge (Baker et al., 2015; Balkundi & Kilduff, 2006; Currie & White, 2012; Kyratsis, Ahmad, & Holmes, 2012; Landry et al., 2002; Lewis & Ricard, 2014; Phillips, Johnsen, Caldwell, & Lewis, 2006; Rowley, 1997; Scarbrough et al., 2014; Wisdom et al., 2014; Zachariadis, Oborn, Barrett, & Zollinger-Read, 2013) .

As concluded by Baker et al. (2015), "*breakthrough innovation has long been associated with an Entrepreneurial Orientation (EO)"* (p.13). Few organisations have "*the culture, capabilities, human resources, or financial resources to morph themselves into a strong EO culture. This research demonstrates …the ability to utilize market knowledge, ideas, and interpretations from external networks, provides a means for firms …to successfully innovate*" (p.13).

4). Leadership Clarity

Leadership Clarity (defined in terms of the roles of team members) was found to foster organisational innovation in a study of 3,147 respondents in health care teams in the UK (M.A. West et al., 2003). This quantitative study was narrowly focused on three types of health care teams: 98 primary health care teams (PHCTs), 113 community mental health teams (CMHTs), and 72 breast cancer care teams (BCTs). Self-report questionnaires were completed by 1,156 respondents from 98 PHCTs, 1,443 respondents from 113 CMHTs, and 548 respondents from the 72 BCTs. The survey questionnaires sought respondents' perceptions of team functioning, innovation, leadership, and effectiveness. The study pointed to the importance of not just a single leader, but also to managers showing leadership at all levels of the organisation. Innovation was more likely to result when the organisation's leaders/managers understood its objectives and where high levels of team participation and commitment to excellence was present (M.A. West et al., 2003).

5). Supporting Team Reflectivity

Innovative organisations have identified the importance of measures that facilitate reflection by team members as encouraging innovation, especially in a high-pressure environment where there is a heavy workload, tight deadlines, high expectations and a less than an optimum working environment. These innovative organisations believe that leaders/managers should be encouraged to create opportunities for team members to reflect inside and outside the traditional work environment (Schippers, West, & Dawson, 2015). For example, since the 1940s, the 3M Company has encouraged its thousands of technical employees, regardless of their roles, to use 15% of their paid weekly hours (*i.e., the 3M 15% Rule*) to reflect/work on independent ideas. Since 1951, it has sponsored the annual 3M Technical Forum (3M Company, n.d.), a global event, where 3M employees from a wide range of backgrounds and experience, ranging from marketing and sales to scientists, meet to exchange ideas and information. The 3M Company argues that many of its health and other innovations emerged from the ideas generated as a result of this approach (3M Company, 2002). As described by Jung et al. (2003), organisations such as the 3M Company, have

outperformed their competitors because the innovative ideas generated by all employees are valued, leading to better business outcomes.

As described by Schippers et al. (2015), leaders/managers that encourage team Reflectivity can promote innovation in less than optimum working conditions. This cross- sectional quantitative study included 1,156 members of 98 primary health teams in the UK. However, the researchers were not privy to the content of the reflective process, including: if and how often reflexive sessions took place; what was discussed; and how the discussions resulted in innovations. In addition, it is unknown whether prior innovation successes may have influenced the results observed.

6). *An Appropriate Employee Mindset*

An Employee Mindset, with a willingness (i.e., growth versus fixed orientation) to learn from errors, supports innovation. For example, an employee with a growth mindset generally believes it is beneficial to their career development to learn from their mistakes. In contrast, an employee with a fixed mindset is more interested in 'looking good 'and may avoid changing situations which may cause them to possibly make a mistake (Yan et al., 2014). When this employee growth mindset is combined with a leadership style where the leader believes in *"facilitating learning and developing employees"* a less risk-averse environment is created which further supports organisational innovation.

In a quantitative study of 268 members of California colleges, a fixed Employee Mindset was found to stifle innovation despite a Transformational leadership style (Yan et al., 2014). The 'Learning and Innovation' model approach proposed by Deng et al. (2010), which is built upon the 'Full Range Leadership Model' and tested by Yan et al. (2014) aligns management styles with the management theory addressing Employee Mindset.

7). *Organisation Culture and Innovation*

As described by Herbig and Dunphy (1998), certain aspects of culture can facilitate transmission of

messages of leaders/managers to an organisation and make them more clearly understood. Such an

organisational culture facilitates transmission and comprehension of messages from leaders and rewards for risk

taking. Hogan and Coote (2014), in a quantitative study of 658 participants from Australian law firms, explain

that leaders/managers can effectively use Schein's three cultural layers (i.e., cultural values, norms and

artefacts as described in Figure 4) to have greater certainty that their communications will be accepted

and lead to innovative behaviours (Schein, 2010).

Figure 4: Layers of an Organisational Culture that Supports Innovation
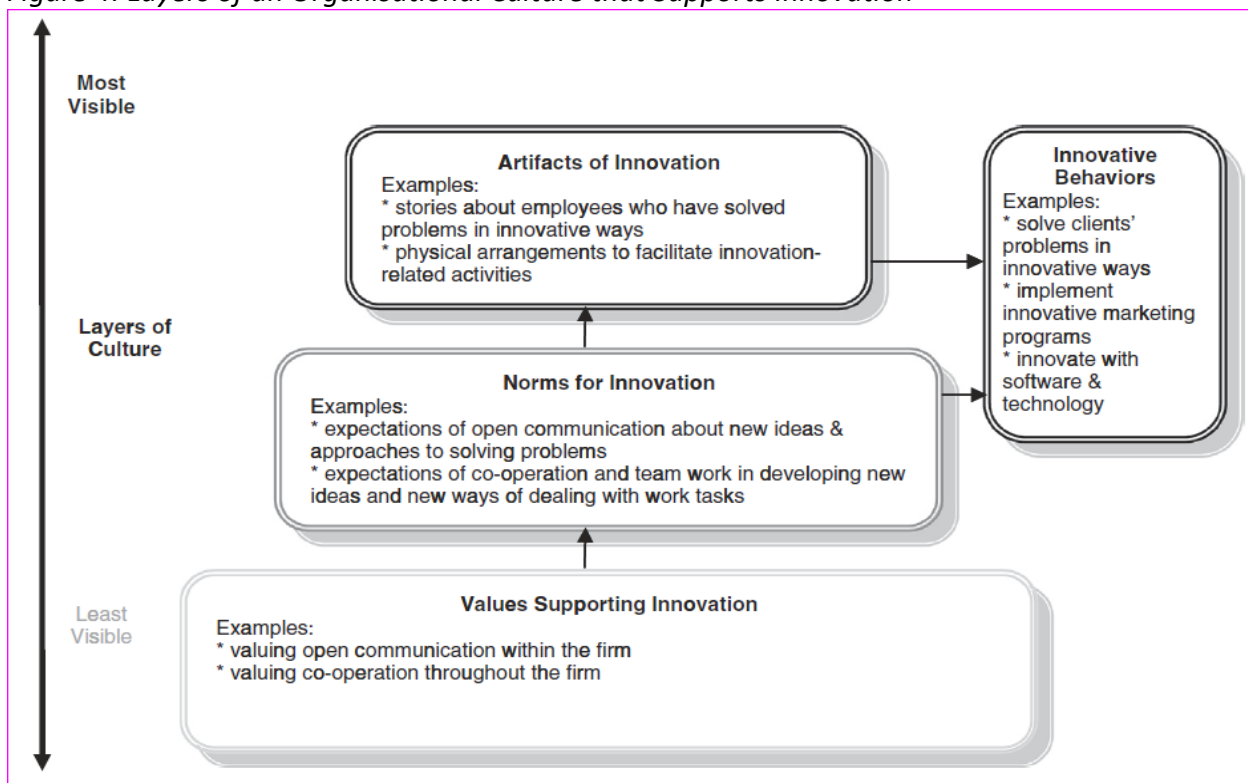
Source: Hogan and Coote (2014), p.2.

An organisation with a culture that emphasizes success or encourages and rewards risk taking is thus

more likely to be successful (i.e., a higher innovation capacity) especially in the first two phases of the innovation

process depicted in Figure 2 [i.e., the '***Search'*** for and '***Selection'*** of new ideas leading to innovations] (Herbig &

Dunphy, 1998; Hogan & Coote, 2014; Wisdom et al., 2014). As shown in Figure 4, a study by Hogan and Coote

(2014) of 658 principals of Australian law firms, empirically demonstrated the links of Schein's multi-layered

model of organisation culture to risking-taking and a firm's innovation capacity.

8). *A Chief Executive Officer (CEO) who is a leader*

Mintzberg (2011) explains, that "*leadership is a necessary component of management*" (p. 66). However, the enthusiasm, opinion leadership and vision of the CEO are critical determinants of an organisation's success at innovating. For example, CEO leadership drives innovation by creating an environment with high quality work relationships. An enthusiastic and visionary CEO (i.e., a Transformational leadership style) creates an organisational culture that encourages open knowledge integration and learning essential for innovation (Bucciarelli, 2015; Caridi-Zahavi, Carmeli, & Arazy, 2015; Wisdom et al., 2014). Caridi-Zahavi et al. (2015) in a survey of senior executives of randomly selected small to medium-sized technological ventures (SMVs) in Israel, found CEO leadership was a key driver of innovation, encouraging organisational connectivity and knowledge integration. However, the study included only 267 CEOs and had a 27.7% response rate.

Elenkov et al. (2005), performed an empirical study of 1,340 presidents, managing directors and CEOs from 227 professional firms and business units in six countries (including the UK and the USA), with respondents from 223 of the selected firms and units. The study encompassed the 'Full Range Leadership Model' discussed previously and the 'Upper Echelons Perspective' (i.e., a focus on the influence of senior leadership in fostering innovation) and 'Visionary Leadership' framework (i.e., the importance of senior leadership to influence innovation by articulating a credible vision-Transformational Leadership Style). The principal aim of the study was to determine whether strategic leadership influenced product or administrative innovation. The study found that strategic leadership influences innovation exclusive of the effects of organisation size and culture, among other factors.

Each of these eight leadership theories and concepts has empirically been shown to have a positive impact on an organisation's innovation capacity and the innovation process described in Figure 2. However, the absence of any particular one does not necessarily mean that an organisation will fail to

achieve its innovation objectives. Therefore, I will examine the collective relationship of these eight

leadership theories and concepts to leadership styles and innovation while I will also analyse (i.e.,

operationalise) how participants in my survey perform against these individual leadership theories and

concepts.

2.3.2 Leadership Styles and Innovation

While these eight empirically supported leadership theories and concepts have found support,

albeit in a disparate manner in research in various economic sectors, they have not collectively been applied

to organisations responsible for health innovation and related to specific styles of leadership. These leadership

styles lie on a continuum from positive to negative leadership styles including Authentic, Transformational,

Transactional, Aversive or Laissez-faire organisational leadership styles (Deng et al., 2010; Jung et al.,

2003; Yan et al., 2014). For example, leadership styles that positively impact an organisation's innovation

capacity (e.g., Transformational Style of Leadership) are more likely to inspire leaders/managers to bring forth

new opportunities for innovation as depicted in the '***Search '***phase of the innovation process and to take risks of

possible failure which affects all the innovation phases shown in Figure 2 (reproduced again here).

Figure 2: The Innovation Process
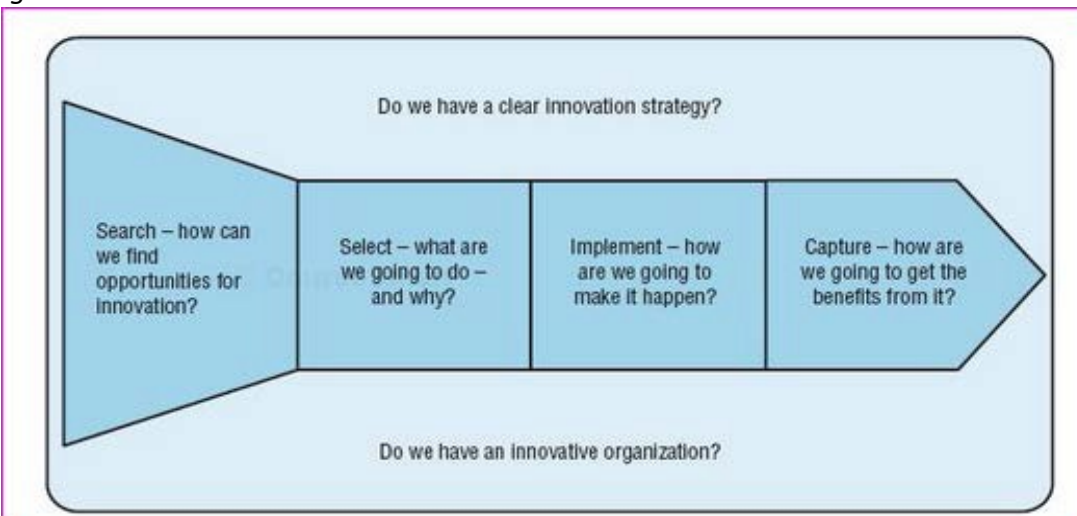
Source: Tidd and Bessant (2013), p.60.

Further, under a positive leadership style such as Transformational leadership, leaders/managers are

more motivated to invite additional risks through collaborations with outside venture capitalists,

commercialization institutes and others and '***Select'*** projects which have more uncertainty, but also more

benefit. This is despite increasing the possibility that the confidentiality of innovations will be leaked to

competitors and the media. However, collaborations with outside groups may also introduce additional

resources to improve the prospect of the organisation successfully implementing an opportunity (i.e., the

'***Implementation'*** phase in Figure 2) and also capturing the benefits of each innovation opportunity, as depicted

in the fourth phase or *'Capture'* phase of the innovation process in Figure 2. When a positive leadership style is

combined with effective use of these eight leadership theories and concepts, it is to be expected that the

capacity to innovate will be enhanced.

In Figure 5, the leadership styles (i.e., Transformational, Transactional, Aversive or Laissez-faire

leadership styles) are operationalised with the eight leadership theories and concepts that have empirically

been shown to have a positive impact on an organisation's innovation capacity and then related to the

four phases of the innovation process described in Figure 2. As previously suggested, the absence of any

particular one of these leadership theories and concepts does not necessarily mean that the innovation

process will not succeed. However, I have listed the leading leadership theories and concepts with

respect to each phase of the innovation process based upon the literature review performed.

For example, creating a Psychological Climate for innovation is more likely to make

leaders/managers feel safe to introduce new opportunities in the '***Search'*** phase for new

ideas/opportunities as depicted in Figure 2. This is because innovation is expected and rewarded.

Leaders/managers therefore have less cause to fear causing internal jealousies because they are introducing

an idea that others in the organisation may have overlooked in the past. The Role of the CEO, in embedding

the drivers of health innovation in the organisation, is recognized for its critical importance in each of the

four phases of the innovation process depicted in Figure 2.

Figure 5: Leadership Styles and the Innovation Process Phases Operationalised with Eight Empirically Supported Leadership Theories and Concepts

Leadership Styles

Search
- Creating a Psychological Climate for Innovation
- Social Capital Promotes Innovation
- Leadership Clarity Essential for Health Innovation
- Organisational Culture and Innovation
- Role of the CEO

Select
- Creating a Psychological Climate for Innovation
- Leadership Clarity Essential for Health Innovation
- Employee Mindset
- Organisational Culture and Innovation
- Role of the CEO

Capture Benefits
- Social Capital Promotes Innovation
- Leadership Clarity Essential for Health Innovation
- Organisational Culture and Innovation
- Role of the CEO

Implementation
- Creating a Psychological Climate for Innovation
- Leader-Member Exchange
- Leadership Clarity Essential for Health Innovation
- Supporting Team Reflectivity
- Organisational Culture and Innovation
- Role of the CEO

Note: Figure 5 depicts that the styles of leadership described in Table 1 envelop each of the four phases of the innovation process described in Figure 2 (i.e., the *'Search'* for ideas/opportunities followed by the *'Selection'* and *'Implementation'* of the idea/opportunity; culminating in the *'Capture'* of the benefits of the innovation idea/opportunity). The leadership theories and concepts corresponding to each of the innovation process phases employed by leaders/managers will likely vary depending upon the 'Context' of the situation. However, the leadership theories and concepts depicted in Figure 5 were related (i.e., ranked) by the researcher to each of the innovation process phases based upon an analysis of the present literature review.

These eight theories and concepts provide the basis for the research in this thesis and inform the

methods used to undertake it, as described in the following chapter.

Chapter 3 Methods

3.1 Research Design

I will use a pragmatic worldview (Creswell, 2014b). This focuses attention on the research

problem and uses *"pluralistic approaches to derive knowledge about the problem"* (Creswell, 2014b),

p.11). As described by Creswell (2014b), *"there are many forms of this philosophy, but for many,*

pragmatism as a worldview arises out of actions, situations, and consequences…There is a concern with

applications—what works—and solutions to problems" (p.10). While a single quantitative study may

offer insights into what a leader/manager is doing, it does not necessarily allow those leaders/managers

to say why a particular leadership style has been adopted. As described by Antonakis et al. (2003),

combining qualitative and quantitative approaches, as will be done in this thesis, makes it possible to

explain what a leader/manager is doing and why. Therefore, Antonakis et al. (2003) recommended that

future leadership studies use a mixed-methods approach.

This pragmatic worldview can best be achieved by an Explanatory Sequential Mixed-Methods

approach, combining quantitative and qualitative approaches. In particular, it makes it possible to use

one set of data "*to check the accuracy (validity) of the other database"* and more clearly explain the

results obtained than is possible when each approach is viewed singly (Creswell, 2014b, p. 15). I also

considered the Convergent and Exploratory Sequential Mixed-Methods design approaches. However,

the strength of the Explanatory Sequential Mixed-Methods approach is that each distinct phase, as

depicted in Figure 6, is clearly identifiable and, most importantly, each phase of the approach builds

upon the other (Creswell, 2014a).

Figure 6: Explanatory Sequential Mixed Methods Approach

Source: Creswell (2014b), p. 220.

3.1.1 Mixed Methods

The Explanatory Sequential Mixed-Methods includes a:

a.) literature review[6];

b.) survey of leadership styles among leaders of organisations in the UK and US engaged in

innovation in the health sector; and a

c.) qualitative interviews among a sub-set of participants to the survey. A nested sampling

design as described by Onwuegbuzie and Collins (2007).

The combined results are used to develop a sampling framework that is feasible, as described

in Figure 7, which will allow me to access appropriate health leaders/managers involved in health

innovation and assess their leadership styles.

3.1.2 Survey of Leadership Styles

As stated previously, the overarching aim of this research is to ascertain the leadership styles of

health leaders/managers of organisations charged with driving innovation in the UK and a selected high-

performing comparator in the US. Then the study will assess how these adopted leadership styles align

with the leadership theories and concepts identified in the literature review. To accomplish this aim, I

will undertake a survey among leaders/managers of UK health organisations responsible for driving

health innovation (CLAHRCs; AHSCs; AHSNs) and a selected high-performing comparator in the US.

The survey will involve a questionnaire administered to individuals within these health

organisations, from which I will derive a leadership profile (i.e., pattern or map of leadership styles) of

each of these health organisations in the UK and USA (Appendix E), looking both at the perception of the

organisation by those in leadership roles and how those individuals view themselves, as described by

Handy (1996). I will use the findings from a leading comparator in the USA (which precedes the founding

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[6] The literature review is an expanded version of the material presented earlier in this thesis so will not be described further here.

of the AHSNs, CLAHRCS and AHSCs listed in Appendix E) as a benchmark against which to compare the

results from the UK health organisations. The comparative analysis will take account of differences in

health systems and national culture, as described by Hofstede (1980) and how this may impact the

results of the survey questionnaire.

The Sampling Framework described in Figure 7, was developed as follows:

1.) I initially set a target of 150 study participants with consideration of the minimum

sample size recommendations depicted in Table 5.

2.) Although the focus was on health organisations in the UK charged with driving

innovation while contemporaneously deriving data from a US comparator organisation, I sought to

identify an organisation in the USA known for its reputation as a health innovator that was comparable

in size and scope to those in the UK. The US comparator health organisation, as one of the largest

organisations of its kind in the US, encompassed a sufficient staff size/student enrolment, scope of

activities and functions to align with the collective UK health organisations charged with driving health

innovation (CLAHRCs; AHSCs; AHSNs)[7] participating in this study.

3.) Senior leadership of the US health organisation agreed to serve as a pilot test site for

the methods used in the UK.

4.) Selection of the UK health organisations was undertaken to provide a range of types of

organisations. It was not intended to provide a representative sample of them as this would have been

far beyond the scope of a DrPH thesis and the resources available. Hence, the sample was a convenience

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[7] As discussed, this study purposely chose to focus on CLAHRCs, AHSCs, and AHSNs which were formed by the UK government with the intent to drive health innovation and work together and with other stakeholders in the UK. As described by the participants included in this study, there are many other public and private organisations in the UK who have important roles to improve the health and wellbeing of the UK population which were not included within the scope of this study. These organisations could be considered for future research with respect to the leadership of health innovation (e.g., NHS Genomic Medicine Centres; MedCity; NIHR CRN). However, certain of the study participants, because of their standing in their fields of research, may also have roles with these other organisations.

one, facilitated by the unsolicited support of representatives of the National Institute of Health Research

(NIHR) which supports the activities and funding of the CLAHRCS as depicted in Figure 1. Learning of my

study from an officer of one the CLAHRCs I had approached, representatives of the NIHR unilaterally

contacted four of the remaining 12 CLAHRCS in the UK encouraging their participation in my study. As a

result, these four additional CLAHRCS joined the study. To complete the sampling framework, a London-

based AHSC and its related AHSN agreed to participate in the study. Upon reaching a possible 155 study

participants, I decided to cease recruitment of UK and US health organisations. However, relationships

were established with other health organisations for future studies of health innovation leadership.

     5.)   The distribution of questionnaires was preceded by a letter from a senior officer or

his/her representative as described in Box 1.

Box 1: Letter from a Senior Officer or His/her Representative to Colleagues to Participate in the Study

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Dear Colleagues:

I am asking for your help on a research project being conducted by Philip Weintraub from the *London School of Hygiene and Tropical Medicine.* Philip's research focuses on leadership and innovations within healthcare organisations and systems. He is developing a tool that gauges the innovation potential of a healthcare organisation/system. The tool can also be used to attract/retain senior leaders and managers in the hopes of maximizing innovation and improve patient care and outcomes, similar to our efforts related to shortening the time it takes to get research from the bench to the bedside.

Philip will be contacting you each directly with a Qualtrics LLC web-based anonymous survey. I hope you will each take a few minutes to aid this important research. I have attached an *Information Note* from Philip Weintraub which provides more information. If you have any detailed questions, feel free to reach out to him directly. His contact information is included below.

Thank you.

Kind regards,

[Signature]

Contact Information:
Philip Weintraub
DrPH Candidate, London School of Hygiene and Tropical Medicine,
Faculty of Public Health and Policy
Department of Health Services Research and Policy
LSHTM Email: Philip.Weintraub@lshtm.AC.UK

6.)	Then two stage sampling was undertaken (i.e., multi-stage purposeful sampling) as described by Onwuegbuzie & Collins, (2007). The first stage involves sampling organisations to participate in the study. As noted, in the USA a single organisation was selected, primarily to pilot the approach, but also to provide some comparative benchmarking. This was an organisation whose duties closely approximate the responsibilities of the AHSNs, CLAHRCS and AHSCs in the UK.

7.)	In the UK, the first stage sampling frame initially comprises the entire set of AHSCs,

AHSNs and CLAHRCs as described in Appendix E. I contacted the leadership of these organisations

individually and through the collective leadership of the AHSNs and CLAHRCS. Representatives of the

leadership of one leading AHSC agreed to participate in the study, including its affiliated CLAHRC and

AHSN. In addition, a CLAHRC affiliated with another leading AHSC agreed to participate as did three

other unaffiliated CLAHRCs. As discussed, with respect to the CLAHRC organisations, my research

attracted the (unsolicited) attention of representatives of NIHR. These NIHR representatives encouraged

CLAHRC organisations to participate in the study, for which I am appreciative.

8.)   Because of the strong UK receptivity to participating in the study, my sampling frame

exceeded my initial estimate of 150 study participants. Also, I identified considerable overlap of

organisational responsibilities for study participants within the UK organisations. For example, several

leaders/mangers in the AHSC had clinical responsibilities as well as involvement with the AHSC's

affiliated CLAHRC and AHSN in different research roles. Therefore, the contact listing prepared for the

survey questionnaire had to be reviewed to identify study participants that may have leader/manager

roles in multiple organisations.

9.)   In the second stage, I created a sampling frame for each UK organisation participating

in the study, to the extent feasible and practicable, comprising all employees holding

leadership/managerial roles. I used the organisation's organogram, organisational directory or web-site

descriptions to create a matrix with axes based on tiers within the organisation and functions.

Generally, a total of 3-5 individuals, depending on the size of the organisation and availability of

participants[8], were sampled from within each cell, at random. If available, the managing director of each

organisation was invited to participate.

10.)   Each tentative contact list of study participants was submitted to a representative of

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[8] For example, in one organisation, three of the leaders/managers were on leave and were excluded
from the study.

the organisation for review. The purpose of this review was to ensure that participants, who may have

recently left the organisation, were out of the country on assignment, or on an extended leave of

absence, were not included in the study. I sought to attain saturation of leaders/managers from each

organisation. I used the Qualtrics LLC web-based system to distribute the survey questionnaires and,

prior to sending them, I drafted a letter that the organisation could edit and send to potential

participants, as described in Box 1, in advance. It was accompanied with an 'Information Note'

(Appendix B), providing more information about the study.

Box 2: Example of Electronic Letter Inviting Study Participants to Complete a Survey

Dear Survey Participant:

I am Philip Weintraub and I am inviting you to join with your colleague's
at_____ in a research study which focuses on leadership of health innovation.

Thank you in advance for your participation.

Please follow this link to consent to participate in the study:

Or copy and paste the URL below into your internet browser:

Instructions to Anonymously Submit the Survey:
Please click the 'Submit' button to complete the survey located after the last survey question.

The survey questionnaire is mailed to you through the Qualtrics LLC web-based software system ensuring all participant responses will remain anonymous and secure. It is estimated it will take you approximately 15 minutes to complete.

Please do not hesitate to contact me if you have any questions or concerns.

Again, thank you for your time. Your contribution is appreciated.

Kind regards,

Philip

Philip Weintraub
Public Health & Policy, DrPH Candidate
Department of Health Services Research and Policy
London School of Hygiene and Tropical Medicine
LSHTM Email: Philip.Weintraub@lshtm.AC.UK

Follow the link to opt out of future emails:

11.)   The Qualtrics web-based survey software tool was selected to send the survey

questionnaires as described in Box 2 because of its robust functionality and the excellent customer

technical support provided. Competing web-based survey tools are offered by Survey Monkey, Google

Forms, and the University of Bristol (BOS) among others. I have tested these applications and found the

Qualtrics LLC web-based survey tool a superior product in terms of ease of use, survey analysis functions

and customer technical support. In addition, Qualtrics LLC is used by over 7,000 organisations in 75

countries including over 1,600 colleges/universities (LLC, 2015)[9]. The functions within the Qualtrics LLC

web-based survey software tool allowed me to determine whether all those invited had responded, while

preserving anonymity. It allowed me to send multiple gentle reminders to non-responders as depicted in Box 3.

In addition, it allows for the downloading of survey results in PDF, Word, Excel, or SPSS format.

Box 3: Example of a Reminder Letter to Study Participant

Dear Survey Participant:

I am sending this gentle reminder inviting you to join your colleague's at_____ in a research study which focuses on leadership of health innovation. Please follow the link below to consent to take the survey or continue a survey you already started. **If you have already started the Qualtrics' survey, you may return online to complete the partially completed survey. The information you entered is saved.**

Please note this survey requires you to singly rank the four statements. Please put a "1" by the statement that is the 'best fit', "2" by the next best, and so forth (e.g., 1 = Best Fit; 4 = Lowest Fit) in the 'Organisation' and 'Self' columns.

Follow this link to the Survey:

Or copy and paste the URL below into your internet browser:
https://kent.qualtrics.com/jfe/preview/SV_57vK33R6PtUx6Ad?Q_CHL=preview

Instructions to Anonymously Submit the Survey:
Please click the 'Submit' button to complete the survey located after the last survey question.

The survey questionnaire is mailed to you through the Qualtrics LLC web-based software system ensuring all participant responses will remain anonymous and secure. It is estimated it will take you approximately 15 minutes to complete.

Please do not hesitate to contact me if you have any questions or concerns. Thank you for your participation.

 Kind regards,

Philip

Philip Weintraub
Public Health & Policy, DrPH Candidate
Department of Health Services Research and Policy
London School of Hygiene and Tropical Medicine
LSHTM Email: Philip.Weintraub@lshtm.AC.UK

Follow the link to opt out of future emails:

As depicted in Figure 7, the final sample framework includes 155 participants from 8 health

organisations in the UK and the US. As described in Chapter 4.2: UK Health Organisations, the AHSC

selected for this study is affiliated with an AHSN. For purposes of clarity in this thesis, the AHSN is

grouped with the AHSC and the AHSC is then referred to, on a combined basis, as a single UK healthcare

organisation. Then this thesis reflects six UK health organisations were included in this study rather than

seven.

Figure 7: Research Study Sampling Framework
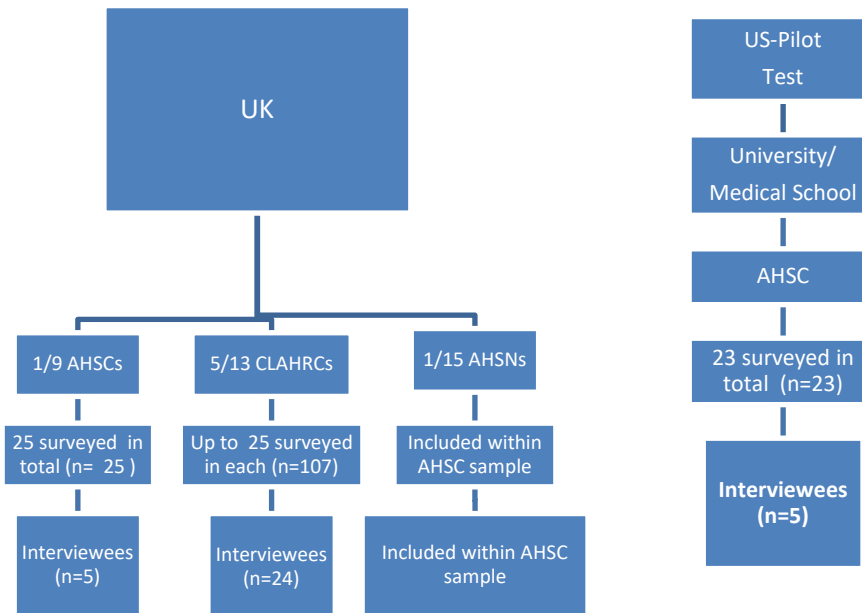
The questionnaire (instrument) includes basic sociodemographic and organisational variables. Thus,

data on the respondent included: age; sex; organisational role; tenure with organisation; and education level

achieved. Data on their organisation included: number of employees as described by Mumford, Scott, Gaddis,

and Strange (2002) , and (Hitt, Hoskisson, & Kim, 1997) as cited in (Jung et al., 2003). To maximize response

rates, I used the reminder functionality built into Qualtrics LLC. This sampling framework will result in a sample

size that exceeds the minimum size recommendations most common in quantitative and qualitative research

designs as described by Onwuegbuzie & Collins (2007) and summarised in Table 5.

Table 5: Selected Minimum Sample Size Recommendations
For Most Common Quantitative and Qualitative Research Designs

Research Design/Method		Minimum Sample Size Suggestion
Correlational		64 participants for one-tailed hypotheses; 82 participants for two-tailed hypotheses
Causal-Comparative		64 participants for one-tailed hypotheses; 82 participants for two-tailed hypotheses
Phenomenological		≤ 10 interviews
Grounded Theory		20-30
Sampling Design		
Subgroup Sampling Design		≥ 3 participants per subgroup
Nested Sampling Design		≥ 3 participants per subgroup
Data Collection Procedure		
Interview		12 participants
		Note: For correlational and causal-comparative research designs, the recommended sample sizes represent those needed to detect a medium using J. Cohen (1988) criteria, one-tailed statistically significant relationship or difference with .80 power at the 5% level of significance.

Source: Onwuegbuzie and Collins (2007), pp.288-289.

Next, the survey questionnaire contains questions that pertain to each of the eight leadership

theories and concepts (Appendix A: Questions 7-14) identified in the literature review. The survey

instrument's instructions to each respondent are excerpted in Box 4.

Box 4: Survey Instructions

Research Study- Leadership of Health Innovation: Building an Innovative Health Organisation

Thank you for taking part in this research study.

To complete the survey questionnaire:

A.) Please complete questions 1-6 regarding your organisational role and the number of people who work in your organisation.

B.) For questions 7-14 you will be asked to rank the four statements in order of 'best fit' to the leadership styles that characterise your organisation, as a whole (i.e., Organisation Column) and 'best fit" reflecting your personal leadership style (i.e., Self Column). To rank the four statements, put a "1" by the statement that is the 'best fit', "2" by the next best, and so forth (e.g., 1 = Best Fit; 4 = Lowest Fit) in the 'Organisation' and 'Self' columns. Please indicate a single response for each of the statements (a.-d.) for the 'Organisation' and 'Self'. Thereby, completing a single ranking of each statement for the 'Organisation' and 'Self'. From your organisation and personal perspectives, please consider the main drivers which provide impetus or motivation and drive innovation which are typical, respectively, of your organisation and then your personal leadership style.

For purposes of this survey, leaders include senior leadership and managers unless otherwise noted. Innovation is defined as the multi-stage process of creating, selection, implementation and capture of the value of new concepts, processes and/or products.   When you have completed the survey press the 'Submit' button located after Question 14 as described in the email instructions. Again, your responses will remain anonymous.

Thank you for your participation.

Kind regards,

The questions 7-14 are presented in Appendix A. Each refers to one of the eight empirically

supported leadership theories and concepts identified in the literature review. For each, a set of four

responses (a-d) is offered, which map onto four leadership styles, as shown in Table 1 (i.e.,

Transformational, Transactional, Aversive, and Laissez-faire). The respondent then indicates which of

these responses most accurately reflects the leadership style that characterises the overall organisation

as well as the style adopted by the individual themselves. They then rank the remaining styles in order

of approximation to the style of the organisation and the individual. (Appendix A). The questions relate

to the theories and concepts as follows:

Question 7: Creating a Psychological Climate for Innovation
Question 8: Leader-Member Exchange (LM X)
Question 9: Social Capital Promotes Innovation
Question 10: Leadership Clarity Essential for Health Innovation
Question 11: Supporting Team Reflectivity
Question 12: An Appropriate Employee Mindset
Question 13: Organisational Culture and Innovation
Question 14: Role of the Chief Executive Officer (CEO) (i.e., A Chief Executive Officer who is a leader)

For example, as shown in Table 6, Question 7 concerns creating a Psychological Climate for

innovation. Ranking Question 7, response a., as the best fit (rank as number 1 or first) from an

'Organisation' perspective indicates that senior leadership and management sets high expectations for

innovation with commensurate rewards for success and would signify a Transformational leadership

style. The choice of statement b. indicates that the respondent believes health innovation is solely

represented in standard policies and procedures, implying a Transactional style. Statement c. suggests

that health innovation ideas, if any at all, flow down from the top of the organisation while failure to

implement an assigned idea is not an option and would signify an Aversive leadership style. Finally,

statement d. shows a belief that the leader(s) offer freedom to staff to pursue health innovation, but

proponents of innovative ideas are completely on their own to succeed or fail and would indicate a

Laissez-faire Style of Leadership. Then the preceding process would be repeated from a 'Self' (i.e., your

personal leadership style) perspective.

Table 6: Operationalised Responses to Survey Questions

Leadership Style..	...................................Rank 'Organisation'				...................................Rank 'Self'...................................			
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
	a.) Transformational	b.) Transactional	c.) Aversive	d.) Laissez-faire	a.) Transformational	b.) Transactional	c.) Aversive	d.) Laissez-faire
Empirical Supported Drivers of Innovation-Survey Questionnaire:								
Question 7: Creating a Psychological Climate for Innovation								
Question 8: Leader-Member Exchange (LM X)								
Question 9: Social Capital Promotes Innovation								
Question 10: Leadership Clarity Essential for Health Innovation								
Question 11: Supporting Team Reflectivity								
Question 12: Employee Mindset								
Question 13: Organisational Culture and Innovation								
Question 14: Role of the Chief Executive Officer (CEO)								

Note: I developed Table 6 to operationalise the survey questions (i.e., questions 7-14, Appendix A) used in the questionnaire. The survey questions describe a leadership style that is then related to each of the eight empirically supported leadership theories and concepts in this thesis. This is based upon an analysis of the survey data from Qualtrics LLC. The Qualtrics LLC's survey data is downloaded into SPSS and the descriptive statistics for each survey response are calculated and analysed. Based upon an analysis of the measures of central tendency (i.e., Median, Mode and Mean), selected leadership styles are colour coded and rankings shown.

This survey instrument was adapted from that used by Handy (1996) in terms of structure and the style of questions/statements posed. It was piloted with selected representatives of the administrative leadership and/or translational medicine departments of two US universities, one of which served as the pilot test for this study. As described by Rea & Parker (2014), Cronbach's Alpha was calculated, in Table 7, using 'Statistical Package for the Social Sciences' (SPSS) to test the scale reliability (internal consistency) of the responses based upon the results described in Chapter 4.1:US Pilot Study.

Table 7: Cronbach's Alpha

Reliability

[DataSet1] C:\Users\Phil\Downloads\Research_Study_Health_Innovation_Leadership (6).sav

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	6	75.0
	Excluded[a]	2	25.0
	Total	8	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.926	56

Note: Cronbach's Alpha of 92.6% was calculated excluding Survey Question 13: Organisational Culture (n= 8), which had a Cronbach Alpha of approximately 50%. This result, with regards to the respondent's understanding of Question 13, was addressed in subsequent changes to the survey questionnaire (Appendix B) and interviews with study participants. Source: SPSS

As described in Chapter 3.1.6, the qualitative interviews subsequently provided insight as to the reliability and validity of the survey. In addition, the questionnaire was shared and discussed in advance with: 1.) representatives of the University's[10] senior administrative leadership; 2.) representatives of the NHS and AHSN/CLAHRCs; 3.) senior executives in Healthcare[11], a publicly-held stock organisation traded on the New York Stock Exchange recognised for its health innovation; 4.) colleagues at Kent State University, Kent, Ohio; and 5.) members of a start-up technology company in the US. These discussions, involving colleagues in both the UK and US, resulted in improvements in the content and clarity of the survey instrument, especially with regards to the language differences (e.g., spelling of certain words) between the UK and US.

This extensive piloting ensured that the questionnaire was easily understood by those

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[10] The name of the organisation was changed in the interests of confidentiality.
[11] The name of the organisation was changed in the interests of confidentiality.

responding to it and the questions posed reliably captured the leadership styles seen, mapping onto the

eight empirically supported leadership theories and concepts from the literature review. Based upon

this work, I made appropriate edits and modifications of the survey instrument's wording. However, the

overall structure of the survey was generally well received by respondents. For example, as described

by Harzing et al. (2009), survey instruments, such as in this instance, using rankings performed best in

reducing response and language bias in international studies.

As described in Chapter 3.1.5: Qualitative Data Collection and Analysis, the intent of this Explanatory

Sequential Mixed-Method approach, as shown in Figure 6, is to use the qualitative phase to explain the

quantitative results more fully. However, the quantitative results in this approach can inform the qualitative

questions posed (Creswell, 2014b, p 224).

3.1.3 Conduct of the Survey

a. In accord with the continuum of leadership styles and objectives of this research study

described in Tables 1 and 2, respectively, this questionnaire seeks to determine

patterns of leadership style(s) found in health organisations engaged in health

innovation. Individuals in each organisation are asked a series of questions, each

relating to one of the leadership theories and concepts identified in the literature

review. Each has four possible responses, corresponding to a different leadership

style (Transformational, Transactional, Aversive, and Laissez-faire) (Appendix A). They

are asked to provide responses about the leadership style of the organisation in which they

work and the style they, personally, adopt. Responses are then aggregated within these

two perspectives and compared.

b. This design was chosen for several reasons, including: 1.) the ability to look at all of the

eight leadership theories and concepts identified in the literature review but not, to my

knowledge, looked at together; and 2.) for pragmatic reasons, recognising that the

respondents are busy health leaders/managers who operate with finite resources and

under time pressures.

c. The number of potential respondents (leaders/managers) in any of these organisations is

limited, although the precise number will vary according to the size/structure of the

organisation. However, they will include both members of senior leadership and lower

levels of management reporting to senior and successive levels of leadership. Pihlainen et

al. (2016) and Oshagbemi & Gill (2004) describe the importance of taking a broader

perspective when analysing an organisation's senior leadership and management

rather than placing a singular focus on a specific organisational level (e.g., first-

level management).

d. The Qualtrics LLC web-based software allows for the survey questionnaire to: 1.) be

communicated by email; 2.) protect identities of the respondents, who will remain

anonymous; 3.) include pre-set email reminder notices and 4.) export the results of the

survey to perform further analysis.

e. As noted, the survey questionnaire described in Appendix A is adapted from Handy

(1996). As he described, "*the questionnaire…provides one way of analysing and*

codifying… your organisation and yourself (i.e. the respondent). Questionnaires, of

course, are fallible, particularly when one fills them in for oneself about oneself. Add to

that the fact that organisations are not hard objective realities, like chairs, which can be

objectively measured and described, or is your character or personality….So it is clear that

the scores that you arrive at can only be your view, from where you stand at this point in

time, of the organisation and yourself" (pp.63-64).

f. Survey respondents received an electronic 'Information Note', as described in Appendix

B, introducing the researcher and describing the aim and objectives of the research,

among other matters. It was estimated that it will take survey respondents

approximately 15 minutes to complete and submit the survey electronically using

the Qualtrics web-based software. The Qualtrics LLC web-based software assures

that each respondent's completed survey questionnaire will remain anonymous

and secure.

g. The data from the survey were stored anonymously on a dedicated personal

computer hard disk under my control. I performed all data analysis, reviewed by

my supervisor.

3.1.4 Quantitative Data Analysis

a. A table was prepared with the numbers and percentages of respondents and non-

respondents. Non-response bias was evaluated using a Wave Analysis. That is, I

performed a weekly analysis to determine if later responses differ materially from

earlier survey responses. Some researchers assume late responders are more

typical of non-responders (Creswell, 2014b, p. 162; Rea & Parker, 2014, pp. 197-8).

In addition, to the extent feasible, I monitored, among successive waves, the pre-

determined categorical nominal, ordinal and numerical variables (i.e., 1.) Individual

Respondent: age; sex; organisational role; tenure with organisation; and education level

achieved; and 2.) Organisation: number of employees influences the respondent and

non-respondents for each health organisation (Mumford et al., 2002 & Hitt et al.,

1997, as cited in Jung, 2003).

b. The analysis depicts the profile of leadership style for each health organisation,

both overall and relating it to each of the eight leadership theories and concepts.

As noted, the analysis includes a comparison of the results of the survey

questionnaires from UK health organisations with one US health organisation

known for its innovative approach. In addition, a descriptive analysis of the survey

results was developed by categorical nominal, ordinal and numerical variable

categories for UK and the US comparator health organisations (Creswell, 2014b,

pp.161-166; Rea & Parker, 2014). As described by Rea & Parker (2014), SPSS was

used to: 1.) analyse cross-tabulated data; and 2.) perform other statistical analyses.

The plan of analysis includes an assessment of the eight leadership theories and concepts identified

in the literature review and collection of data concurrently from respondents' organisations and personal

perspectives. Zampieron et al. (2013) used a similar approach in a study to compare leadership styles of

nurse managers and their staff. That study gathered information based upon perceived (i.e., an

'Organisation' perspective) versus preferred (personal ['Self'] perspective) leadership styles.

To illustrate the approach, Figures 8 and 9 show the ranking given to different leadership styles, as

seen from the 'Organisation' and 'Self' perspective, are summarised, based on answers to the question

on the 'Psychological Climate' (question 7 in the survey) for a hypothetical organisation. Individuals

had been asked to state:

a. Leaders set high expectations for health innovation with commensurate rewards for

success.

b. Health innovation is included in standard policies and procedures.

c. Health innovation ideas, if any at all, flow down from the top of the organisation and failure

to implement an idea is not an option.

d. Leaders offer freedom to pursue health innovation, but proponents of ideas are on their own

to succeed or fail.

Thus, Figure 8 shows the ranking (1-4) of the 'Organisation' in terms of 'Psychological Climate'.

The responses referred to: a.) level of leadership support; b.) championing of innovation; c.) innovation

expectations; and d.) rewards, or in other words, the extent to which organisation members believe

health innovation is expected, supported, and rewarded. In this illustration, approximately 50% of the

collective survey respondents stated the organisation demonstrated (ranked as 1 or first-red line[12]) a

Transformational Style of Leadership and approximately 43% of respondents ranked as 2 or second (blue

line) an Aversive Style of Leadership.

In contrast, Figure 9, which looks at how respondents rank their own leadership style, in terms

of: a.) level of leadership support; b.) championing of innovation; c.) innovation expectations; and d.)

rewards, or the extent to which respondents view their own style, finds that approximately 29% (ranked

#1-red and purple lines) had either Transformational or Transactional Styles of Leadership, while

approximately 38% ranked 2 or second (purple line) reported a Transactional Style of Leadership.

Figure 8: Ranking the 'Psychological Climate' from an 'Organisation' perspective

Source: Qualtrics LLC

<hr>

[12] Respondents are requested to rank the statements from 1 to 4, putting a '1' by the statement that best represents the organisation, '2' by the next best, and so forth.

Figure 9: Ranking from a Personal ('Self') Perspective the 'Psychological Climate'

So where 50% of people assess the Leadership Style as **Transformational** from an 'Organisation' perspective, the leaders/managers are almost equally divided in placing each of the four leadership styles in 1st place

Transactional
Transformational
Laissez faire
Aversive

Ranking

Source: Qualtrics LLC

Thus, Figures 8 and 9 show a marked the lack of alignment suggesting that the organisation's capacity for innovation may be failing to meet senior leadership's expectations. This recognition of a misalignment between 'Organisation' and 'Self' perspectives affords the organisation an opportunity to take remedial steps to address the 'Psychological Climate' in a constructive and time-sensitive manner.

A similar analysis, as depicted in Figures 8 and 9, was performed for each health organisation included in the study. As described in Table 6, I then identified a leadership style based on each of the eight leadership theories and concepts and then collectively, for the overall organisation. Then the US comparator health organisation was analysed and compared to the collective results for the UK health organisations surveyed in Chapter 5.

To illustrate the approach to combining the survey results, I use the responses to the eight leadership theories and concepts for the 11 respondents in the previously depicted hypothetical organisation

to generate Tables 8 and 9, from an 'Organisation' and 'Self' perspective, respectively. Upon a review of

the collective results in Tables 8 and 9, it would appear that a majority of the respondents ranked the

Transformational (36% of responses) and Transactional (32% of responses) Styles of Leadership as '1' or

first from an 'Organisation' and 'Self' perspectives, respectively. However, as discussed in Chapter 1:

Introduction and Chapter: 4.1.2: Quantitative Data Collection, the 'Organisation' perspective would

appear dependent on the '**Context**' (i.e., operating environment) and 'Group Cohesiveness' that the

leaders/managers function. This suggests a situational response in leadership style from/for

leader/manager respondents also from a 'Self' perspective. As previously discussed, unlike in natural

sciences, social science theories are rarely, or never, according to some, universally applicable (Gorton,

2012). To account for the implications of the different organisation **Contexts** and levels of **Group**

Cohesiveness, a weighted score was calculated for each leadership style, allocating 4 points if ranked

first, 3 if ranked second, and so on (missing values were coded as zero), with the total divided by the

number of respondents.

Table 8: 'Organisation' Perspective-Collective Results

'Organisation' Perspective	1	2	3	4	Weighted Score	Total
Transformational	32	16	22	18	21.6	88
Transactional	17	32	22	17	20.5	88
Aversive	13	29	19	27	18.5	88
Laissez faire	25	20	25	18	20.7	88
Total	87	97	88	80		352

Note: Rankings 1-4 showing a collective best fit to least from an 'Organisation' perspective depicting responses from eleven participants to eight questions (7-14), each with four possible responses: (i.e., a.) Transformational Leadership Style; b.) Transactional Leadership Style; c.) Aversive Leadership Style or d.) Laissez-faire Leadership style). A total of 11 respondents and eight questions and four statements with each question were included [11 X 8 X 4=352 responses]). Then a weighted leadership style score was calculated as described.

Source: Qualtrics LLC and Microsoft Excel analysis

Table 9: 'Self' Perspective-Collective Results

'Self ' Perspective	1	2	3	4	Weighted Score	Total
Transformational	20	25	19	24	19.7	88
Transactional	27	29	19	13	22.4	88
Aversive	17	21	27	23	18.9	88
Laissez faire	21	**18**	31	18	19.8	88
Total	85	93	96	78		352

Note: Rankings 1-4 showing best fit to least from an 'Organisation' perspective depicting responses from eleven participants to eight questions (7-14), each with four possible responses: (i.e., a.) Transformational Leadership Style; b.) Transactional Leadership Style; c.) Aversive Leadership Style or d.) Laissez-faire Leadership style). Then a weighted leadership style score was calculated as described.

Source: Qualtrics LLC and Microsoft Excel analysis

As depicted in Table 8, the eleven respondents show a weighted 'Organisation' score that is almost split among a Transformational, Transactional and Laissez -faire Styles of Leadership. That is, an organisation with inspiring leadership, but little sincere interest in the members of the organisation as individuals. Innovation ideas, if any at all, are processed according to policies and procedures with pre-set awards. As described in Table 9, the 11 respondents show a weighted 'Self' perspective that favours a Transactional Leadership Style, but the other three leadership styles are still preferred by several their colleagues.

I have presented the preceding analysis of a hypothetical health organisation to demonstrate the approach used throughout this thesis to analyse the results of the surveys performed. In this instance, there is a conflict between the 'Organisation' and 'Self' perspectives. As will be discussed in Chapters 4 and 5 of this thesis, conflicts between survey respondents' perspectives from an 'Organisation' versus a 'Self' leadership style will need to be addressed by senior leadership and management to improve the organisation's innovation capacity and possibly reduce resulting employee turnover. It is emphasized that this thesis focuses on building innovative health organisations. Therefore, the 'Organisation' and 'Self' perspectives collectively presented are not merely the views of unrelated individuals, but individuals who collectively work for health organisations that are trying, as an organisation, to innovate to achieve its

strategic mission, vision and values and its duty to its stakeholders including patients.

3.1.5 Qualitative Data Collection and Analysis

The qualitative component began once the survey results were analysed. It involved semi-structured interviews with approximately twenty percent of the leaders/managers of the organisations included in the survey, in the UK and the USA, as depicted in Figure 7.

As described by Onwuegbuzie & Collins (2007), this sampling framework is referred to as a nested sequential sampling design. An example is the study conducted by Way, Stauber, Nakkula, and London (1994) as cited in Onwuegbuzie and Collins (2007). *"These researchers administered questionnaires that focused in the areas of depression and substance use/abuse to students in urban and suburban high schools (quantitative phase). On finding a positive relationship between depression and substance use only in the suburban sample, the researchers undertook in-depth interviews of the most depressed urban and suburban students (qualitative phase)..."(p.296).*

Onwuegbuzie & Collins (2007) believed that this nested sampling framework was the most flexible and enabled the "*researcher ... to fit a specific research context, as well as the research goal, research objective(s), research purpose, and research question(s)" (p.297).* Contrary to popular belief, Onwuegbuzie & Collins (2007) explained that non-random sampling was often used in quantitative and qualitative studies. As in this instance, nested sequential sampling designs can use a combination of sampling methods to best fit the aim and objectives of this study.

The leaders/managers were randomly selected for interview. However, if a leader/manager was not available, an appropriate individual was substituted to the extent feasible. The interview schedule, the core of which was the same for all organisations to enable comparability, complemented the results of the survey questionnaires (e.g., offering insight into the operating environment of the organisation) and interviews were conducted either face-to-face or by telephone using Skype, depending on the locality and availability of key informants. These interviews lasted approximately 30 minutes each. The preference

was to perform in-person interviews in the offices of the participating organisations.

Because of the anonymous nature of the responses to the survey and the nested approach used, participants selected at random for interviews may or may not have completed the questionnaire. As described in Appendix F, the interviews followed a semi-structured, open-ended format allowing the participant to offer further information and provide opinions for the interviewer to pursue other lines of questioning where relevant.

The interviews had two objectives. The first was to identify the ways in which different leadership styles facilitate or inhibit innovation, assessing their influence on the four stages of the innovation model described in Figure 2. The second, subsidiary objective was to assess the extent to which the questions in the survey accurately and reliably capture the leadership styles in the organisation, thereby contributing to the validation of the survey instrument.

The interview schedule initially explored in depth the questions asked in the survey, ensuring that meanings were clear, before obtaining concrete examples of how leadership characteristics impact on the work of the organisation and, in particular, its ability to innovate. A second element focused on situations in which health innovation has been facilitated or impeded and why. These stories were interrogated to identify aspects of leadership styles that gave rise to these facilitating or impeding factors. This information was subsequently related back to the findings from the survey in the particular organisation.

The interview schedule was piloted in both countries. In the US, the piloting took place during the collection of data from the quantitative survey and was informed by emerging results. In the UK, piloting of the survey instrument was undertaken with colleagues in several UK health organisations, as described previously. The approach to piloting is as set out in the Box 5 below.

Box 5: Piloting of interview schedule

A draft interview schedule was piloted among a group of at least 5 people working in health organisations in each country. The piloting addressed the following issues:

1. Will each question measure what it is supposed to measure?

2. Are all the words used understood?

3. Do all respondents interpret the interview question in the same way?

4. Does the interview process create a positive impression that motivates people to respond to the

questions posed?

5. How long does it take to complete the interview?

6. Is the information you want collected?

3.1.6 Qualitative Data Analysis

Green & Thorogood (2013) describe qualitative reliability as relating to *"issues such as accuracy of reporting, consistency of coding, and thoroughness of analysis"* (p.324). Creswell (Creswell, 2014b) describes qualitative validity "*meaning that the researcher checks for the accuracy of the findings"* (p.201). Given the limitation of this research study being performed by a single researcher, the strategies used to ensure the reliability and validity of the data analysis will include, but not limited to:

   a. Interviews, with the exception of parties who do not wish to be recorded and the extent practicable, will be recorded on two different devices (i.e., Livescribe Echo smartpen and the Voice Record Pro App on an IPhone 6).

   b. I arranged for the interviews to be transcribed shortly after completing them, using a reliable third party. The transcriber had access to a shared file of each interview in Microsoft's OneDrive without any reference to the party's name or the survey questionnaire, if completed.

c. This research employed an interactive approach adapted from that described by

(Maxwell, 2012) rather than a cyclical or a linear structure (Creswell, 2014b; Green

& Thorogood, 2013).

d. As noted, the quality (and accordingly the weight given) of identified documents

listed as references in this thesis was assessed using a standardized tool (Center for

Evidence Based Management, n.d.).

e. Triangulation of data sources was performed throughout the study.

f. The coded interviews were summarized into themes for further analysis, as

depicted in Figure 10.

g. The collected interview data were stored anonymously on a dedicated password

protected personal computer hard disk under my control. I performed all data

analysis, with review by my supervisor.

To summarize, the ongoing data collection and analysis is an iterative process. As noted above,

survey data were solicited from 155 persons while interviews were conducted with 34 individuals as

depicted in Figure 7. This is not a hypothesis testing study, but rather one to identify emerging themes, so

formal sample size testing is not appropriate. As noted previously, and as explained by Onwuegbuzie &

Collins (2007), the sample sizes in this research study exceed the minimum size for a study of this sort.

I reflect specifically on my role as a researcher in Chapter 5.4, Contributions of the Study.

This includes reflecting on the survey data, documentary sources, audio files, transcripts, and my

interview technique throughout the data collection phase, revising the interview schedule as

appropriate. The documentary sources and transcripts of audio-taped interviews were coded using

thematic analysis to identify emergent themes. I used NiVivo software to manage the coding process

and within the analysis of the data. I maximized validity of the analysis by identifying negative cases,

ensuring my interpretations of the data were sufficiently contextualized and by triangulating findings

across the different sources.

Figure 10: Validating the Accuracy of the Qualitative Information
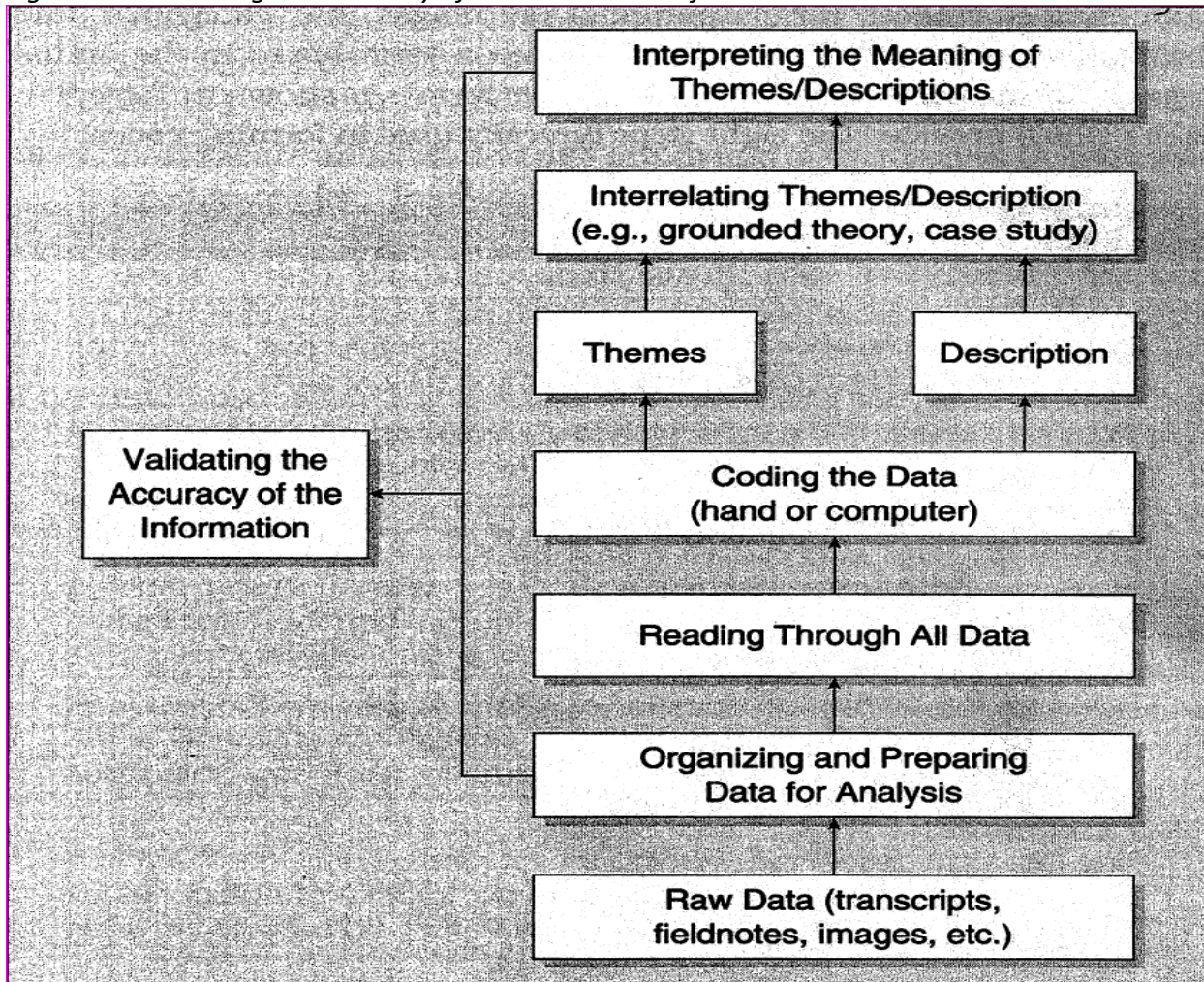
Source: Creswell (2014b), p.197.

3.1.7 Explanatory Sequential Mixed Method

To accomplish the aim and objectives, data collection was performed "*in two distinct phases*"

(Creswell, 2014b, p. 224). As previously noted, the intent of this method, as was shown in Figure 6, was to

use the qualitative phase to explain the quantitative results more fully. However, the quantitative results in

this approach can inform the qualitative questions posed.

3.1.8 Data Analysis, Interpretation and Validity

In this approach, the analyses of data from the quantitative and qualitative phases are first

considered separately. However, the sample for the qualitative phase is drawn from the population

used in the quantitative phase to enhance the validity of this approach. Therefore, in the interpretation

of this research, the results of the two phases are first discussed separately and then the quantitative

results are illuminated by the qualitative results. In this way, the results from each phase can be

triangulated with each other to strengthen their validity. The approach to triangulation will be based

on the method of triangulation by Patton (1999) whereby quantitative and qualitative data elucidate

complementary aspects of the same phenomenon. This approach points the researcher to where these

data sources diverge, which is of most interest as it offers the most valuable insights.

3.2 How my background enables me to conduct mixed methods research

I am a DrPH student with experience in health organisations in both the public and private

sectors in the UK and the US. My prior business experience includes working in computer information

services, healthcare consulting, investment banking, and the financial services industry as well as an

audit partner with the international public accounting firm of Deloitte LLP. My US government service

includes serving as the Special Assistant to the Vice-Chairman of the Board of Governors of the Federal

Reserve System which included both domestic and international banking oversight responsibilities. In

addition, I served (pro bono basis) as the Treasurer of a not-for-profit Florida-US regional medical centre

and served as a trustee and member of its executive and finance committees. I subsequently served as a

member of a county's healthcare district's finance committee and as a member of selected task groups. In

2015, I undertook an OPA of an AHSN in the United Kingdom as part of my DrPH degree.

Given my experience, it will be important to address the issue of reflectivity. In Chapter 5.4,

Contributions of the Study, this will be facilitated by keeping a field diary, recording the progress of the

research and reflecting on the role of a researcher in the interactions with subjects.

3.3 Ethical Issues

Prior to the commencement of the research, the senior leadership/governance representatives of each organisation in this study were informed of my background and were provided with my curriculum vitae. I spoke with the senior leadership/governance representatives of each organisation prior to commencing this study and discussed its aim and objectives, responding to any questions regarding the 'Information Note' (Appendix B). Their agreement to commence the research was obtained. In addition, the 'Information Note' will be provided to leaders/managers selected to receive survey questionnaires or participating in an interview. An 'Informed Consent Form' (Appendix C) was provided to leaders/managers selected for interviews. This research protocol was approved by the London School of Hygiene and Tropical Medicine Ethics Committee on 18 February 2016. In each instance, when interviewees are anonymously quoted in this thesis, a signed Consent Form as described in Appendix C was obtained in advance which states: *I understand that any quotations used in writing up the study findings will be used anonymously and I consent to this.*

Chapter 4 Results

4.1 US Pilot Study

4.1.1 Introduction

After being granted permission by the Vice Provost for Academic and Strategic Planning, I

piloted a study at one of the largest US Universities[13], a not-for-profit organisation, which includes a

highly regarded medical school and hospitals including speciality hospitals (e.g., treatment of cancer);

and an AHSC (collectively referred to in this thesis as the 'University', 'US health organisation' or 'US

Pilot Study'). With a student body of over 50,000 students, the University is one the leading educational

and health organisations in the United States and among the largest as measured by size of the student

body (Vice Provost for Academic and Strategic Planning of the University, Personal Communications, 6

October 2016).

As described in Chapter 3.1.1, a sample of 26 department leaders/managers was selected within

the US University whose duties closely approximate the responsibilities of the AHSNs, CLAHRCS and

AHSCs in the UK. In this instance, the study participants had responsibilities within: the Division of

Clinical and Translational Informatics; Division of Computational Biology and Bioinformatics; or the

Division of Data Science. In addition, certain study participants may be on a temporary assignment to

these and /or other departments at the University from other highly regarded research organisations

throughout the US.

4.1.2 Quantitative Data Collection

As described by Rea and Parker (2014), Cronbach's Alpha was used to test the reliability of the

respondent results to the survey questionnaire as depicted in Table 7. The response rate to the US Pilot

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[13] The name and certain descriptive data of the organisation has been changed to ensure the confidentiality of the information shared with the researcher.

Study is depicted in Table 10.

Table 10: Survey Questionnaire Response Analysis

All Responses:					
Distribution Channel	Audience Size-Initial	Surveys Started	Responses	Response rate	Completion Rate (of those starting survey)
Invitation by Qualtrics LLC Email	26	14	8	31%	57%

Source: Qualtrics LLC.-29 June to 30 September 2016

Of the initial sample of 26, three participants left the University within a short time after the survey process started (including the head of the Division of Clinical and Translational Informatics) and these three surveys were not completed. Therefore, the response rate was adjusted to approximately 34.8% (i.e., 8 out of 23). This response percentage exceeds that obtained by the RAND Corporation (2016) in a report on *Innovation, Health and Wealth - a formative and summative evaluation* which sampled a similar professional population in the UK. The RAND Corporation report represented independent research commissioned and funded by the UK Department of Health, Policy Research Programme. As described by the RAND Corporation, *"survey responses overwhelmingly came from people already interested in innovation. After excluding initial contacts where emails were not deliverable, and alternative email addresses could not be found, the overall response rate was 16 per cent (typical for online surveys)…"* (p.25).

Non-response bias of the survey sample was also evaluated using a Wave Analysis. Based upon the Wave Analysis performed over the survey period, no significant differences were noted between respondents and non-respondents. However, minor differences were noted as to age and sex. Non-respondents tended to be somewhat younger (35-44) and more likely to be male. The results are summarized in Appendix I.

Cronbach's Alpha was calculated using SPSS to test the reliability of the survey questionnaire (Appendix A), giving a value of 92.6%. As noted previously, this result excluded Survey Question 13;

Organisational Culture (n= 8), which had a Cronbach Alpha of approximately 50%. Consequently, this

question was reworded to ensure greater clarity, based on interviews with study participants (Appendix

A).

As stated previously, the overarching aim of the study was to ascertain the leadership styles of

health leaders/managers of organisations charged with driving innovation in the UK and a selected high-

performing comparator in the US. Then the study assessed how these adopted leadership styles align

with the leadership theories and concepts identified in the literature review. As noted in the previous

chapter, each of these theories and concepts was operationalised as one question, with four statements

a-d, relating to the following leadership styles, including: a.) Transformational Leadership Style; b.)

Transactional Leadership Style; c.) Aversive Leadership Style; or d.) Laissez-faire Leadership style. They

were then asked to describe the leadership style in their organisation and their own leadership style. A

summary of their responses from each perspective is presented in Table 11. A weighted score was

calculated for each style, allocating 4 points if ranked first, 3 if ranked second, and so on (missing values

were coded as zero), with the total divided by the number of respondents. As this shows, based on the

highest weighted score, the US organisation was considered to have a mainly Transactional Leadership

Style, although with elements that were Aversive and Laissez-faire Styles of Leadership. A

Transformational style attracted the lowest rankings. In marked contrast, the most prevalent leadership

style adopted by respondents ('Self' perspective) was a Transformational Style of Leadership, indicating

a mismatch between the respondents and their organisation.

Table 11: 'Organisation' and 'Self' Perspective Collective Results-Pilot Test-US Health Organisation

'Organisation' Perspective	1	2	3	4	Weighted Score	Total
Transformational	11	7	16	26	15.4	60
Transactional	18	26	12	4	22.3	60
Aversive	18	16	16	10	20.3	60
Laissez faire	16	14	17	13	19.1	60
Total	63	63	61	53	77.0	240
'Self' Perspective	**1**	**2**	**3**	**4**		**Total**
Transformational	32	8	9	4	21.8	53
Transactional	3	25	15	10	15.9	53
Aversive	9	11	14	18	14.4	52
Laissez faire	10	12	9	20	14.3	51
Total	54	56	47	52		209

Note: Rankings 1-4 showing best to least fit from an 'Organisation' and 'Self ' perspectives depicting the responses of eight respondents to eight questions (7-14) A total of 8 respondents and eight questions and four statements with each question were included in the survey questionnaire (8 X 8 X 4=256 possible responses). However, in certain instances participants did not respond to each question resulting in a lower collective count out of the 256 possible responses as was noted in Table 7 in the calculation of Cronbach's Alpha.

Source: Qualtrics LLC Survey Reponses and Microsoft Excel analysis.

Table 12 examines the most commonly reported leadership styles associated with the different

questions, and thus, the leadership theories and concepts.

Table 12: Responses to Survey Questions-US Health Organisation-Leadership Style Ranked as #1-Best Fit

Empirical Supported Drivers of Innovation-Survey Questionnaire:	Rank Organisation a.) Transformational	Rank Organisation b.) Transactional	Rank Organisation c.) Aversive	Rank Organisation d.) Laissez-faire	Rank Self a.) Transformational	Rank Self b.) Transactional	Rank Self c.) Aversive	Rank Self d.) Laissez-faire
Question 7: Creating a Psychological Climate for Innovation				(purple)	(red)			
Question 8: Leader-Member Exchange (LMX)		(purple)			(red)			
Question 9: Social Capital Promotes Innovation		(purple)			(red)			
Question 10: Leadership Clarity Essential for Health Innovation			(blue)		(red)			
Question 11: Supporting Team Reflectivity		(purple)			(red)			
Question 12: Employee Mindset		(purple)			(red)			
Question 13: Organisational Culture and Innovation			(blue)		(red)			
Question 14: Role of the Chief Executive Officer (CEO)			(blue)		(red)			

Source: Qualtrics LLC survey results and SPSS analysis.

Note: Table 12 depicts the operationalised responses to the US Pilot Study survey question responses (i.e., questions 7-14, Appendix A) from an 'Organisation' and 'Self' perspectives based upon the methodology described in Table 6. This approach includes an analysis of the survey response data from Qualtrics LLC. The Qualtrics LLC's survey data was downloaded into SPSS and the descriptive statistics for each survey response were calculated and analysed. Based upon an analysis of the measures of central tendency of the data, the selected leadership styles were colour coded and ranked as the best fit (i.e., ranked as number 1 or first) to the survey question posed.[14]

The striking finding is the consistency of responses in relation to 'Self', where respondents were most likely to opt for a Transformational style in relation to all the theories and concepts. In other words, they are people who prefer to work together to achieve a shared vision. However, their assessment of the organisation was extremely varied, although dominated by Transactional and Aversive styles, with a Laissez faire approach to creating a psychological climate for innovation. Taken together, these findings paint a picture of an organisation staffed by people who recognise the need for

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[14] As described by Rea & Parker (2014), the Mode can be best used to describe the most common responses for ranked scale data. The Median is the most appropriate measure for categorical ordinal data. However, the Mean should also be considered when there are numerical responses to questions.

innovation and the means to pursue it but are trapped within an organisation where the focus is on

process, with blame for those who err, but with some elements of a hands-off approach. This does not

suggest a well-functioning organisation, despite its previous history of achievement. Crucially, the

problem seemed to lie with the organisation rather than the staff, so it would seem unlikely that

measures such as leadership training would help. It was thus unsurprising that members of the senior

leadership of this University later resigned under pressure from the leaders/managers and staff from

University departments that were included in this research.

I then explored the data in terms of the characteristics of respondents: age; sex; organisational role;

tenure with organisation; and education level achieved. While the Transactional and Aversive Styles of

Leadership dominated the responses to the survey questions, certain respondents preferred a Laissez-faire

Style of Leadership. At first glance, this seemed to be associated with their length of time with the organisation,

so this variable was selected for further investigation.

There were other reasons why this may be of interest. First, as described by Cohen and Bailey (1997),

"'Group Cohesiveness' [Emphasis added] is positively related to performance. Three meta analyses and

several empirical studies found a slight to moderate positive relationship between 'Group Cohesiveness'

and performance. This is a robust finding in an area that has long been studied." Second, 43% of the

respondents (Appendix I) had spent over 10 years with the organisation and a further 29% had spent 5-

10 years with the University, so 72% had been with the University over 5 years. For comparison, the

median tenure of management, professional and related occupations in the US is 5.1 years (Bureau Of

Labor Statistics, 2016).

Table 13 shows the 'Organisation' and 'Self' Perspective Organisation for US Pilot Study

participants with 10 years or more tenure and weighted scores for this group and those participants with less

than 10 years tenure, adjusted for the number of respondents. Table 13 shows that those with shorter tenure

are slightly more likely to report that they have a Transformational style from a 'Self' perspective while

presenting a Transactional Style of Leadership from an 'Organisation' perspective. In contrast, those who have

been with the University longer are slightly more likely to view the organisation as demonstrating a

Transformational style from both perspectives.

Table 13: 'Organisation' and 'Self' Perspective Collective Results-Pilot Test-US Health
Organisation Participants with more than 10 years Tenure and Weighted Scores for each
Leadership Style among Those with Differing Levels of Tenure

Tenure	> 10 years (n=3)	< 10 years (n=5)
'Organisation' Perspective		
Transformational	18	13.8
Transactional	17.6	25
Aversive	17	22.2
Laissez faire	15	21.6
'Self' Perspective		
Transformational	17.3	24.4
Transactional	16.3	15.6
Aversive	16.3	13.2
Laissez faire	13.7	14.6

Source: Qualtrics LLC & Microsoft Excel Analysis

In Figure 11, I was interested in how those with over ten years in tenure viewed the CEO of the

University. Upon further examination of the data, these leaders/managers ranked as 1 or first (from an

'Organisation' or 'Self' perspective) either the Transformational (i.e., Senior leadership combines

leadership by example with inspiring and motivating organisation members to experiment with new

ideas) or the Laissez-faire Style of Leadership (i.e., senior leadership delegates most organisational

responsibilities and duties to leaders/managers giving them considerable latitude to make decisions.

Senior leadership does not lead by example and refrains from motivational efforts) as depicted in Figure

11. This is followed by ranking as second the Transactional Style of Leadership.

Figure 11 : Organisation' Perspective-Question 14-Role of the CEO
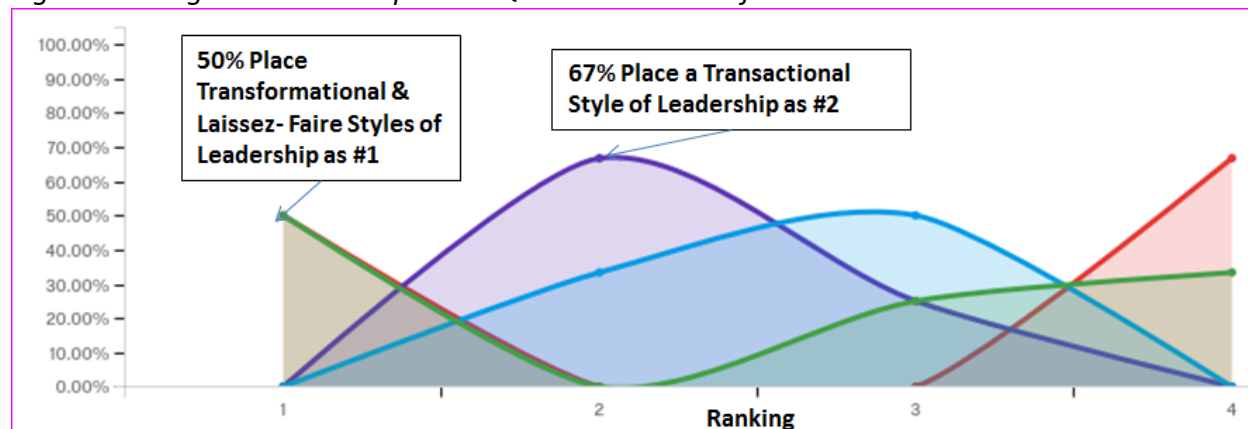
Source: Qualtrics LLC Survey Reponses and Microsoft Excel analysis

To summarize, as illustrated in Tables 11 and 12, there is a collective lack of alignment, among leaders/managers (e.g., mainly a Transactional Leadership Style, although with elements that were Aversive and Laissez faire Styles of Leadership from an 'Organisation' perspective) versus a Transformational form of leadership from a "Self' perspective as aligned with the eight leadership theories and concepts favourable to health innovation. However, this collective misalignment was not noted among those who had over 10 years tenure with the organisation (Appendix I) described in Table 13. In Table 13, this group consistently ranked the Transformational, Transactional and Aversive Styles of Leadership highly both from the 'Organisation and 'Self' perspectives. As this group also included the executive leadership, it indicated a difference in the perspectives of leadership style at different organisation levels.

This lack of consistency among leaders/managers may also partially explain the high turnover that I observed among the University's senior administrative leadership and the high ranking of a Laissez-faire Style of Leadership in this sample (Survey Question 14, Appendix A) by respondents with over ten years in tenure in the organisation (Figure 11). For example, the University had 5 interim and full-time presidents since 2007 as well as recent turnover in other senior administrative and division/department leadership. Based upon the researcher's observations and responses from survey respondents with over ten years of tenure in the organisation, described in Figure 11, the organisation's board of directors and senior administrative leadership

project a top down corporate view without giving a great deal of attention to knowledge worker buy-in (i.e.,

Laissez-faire Style of Leadership).

4.1.3 Qualitative Data Collection

As described in Chapter 3.1.5-Qualitative Data Collection and Analysis, in October 2016, five of

the twenty-three participants (approximately twenty percent) in the sample were randomly selected for

a semi-structured interview (Appendix F). Of the five interview participants, three submitted survey

questionnaires. This nested sequential sampling design is referred by Onwuegbuzie and Collins (2007) as

a "*random purposeful technique"* that *"selected random cases from the sampling frame and randomly*

choosing a desired number of individuals to participate" (p.286). This approach enabled the selection of

individuals covering each level of leadership and management. In this instance, one of the individuals

selected was assigned to a project in China and a substitute participant was identified. After my arrival at the

interview location, one individual became unavailable due to illness and the Vice Provost for Academic and

Strategic Planning agreed to be interviewed. While he was not among the twenty-three survey

participants, he had reviewed the survey questionnaire, research protocol and participated in prior

discussions with me.

The qualitative procedures facilitated the evaluation of non-response bias to the survey (i.e., views of

non- respondents can be compared to survey respondents) manifested by any meaningful differences

between the views of these two groups. During the interviews, those who had responded to the survey

disclosed that they had more training and/or interest in leadership and health innovation, specifically. This

observation is similar to that found by RAND Corporation (2016).

As previously explained, the interviews had two objectives. The first was to identify the ways in

which different leadership styles facilitate or inhibit innovation, assessing their influence on the four

phases of the innovation process described in Figure 2(reproduced again here).

Figure 2: The Innovation Process
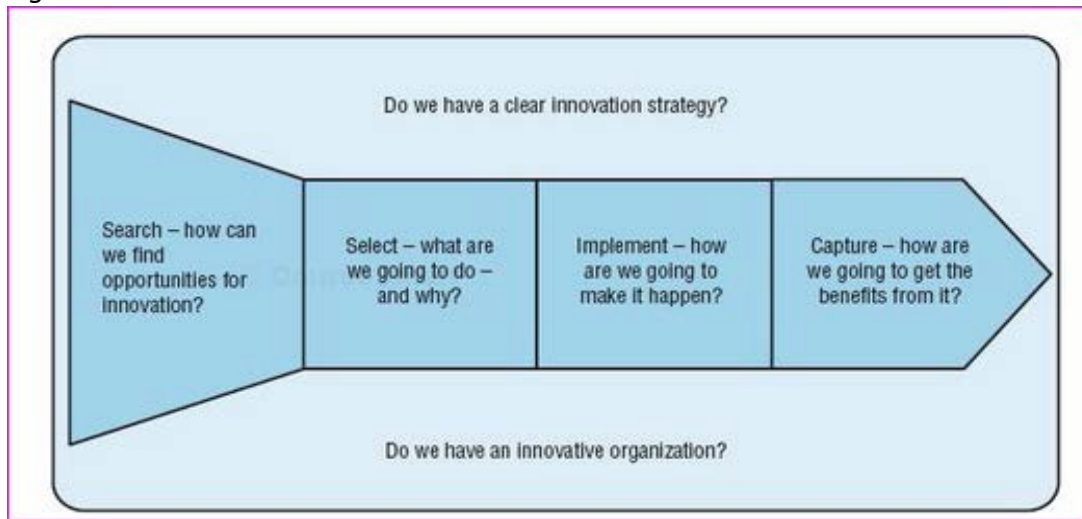
Source: Tidd and Bessant (2013), p.60.

Consistent with the results reported in Chapter 4.1.2: Quantitative Data Collection, the

interviewees collectively described an organisation with a Transactional Style of Leadership where short-

term return on investment (ROI) was the main criterion for deciding the amount of funding,

administrative and other support a research project would receive. Concurrently, the interviewees

described an organisation that demonstrated an Aversive Style of Leadership (i.e., top-down) where

there was little consideration by senior administrative leadership (i.e., Laissez- faire Style of Leadership)

of buy-in by leaders/managers at lower levels (divisions/departments). However, as emphasized by

several interviewees, buy-in may be needed to generate a high level of collaboration to achieve the

success of a research project. The following interviewees' quotes are representative of these views:

Answer: "We are in a situation now where it is more difficult to fund a research group, and so you've seen a shift from this more altruistic knowledge-based motivation to a much more financially driven, bring in money."

Answer: "I think it does relate to the fact that the funding for all the colleges and the health system is not all centralized, and I can't begin to tell you how it's actually done, but some colleges have more support and some have less support."

Question: "Could we get buy in…?"

Answer: "They don't. Their buy in is at the top level as you kind of go down, there's executive committees, but once you get below a certain level, where you have brought faculty or the staff, there's not really a buy in there. It's more like a forum saying "Hey look, we want to talk about these…."

Answer: "That takes a lot of institutional will, but a lot of institutional will isn't difficult if you have the vision for it. All I'm saying is that change (i.e., innovation) *is only hard when you are asking people to do something that they haven't bought into."*

The perceptions of interviewees of their 'Self' leadership style was primarily Transformational was especially strong among participants with over ten years tenure with the organisation as described in Figure 16. The following interviewees' quotes are representative of these views:

Answer: *"When these organisations think outside of the box, yes there are going to be mistakes, there are going to be errors, but leaders learn from those mistakes and adapt. I think adaptation has to be beautiful. Okay, fine. That was a mistake, that's okay, move on, learn from it and adapt. To me I think that is what I need. Those are my role models. Those are people whom I say I want to be like them. I want to be able to be a critical thinker; you know, my mistake, my bad, learn from it, adapt and move on."*

Answer: "*You can't be innovative if you are risk averse."*

Answer: *"The one challenge that I have in the conversation that we had and I just alluded to it, is you could do what worked for us again and fail. It's not that these are the ingredients, not a recipe, and I think that really it's about getting the right people before they come in, and setting expectations…"*

Answer: *"So the question is, if I can lead you, if I can give a vision of what we are trying to do, when I walk away you think that my idea is your idea. So you are still working towards that common goal."*

As described in Chapter 2.3.2 and Table 11, the Transactional leadership style with elements that were Aversive and Laissez faire Styles of Leadership attributed to the 'Organisation' would present a barrier to success through all four stages of the innovation process depicted in Figure 2. This is especially true if this Transactional leadership style is coupled with an Aversive leadership Style of Leadership, which could lead leaders/managers to be risk-averse rather than innovative.

Given the predominant 'Self' perspective of a Transformational Style of Leadership shown in Table 12; this could inspire the innovation process. Therefore, this misalignment of the 'Organisation' and 'Self' perspectives (Tables 11 and 12) may lead to conflicts between a senior leadership not interested in achieving buy-in to an idea and Transformational leaders/managers at lower levels of

responsibility. Again, this misalignment of leadership styles may also partially explain the high leader/manager turnover seen in this organisation.

Overall, the perceived Transformational Style of Leadership described by study participants with over ten year's tenure (Table 13), from both the 'Organisation' and 'Self' perspectives, should not be surprising. These more experienced participants generally comprise the senior members of the organisation's (executive) leadership at the division/department level who are the recognized experts in their field and may also aspire to senior administrative leadership.

With the organisation's senior administrative leadership's Transactional Leadership Style with elements that were Aversive and Laissez-faire Styles of Leadership of leadership (Table 11) and their focus on ROI, it is incumbent on the study participants with over ten year's tenure to present a strong business case to the senior administrative leadership of the University to generate and select ideas that represent a combination of their project team's views (Figure 2-Phases 1 and 2, **Search** and **Select**, respectively). These individuals perceive the senior administrative leadership of the University as having a combination of Transformational and Laissez-faire Styles of Leadership (Figure 11). Accordingly, it is likely that these expert researchers see an opportunity to present a business case for their research proposals that blends the senior administrative leadership's focus on ROI with their ('Self') collaborative Transformational Style of Leadership.

The second objective of the interviews is to assess the extent to which the questions in the survey accurately and reliably capture the leadership styles in the organisation, thereby contributing to the validation of the survey instrument. After transcription, which took place shortly after each interview, I coded the interviews line-by-line using NiVivo 11 and summarized the content into themes. The themes identified (i.e., listed as Questions 7-14 of the survey questionnaire in Appendix A) in the interviews were consistent with the prior literature searches used to structure the survey instrument and the initial interview questions.

The interviewees confirmed the organisation's degree of alignment with the eight empirically

supported leadership theories and concepts favourable to health innovation included in the

questionnaire (Appendix A-Questions 7 to 14), individually and collectively. The following interviewees'

quotes are representative of these views:

Question 7: 'Psychological Climate'

Answer: "*They created a safe environment, supportive culture for you to do this. And if they were not willing to have the right climate and the right culture, and you instead were told, like at the GM manufacturing plant, we stamp this metal in the middle with a big X, and then you are going to stamp it with big X's.*"

Question 8: 'Leader Member-Exchange' (LMX)

Answer: "*I can't speak to the organisation; we are not a monolith, not even from the top down. I would tell you that my research success is entirely dependent on the infrastructure in relationships we built.*"

Question 9: 'Social Capital'

Answer: "*…And I might actually have networks of interdependence and my organisation then becomes a constellation of networks. That's what holds everything together, but in the end, there were a bunch of networks here, and there are going to be loose connections between the networks; but this one is doing this kind of work and that one is doing that kind of work, and no one is expected to do everything. People are expected to collaborate to come up with that.*"

Question 10: 'Leadership Clarity'

Answer: "***…** it's about getting the right people before they come in, and setting expectations. We spend an awful lot of energy about setting expectations in our group so that you know….*"

Question 11: '**Organisational Reflectivity'**

Question: "*In your Programme, is there an opportunity for the people to just exchange ideas with each other? I mean, is there a reflectivity time?*"

Answer: "*Yes, there is. They have quite a lot of time to do so. So they follow the group, the whole cohort, and the same cohort meets up at every time, every month for ten or twelve months. And they do form a sort of cohesive Group during that time, and do have quite a bit of time reflecting. There's one main sort of Course Programme Director who is with them every Session, even if he's not formally teaching. They become very attached to him, and he sort of facilitates the group sessions. It's very successful in doing that and they have quite a little time within each day actually just reflecting and talking to each other.*"

Answer: "*…We function like a think tank. We function like a research incubator. That's the language people have when they talk about it. For example, our group spends no less than 12 hours [weekly]*

sitting together around a table of coffee…"

Question 12: 'Growth versus Fixed Mindset'

Question: "You had a growth Mindset. You were open to change."

Answer: *"That's what collaboration is."*

Question 13: Organisation 'Culture' refers to the values and beliefs which set the expectations for innovative behaviour

Answer: *"We should be supporting interdependent researchers, because they can do science that independent researchers can't do. That's the part that's missing. There is a culture associated with it. There's a mentality associated with it, and I think that you've got to buy into this idea that we are interdependent. That may mean you need to clear out everything and start again and say, we are going to build an interdependent organisation… "*

Question 14: 'Senior leadership's impact' (Role of the CEO)

Answer: *"No, that wouldn't work. I was very fortunate. The only reason I came here was that I was told I could create this environment. So one of the dynamics that we have is we interview candidates for jobs. One of the things that we tell them is when you come here; your prior research is gone. You can do it off the side of your desk, but we can't support you doing that research and this tent is big enough. What we are trying to do are train people to do this work, because this is what's needed. Not what interests you, but in ways needed by the Institution. It is what is needed by the country. This is what is needed. That's how we are driving our research. What value are we adding to the world? Not, well, I'm interested in this….that's me-search. I don't understand how we can be funding so much of it. I mean, I do - I understand the way it's set up and everything, traditionally. But that is not the team science approach that is going to get us to solve the big problems. So, if we are going to do that, then you have to create an environment where people come in and what has happened, is that they have been transformed by the process. We at times call it drinking the Kool Aid. They get transformed by the process. They change their world view and then they scaffold onto where we are, where their interests were."*

4.1.4 Mixed-Methods Analysis & Discussion

The overarching aim of this study is to ascertain the leadership styles of health

leaders/managers of organisations charged with driving innovation in the UK and in a selected high-

performing comparator in the US and assess how the styles adopted align with the eight theories and

concepts identified in the literature review as favourable to health innovation. To achieve this aim, an

Explanatory Sequential Mixed Methods approach was used. The combined results of this approach were

then used to develop a feasible and practicable 'L e a d e r s h i p Framework' that a health organisation can

use to determine the leadership styles of health leaders/managers aligned with eight empirically

supported theories and concepts, thereby to drive much needed health innovation.

The integration of the results of quantitative and qualitative approaches used in this US Pilot

Study are depicted in Table 14; "*a follow-up results joint display*" as described by Creswell (2014a, p. 84).

This summary of the results of the pilot test of the US health organisation provides a baseline for

comparative purposes to the UK health organisations subject to the limitations discussed in Chapter 5.5

of this study.

Table 14: A Follow-Up Joint Display of Mixed-Methods Result- US Health Organisation

Quantitative Results	Qualitative Follow-Up Interviews Explaining Quantitative Results	How Qualitative Findings Helped to Explain Quantitative Results
1.) There is a collective lack of alignment, among leaders/managers (i.e., Transactional with elements that were Aversive and Laissez faire Styles of Leadership from an 'Organisation' perspective versus a Transformational form of leadership from a "Self" perspective) as aligned with the eight empirically supported leadership theories and concepts (themes) described in this thesis and shown favourable to health innovation.	1.) The interviewees collectively described an organisation with a Transactional Style of Leadership where short-term return on investment was a priority on the amount of funding, administrative and other support a research project would receive. Also, the interviewees' confirmed the organisation's degree of alignment with the eight leadership empirically supported theories and concepts included in the study questionnaire.	1.) This perceived misalignment of leadership styles between the 'Organisation' and 'Self' is understandable. As expressed by the interviewees, the health organisation's senior administrative leadership focuses on project by project funding return on investment because the sources of public funding for research have decreased. That is, organisations (particularly not-for profit organisations) may present a Transactional and Aversive senior administrative leadership style if their focus and first goal is to maintain financial viability (Gapenski, 2016).
2.) This collective lack of alignment was not noted among the largest population group by tenure (i.e., over 10 years with the organisation). This group consistently ranked the Transformational and Aversive Styles of Leadership highly both from the 'Organisation and 'Self' perspectives. However, this population group perceived the senior administrative leadership having a combination of a Transformational and a Laissez-faire Style of Leadership.	2.) Concurrently, the interviewees' described an organisation which also demonstrated an Aversive Style of Leadership (i.e., top-down) where there was little consideration for buy-in of leaders/managers at the different levels of the division/department that may be needed to collaborate to achieve the success of a project.	2.) Therefore, it is incumbent on this health organisation to engage leaders/managers with a Transformational Style of Leadership that is coupled with the courage to make a business case for research projects that will most help the health of the population and bring together the collaboration necessary to attract funding.
	3.) A perceived 'Self' Transformational Style of Leadership was described by participants especially those with over ten years tenure.	3.) Health organisations will need to ensure leaders/managers have the necessary leadership skill-sets by offering training programmes throughout their careers.

Based upon the work performed, there are two additional salient matters that I must discuss regarding the mixed-methods analysis.

First, a Reporter (2017) disclosed that the CEO of the University's Medical Center resigned following complaints by the faculty about his leadership. He also stepped down from his position as executive vice president of health sciences at the Medical Center. According to the Reporter (2017) , *"Thirty …University College of Medicine physicians … **signed** a letter of "no confidence" regarding the CEO … 2017. The letter notes that more than 100 faculty members from the College of Medicine express the same sentiments as the letter; however, not all signed it due to **fear of retaliation** [emphasis added].* *Soon after, … senior members of the Medical Center's … also wrote a letter detailing concerns about the leadership team."* While the two letters included several strong complaints against the CEO, *"both letters allege the CEO's **leadership was negatively** [emphasis added] affecting the academic mission…"*

These events, affecting leadership of the University, are consistent with the quantitative findings from the survey instrument used in this study (i.e., there is a collective lack of alignment of leadership styles, among leaders/managers, from 'Organisation' and 'Self ' perspectives as described in this thesis). Further, these events occurred approximately seven months after my research at the University was completed. While disturbing, these events suggest that the methods that I used may be able to identify potential problems.

The findings describe a University that presents a collective dysfunctional set of leadership styles from an 'Organisation' perspective, ranging from Transactional to negatives styles of leadership including Aversive to Laissez-faire, which contrasts with the Transformational form of leadership style preferred by leaders/managers at different levels in the organisation from a 'Self' perspective; particularly among the more senior researchers at the University.

These quantitative findings are also supported by the qualitative interviews performed. The qualitative interviews found that leaders/managers believed the senior leadership of the University held a Transactional and Aversive leadership style partially because of their intense focus on Return on Investment.

As described by Miller & Tsang (2010) *"organizations are diverse, complex, and changing social phenomena, with multiple levels of analysis, as well as multiple and contingent causal processes"(p.140).* At the time this study was performed, the University presented an operating '**Context**' which demonstrated a collective Aversive, Laissez-faire, and Transactional form of leadership style from an 'Organisation' perspective. As described by Antonakis et al. (2003), *"ratings of leadership may be contextually sensitive in that the context in which ratings are collected… and can affect measurement and structural properties of leadership surveys, as well as one's interpretation of the results"*(p.268). Antonakis et al. (2003) further described this contextually sensitivity as a validation of a survey instrument, when it can differentiate between the leadership styles of multiple organisations. However, because the behaviour of the leaders/managers of the University and the staff reporting to them likely modified their behaviour due to the operating 'Context', comparisons to UK organisations participating in this study which presented a different operating 'Context', must be undertaken with caution.

To enable me to conduct this analysis, additional procedures were undertaken, including: 1.) detailed discussions concerning the operating environment with several representatives of the University's senior administrative leadership; and 2.) a review of documents including operating and strategic information. Finally, the differences in *"employee motivation, management styles , and organisational structures"* between the US and UK health organisations described by Hofstede (1980) were considered.

Second, from a policy perspective, UK policymakers should take particular note of the approximately 71% of the sample with over 5 years tenure, including approximately 43% of the sample with over 10 years of tenure with this leading US health organisation. This contrasts markedly with the figures of 49% and 13%, respectively in the UK health organisations sampled, as depicted in Table 15. Currently, approaches to health innovation in the UK appear to show a preference for evaluating organisations in five-year increments, leading to decisions to continue or abandon an organisation. For

example, beginning in October 2008, the NIHR funded nine CLAHRC pilots for five years. A second wave

followed, and, at present, there are 13 CLAHRC which are also subject to a five-year review. Also, the

first AHSNs in the UK were formed in 2012 and are also subject to a five-year review to decide their

continuation.[15] This form of government oversight could lead to uncertainty about employment among

critical leaders/managers and knowledge staff workers in UK organisations responsible for health

innovation. If this uncertainty about employment is allowed to become embedded in the culture of

these organisations, this could present a barrier to them achieving the '**Group Cohesiveness'** observed

in the US health organisation. In other words, leaders/managers and knowledge staff workers may

perceive these health organisations as short-term resume builders versus part of a long-term career

strategy.

Table 15: Sample Population by Tenure-US and UK Health Organisations

Question#3	Answer	..........US Pilot Test Respondents......		..........UK Health Organisation Respondents......	
		%	Count	%	Count
	1 Below 1 year	0.00%	0	3.28%	2
	2 1-2 years	0.00%	0	16.39%	10
	3 2-5 years	28.57%	2	31.15%	19
	4 5 -10 years	28.57%	2	36.07%	22
	5 Over ten years	42.86%	3	13.11%	8
	Total	100%	7	100%	61

	Minimum	Maximum	Mean	Std. Deviation	Variance	Count
US Pilot Test Respondents	3	5	4.14	0.83	0.69	7
UK Respondents	1	5	2.74	1.01	1.01	61

Question#3-What is your
tenure with the
Organization?

Note: Compiled from sample data described in Appendix I. As described in connection with Table 16,
there were 61 total survey questionnaires submitted versus the 44 survey responses included for
complete analysis. The 17 questionnaires not included for complete analysis were improperly prepared

[15] On 27 July 2017, The NHS Board voted to commence the relicensing process for all 15 AHSNs subject
to approval of their plans beginning April 2018. Ian Dodge, National Director: Strategy and Innovation
stated the *"AHSNs serve as vital 'connective tissue' between industry, universities, and the NHS…In the
future, AHSNs will have two primary functions: innovation and service transformation"* (NHS England,
2017, 6 July) .

(i.e., did not comply with the instructions beyond answering the categorical questions 1-6 [e.g., Question 3: What is your tenure with the Organisation?], but omitted responding to the ranked survey questions 7-14).

4.2 UK Health Organisations

4.2.1 Introduction

As described in Figure 7, six UK health organisations described below were included in this study. These have been described earlier, in Chapter 1. As previously noted, the names and certain descriptive data of the organisations have been changed to ensure the confidentiality of the information shared with the researcher.

1). *Academic Health Science Centre –England (AHSC-England):*

AHSC-England is one of the leading AHSCs in the United Kingdom with *partners* from the NHS, social care and academia located throughout England. AHSC-England's reputation for excellence in health delivery and research extends throughout the UK and globally. For example, AHSC-England supports translational medicine improvements including innovations affecting population health by partnering with the NHS, other AHSNs, and CLAHRCS to train clinical and other professionals in leadership and support their innovative initiatives.

2). *CLAHRCs*

Five CLAHRCS were included in the study; each focused on specific delivery themes (e.g., dementia; mental health; respiratory care) and cross cutting themes (e.g., patient and public engagement). These were responsible for meeting the research needs of more than 12 million people located in different parts of England.

The quantitative and qualitative data for the UK health organisations included will be presented in section 4.2.2: Quantitative Data Collection.

4.2.2 Quantitative Findings

In Table 16, I have summarized the responses to the survey questionnaire from the UK health

organisations. While there were 61 survey questionnaires submitted (i.e., of the 77 surveys started or

72%) by respondents, a total of 44 questionnaires were accepted for complete analysis. The deleted 17

survey questionnaires were improperly prepared (i.e., did not comply with the survey instructions

described in Box 4 beyond answering the categorical questions [e.g., Question 3: What is your tenure

with the Organisation?], but omitted responding to the ranked survey questions 7-14 (Appendix A).

While these 17 responses were not analysed fully, they were included in Appendix I to describe

responses to socio-demographic and organisational questions.

Table 16: Survey Questionnaire Response Analysis-UK Health Organisations

All Responses:					
Distribution Channel	**Sampling frame**	**Surveys Started**	**Responses**	**Response rate**	**Completion Rate %**
Initiation By Qualtrics LLC Email	132	77	44	33%	57%

  Source: Qualtrics LLC-24 November 2016-10 June 2017

The overall UK survey questionnaire completion rate and the response rate of 57% and 33.3%

are similar to the experience of the US health organisation of 57% and 34.8%, respectively. As previously

discussed, the response rate (i.e., based upon 44 responses to the survey questionnaire) was more than

double the response rate incurred by the RAND Corporation in a survey of a similar UK population

(RAND Corporation, 2016).

Non-response bias of the survey sample was also evaluated using Wave Analysis. Based upon

the Wave Analysis performed over the survey period 24 November 2016-10 June 2017, no significant

differences were noted. The survey period for each UK health organisation was approximately two-three

months and the solicitation period was staggered over the period 24 November-10 June to allow for

analysis of the collected data prior to commencing interviews of randomly selected study participants.

As previously discussed, each survey questionnaire was accompanied by an invitation letter (Box 1) with

an attached Information Note (Appendix B). Also, gentle reminders were sent as depicted in Box 3.

As stated, the overarching aim of the study was to ascertain the leadership styles of health

leaders/managers of organisations charged with driving innovation in the UK and a selected high-

performing comparator in the US. Then the study will assess how these adopted leadership styles align

with the eight leadership theories and concepts identified in the literature review.

Based upon the survey responses, the collective leadership styles depicted by UK health

organisations on an 'Organisation' and 'Self' perspective are compiled in Table 17. As before, a weighted

score was calculated for each style, allocating 4 points if ranked first, 3 if ranked second, and so on

(missing values were coded as zero), with the total divided by the number of respondents.

Table 17: 'Organisation' and 'Self' Perspective Collective Results-UK Health Organisations

Organisation perspective	1	2	3	4	Weighted score	Total
Transformational	181	50	31	36	22.1	298
Transactional	51	173	40	42	19.2	306
Aversive	29	27	119	129	12.8	304
Laissez faire	39	49	105	104	14.0	297
Total	300	299	295	311		1205
`Self-perspective	1	2	3	4	Weighted score	Total
Transformational	213	52	20	18	24.2	303
Transactional	33	184	41	42	18.4	300
Aversive	15	17	125	142	11.4	299
Laissez faire	24	43	107	125	12.8	299
Total	285	296	293	327		1201

Note: Rankings 1-4 showing best to least fit from an 'Organisation' and 'Self ' perspectives depicting respondent survey choices to eight questions (7-14) for each of the four statements a-d to each question representing four leadership styles, including: a.) Transformational leadership style; b.) Transactional leadership style; c.) Aversive leadership style or d.) Laissez-faire leadership style. There was a total of 44 respondents with eight questions and four statements with each question (44 X 8 X 4=1408 possible responses). However, in certain instances participants did not respond to each question resulting in a lower collective count out of the 1408 possible responses. Then a weighted leadership style score was calculated as described.
Source: Qualtrics LLC Survey Reponses and Microsoft Excel analysis

To recall, in the US Pilot Study, the dominant assessment of the organisation was that it exhibited a Transactional Style of Leadership, with a dominant Transformational Style of Leadership being described by the fewest respondents, although most respondents described themselves ('Self') as predominantly Transformational in leadership style. In the UK sample, the Transformational Style of Leadership was the dominant view of both the 'Organisation' and 'Self' perspectives.

Table 18 examines the most common styles identified in responses to the individual questions (which map to the eight theories and concepts). Respondents ranked the Transformational Style of Leadership first whether their perspective was from an 'Organisation' or 'Self '. In the same regard, the Transactional Style of Leadership was ranked second whether their perspective was from an 'Organisation' or 'Self 'except, with respect to Question 12: Employee Mindset which survey respondents ranked the Laissez-faire Style of

Leadership as the second best fit.

Table 18: Operationalised Responses to Survey Questions-UK Health Organisations-Ranked as #1 and #2 Leadership Style

Leadership Style.. Empirically Supported Drivers of Innovation-Survey Questionnaire:	Rank 'Organisation' a.) Transformational	b.) Transactional	c.) Aversive	d.) Laissez-faire	Rank 'Self' a.) Transformational	b.) Transactional	c.) Aversive	d.) Laissez-faire
Question 7: Creating a Psychological Climate for Innovation	Ranked as #1	Ranked as #2			Ranked as #1	Ranked as #2		
Question 8: Leader-Member Exchange (LM X)	Ranked as #1	Ranked as #2			Ranked as #1	Ranked as #2		
Question 9: Social Capital Promotes Innovation	Ranked as #1	Ranked as #2			Ranked as #1	Ranked as #2		
Question 10: Leadership Clarity Essential for Health Innovation	Ranked as #1	Ranked as #2			Ranked as #1	Ranked as #2		
Question 11: Supporting Team Reflectivity	Ranked as #1	Ranked as #2			Ranked as #1	Ranked as #2		
Question 12: Employee Mindset	Ranked as #1			Ranked as #2	Ranked as #1			Ranked as #2
Question 13: Organisational Culture and Innovation	Ranked as #1	Ranked as #2			Ranked as #1	Ranked as #2		
Question 14: Role of the Chief Executive Officer (CEO)	Ranked as #1	Ranked as #2			Ranked as #1	Ranked as #2		

Source: Qualtrics LLC survey results and SPSS analysis.

Note: Table 18 depicts the operationalised responses to the survey questions (i.e., questions 7-14) from an 'Organisation' and 'Self' perspective based upon the methodology described in Table 6. This approach includes an analysis of the survey data from Qualtrics LLC. The Qualtrics LLC's survey data was downloaded into SPSS and the descriptive statistics for each survey response were calculated and analysed. Based upon an analysis of the measures of central tendency of the data, the selected leadership styles were colour coded (as depicted in Table 6) and ranked as the best fit (i.e., ranked as number 1) and the next best fit (ranked as number 2) to the survey question posed.[16]

Figures 12 and 13 look in more detail at the distribution of responses to the question relating to the

Employee Mindset.

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[16] As described by Rea & Parker (2014), the Mode can be best used to describe the most common responses for ranked scale data. The Median is the most appropriate measure for categorical ordinal data. However, the Mean should also be considered when there are numerical responses to questions. Also, due to the collective consistency in leadership styles between the 'Organisation' and 'Self' perspectives in the UK survey results versus the US Pilot Study, additional emphasis was placed on the second ranked perspectives in the analysis of the UK survey results.

Figure 12: Organisation' Perspective-Question 12-Employee Mindset
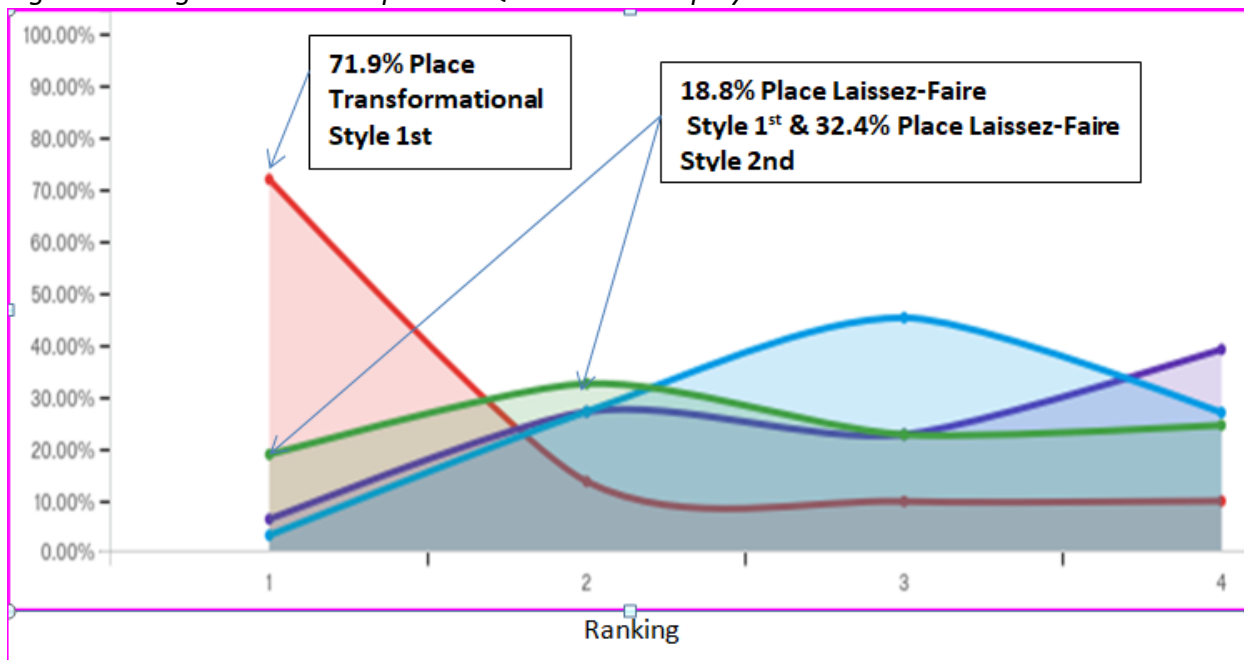
Note: In Figure 12, leadership styles are depicted aligned with Question 12 regarding Employee Mindset [i.e., fixed versus growth] (i.e., ranked 1 to 4 from best to worst fit for respondents. The survey respondents stated their 'Organisation' perspective (ranked #1-red line) was a Transformational Style of Leadership. The Laissez- faire Style of Leadership was favoured as second (ranked #2-green line).

Source: Qualtrics LLC survey responses and Microsoft Excel analysis

Figure 13: 'Self' Perspective-Question 12-Employee Mindset
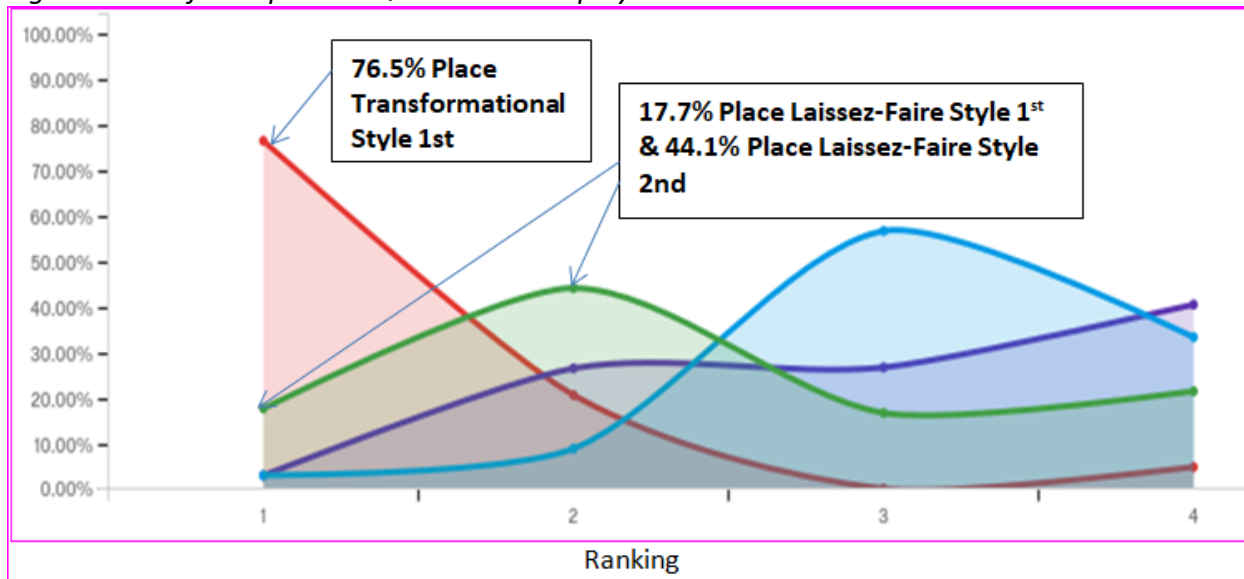
Note: In Figure 13, leadership styles are depicted aligned with Question 12 regarding Employee Mindset [i.e., fixed versus growth] (i.e., ranked 1 to 4 from best to worst fit for respondents. The survey respondents stated their 'Self' perspective (ranked #1-red line) was a Transformational Style of Leadership. The Laissez- faire Style of Leadership was favoured as second (ranked #2-green line)

Source: Qualtrics LLC survey responses and Microsoft Excel analysis

Figure 14 was created by aggregating the responses by each individual across all leadership

theories and concepts to identify the leadership style that the respondents placed most frequently in

first position. It shows the distribution of respondents placing each leadership style in first position

within each of the six UK health organisations (labelled A-F) included.

Figure 14: Distribution of first ranked responses by organisation, from 'Organisation' and 'Self' Perspectives

Source: Qualtrics LLC

This reveals a quite different picture to that seen with the US health organisation. Thus, for 4 of

the NHS bodies, all, or almost all, respondents reported a Transformational Style of Leadership as

dominant when describing the organisation. In contrast, in only one, organisation A, did all respondents

describe their own style as predominantly Transformational, although in all cases, a Transformational

Style of Leadership was the single most common style that dominated in their assessment of

themselves, accounting for over 50% of respondents in all but one organisation, where it was exactly

50%.

Figure 15 examines how the entire sample of UK health respondents perceived the styles

adopted by themselves and their organisations. The most common combination, by far, comprised

individuals who viewed their own style and that of their organisation as predominantly

Transformational. A few saw their organisation as Transformational, but themselves as a Transactional

or laissez-faire Style of Leadership.

Figure 15: Comparison of perceptions of dominant styles of self and organisation
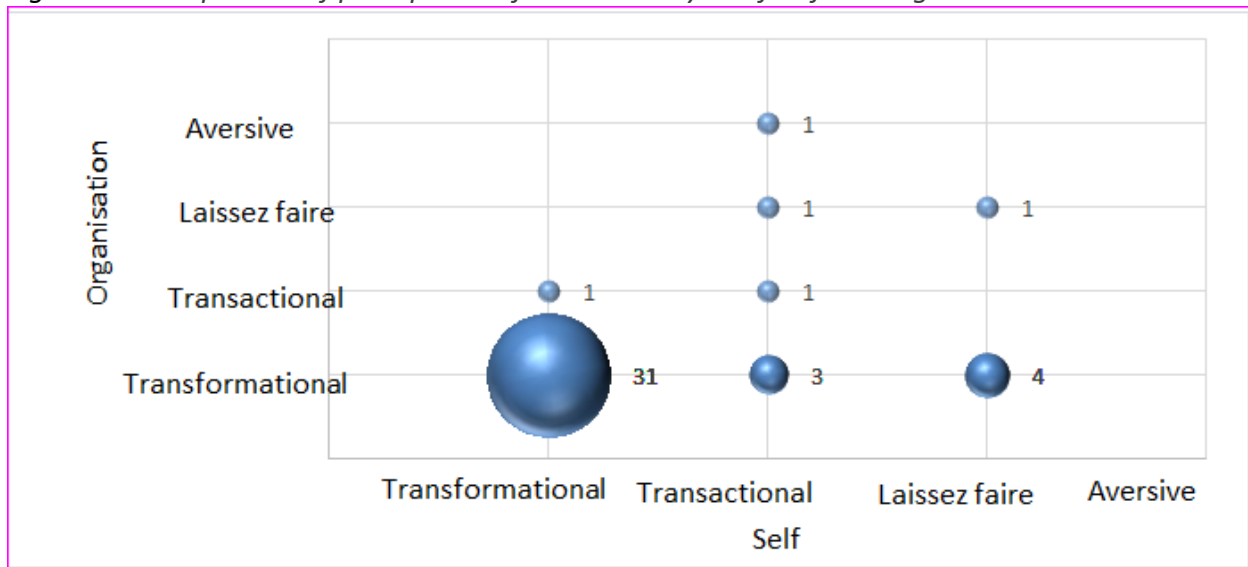
Source: Qualtrics LLC

The value for health innovation of having staff who have a Transformational Style of Leadership in an organisation with the same culture is clear. For example, a person with a growth mindset generally believes it is beneficial to their career development to learn from their mistakes. In contrast, an employee with a fixed mindset is more interested in 'looking good 'and may avoid changing situations which may cause them to possibly make a mistake (Yan et al., 2014). This has implications for both senior leadership in an organisation, who can shape its culture, and for human resource practices, which should seek to attract and retain those with a Transformational style.

I then explored the data by characteristics of the respondents, with a focus on the following variables because of their departure from the otherwise dominant styles of leadership (i.e., Transformational and Transactional Styles of Leadership ranked as number 1 and 2, respectively) including: 1.) organisation role; 2.) age of respondent; and 3.) tenure of respondents.

1.)   Organisational Role:

Table 19: Operationalised Responses to Survey Questions-UK Health Organisation-Ranked as #1 and #2 Leadership Style by Organisation Role of Survey Respondents

Ranked Empirical Supported Drivers of Health Innovation:	Rank Organisation				Rank Self			
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
	a.)	b.)	c.)	d.)	a.)	b.)	c.)	d.)
Leadership Style...	Transformational	Transactional	Aversive	Laissez-faire	Transformational	Transactional	Aversive	Laissez-faire
Organisation Role-Executive Leadership:								
Question 12: Employee Mindset........................	Ranked As #1			Ranked As #2	Ranked As #1			Ranked As #2
Organisation Role-Managerial Leadership:								
Question 12: Employee Mindset........................	Ranked As #1	Ranked As #2	Ranked As #2		Ranked As #1			Ranked As #2
Organisation Role-Professional Specialists:								
Question 12: Employee Mindset........................	Ranked As #1			Ranked As #2	Ranked As #1			Ranked As #2

Note: Table 19 depicts the operationalised responses to the survey questions (i.e., questions 7-14, Appendix A) from an 'Organisation' and 'Self' perspectives based upon an analysis of the survey data from Qualtrics filtered according to the organisation role of the survey respondents. The selected leadership styles were then colour coded (as depicted in Table 6) and ranked as the best fit (i.e., ranked as number 1) and the next best fit (ranked as number 2) to the survey question posed. [**Respondent groups by organisation role and related empirically supported leadership theories and concepts are not shown where the operationalised style of leadership according to the eight empirically supported leadership theories and concepts which are favourable health innovation were the same as the dominant leadership style preferences for the UK health organisations as a whole described in Table 18.**]
 Source: Qualtrics LLC Survey Reponses and SPSS analysis

Looking at the role of individuals within their organisation, the only area where the leadership style, from 'Organisation' and 'Self 'perspectives, materially differed from the dominant leadership styles shown overall by the UK health organisations (i.e., Transformational and Transactional Styles of Leadership ranked as number 1 and 2, respectively) was with regard to Question 12: Employee Mindset. As discussed previously, this result is like the analysis depicted in Table 18 when the overall responses from UK organisations were mapped onto the leadership theories and concepts favourable to health innovation. For example, respondents in a managerial leadership role ranked the Transactional and Aversive Styles of Leadership equally as their number 2 preferences.

2.) Age of Respondent:

Table 20: Operationalised Responses to Survey Questions-UK Health Organisations-Ranked as #1 and #2 Leadership Style by Age of Survey Respondents

| Ranked Empirical Supported Drivers of Health Innovation:	Rank Organisation				Rank Self			
	a.) Transformational	b.) Transactional	c.) Aversive	d.) Laissez-faire	a.) Transformational	b.) Transactional	c.) Aversive	d.) Laissez-faire
Leadership Style								
Age of Respondents-Aged 45-54:								
Question 8: Leader-Member Exchange (LM X)		Ranked As #2		Ranked As #1	Ranked As #1	Ranked As #2		
Age of Respondents-Under 35:								
Question 7: Psychological Climate		Ranked As #2		Ranked As #1	Ranked As #2	Ranked As #1		
Question 13: Organisational Culture	Ranked As #1	Ranked As #2			Ranked As #2	Ranked As #1		
Question 14: Role of the Chief Executive Officer (CEO)	Ranked As #1	Ranked As #1 & 2			Ranked As #1	Ranked As #1 & 2		

Note: Table 20 depicts the responses to the survey questions (i.e., questions 7-14, Appendix A) from an 'Organisation' and 'Self' perspectives based upon an analysis of the survey data from Qualtrics filtered according to the age of the survey respondents. The selected leadership styles were then colour coded (as depicted in Table 6) and ranked as the best fit (i.e., ranked as number 1) and the next best fit (ranked as number 2) to the survey question posed. **[Respondent groups by age and related leadership theories and concepts are not shown where the operationalised style of leadership according to the management theories and concept s which drive health innovation were the same as the dominant leadership style preferences for the UK health organisations as a whole described in Table 18.]**
Source: Qualtrics LLC Survey Reponses and SPSS analysis

An analysis of responses by age of respondents showed that those aged 45-54 showed a materially different leadership style when asked to Question 8: Leader-Member Exchange (LM X) from an 'Organisation' perspective than UK health organisations overall (i.e., Transformational and Transactional Styles of Leadership ranked as number 1 and 2, respectively). Respondents aged under 35 present a materially different leadership style from an 'Organisation' and 'Self 'perspective from the leadership styles shown overall by the UK health organisations for survey Question 7: Psychological Climate; Question 13: Organisational Culture; and Question 14: Role of the CEO (Appendix A).

3.) Tenure of Respondent:

Table 21: Operationalised Responses to Survey Questions-UK Health Organisations-Ranked as #1 and #2 Leadership Style by Tenure of Survey Respondents

Ranked Empirical Supported Drivers of Health Innovation	Rank 'Organisation' a.) Transformational	b.) Transactional	c.) Aversive	d.) Laissez-faire	Rank 'Self' a.) Transformational	b.) Transactional	c.) Aversive	d.) Laissez-faire
Leadership Style..								
Respondents with Tenure of 1-2 Years:								
Question 7: Psychological Climate............................	Ranked As #1	Ranked As #2			Ranked As #1	Ranked As #1		Ranked As #2
Question 8: Leader-Member Exchange (LM X).........		Ranked As #1			Ranked As #1	Ranked As #2		
Question 14: Role of the Chief Executive Officer (CEO)	Ranked As #1&2	Ranked As #1		Ranked As #2	Ranked As #1& 2	Ranked As #1		Ranked As #2
Respondents with Tenure of 2-5 Years:								
Question 7: Psychological Climate........................	Ranked As #1	Ranked As #1 & 2			Ranked As #1	Ranked As #2		
Question 11: Supporting Team Reflectivity...........	Ranked As #1	Ranked As #1 & 2			Ranked As #1	Ranked As #2		
Respondents with Tenure of 10 Years or more:								
Question 14: Role of the Chief Executive Officer (CEO)	Ranked As #1 & 2	Ranked As #1 & 2			Ranked As #1	Ranked As #2		

Note: Table 21 depicts the operationalised responses to the survey questions (i.e., questions 7-14 Appendix A) from an 'Organisation' and 'Self' perspectives based upon an analysis of the survey data from Qualtrics filtered according to the tenure of the survey respondents. The selected leadership styles were then colour coded (as depicted in Table 6) and ranked as the best fit (i.e., ranked as number 1) and the next best fit (ranked as number 2) to the survey question posed. **[Respondent groups by tenure and related empirically supported leadership theories and concepts are not shown where the operationalised style of leadership according to the empirically supported theories and concept favourable to health innovation were the same as the dominant leadership style preferences for the UK health organisations as a whole described in Table 18.]**
Source: Qualtrics LLC Survey Reponses and SPSS analysis

Looking at the role of duration of tenure at a UK health organisation, respondents who had been with

the organisation for 1-2 years differed from the overall picture in responses to Question 7: Psychological

Climate; Question 8: Leader-Member Exchange (LM X); and Question 14: Role of the CEO from an

'Organisation' 'and/or 'Self' perspective than the leadership styles shown overall by the UK health organisations

(i.e., Transformational and Transactional Styles of Leadership ranked as number 1 and 2, respectively).

Respondents with tenure of 2-5 years present a materially different leadership style from an 'Organisation'

perspective from the leadership styles shown overall by the UK health organisations for survey Question 7:

Psychological Climate; and Question 11: Supporting Team Reflectivity. Finally, respondents with tenure of 10

years or more present a materially different leadership style from an 'Organisation' perspective regarding

Question 14: Role of the CEO.

4.2.3 Qualitative Data Collection

As described in Chapter 3.1.5: Qualitative Data Collection and Analysis, beginning in January

2017 through May 2017, 30 interview participants (approximately 23 percent of the 132 UK survey

participants described in Figure 7) in the sampling frame were randomly selected for a semi-structured

interview (Appendix F).

While I selected a slightly higher percentage of interviewees than initially planned, I was

anticipating some last-minute cancellations because of professional or personal scheduling conflicts.

When an interviewee could not appear, a representative of the health organisation assisted me to

identify a suitable replacement often on very short notice. However, there was only one last minute

cancellation due to a study participant being on-call for a medical matter where a replacement could not

be identified. Consequently, the total interviews performed were 29 (approximately 22 percent of the

132 UK survey participants), exceeding the 20 percent specified in Chapter 3.1.5: Qualitative Data

Collection and Analysis. I am appreciative that the study received such strong receptivity in the UK.

Of the 29 interview participants, a total of 21 submitted a survey questionnaire and seven

others started a survey questionnaire and did not submit it. This nested sequential sampling design is

referred by Onwuegbuzie and Collins (2007) as a "*random purposeful technique"* that *"selected random*

cases from the sampling frame and randomly choosing a desired number of individuals to participate"

(p.286). This approach enabled the selection of individuals covering each level of leadership and

management.

The qualitative procedures facilitated the evaluation of non-response bias to the survey (i.e., views of non- respondents can be compared to survey respondents) manifested by any meaningful differences between the views of these two populations can be analysed. Based upon the interviews performed, I observed the following differences between survey respondents and non-respondents:

1.)   Respondents to the survey instrument disclosed to me that they had more training and/or interest in leadership and health innovation. This observation is similar that found by the RAND Corporation (2016). This may explain why 17 survey participants just completed the categorical questions and then submitted their surveys. As discussed, these individuals did not respond to the leadership style questions (i.e., Survey Questions 7-14, Appendix A.). The element of Leadership Training is described in Table 22. The following paraphrased communication and a quote, respectively, from health organisation leaders/managers, including; i.) a non-respondent to the survey who was randomly selected for an interview, but did not participate in either; and ii.) a survey respondent who was also an interview participant, are representative of this view:

   i.   Answer: *I regret, but in reviewing the 'Information Note' in preparation for our meeting I realize that I do not have the background or training to respond to your questions. I do not want to waste your time or adversely affect your results, so I will decline the kind invitation to participate in an interview. Best Wishes* (Paraphrased and not quoted)*.*

   ii.   Answer*: "Currently, the University offers Research and Development Courses, particularly for the early career Researcher, which I still fall into… I define myself as an early career Researcher as I'm …five years post Ph.D., which seems a long time compared to how my career was planned…It's still an early career in terms of what kind of work I've been doing; so of those Researcher Development Courses, one of those is an introduction to Leading and Managing others. This is in the University, and the NHS... has Leadership Programmes."*

2.) Respondents had generally a more cohesive relationship with the organisation and its senior leadership. For example, in a CLAHRC with a lower than average response rate (i.e., 12.5% versus an average survey response rate of 33.3%), a participant stated that very few professionals were located at or near the organisation's headquarters office but were "*dotted about England".* [17]These professionals had overlapping

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[17] Jony Ive was Steve Jobs, Chief Designer, beginning in 1997. He was the lead designer of Apple's IPod, IPhone

responsibilities, as mentioned earlier, and gave attention to other organisations where they performed clinical

and/or other research duties. As a result, this study participant reported having difficulty getting a timely

response to letters or telephone calls made on behalf of the organisation. The importance of '**Group**

Cohesiveness' is discussed in Chapter 4.1.2: Quantitative Data Collection.

As previously explained, the interviews performed had two objectives. The first was to identify

the ways in which different leadership styles facilitate or inhibit innovation, assessing their influence on

the four stages of the innovation process described in Figure 2(reproduced again here).

Figure 2: The Innovation Process
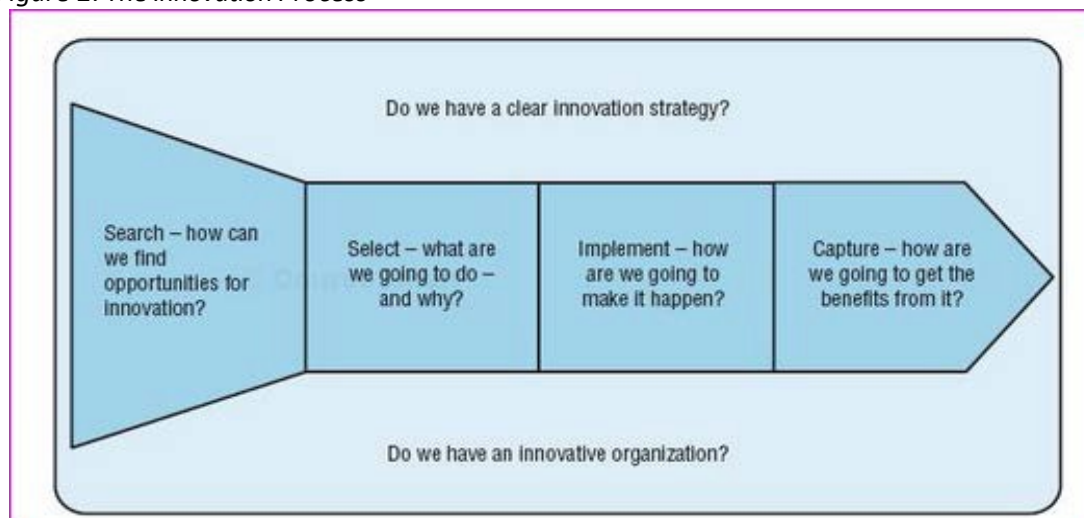
 Source: Tidd and Bessant (2013), p.60.

Consistent with the results reported in Chapter 4.2.2: Quantitative Data Collection, Tables 17

and 18, the majority of UK interviewees presented a collective Transformational Style of Leadership

from an 'Organisation' and 'Self' perspective. This was followed by a collective Transactional Style of

Leadership.

The following three interviewee quotes are representative of these views:

Question: *"How would you describe the leadership style of the organisation …?"*

and IPad and most recently Apple Park, Apple's new corporate campus in Cupertino, California. He
commented that *"scattering of thousands of Apple employees across more than 100 sites in Silicon Valley had
rendered more difficult the collaboration necessary for innovation. … We've done a really good job of working
around it, but it's not the way we want to be working nor does it represent our culture well (Passariello, n.d.).*

Answer: *"It's a mixture because of the numbers of people and the different types of background they are involved in in the organisation. So trying to lead Academic Researchers, University Researchers, is a very different proposition than trying to lead Senior Managers in the Health Care Organisation. They are just used to very different structures in which they work. The … role is very much about leadership, and it's one of the most challenging leadership roles that I have had [and] so very different from being … of the University Department... So it's a set of much dispersed challenges. Some of it is offering …the prospect of transformation. For the academics, it's sometimes setting out what could be, but then offering a supportive structure in which they can make the changes themselves…"*

Answer: *It's all about, let's learn from it and just move on. It's all part of aspiring to excellence. I try and make an environment where I want people to feel safe, I want people to feel valued, I want people to feel understood and supported and cared for. Each one of the staff has different needs… inspiration for excellence, but within I hope is a caring supporting positive environment. Let people have fun as well…"*

Answer: *"My staff would tend to be leadership by example. And that's possible, because as a clinician, I worked in the NHS part of my time; I did research the other part of the time at … and so on. So the CLAHRC was bringing different disciplines and academia together in a way that I think was very powerful."*

As described in Chapter 2.3.2: Leadership Styles and Innovation, from the 'Organisation' and 'Self' perspectives, the Transformational Style of Leadership dominated the collective responses of the UK survey respondents. This leadership style would present an inspirational and motivating force to achieve success through all four phases of the innovation process as depicted in Figure 2. This is especially true if this style of inspirational leadership was accompanied by a pragmatic Transactional leadership style. This combination, based upon an empirical study of 267 Columbian workers from a variety of industries by Torres, Espinosa, Dornberger, and Acosta (2017) and my observations of the participant organisations, could offer an opportunity to more smoothly align the visionary Transformational leadership style of leaders/managers with an organisation's corporate governance and regulatory environment (e.g., efficiently establish organisation award and fellowship training programmes).

As described in Table 18, the survey responses, when matched to the eight empirically supported leadership theories and concepts included in the survey questionnaire (i.e., Survey Questions-7-14, Appendix A), consistently presented the Transformational Style of Leadership from an 'Organisation' and 'Self' perspectives as ranking first. However, the Transactional Style of Leadership

was ranked as second except with respect to the 'Employee Mindset', in which the Laissez-faire Style of

Leadership prevailed from an 'Organisation' and 'Self' perspective. Further analysis was performed by

filtering the survey responses by specific leadership theories and concepts according to pre-determined

respondent categorical nominal variables [i.e., 1.) Individual Respondent: age; sex; organisational role; tenure

with organisation; and education level achieved; and 2.) Organisation: number of employees] (Mumford et al.,

2002 & Hitt et al., 1997, as cited in Jung, 2003)].

The resulting analysis is described in Tables 19, 20 and 21, which noted certain material departures

from the dominant styles of leadership (i.e., Transformational and Transactional Styles of Leadership ranked as

number 1 and 2, respectively). Respondent survey departures from the dominant styles of leadership

were not noted for categories analysed by sex, education or an organisation's number of employees and

were therefore not depicted in the preceding tables.

These exceptions to the dominant styles of leadership are analysed in Chapter 4.2.4: Mixed-Methods

Analysis & Discussion. However, this should not distract from the entrepreneurial terminology used by

several interview participants in describing their organisation. The most serious departures described in

Tables 19, 20 and 21, while important to comment upon, were principally among a small percentage

(less than 10%-Appendix I) of under 35 participants in managerial roles with 1-2 years tenure in their

organisations. The preceding interviewee quotes regarding the dominant Transformational leadership

style from an 'Organisation and 'Self' perspectives using entrepreneurial terminology are representative

of this view:

Answer: *"I think we sort of talked a bit about before that this is sort of quite an entrepreneurial organisation… Whereas, I was thinking what you want to do is create an environment which rewards innovation and especially doesn't hurt it….If they are trying their best to improve things, and something didn't quite work, well then the question is what did we learn from this? And then how can we take that forward? So we know we don't need to make those mistakes again, but it's in hindsight learning and what you are trying to achieve. The problem is still there, so we need to do something else. So you want…people who try and innovate and overcome these sorts of challenges, and I think that's the key for it. And then it becomes about having enablers which support those people…"*

Answer: *"I think entrepreneurialism is about supporting and making improvements and innovations and*

changes in whatever system you work in. Yes, I would say we are entrepreneurial…"

As previously noted, the second objective of the interviews is to assess the extent to which the

questions in the survey accurately and reliably capture the leadership styles in the organisation, thereby

contributing to the validation of the survey instrument. An interesting observation from two of the

interviewees captured the intent of this objective:

Answer: *"I thought the survey was very interesting. I had to read it a couple of times before I got the scale…I thought it was interesting because it made me start thinking about it before the interview. I thought I hadn't ever thought about my own personal view of what I think it should be like, versus what it is, and on some of them, that's okay. It's similar, then I go, no, yes, this is not good…"*

Answer: *"That's an interesting question. Reflecting back to the actual survey… I was one of the three or four who had to click onto the video to help me, because I didn't quite get it at first, how you want me to write different things. I had to Figure it out, and that was helpful. Those things actually work. They impart the knowledge, and I was required to learn it. The video worked, because usually, based on my experiences…….."*[18]

Due to the large number of interviews, interview transcription for the UK health organisations

was performed solely by a reliable third party whom I engaged, shortly after each interview. I then

coded the transcribed interviews line-by-line using NiVivo 11 and summarized them into themes. The

themes identified (i.e., listed as Questions 7-14 of the survey questionnaire in Appendix A) from the

transcribed interviews were consistent with the results of the US Pilot Study (Chapter 4.1.3: Qualitative

Data Collection), the prior literature searches used to structure the survey instrument, and the initial

interview questions.

The interviewees' confirmed the organisation's degree of alignment with the eight empirically

supported leadership theories and concepts favourable to health innovation included in the survey

questionnaire (Appendix A-Questions 7 to 14); they reliably affirmed the leadership styles associated

with each of these supported leadership theories and concepts individually and collectively. The

following interviewees' quotes are representative of these views. Views of the different interviewees

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[18] The survey questionnaire included a link to an Internet video I prepared (i.e., screencast.com) to assist survey respondents if they encountered any error messages which prevented them from completing the survey.

are separated by the symbol *:

Question 7: **'Psychological Climate'**

Answer: *"So I think that's how we operate. So individually, there isn't a standard thing where if you get X number of papers, you get something, if you see what I mean. If you are doing well, we would look to support you and give you things to keep you here."*
Question: *"Were his achievements publicized with people outside this room…"*

Answer: *"Everybody in our team would know."*
Question: *"Okay, so they saw that … was being pulled along and given opportunities, doors were opened for …, because of … achievements. They saw all that."*

Answer: *"Yes, absolutely. I want it clear that I think the thing we have here, if you look at the NHS where it's under so much stress, that sometimes the people in here don't realize how supportive and how unique this environment is which gives them these opportunities…"*

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Answer: *"I don't micromanage them, but then I'm going to say something contradictory. I mean I think the principle is that you've got to kind of say to people, the Harvard decent management in our world, is to say to people I hired you because I think you are bloody good. Go and do good things and tell me what support you need. So that's the principle…"*

Question 8: 'Leader Member-Exchange' (LMX)

Answer: *"I'm quite comfortable with unmanaged structures, so to some extent, I think that you kind of want to try to inspire people with a way of thinking, being fully aware that that sounds great, but with some people, it doesn't work, it doesn't take. But quite a lot of the time, I think if you can inspire people a bit, although some operations will turn into a complete disaster, the total is much more than the sum of its parts. So I believe that you can actually get a huge amount more by trusting people than by close management."*

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Answer: *"So at the moment, I have identified a couple of coaching needs for my staff in two areas. Then it's really down to my initiative to locate those and do that. Sometimes, I think the Leadership is enabling people to do that. My Manager is very good at saying, think about what you are doing and what you take on; how does that fit for you? So I feel encouraged and supported in that way, which to me is good Management as well as Leadership. It's really difficult…Then sometimes giving that room for people to take their initiative and develop their leadership skills on their own; self-Leadership, if you like, as well as other Leadership [styles]. So they are two different things to me as well. At least it's very multifaceted."*

Question 9: 'Social Capital'

Question: *"Interesting. Is there anything else that I have not brought up which you think is important to driving Innovation in your field?"*

Answer: *"Partnership. Being ready to partner. "*

Question: *"Are you referring to collaboration?"*

Answer: *"Yes…"*

Question: *"When you say partner, give me a little bit more detail with that."*

Answer: *"Being open to working with people or organisations that will have a very different perspective."*

Question: *"Private sector for instance? "*

Answer: *"…So I think that's one thing, bridging the gap, but that wasn't actually what I was thinking about. I was thinking about wider learning, developing our learning and therefore, Innovation; by thinking about, listening to, struggling with ideas from other sectors. It may be private, as I'm not just talking about the public private partnership; I'm talking about the mention before any disciplinary partnership. So it might be the time we need to be listening to ideas from engineers or accountants, and thinking about their methods. "*

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Question: *"Do you reach out to the private sector much?"*

Answer: *"We do, yes. That's one of things actually the NIHR, our funding body, would like us to do. For example, at the moment I am working on collaboration with a potential client, nothing is fixed yet, around going to get some software that we are working on from a third party. It doesn't make sense for us to become a third-party developer."*

Question 10: 'Leadership Clarity'

Question: *"If you had to choose one management driver that motivates these people to give their best, would it be for instance just creating an environment that they feel safe in, that there is support for, that they know they are going to be rewarded for their efforts, or is it other things? Is it opening up opportunities for them to obtain conferences, meet other people…? "*

Answer: *"I think it's a mixture of all of it. It's to have a clear vision."*

Question: *"Clarity of vision, you might say."*

Answer: *"So I think it's a clear vision about why we exist and a very clear vision about what this unit's about. We can talk about my research or we can talk about the department; but in spite, why do we exist? Why do we think the work's important? What's the goal of the work? But we are going to be excellent. So that everything comes from that clarity. This is really important work and we are going to do it to the best of our possible ability…"*

****

Answer: *"Yes, that's quite clear when our mentoring process stops and the minute it goes on for external funding, we've lost control over that, but we don't lose sight of it…it's about talking to clinicians, it's about talking to service managers, in the NHS or in the private sector to ensure that we research the right question at the start; and that's absolutely important, …But one of the things we will be looking right from the start is getting the patients involved; patients who are elderly, perhaps, who already experienced it and say, would you wear that device? Would you pay for that device? How much would you pay for it?' All that kind of thing, because there's no point us going any further if they turn around and say, 'no we wouldn't wear it,' so what is the point?"*

Question 11: 'Organisational Reflectivity'

Questions: *"Do they come back and share the results of an outside meeting?"*

Answer: *"You mean like my visit to …, for example, did I share that with the team?"*

Question: *"Yes…"*

Answer: *Yes, we do that. So, again, probably not as consistently as would be ideal, but given the busy schedules that the team has, I think we have managed that quite well. So most of the time, when people go away on a conference or an organized study trip like the one last week, we do a brief item on our team meeting which is every …. Every … for an hour, we have a team meeting with the whole team which is about 35-40 people. In that meeting, we will hear back from them…"*

Question 12: 'Growth versus Fixed Mindset'

Answer: …*"I suppose that's one of the roles that I had in the processes of trying to switch the lights on for them in relation to what the groups are that you are going to have to get engaged... So anyway, in this pathway model, the getting everyone around the idea of mocking up a model, you know, arrows, and here, this is what it's going to be, and the model is thinking, I've got to go away and get the data for these things, do we have it? All that stuff is going on. You have the emergency people in there and then you have the stroke physician people, and it outed the emergency physicians who just didn't think … technique worked. The reason they didn't think it, was because it was some years before that some much esteemed person had come and told them, oh, it doesn't work. You'll hear some stuff about this, but it's nonsense. Nope, it's clearly wrong. Now the really beautiful thing about this story is that because you had the stroke physician, now all those emergency people know him, but they don't see him very much; the consultants. But, they know him and respect him. He was able to understand that this barrier to the whole thing getting better was that these guys just don't think it works. So he then addresses that. But my point is that if we hadn't set out with the idea of building a model of the pathway in order to make it quicker, we wouldn't have found that out. We wouldn't have sorted that out. So here's what we accomplished."*

Question: *"There was a fixed mindset locked into incorrect evidence…"*

■ ■

Answer: *"…I don't think it's that transparent of an organisation. We do have quite a hierarchical*

leadership style where…. "

Question: *"Let me ask you, and this is true in many research groups that I've worked at, there is a tendency to have what I call top down leadership… Then they wonder why there is a lot of turnover. One organisation I had studied had 5 presidents of this organisation in 9 years. You know something is wrong. The board, not the president, who are not clinical people for the most part, are running this organisation, saying which project you are going to work on. Everything was driven by return on investment. The clinical people were to fall line, march to this drummer, or leave; and what was going on, was like a revolving door, not just at the personal level, but the top leaders of the different groups. From … groups to medical groups, they were all going too soon, and their key people were going too soon. So there was this top down, forced; while this gets us the best return investment, therefore, you do this. How is this group different from that?"*

Answer: *"So I think there is a lot of top down push here for sure. I think the big difference is actually that there is a lot of buy in into the top down push, because it's almost…we jump when the director or the co-director says something. Oh, we have to get this deliverable; okay, then we all have to do it.* **I think often that's really detrimental because people are working on other things that are…..."** *[Emphasis added]*

Question: *"They'll drop what they are working on."*

Answer: *"Exactly. So I think there's a buy in almost; they do it,* **but I wouldn't say there's like almost an emotional buy in. That sounds weird, but…"** *[Emphasis added]*

Question 13: Organisation 'Culture' refers to the values and beliefs which set the expectations for innovative behaviour

Answer: *"I can't say I've cracked it. I would say that the way I deal with it, is this incredibly micro Level; in that, for example, when I'm with interesting people literately at the individual level, you meet people whom you want to bring in because they are really impressive. It's about a one to one conversation. Everybody's view, politely or not… It will literally be one to one conversation with researchers whenever we have regular, probably quarterly, lunches for new staff. Then we have regular bi-annually socials for everyone…"*

Question: *"That's part of your Culture, you might say?"*

Answer: *"Yes, that's part of the Culture. To all of those, not only are the messages reinforced, but we use it very much as a listening exercises…"*

Question 14: 'Senior Leadership's Impact'

Answer: *"…I found it a very interesting and persuasive business, and one of the things that most clearly resonated with me was that if you want to get evidence used, it seems to me a reasonable hypothesis that a close engagement with the people who might use the information might be a pretty good starting place for engagement while you generated the evidence. That was a bit of the conclusion of the Commission which says, look, what we need is a closer partnership between the people who know what the questions are, which would be the kind of people at the end delivering services, and the people who do the research who can't know how to answer questions, but tend to go and answer questions that they*

are interested in rather than which are important. So we decided that we would try to produce a model which actually took that seriously…"

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Answer: *"They were already performing quite well; but actually, what they seemed to have wanted was stability of a leader, a stability of a team that had really built relationships across working, which again added complexity, I think when you start to have different departments that have to work together, to me that gets more complex. I think where it didn't hold up so well is, and I've heard other stories, that this is where you have a Leader but they are not there; they are not going to be there necessarily for the long haul…"*

As described in Chapter 3.1.5: Qualitative Data Collection and Analysis, the interview schedule explored in more depth the questions asked in the survey, ensuring that meanings were clear, before obtaining concrete examples of how leadership characteristics impact on the work of the organisation and, in particular, its ability to innovate. A second element of the interview process focused on situations in which innovation has been facilitated or impeded and why. The 29 UK health organisation interviewees (views of different interviewees are separated by the symbol *) discussed barriers and facilitating situations in connection with leadership of health innovation, including: 1.) Leadership Training; 2.) Role of Bureaucracy; 3.) **'Capture'** Phase of the Innovation Process; 4.) Health Organisation Competition and Conflicting Incentives; and 5.) Recruitment and Retention of Millennials-Aged 35 and under.

The following interviewee quotes are representative of the UK study participants' views regarding the preceding barriers and facilitating situations:

1.) Leadership Training:

Question: "*What role does training play in health innovation leadership…?*"

Answer: *"Vitally important. It's really integral. In fact, in all my major roles, whether it's head of a department, officer of a CHALRC, or a Clinical Research Network (CRN), training is amazingly important for many reasons; to upscale the work force, to increase morale, to engage people, to stimulate people and to make people believe that they can be part of making the system that they are in better, also to stretch people. So we do again, where we've always been pretty innovative in our training to the extent that the courses which we offer immediately outstrip demand and supply. Actually, already within a year, often new courses found that we couldn't meet the demand; because we first started off by going out and asking people what do they want, but no interest in replicating what is already out there.*

Over my career, there will be a continuum of different courses that fit into that framework. With

respect to leadership, I've received all kinds of different answers on this one. I'm not trying to surprise you with this, I'm just telling you. For instance, the Health Foundation has an outstanding Leadership programme because I've met some of the people, but that's for a few good people. Eventually, you are going to ask researchers to lead something in their career which may include small leadership roles at first, but then maybe quite large, and maybe with a big budget attached to it. What Training do they receive over their careers that would prepare them for assuming that kind of responsibility? It's incredibly ad hoc. There are loads of national bodies, but they are all different, whether or not you get NIHR to do a leadership programme or other health organisation... There are scores of leadership programmes. What's ad hoc is whether or when you get on them, and that's dependent on your own productivity and the productivity and interest of your line manager. However, I also need to say that I am skeptical about the value of some of these leadership programmes. I think they are incredibly diverse and I think that they do not, in my …experience, tailor the programme to the very different ways that people learn and respond. For example …lecture might be great for some people and role play might be great for others. Group learning might be great for some, one on one might be better for others. In my experience, they are not tailored. I think the amount of value you get out of it might amount to one or two little plums from a forest of information and guidance. …Anyway, it's about the tailoring of them, so I'm not convinced at all [of the value of many of these courses]. For example, the reason I talked on a recent programme was actually doing a favour for a colleague who I really respected and didn't want to let down. I would never block anyone going on one, but what I've said to people before …look at it really carefully and decide which one you want to go on; whether it would suit your individual needs and …your time. Anyway, I've said enough about my view of Leadership Programmes."

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Answer: "…*Okay, but if I was going to be radical…, I would say your completion shouldn't be we need more training, or we need any training. If we are going to use lessons from a Deloitte, or whoever's like them, not necessarily do we have to get rid of people, but you need to be more ruthless about appointing people into posts where they have the skills to do it. So forget the training, basically; all the good people I know are not necessarily trained, they just either have it or they don't. I suppose that's a belief I have made with my fixed mindset. But training can help a bit.*"

Question: *"In all your training to date, has anybody or any course ever tried to teach you how to lead or manage?"*

Answer: *"Oh yes, as a doctor, yes, but not as a researcher."*

Question: *"Let's go back to your role as a doctor. What kind of leadership training did you receive then? "*

Answer: *"In the UK, before you become a consultant, you have to go on healthcare management and leadership courses, two courses. "*

Question: "*They have an Academy through the NHS?"*

Answer: *"Yes, exactly."*

Question: *"That is a long term programme. There are courses that lead all the way to your senior role. Do you feel at this point if they would suddenly come to you and say "We want you to lead this organisation," would you say you are prepared to do that? "*

Answer: *"No, not at all."*

Question: *"What additional training do you think you need in your career that would prepare you to do this?"*

Answer: *"What we as doctors generally get is a week course here and a week course there. As [there] a lot of things they can teach you go through a whole programme for a year. Generally, I would find the time for that, but I think actually it is worthwhile. It's not that these week courses aren't good, they are good, but they are just too short to learn [leadership of health innovation] properly".*

2.) Role of Bureaucracy:

Question: *"Yes, it's hard to deal with. The last thing I wanted to bring up is… the different layers within an organisation… you need to work your way through ….for instance, I was at a cancer institute in America with one of the leading researchers. I'm talking to this man who has worked in this field for 30 years. He's trying to find a cure for Cancer, but I looked at his desk and he had all this paperwork, his desk looked like it belonged to an accountant. He had vouchers that he was signing for people for travel, he had all kinds of accounting stuff on his desk, and I asked him what he was doing. He said… this is 20-30% of what I do. He's not working on a cure for Cancer; he's working on something for the Accounting Department. "*

Answer: *"The operational day to day stuff. "*

Question: *"Yes. And the question is, is there a need in a research environment to construct the bureaucracy in a more user friendly way? …. "*

Answer: *"Is anyone going to say no to that?"*

Question: *"I don't know."*

Answer: *"We are desperate for it."*

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Question: *"Now this is something I understand because I've worked a whole career with financial people, and they are usually intelligent, and you have to make them part of the mission. Then they have to redesign the processes, not around what's convenient for them, but what's convenient for the people who are actually doing the work. "*

Answer: *"Yes. I agree with that."*

3.) Health Organisation Competition and Conflicting Incentives

Question: *"Do you find your activities… at this organisation overlap the AHSNs and AHSCs a bit?"*

Answer: *"I think they can and they do often, because what we do is pulling from the evidence out there of what is needed to be done. I think other people do that too, and often our project ideas are from the ground up, so multiple groups of people will recognize if the service isn't running properly. So I think yes, you will get lots of different people trying to work on the same problem with slightly different …approaches. "*

Question: *"Since there is an overlap, do you see yourself really collaborating with …group? If they had a group in …, would you be collaborating with them? "*

Answer: *"So to be completely honest, I think we want to appear as though we are collaborating, but there is still an element of feeling competitive. I think there are …other organisations…you want to help, but you actually want to maintain that you've made this change, because you are accountable to others for any of the improvement. So it's great to say you've shared in some learning, or shared in some activity; but actually, ultimately you want the result to be yours. Anything in Academia, it's a bit better known, because you know, intellectual property; you want to keep it within your organisation. I think it feels weird actually, because you want to be sharing all this and saying we are just doing this for the greater good, but that's not the reality of what actually happens a lot of the time."*

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Answer: *"… we have …different masters, maybe four if you Figure …. I kind of think my master is my patient generally… But obviously, directly, I have to account to NIHR for money. I have to account to the … because this [organisation] is primarily employing people in the University… and …, I have to account to partner organisations who are mostly NHS Organisations."*

▪▪▪

Question: *"There is an AHSN so you collaborate with them because their job is to take it, scale it up and push it out the door [to the population]?"*

Answer: *"Yes, for better or for worse, the AHSNs, AHSCs and the CHALRCs across England coincide geographically. …If I'm honest, the way those …different organisations were set up could have been clearer. They come from different masters, as Dept. of Health. "*

Question:*" That's true, different funding."*

Answer: *"While they are not quite the same in their remit, they are pretty similar. So CLAHRCs, the emphasis is on, okay, here's the knowledge we have; how do we get that out to benefit people? Whereas AHSCs [and AHSNs], I think is a bit more business."*

4.) 'Capture' Phase of the Innovation Process (Figure 2-How are we going to Benefit from it)

Answer: *"I think it might be helpful to have a national organisation that picks the best of what*

the CLAHRCs, [AHSCs and AHSNs] are doing, and then decides to roll that out nationally. I'm not sure all the preceding organisations collaborate on quite a lot of stuff; it doesn't seem that [they are regularly] spreading each other's Ideas and Innovations into other areas. My understanding through … is that we've had quite strained relations with certain AHSNs; as I'm not sure the top leadership got on quite well and I don't think we have any particular collaboration. I'm not certain my Team has been working with these health organisations."

■■■

Answer: *"That's the big thing, because the barrier you come across is exactly what you just said. So you have an idea, you go to one person in Contract, they send you to another person in IP [Intellectual Property], this units; and then they say well, where's your money? And we go, well, we don't have the money, because we have to bid for the money. So you go around in circles. I mean, there are now some of these Innovations Hubs; the AHSNs are now supporting some of these Innovation Hubs and this, that, and the other. They are great, and they've moved us on from where we have been. But they are for the people who are really… who are a bit savvier, and know what they are doing; but there are so many people out there who could have Innovations, who could have smaller Inventions, who could develop these, and those are the people who are struggling. So yes, it's great to have these Innovation Funds that are out there, and that's one avenue; but you have to spend a few months writing your bid for them again, and where do you get the capacity for that?..."*

Answer: *"But we [in the UK] still are much siloed here; so it's still, we are the medical model, we are the Social Scientists, we are the….and …Business School, it's very rare to get everyone working together on the solution, and because of your measures as well. Who measures…who are we funded by, who measures our outputs, and who measures success?"*

Answer: *"Well, again it's this thing about collaboration. So you are funded by an AHSN, you are measured again on outputs of the AHSN. How do we collaborate with the other AHSNs? Again, that's the part of the missing link. Individually, if we know about them, we may have a personal relationship with them; and there is no formal mechanism of say, let's all come together for ... So, for example, there isn't a formal mechanism that then says, we have done this in one AHSN; where are all the other people who have done …Health work? Let's bring this all together. We developed that for the CLAHRC ourselves and we actually recognized the gap; and we said why are all the CLAHRCS doing different research around the country in …Health? We have no Forum to discuss what we are all doing…. Again, …we haven't done this."*

Question: *"Well, you do have a Forum. If I go to the Web, there is a Forum that looks like all 15 AHSNs are under the same umbrella."*

Answer: *"They are all under the same umbrella, the Directors at the Top of the Chairs, or whatever, will go to a meeting, but that's not the same as the people leading the projects. Like you said, bring everyone together who has been left out, and have them all in one room. We haven't all, under our specialty area across the Country contacted…."*

■■■

Answer: *"Yes. This isn't really my area. The financial, the industry side of things is*

something I've not really had much contact... I mean the issues that we are running up against is that the University contracts people who we have to work through, and are not very familiar with dealing with that kind of….They are used to the concept of like a spin-off company from a pharmaceutical side of things which tends to be quite big. Most of the stuff the CLAHRC does is much smaller and is often not about a physical product, but it might be about a way of doing something. It is often a process rather than a thing. And they seem to struggle getting their heads around it… At the moment, we've had our hold ups of being with getting contracts produced by them that we are then able to use, to work with. Our… has been asking them for a Standard Model Contract that we can then use. From where've I'm sitting, it feels like it's something that ought to be done at a more central level by the NIHR for use by all of the groups that it funds, because they've got some really serious experts who work for them on some of this stuff. If they could produce a standard model that basically says if you are funded by us, you should be using….because there are about four or five different contracts that they use to fund various groups. They have a slightly different contract with the… than they do for Universities to other Groups. They could produce a similar sort of model for at least a template contract for taking …forward, and some guidance on what they would expect to get back out of it…"

5.) Recruitment and Retention of Millennials-Aged 35 and under[19]

Answer: *"I think that's a massive problem for healthcare and because of the cultural change, a lot of these younger entrepreneurial people are leaving really quickly. They don't even hang on for four or five years. They are out as soon as they are qualified within a year or so, you know which is a massive drain to the [health] System and loss of knowledge."*

Each of the preceding five elements discussing barriers and facilitating situations ultimately

impact upon 'Group Cohesiveness'. The positive relationship of organisation performance to 'Group

Cohesiveness' was discussed in Chapter 4.1.2: Quantitative Data Collection. A complete study of the

dimensions of 'Group Cohesiveness' is beyond the scope of this thesis. However, the matter of 'Group

Cohesiveness' will be discussed again in Chapter 5: Discussion of Collective Results. Also, I believe the

subject of 'Group Cohesiveness' is deserving of additional research to generate a full discussion of its

likely implications to leadership of health innovation and an organisation's innovation capacity.

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[19] While there are varying definitions of the term, Millennials, it is a widely- held belief this term applies to people born in the early 1980s to the mid-1990s. At the time this survey was performed, beginning 24 November 2016 to 10 June 2017 in the UK (Figure 7), the oldest millennial survey respondent in this study would have likely been under 35. However, it is possible a participant may have turned 35 during the latter part of the survey period and was included with the 35-44 age respondent group. The US Pilot Study, which commenced in June 2016, had no survey respondents under 35 (Appendix I).

4.2.4 Mixed-Methods Analysis & Discussion

The integration of the results of quantitative and qualitative approaches with respect to the UK Health Organisations included in this study is depicted in Table 22; *"a follow-up results joint display"* as described by Creswell (2014a, p. 84). This summary of the results of the UK health organisations in this study will then be further analysed and compared to the summary of results of the US health organisation subject to the limitations of this study and discussion in Chapter 5.

Table 22: A Follow-Up Joint Display of Mixed-Methods Results-UK Health Organisations

Quantitative Results	Qualitative Follow-Up Interviews Explaining Quantitative Results	How Qualitative Findings Helped to Explain Quantitative Results
1.) As described in Tables 17 and 18 the collective leadership styles among leaders/managers, ranked as first and second, respectively, were a Transformational and Transactional style of leadership from an **'Organisation'** and **'Self'** perspective.	1.) The majority of interviewees' described health organisations with the dominate styles of leadership identified in the surveys of participants (i.e., Transformational and Transactional Styles of Leadership ranked as first and second, respectively).	1.) The qualitative findings confirmed the findings of the quantitative results. Despite a Transformational Leadership Style ranked first from the 'Organisation' and 'Self' perspectives, the interviewees' expressed difficulties in Capture Phase of the Innovation Process depicted in Figure 2. The Capture Phase has been noted as an interview element to be discussed further in Chapter 5.
2.) The operationalised responses to the survey questions according to the eight empirically supported leadership theories and concepts (survey questions 7-14, Appendix A) are depicted in Table 18 from an **'Organisation'** and **'Self'** perspective.	2.) The interviewees' confirmed the organisation's degree of alignment with the eight empirically supported leadership theories and concepts included in the questionnaire (survey questions 7 to 14, Appendix A); they reliably affirmed the leadership styles associated with each of these supported leadership theories and concepts individually and collectively.	2.) The qualitative findings confirmed the findings of the quantitative results.

Table 22: A Follow-Up Joint Display of Mixed-Methods Results-UK Health Organisations (Cont'.d)

Quantitative Results	Qualitative Follow-Up Interviews Explaining Quantitative Results	How Qualitative Findings Helped to Explain Quantitative Results
3.) The Transformational Style of Leadership was ranked first from an **'Organisation'** and **'Self'** perspective. However, the Transactional Style of Leadership was ranked as second from an **'Organisation'** or **'Self '** perspective <u>except</u> , with respect to survey **Question 12: Employee Mindset,** which the Laissez-faire Style of Leadership was ranked as second.	3.) The presence of a possible (secondary) Laissez-faire Style of Leadership was identified in connection with certain interviewees' views with regards to the value of leadership training and the need for a user friendly bureaucracy in certain UK health organisations (i.e., **Question 12: Employee Mindset**).	3.) The qualitative findings with regards to Leadership Training received mixed receptivity. Also, while the process part of research was observed negatively by certain interviewees, they stayed with an uncomfortable situation until they were asked if a more user friendly bureaucracy might benefit health innovation. Therefore, it has been noted as an element in which innovation may have been impeded and will be discussed further in Chapter 5.
4.) The survey responses were then operationised by categorical nominal, ordinal or numerical variables for each of the eight empirically supported leadership theories and concepts (survey questions 7-14, Appendix A) as described in Tables 19-21. The Lassiez-faire Style of Leadership was ranked as second solely by the survey respondents' categorized according to their 'Organisation Role' for **Question 12: Employee Mindset.**	4.) The interviewees expressed a willingness to experiment with different leadership styles as a means of leading effectively a diverse group. As stated by one interviewee, *"I'm quite comfortable with unmanaged structures, so to some extent, I think that you kind of want to try to inspire people with a way of thinking, being fully aware that that sounds great, but with some people, it doesn't work, it doesn't take. But quite a lot of the time, I think if you can inspire people a bit, although some operations will turn into a complete disaster, the total is much more than the sum of its parts…." "It's a mixture because of the numbers of people and the different types of background they are involved in in the organisation."*	4.) The interviewees confirmed that they experimented and often adjusted their leadership styles to better fit specific groups of leaders/managers and staff. Therefore, the presence of variances from the dominant leadership styles demonstrated from the **'Organisation'** perspective can be expected. Interviewees noted the element of competition among health organisations and conflicting Incentives due to responsibilities of researchers with other organisations. This element has been noted for further discussion in Chapter 5.

Table 22: A Follow-Up Joint Display of Mixed-Methods Results-UK Health Organisations (Cont'.d)

Quantitative Results	Qualitative Follow-Up Interviews Explaining Quantitative Results	How Qualitative Findings Helped to Explain Quantitative Results
5.) According to the operationised analysis by **Organisation Role'**, for **Question 12: Employee Mindset**, the Executive Leadership and Professional Specialist respondents' from an **'Organisation'** perspective ranked the Lassiez-faire Style of Leadership as second. Managerial Leadership respondents were split, ranking as second the Transactional and Aversive Styles of Leadership from an **'Organisation'** perspective for **Question 12: Employee Mindset.** From the **'Self'** perspective, Executive Leadership, Managerial leadership and Professional Specialists (i.e., comprising approximately 98.3% of survey respondents, Appendix I) ranked as second the Lassiez-faire Style of Leadership regarding Question 12: Employee Mindset.	5.) Interviewees' felt they had to adjust their leadership styles to achieve the greatest effectiveness. As these health organisations are diverse with some leaders/managers and staff having a clinical versus an academic background, one interviewee commented: *"It's a mixture because of the numbers of people and the different types of background that are involved in the organisation".*	5.) While the presence of different leadership styles can be anticipated from the **'Organisation'** perspective, it is concerning and possibly detrimental to innovation if a Fixed Mindset is even a secondary viewpoint from the **'Self'** perspective. An Employee Mindset, with a willingness (i.e., growth versus fixed orientation) to learn from errors, supports innovation. As previously noted, an employee with a Growth Mindset generally believes it is beneficial to their career development to learn from their mistakes. In contrast, an employee with a Fixed Mindset is more interested in 'looking good 'and may avoid changing situations which may cause them to possibly make a mistake (Yan et al., 2014).
6.)The survey responses were operationised, for each of the eight empirically supported leadership theories and concepts (survey questions 7-14, Appendix A) by 'Age' in Table 20. The survey respondents aged 45-54, in Table 20, presented an **'Organisation'** perspective which ranked as first the Lassiez-faire Style of Leadership with the Transactional Style of Leadership as second with respect to survey **Question 8: Leader-Member Exchange (LMX)**. The survey respondents aged under 35 in Table 20 presented an **'Organisation'** perspective which ranked as first and second, respectively, the Lassiez-faire and Transactional Styles of Leadership for survey **Question 7: Psychological Climate.** There was also some minor differences from the collective leadership styles with respect to **Questions 13: Organisational Culture and Question 14: Role of the Chief Executive Officer (CEO).** With respect to the preceding empirically supported leadership theories and concepts, survey participants ' **'Self'** perspective ranked the 'Transactional' and 'Transformational' Styles of Leadership first and second, respectively. The reverse of the dominant leadership styles from an **'Organisation'** view presented by the collective survey participants.	6.) The recruitment and retention of Millennial's has been confirmed as an issue for the UK's health system during the survey and interview process. A Laissez-faire and a Transactional approach to Leader-Member Exchange in the more senior aged group may be part of the explanation.	6.) The recruitment and retention of leaders/managers and staff aged under 35 was identified as a "massive" drain on the UK's health system. Also, the relationship of study participants with an organisation's bureaucracy appears to affect their perspective with respect to leaders/managers. These issues will be discussed further in Chapter 5.

Chapter 5 Discussion

5.1 Discussion of Findings

At the outset, I posed one main question and one subsidiary question.

1. Do the styles of leadership adopted by leaders/managers in organisations charged with innovation in the health sector in the UK align with leadership theories and concepts empirically shown to encourage innovation?

2. How do the leadership styles adopted by leaders/managers in these UK organisations compare with those seen in an organisation adopting similar roles in the US that many of them aspire to emulate?

The first research question, on the collective leadership styles of leaders/managers of the UK and US health organisations (ranked as '1') and their alignment with the leadership theories and concepts empirically shown to encourage innovation is addressed in Tables 23 and 24.

Table 23: Operationalised Responses to Survey Questions-Comparison of UK and US Health Organisation Leadership Styles from an 'Organisation' Perspective

Organisation' Perspective:	UK Health Organisations				US Pilot Study			
Leadership Style	a.) Transformational	b.) Transactional	c.) Aversive	d.) Laissez-faire	a.) Transformational	b.) Transactional	c.) Aversive	d.) Laissez-faire
Empirical Supported Drivers of Innovation-Survey Questionnaire:								
Question 7: Creating a Psychological Climate for Innovation	RED							PURPLE
Question 8: Leader-Member Exchange (LMX)	RED					PURPLE		
Question 9: Social Capital Promotes Innovation	RED					PURPLE		
Question 10: Leadership Clarity Essential for Health Innovation	RED						BLUE	
Question 11: Supporting Team Reflectivity	RED					PURPLE		
Question 12: Employee Mindset	RED					PURPLE		
Question 13: Organisational Culture and Innovation	RED						BLUE	
Question 14: Role of the Chief Executive Officer (CEO)	RED						BLUE	

Source: Qualtrics LLC survey results and SPSS analysis.

Note: Table 23 depicts the comparative operationalised responses to the UK Health Organisation and US Pilot Study survey questions (i.e., questions 7-14, Appendix A) from an 'Organisation' perspective based upon the methodology outlined in Table 6. This approach includes an analysis of the survey data from Qualtrics LLC. The Qualtrics LLC's survey data was downloaded into SPSS and the descriptive statistics for each survey response were calculated and analysed. Based upon an analysis of the measures of central tendency of the data, the selected leadership styles were colour coded (as depicted in Table 6) and ranked as the best fit (i.e., ranked as number 1) to the survey question posed.

Table 24 Operationalised Responses to Survey Questions-Comparison of UK and US Health Organisation Leadership Styles from a 'Self' Perspective

'Self' Perspective:	UK Health Organisations				US Pilot Study			
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
	a.)	b.)	c.)	d.)	a.)	b.)	c.)	d.)
Leadership Style……………………………………………	Transformational	Transactional	Aversive	Laissez-faire	Transformational	Transactional	Aversive	Laissez-faire
Empirical Supported Drivers of Innovation-Survey Questionnaire:								
Question 7: Creating a Psychological Climate for Innovation	■				■			
Question 8: Leader-Member Exchange (LMX)	■				■			
Question 9: Social Capital Promotes Innovation	■				■			
Question 10: Leadership Clarity Essential for Health Innovation	■				■			
Question 11: Supporting Team Reflectivity	■				■			
Question 12: Employee Mindset	■				■			
Question 13: Organisational Culture and Innovation	■				■			
Question 14: Role of the Chief Executive Officer (CEO)	■				■			
Source: Qualtrics LLC survey results and SPSS analysis.								

Note: Table 24 depicts the comparative operationalised responses to the UK Health Organisation and US Pilot Study survey questions (i.e., questions 7-14, Appendix A) from a 'Self' perspective based upon the approach methodology outlined in Table 6. This approach includes an analysis of the survey data from Qualtrics. The Qualtrics LLC's survey data was downloaded into SPSS and the descriptive statistics for each survey response were calculated and analysed. Based upon an analysis of the measures of central tendency of the data, the selected leadership styles were colour coded (as depicted in Table 6) and ranked as the best fit (i.e., ranked as number 1) to the survey question posed.

As can be seen, the UK health organisations collectively present a Transformational Style of Leadership, from an 'Organisation' and 'Self' Perspective (ranked as '1'). With respect to the Innovation process described in Figure 2, this leadership style aligned with the eight empirically supported leadership theories and concepts discussed in this thesis (from an 'Organisation' and 'Self' perspectives) would present an opportunity to achieve success through all four phases of the innovation process (i.e.,' **Search', 'Select', 'Implementation'** **and** **'Capture'** phases) as discussed in Chapter: 1.1.2: The Innovation Process, Chapter 2.3.2: Leadership Styles and Innovation and Chapter 4.2.3:Qualitative Data Collection, respectively (Figure 2 is reproduced again here).

Figure 2: Innovation Process
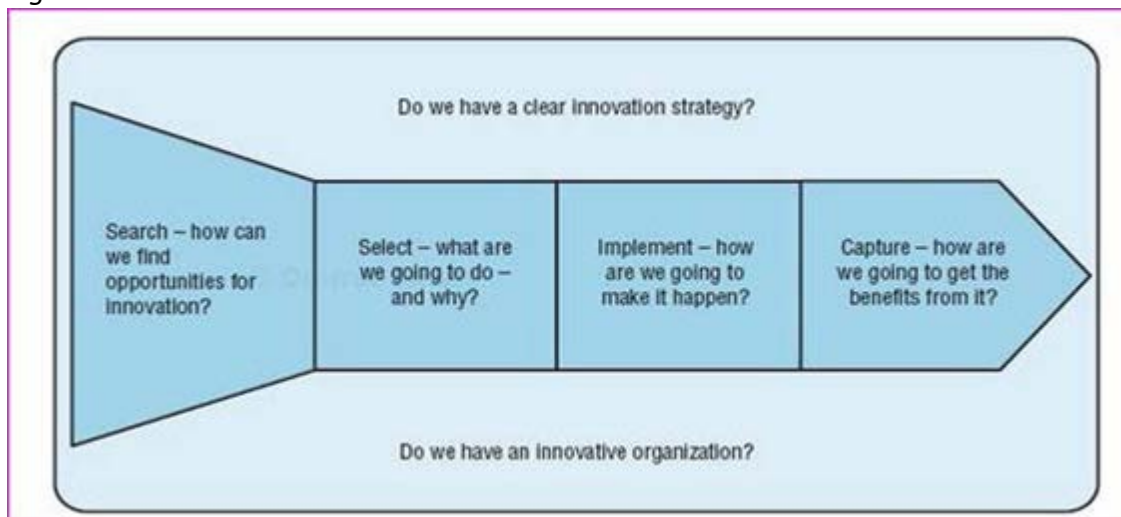
Source: Tidd and Bessant (2013), p.60

The second research question is also addressed in Tables 23 and 24, which reveals the stark

contrast in leadership styles presented by the US health organisation from an 'Organisation' perspective.

It demonstrates a dysfunctional set of leadership styles from an 'Organisation' perspective, ranging from

Transactional to Aversive to Laissez-faire. As a consequence, the US health organisation appears to face

more challenges than the UK health organisations to drive health innovation through the four phases of

the innovation process depicted in Figure 2.

As discussed in Chapter 1: Introduction and Chapter: 4.1.2: Quantitative Data Collection, the

'Organisation' perspective would appear dependent on the 'Context' (i.e., operating environment) and

'Group Cohesiveness' in which the leaders/managers function. Even in the event that the US health

organisation had depicted a Transformational 'Organisation' perspective, there is still no guarantee that

adhering to the eight empirically supported leadership theories and concepts shown to be favourable to

health innovation will lead to the predicted results under all circumstances. That is, the 'Context' and

'Group Cohesiveness' of the US health organisation must be taken into consideration as well as the 'Self'

perspective of the leaders/managers (Figure 17).

In this instance, the 'Self' perspective of the leaders/managers is critical to the innovation

process. Respondents to the US Pilot Study presented a Transformational Leadership Style from a 'Self'

perspective identical to that in the UK health organisation participants depicted in Table 24. As

described in Chapter 4.1.3: Qualitative Data Collection, the participants from the US health organisation

reported that they were able to overcome the barriers to innovation placed in their way by senior

leadership. As previously discussed, I observed that the leaders/managers of the US health organisation

and the staff reporting to them appeared to have modified their behaviour to adapt to its operating

'Context'. However, there was a cost to the organisation and the study participants possessing a

Transformational Leadership Style from a 'Self Perspective' operating in a dysfunctional organisation

'Context'. One aspect was evidenced by my observations regarding employee turnover. As described in

Chapter 4.1.2: Quantitative Data Collection, the US health organisation had 5 interim and full-time

presidents since 2007, as well as recent turnover in other senior administrative and division/department

leadership. This profound lack of alignment between the 'Organisation' and 'Self' perspectives presents an

opportunity for intervention, but also a stressful environment to function, possibly contributing to the observed

turnover.

        The stressful nature of the operating environment of the US health organisation and the lack of alignment

in 'Organisation' and 'Self' leadership styles in 'Context' and 'Group Cohesiveness' may explain the

resignation of its CEO approximately seven months after the study was completed. Of particular note, it

was reported that the resignation was prompted by a petition signed by approximately 30 physicians. It

was also reported that another 100 physicians or more within the organisation wanted to sign the

petition, but were afraid to do so fearing harsh retribution (Reporter, 2017). This would seem to be a

realistic concern, given that the organisation presented an Aversive leadership style from an

'Organisation' perspective in Table 12 with respect to the role of the CEO.

        As discussed in in Chapter 4.1.2: Quantitative Data Collection, the responses to survey questions

according to pre-determined characteristic variables (Appendix I) showed   that approximately 71% of the US

health organisation respondents had over 5 years tenure, including approximately 43% of the

respondents with over 10 years of tenure versus 49% and 13%, respectively, in the UK health

organisations as depicted in Table 15. This finding suggests that the US organisation had greater 'Group

Cohesiveness' than the UK organisations and, therefore, potential for higher innovation capacity as

described in Chapter 4.1.2: Quantitative Data Collection. However, there also may be a negative side to

this finding with respect to the US organisation.

As described in Table 15, the US organisation had no survey respondents with less than two

years tenure or under the age of 35 (Appendix I). In contrast, approximately 20% and 10%, of the UK

health organisations' respondents had tenure of two years or less and were aged under 35 years,

respectively. My discussions indicate that the University recognizes that these younger people

represent the future, as potential leaders of innovation, as is also recognised in many similar

organisations in the USA and the UK. However, subject to the limitations of this study, the findings of

this study show a range of leadership styles ranging from Transactional to Aversive and Laissez-faire

from a collective 'Organisation' perspective, which appears to be an issue which goes beyond just the

recruitment and retention of Millennials. These findings may pose challenges to the US health

organisation's senior leadership in the recruitment and retention of innovative leaders/managers and

staff, while affecting the overall innovation capacity of the organisation today.

A discussion of the many implications of the '**Context**' of an organisation and '**Group**

Cohesiveness' to leadership of health innovation are beyond the scope of this study. However, certain

barriers and facilitating situations of **'Group Cohesiveness**' are described in Tables 14 and 22 of

Chapters: 4.1.4 and 4.2.4 Mixed-Methods Analysis & Discussion, respectively. These barriers and

facilitating situations are further discussed in Chapter 5.2: Barriers & Facilitating Situations, including: 1.)

Leadership Training; 2.) Role of Bureaucracy; 3.) Health Organisation Competition and Conflicting

Incentives; 4.) '*Capture'* Phase of the Innovation Process; and 5.) Recruitment and Retention of

Millennials-Aged 35 and under*.

5.2   Barriers & Facilitating Situations

1.)   Leadership Training

UK and US interviewees described the need for leadership training to prepare leaders/managers to successfully navigate through the four phases of the innovation process (i.e., *'Search'*, '*Select'*, '*Implementation'* and '*Capture'* phases) depicted in Figure 2. As described by Aarons et al. (2015), leadership for "*Organizational Change for Implementation(LOCI)"* [training] was supported to be a feasible solution for preparing leaders/managers to efficiently lead an evidence based practice (p.1).

Aarons et al. (2015) described a relatively small pilot mixed-methods study of first level mental health service team leaders/managers. However, this rigorous study was intended, in addition to supporting the feasibility of LOCI, to establish interest in future research rather than be generalized as a 'one size fits all answer 'to a larger population desiring to improve their leadership skills. As a result, the study helped contribute to the importance of leadership training as a strategy for improving the innovation capacity of a health organisation.

Based upon the interviews performed, it was clear that there is a plethora of innovation leadership fellows' programmes and courses/seminars sponsored singly or in joint ventures by the NHS, AHSCs, AHSNs and other private/public organisations (e.g., NHS Innovation Accelerator[20] [NIA] fellows), although not necessarily known and/or available to all researchers I interviewed. However, a number of these programmes are relatively recent, although they do more than discuss leadership principles and leadership of health innovation and assist innovative individuals to '*Implement* 'and '*Capture*' the value of their ideas.

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[20] As part of the approval of the relicensing of the AHSNs in July 2017, the NHS Board assigned the 15 AHSNs the responsibility for coordinating the Innovation Exchange model in connection with the Accelerated Access Review(NHS England, 2017, 6 July).

These recent programmes were developed in response to the recognised need in the UK to

drive health innovation to promote *"Health & Wealth"* as described by as described by *NHS England*

(2011, December 5) . For example, "…the NIA supports exceptional individuals with a passion for learning

and a commitment to share their learnings widely, scaling evidence-based innovations for greater

patient benefit…"(England, n.d.). According to the UK interviewees, the NHS 'Leadership Academy',

performs its mission of improving the NHS' customer service and meeting community needs well

(Storey & Holti, 2013). However, as also pointed out by my UK interviewees, people learn differently and

at a different pace.

To respond to the comments by the interviewees that leadership programmes should be more

widely promoted, suitable and cost effective, I recommend the NHS establish (possibly with partner

organisations), an online clearing house of leadership programmes accessible by cell phone or computer

with a concise course description by experience level and grouped alphabetically according to category,

including[21]:

a.) Course ratings on a recognized ranking scale based upon a stated number of actual
    participants who have completed the courses and the period used including student
    testimonials (AHSC Interviewee, Personal Communication, June 16, 2017);

b.) Links to online demonstration videos of actual classes held which is common to many
    online graduate programmes in the US;

c.) Documentation of a standardized curriculum development process. For example, the
    alignment of the individual course competencies, course outcomes and learning objectives
    should be developed for the course modules for each of the courses to be presented.
    Courses should be placed into a pathway in order for Leaders/managers/students to
    determine their appropriateness (College of Public Health, Department Chair, Department
    of Health Policy & Management, personal communication, July 21, 2014);

d.) A syllabus should be developed and available online for each course that is based on the
    alignment of the individual course competencies, course outcomes and learning objectives

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[21] Based upon the interviews performed, I recognize that certain organisations may have individually
implemented certain parts of the recommendation outlined herein (e.g., instructor ratings on a
recognized ranking scale). The name of the individual/organisation in the personal communications was
changed in the interests of confidentiality.
.

referred to above. The syllabus should also incorporate a course schedule and policies and procedures which will govern each course including how students will be assessed and grading rubrics, if applicable (College of Public Health, Department Chair, Department of Health Policy & Management, and Instructional Designer, personal communications, July 21, 2014);

e.) Individual (anonymous) student assessments (i.e., ratings) of the instructor(s) and the course material should be submitted at the conclusion of each course, collected and available to prospective students (Interviewee, Personal Communication, June 16, 2017); and

f.) A helpline, FAQs and an application with instructions should be available online for each course. Also, financial and time commitments should be clearly stated (College of Public Health, Department Chair, Department of Health Policy & Management, and Instructional Designer, personal communications, July 21, 2014).

2.) Role of Bureaucracy

The interviewees in the US and UK recognized the necessity of a bureaucracy to deal with the process of documenting activities and various administrative actions. However, there was a general agreement that some, but not all the people tasked with these duties understood their role was to first make the organisation run effortlessly, while complying with good governance practices.

Based upon my observations and experience, the role of bureaucracy in health organisations included in this study could be broadened and made more user friendly than observed, including:

a.) Organisation members should be initially given an orientation course that they are to be of service to their customers (e.g., researchers) and then kept well-informed of changes in the organisation's and related researchers' mission, vision, values, and project time-lines.

b.) Each health organisation's bureaucracy cannot expect to have all the answers to every question posed, but a central location for answers should be established. Whether this is done at an individual organisation level or collaboration among health organisations. In particular, certain questions regarding expertise required can be anticipated based upon the innovation process depicted in Figure 2 (e.g., legal contracts and negotiation; sources of

funding and application process; stakeholder contacts and relationships; engineering and

design).

3.) Health Organisation Competition and Conflicting Incentives

As discussed in Chapter: 1.1.3: Innovation in the NHS, while the Health and Social Care Act 2012

"sought to strengthen the role of competition within the health system, NHS organisations are now being

told to dampen the competition and collaborate to plan and provide local services…(Alderwick et al.,

2016), pp.7- 16. This is an interesting comment as competition is often viewed positively. However,

regarding innovative health organisations, the interviewees confirmed that this competition had led to

health organisations researching the same health issues and duplicating efforts. The result of this

practice is wasting time and resources and encouraging a lack of collaboration delaying the delivery of

needed health innovations to the public.

This competition appears partially motivated by the funding and regulatory measures that each

organisation must adhere to in order to have their funding or license renewed. In other words,

researchers find themselves trying to please multiple masters, each with a different set of reporting

requirements. Also, some researchers confronted by these myriad measures and conflicting incentives

simply give up and the health innovation process ends before beginning the '*Capture'* phase of the

innovation process depicted in Figure 2.

The NHS comment regarding encouraging collaboration is not likely in itself to eliminate

competition without addressing the core issues driving it. Nor will the NHS be able to influence all

sources of competition. For example, there will always be competition for funding sources that impose

different conditions, such as those from foreign or private sources outside the NHS. However, I

recommend the NHS should commission a study, as soon as practical, to identify and collect the many

variables impeding collaboration among health organisations. Based upon an analysis of the study

results, the NHS should host a meeting of representatives of health organisations and other

stakeholders to discuss the results, solicit their feedback and develop a plan of action.

4.) *'Capture'* Phase of the Innovation Process

Based upon the analysis described in Table 26,to improve the '*Capture*' of the organisational

benefits of the health innovation strategy in the UK, including achieving "*Health & Wealth"* as described

by *NHS England (2011, December 5);* I suggest the NHS should address each of the preceding

recommendations (i.e., Leadership Training; Role of Bureaucracy; and Health Organisation Competition

and Conflicting Incentives).

The NHS has recognized the need to improve the '*Capture'* phase of the Innovation process

depicted in Figure 1. In an independently chaired report supported by the Wellcome Trust (GOV.UK,

2016, 24 October), a detailed 'Framework' for implementing Accelerated Access Review (the

'Framework') was presented to the NHS for implementation . For example, it recommends detailed

pathways for each of three innovative product groups including: 1.) pharmaceuticals; 2.) medical

technology and diagnostics; and 3.) digital health. In addition, an 'Accelerated Access Partnership' is

recommended be established to bring together all the main organisations involved with healthcare in

the UK, the Department of Health and other stakeholder groups to *"improve the coordination across the*

innovation pathways" (p.20). The 'Framework' also makes high level recommendations regarding

training of clinicians and addressing conflicting incentives.

To facilitate the implementation of the Framework's recommendations, the NHS published '*The*

NHS England Innovation and Technology Tariff 2017 to 2019 Technical notes'. "It sets out the innovation

themes, specifications, reimbursement and reporting requirements" for product innovations under the

Accelerated Access Review (NHS England, 2017, 9 May). Based upon discussions with interviewees, the

implementation of the 'Framework' is continuing and will likely take considerable time and effort before

the NHS receives the intended benefits of an improved '*Capture*' phase.

The actions of the UK government in health research and innovation are consistent with the view expressed by Mazzucato (2015) regarding the State's role in promoting innovation. As described by Mazzucato (2015), the UK government is doing more than creating a national system for innovation; it is leading the process. For example, the Department of Health and Department for Business, Energy & Industrial Strategy announced new funding of up to £86 million to "*speed up access to new medicine and technology by supporting business to develop and test their innovations*" thereby visibly putting the State and the public's money and trust behind improving the '**Capture**' phase of the innovation process (GOV.UK, 2017 14 July) .

Mazzucato (2015) explains that the US government assumes most of the risk in the early stage of innovations with the private sector sitting on the side lines because of the risk of uncertainty (i.e., a high failure rate) involving early stage start-up ventures. She cited examples of companies, including Apple Inc., which integrated technologies into their products proven solely by government funding and created billions in wealth for its shareholders.

In the private US healthcare system, such an approach may be acceptable and expected where the government takes the risk, but the large benefits fall on the private sector which adapts proven and therefore lower risk innovations. While it appears that the NHS may have the included the recovery of their investment in their commercial arrangements with early stage innovators, it is not apparent whether the NHS will share and to what extent, if any, in the later stage equity appreciation of the supported early stage innovations. While a complete discussion, of these often complex financial arrangements, is beyond the scope of this study, I recommend that this matter be researched further in connection with the implementation of 'Accelerated Access Review.'

Finally, several the interviewees' expressed to me that many of their innovations are small and involve improving specific health processes rather being identifiable products that would neatly fall into the 'Framework's' three product review pathways. While the NHS' recent initiatives discussed herein are

exciting and needed, a pathway for these more numerous smaller health innovations should be added

to the added to the 'Framework 'to improve the '*Capture*' phase of the innovation process for most

health organisations.

5.) Recruitment and Retention of Millennials-Aged 35 and under

As discussed in Chapter 4.2.2:Quantitative Data Collection and Chapter 5.1:Discussion of

Findings, the study's findings regarding the recruitment and retention of Millennials-aged 35 and under,

may pose serious challenges for the organisations in each country.

As described by DePass (2016, 14 June), the 3M Company ranked first in the US, in a national

survey ,as the most preferred workplace for Millennials. Among, the top ten workplaces for Millennials

in the National survey were St. Jude Children's Research Hospital, Mayo Clinic and two major US

government agencies. Thus, dispelling the view I learned from certain interviewees that health and

especially public organisations cannot compete in the recruitment and retention of Millennials.

Of particular interest, DePass (2016, 14 June) reported the remarks of 3M Company CEO Inge

Thulin regarding his views why 3M Company, a $30 billion multi-national corporation, headquarters in

Minneapolis, Minnesota, would be an attractive workplace for Millennials. Mr. Thulin' s explanations

included: 1.) 3M's sustainability projects and its three-to-12 month leadership development program;

2.) 3M's commitment to geographic, linguistic and ethnic diversity; 3.) senior administrative leadership,

'*represents many races and countries around the world";* and 4.) 3M's 15% Rule as discussed in Chapter:

2.3.1: Leadership Theories and Concepts Relevant to Health Innovation, "which allows scientists and

product makers to spend 15 percent of their time on projects of their choosing". Mr. Thulin summed up

his remarks by stating:

> *"Our 15 percent culture is fantastic for these individuals… That is what that this group is looking [for]. They want to go to a place where they can look and see diversity in the management, sustainability and environmental goals [up held], and freedom. Lastly, they want to know they can make a difference. And they can and do."*

While a complete study of the recruitment and retention of Millennials is beyond the scope of this study, I would recommend that the NHS and the other members of the 'Accelerated Access Partnership' begin a dialogue with the senior leadership of the 3M Company and the other organisations among the top 25 on this national survey as a starting point for a complete research study of this barrier to health innovation.

5.3   'Leadership Framework'

As discussed in Chapters: *4.1.4* and 4.2.4, *Mixed-Methods Analysis & Discussion,* the combined results of this study were used to develop a feasible and practical 'Leadership Framework' depicted in Figure 16. This 'Leadership Framework' can be used by an organisation to determine the leadership styles of health leaders/managers aligned with eight theories and concepts used in this thesis.

Figure 16: Leadership Framework for Health Innovation
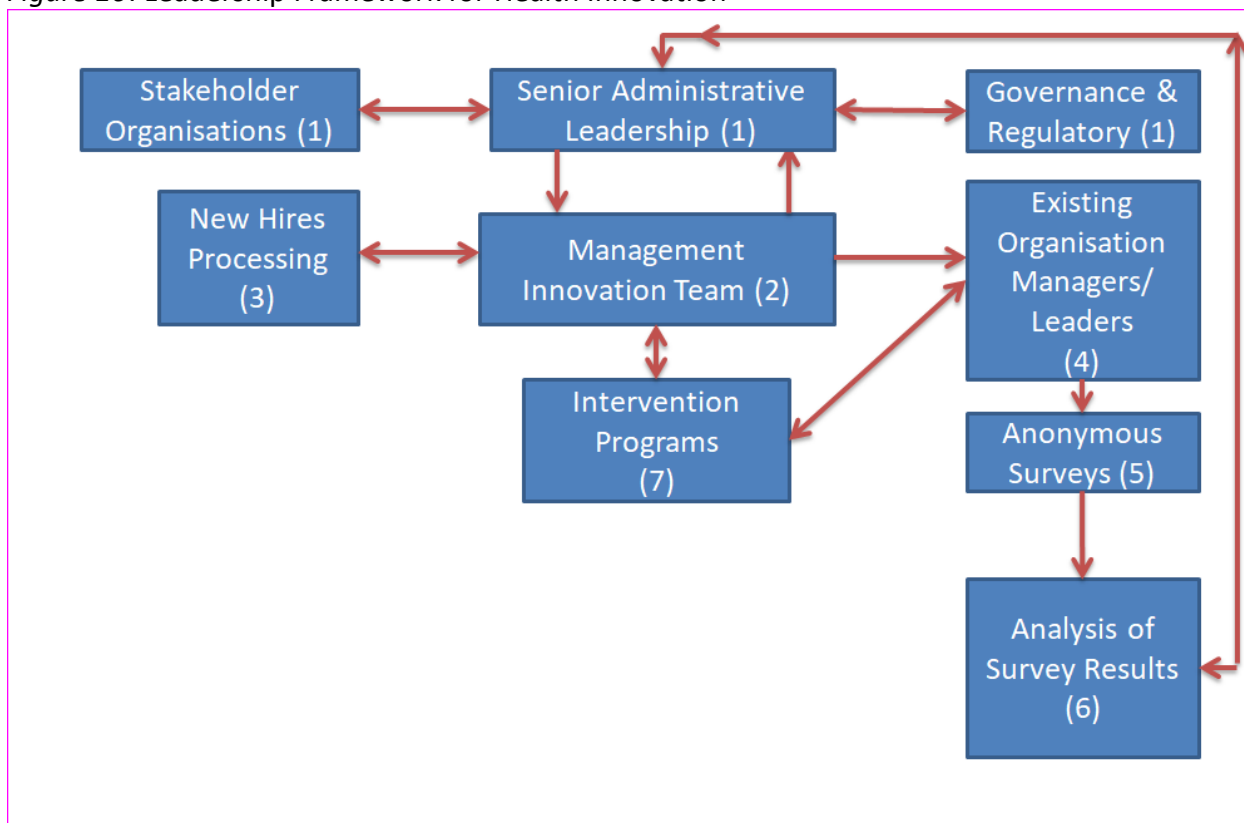
The components of the' Leadership Framework' for Health Innovation are referenced numerically in Figure 16 and explained below:

1.) Senior administrative leadership's support for health innovation is evidenced by their active participation in the 'Leadership Framework'. As discussed in this thesis, the support of senior leadership of each organisation is deemed essential for the 'Leadership Framework' to be successful. For example, only where I could obtain the support of the senior leadership of an organisation was it included in this study (Box 1). I contend that such support is essential to focus attention of busy health organisation team members in participating and giving the survey their serious attention. Consistent with the proposed 'Accelerated Access Partnership' discussed in in connection with the '*Capture*' phase of the innovation process, the possible participation of representatives of the governance and regulatory structure and associated stakeholders is also contemplated.

2.) To execute the 'Leadership Framework' process, there is a strong argument for a 'Management Innovation Team' to be formed. Serious thought needs to be given to the people assigned and the authority delegated to this team. This is critical if the 'Leadership Framework' is to be implemented efficiently while maintaining the confidence and trust of all participants. For example, the team should have a representative of the human relations area (HR) to ensure all 'available' organisation leaders/managers participate, including participants beyond first level executives. A representative of senior administrative leadership should also be included on the team with the delegated authority to engage third-party organisations to ensure individual survey results are anonymous.

3.) The recruitment process of 'New Hires' should include the completion a confidential survey questionnaire to determine if their leadership style is aligned with the eight empirically supported leadership theories and concepts discussed in this thesis. For ease of use and to

avoid any inordinate delays in the recruitment process, it is recommended that the survey

questionnaire be included in an APP. The building of an APP to host the 'Leadership

Framework' (i.e., on a mobile device that could be downloaded by an organisation recruit

and/or a web-site), is beyond the scope of this study. However, the APP should include:

a. An application using iOS or other operating system could be developed for all

   common commercial products for downloading on all iPhone, iPad and other

   devices;

b. An Android application for download on all android phones and devices;

c. A proprietary web-site with identical functionality;

d. An administrative portal where the organisation can assign the survey

   questionnaire, view the results and view the statistical data displayed in a table

   format and/or in multiple graphs;

e. A portal for the survey questionnaire taker to complete/submit the survey

   questionnaire and later view the results, if permitted by HR; and

f. The capability of comparing all survey results to a scoring grid and/or compare it to

   statistical data from prior survey participants anonymously.

The use of Apps to access data and other information over the Internet has been shown to be an

effective means of delivering certain elements of the information required to deliver appropriate

healthcare. For example, Bullock et al. (2015) described an intervention involving 125 newly qualified

doctors in Wales. The doctors were asked to access medical textbooks using an App. The study results

supported that the timely access to technical knowledge and data advanced the development of these

doctors. In addition, the doctors demonstrated their ease of use of the App, particularly in front of their

colleagues in the workplace, improving over the 12 month intervention period. As described by Canedo,

Graen, Grace, and Johnson (2017), Millennials show a preference for the use of Apps versus traditional

paper based practices in the hiring process. Further, Millennials desire to work for organisations that

align with their values and as a consequence would likely appreciate the introduction of what may

termed by some as 'cutting edge electronic technology' as well as the purpose of the 'Leadership

Framework' App in the hiring process.

4.) – 7.) Existing Organisation Managers/Leaders; Anonymous Surveys; Analysis of Survey Results; and Intervention Programmes

To ascertain the collective leadership styles of an organisation and operationalise the results by

the eight theories and concepts used in this thesis, the 'Management Innovation Team' should provide

the App described previously for 'New Hires' to each manager/leader in the organisation. However, in

this instance, there should be no personal identifier associated with an individual's survey results (i.e.,

an anonymous survey). If feasible and practicable to encourage the participation of all leaders/managers

in the survey process, an independent third-party firm with an established reputation should be

engaged to perform the survey and collect the data. The survey process should encompass the

procedures described in Chapter 3.1.2: Survey of Leadership Styles; Chapter 3.1.3: Components of the

Survey Plan; and Chapter: 3.1.4-Quantitiative Data Analysis. The aim of this survey process is to

ascertain the leadership styles of leaders/managers of health organisations charged with driving

innovation and assess how these adopted styles align with the eight theories and concepts. The

objectives should include using the collective results to benchmark the innovation capacity of the

organisation, identify areas for improvement, and monitor the ongoing innovation capacity of the

organisation.

5.4   Contributions of the Study

I have reflected on the contributions of my research to the furtherance of improving leadership

of health innovation and building innovative health organisations. As discussed, there has been a paucity

of research regarding leadership of health innovation.

As reiterated by several the study participants in the UK, this is an exciting time to be working with the NHS. The UK government is doing more than creating the organisation structures necessary to drive health innovation, it is leading the process. This study showed, with respect to the participants in this study, the leaders/managers of UK health organisations presented a collective (i.e., ranked as first or best fit in the survey questionnaire, Appendix A) Transformational Style of Leadership from an 'Organisation' and 'Self' perspective. This positive leadership style was aligned with the eight leadership theories and concepts identified earlier. Consequently, it would appear the UK appears to have the right leaders/managers to lead health innovation. However, this study also emphasized that the combination of a positive Transformational Leadership Style and the eight leadership theories and concepts alone is no guarantee of success in the leadership of health innovation.

The study identified several issues which could derail this road to success in health innovation. First, it discussed the subject of 'Group Cohesiveness'. For example, the CLAHRC and AHSN organisations are subject to five year license renewals. This repeated renewal process may help to explain why the US health organisation's leaders/managers have worked together for a longer period (i.e., more years of tenure in their organisation positions) than the UK health organisations. This is concerning because 'Group Cohesiveness' has been shown to be related to organisation performance. Second, the study also identified departures from the dominant UK style of leadership shown in the surveys (i.e., the Transformational leadership style). This occurred when the leadership styles of participants from an 'Organisation' and 'Self' perspectives aligned with the eight leadership theories and concepts were operationalised according to the categorical variables tested in this study. Of particular note were the 'Organisation' and 'Self' perspectives of study participants aged under 35 years (Millennials). It is evident that this generation represents the future of health innovation in the UK and the US, but organisations in both countries showed they faced challenges in retaining and recruiting

Millennials. Third, the interviewees in the UK (some of whom mirrored the comments of interviewees in

the US health organisation) identified five barriers and facilitating situations in connection with

leadership of health innovation, including: 1.) Leadership Training; 2.) Role of Bureaucracy; 3.) '***Capture'***

Phase of the Innovation Process; 4.) Competition and Conflicting Incentives; and 5.*)* Recruitment and

Retention of Millennials-Aged 35 and under. Fourth, the preceding issues culminated in seven

contextually appropriate recommendations on the basis of theory and empirical evidence, if considered

and acted upon by the NHS and individual health organisations, may contribute to keep the UK health

organisations on the road to success in leadership of health innovation.

Only limited comparisons were made with the US health organisation, because, contrary to

what was expected when selecting it, it presented a dysfunctional set of leadership styles from an

'Organisation' perspective, ranging from Transactional to negatives styles of leadership including

Aversive to Laissez-faire. I believe that, because the US study participants presented a collective

Transformational 'Self' perspective and '**Group Cohesiveness**', they were able to adapt their behaviour

to this difficult organisational 'Context'. Consequently, they were able to progress through the

innovation process successfully, but under stress.   Their '**Group Cohesiveness**'   was later demonstrated

when they joined together to remove the senior administrative leadership they felt was the cause of

their dysfunctional 'Organisation' perspective.

I feel that this study also showed the importance of considering both the 'Organisation' and

'Self' leadership style perspectives of an organisation's leaders/managers not just at the senior

administrative leadership level, but through as many organisational levels as practical. Again, while the

UK and US comparisons were limited for the reasons stated, the comparisons provided insight by

showing that the 'Self' leadership style perspective may be able to overcome a dysfunctional

'Organisation' leadership style perspective, at least in the short-run. Therefore, the leadership of health

innovation and the building an innovative health organisation is an iterative process involving the

considerations as depicted in Figure 17, whereby , the organisational '**Context**' (e.g., operating

environment) and '**Group Cohesiveness'** of an organisation's leaders/managers charged with driving

innovation must also be simultaneously taken into consideration with the leadership styles from the

perspectives of the 'Organisation' and 'Self as aligned with the eight theories and concepts. Finally, I was

able to propose a 'Leadership Framework' that is a feasible, affordable, and practical tool that health

organisations could use in-house to determine the leadership styles of health leaders/managers and

their alignment with eight empirically supported theories and concepts will best drive much needed

health innovation.

5.5   Study Limitations

This study should be interpreted considering its limitations, including the following:

1.) As described in the Methods section, this study used a cross-sectional survey design by a single

researcher to determine a   pattern of leadership style(s) from respondents' answers to

questions linked with the eight leadership theories and concepts. A longitudinal study performed

over a number of years, by a research team, may have resulted in different quantitative and

qualitative results due to changes in the 'Context (e.g., a changing operating environment due to

changes in economic, political and social conditions) leaders/managers experience and the

added research team leadership perspectives.

2.) There are a limited number of leadership studies within the healthcare sector, and even less

on senior leadership and innovation (Goffin & Mitchell, 2010; Ovseiko et al., 2014; Weberg,

2009; M. West et al., 2015). Therefore, had more studies of health innovation leadership been

performed in the past it is entirely possible additional leadership theories and concepts supporting

health innovation leadership may have been identified.

3.) There was a lack of existing survey questionnaires that could test the alignment of leadership

styles adopted by health organisation leaders/managers with the eight leadership theories

and concepts. Accordingly, this required me to develop a survey questionnaire to accomplish the aim and objectives of the study. As described in this thesis, the reliability and validity of the survey results were tested. However, the survey questionnaire has not been be subject to exhaustive testing by different researchers over a lengthy period of time as have other survey questionnaires that are narrower in scope [e.g., Bass and Avolio's Multifactor Leadership Questionnaire [MLQ-Form 5X] as described by Antonakis et al. (2003)].

4.) In the quantitative phase of this mixed-methods study, a two-stage purposive sampling framework was used which affects and therefore limits the generalizability of the study results to other health organisations not included in the study. In the UK, the first stage sampling frame was purposive and initially comprised the entire set of AHSCs, AHSNs and CLAHRCs as described in Appendix E. In the second stage, for each organisation participating in the study, I created a sampling frame, to the extent feasible and practicable, comprising all employees holding leader/manager roles. I used the organisation's organogram, organisation directory or web-site descriptions to create a matrix with axes based on tiers within the organisation and functions. However, I selected organisations only where I could obtain the support of the senior leadership. As a result of the sampling frame used, the number of health organisations included in the study and the sample size of the resulting study participants, may have omitted organisations/participants. If other organisations were subject to testing, these organisations may have reported results that differed from those described in this study. As the survey instruments were sent electronically through the Qualtrics LLC web-based system, response rates were negatively affected as reported by Rand Corporation in a 2016 survey of similar health organisations in the UK(RAND Corporation, 2016).

5.) The qualitative phase of this mixed-methods study used a nested sequential sampling design. Approximately 20% of the study survey participants were selected for a semi-structured interview regardless if they responded to the survey instrument or not. While the study participants were selected at random, no statistical inference can be drawn from this approach. Selected interview participants declined the researcher's invitation or were later unavailable to be interviewed after initially accepting. Substitute interview participants were purposefully selected, if feasible. However, in one instance, substitution was not possible (i.e., last minute cancellation due to a study participant being on-call for a medical matter).

6.) The responses to survey questions were anonymous. I considered this approach necessary to encourage survey respondents to participate in the survey. However, this has been known to lead to 'socially acceptable' responses (Bernard et al., 2007). I sought to explore this tendency in the qualitative phase of this study. However, there was no indication of a strong desire to be 'socially acceptable' despite the pressure felt by some study participants as continuation of the funding of certain organisations was approaching the end of a 5 year budget period as discussed in Chapter: 4.1.4 Mixed-Methods Analysis & Discussion.

5.6   Further Research

I have summarized, in Table 25, suggestions for further research arising from this thesis that may have implications to leadership of health innovation.

Table 25: Further Research

Thesis Chapter(s)	Areas for Further Research
Chapter: 4.1.2 Quantitative Data Collection; Chapter 4.2.3: Qualitative Data Collection	1. **Group Cohesiveness**- As Group Cohesiveness is linked with organizational performance, I believe the subject of Group Cohesiveness is deserving of additional research to generate a full discussion of its likely implications to leadership of health innovation and an organisation's innovation capacity.
Chapter: 1Introduction Chapter: 4.1.4 Mixed-Methods Analysis & Chapter: Discussion; Chapter: 6.1: Summary	2. **Organizational Context**-A complete discussion of the implications to leadership of health innovation regarding the 'Contexts' of an organization are beyond the scope of this study. As discussed, leaders/managers need to consider the organizational 'Contexts' in which these leadership theories and concepts are applied.
Chapter 5.2: Barriers & Facilitating Situations	3. **NHS Equity Participation in Early Stage Innovations**-NHS may have included the recovery of their investment in their commercial arrangements with early stage innovators, however, it is not transparent whether the NHS will share and to what extent, if any, in the later stage equity appreciation of the supported early stage innovations.
Chapter: 4.2.3 Qualitative Data Collection; Chapter: 4.2.4 Mixed-Methods Analysis & Discussion; Chapter: 5.1 Discussion of Findings; Chapter: 5.2 Barriers & Facilitating Situations; Chapter: 6.2 Study Recommendations	4. **Recruitment and Retention of Millennials-**While a complete study of the recruitment and retention of Millennials is beyond the scope of this study, I would recommend that this should be the subject of a major project to understand how their aspirations, expectations, and motivations differ from those of previous generations and thus how they can best be recruited and retained as they will be key to health innovation. Also, noted in Table 26: Study Recommendations for NHS policy consideration.
Chapter:5.3'Leader-ship Framework'	5. **'Leadership Framework'**- A partial use of the 'Leadership Framework' is included in Table 26: Study Recommendations for NHS policy consideration, only with respect to the formation of a 'Management Innovation Team' and the use of a confidential survey questionnaire to determine the leadership styles of 'New Hires'. It is suggested the full implementation of the 'Leadership Framework' and development of an App to support its complete organisational implementation be subject to further testing in a variety of research organisations and under different operational **Contexts**.

Chapter 6 Policy Implications

6.1 Summary

Subject to the limitations discussed in Chapter 5.5, and the need to draw on further research on

certain issues, as set out in Chapter 5, the following tentative conclusions could be drawn regarding the

collective leadership styles of leaders/managers of the UK and US health organisations participating in

this study and their alignment with the eight leadership theories and concepts.   The UK organisations

presented a collective Transformational Style of Leadership both from an 'Organisation' and 'Self'

perspective (i.e., ranked as '1'). As discussed, this bodes well for the successful completion of the four

phases of the innovation process described in Figure 2. However, the US health organisation presented a

collective dysfunctional 'Organisation' perspective ranging from ranging from Transactional to Aversive

to Laissez-faire.   I formed the view that the US study participants presented a collective

Transformational 'Self' perspective and demonstrated '**Group Cohesiveness**' so that they were able to

adapt their behaviour to the organisational situation. As a consequence, they were able to progress

through the innovation process described in Figure 2 successfully, but under stress.

The overall results of this study show that building an innovative health organisation requires

attention to the leadership styles of an organisation's leaders/managers, supported by leadership

theories and concepts that have been shown to encourage health innovation. This study presents a

'Leadership Framework' in Chapter 5.3: 'Leadership Framework', to enable leaders/managers to put the

preceding discussion in this thesis into action. However, as also discussed in this thesis, a focus solely on

developing a positive leadership style and aligning the eight theories and concepts among an

organisation's leaders/managers is no guarantee of success in innovation. As I have also discussed,

building an innovative health organisation is an iterative process as depicted in Figure 17, whereby the

organisational **'Context'** (e.g., operating environment) and '**Group Cohesiveness**' of an organisation's

leaders/managers and staff charged with driving innovation must also be simultaneously taken into

consideration.

Figure 17: Discussion of Research Study Collective Results: The Components of Building An Innovative Health Organisation
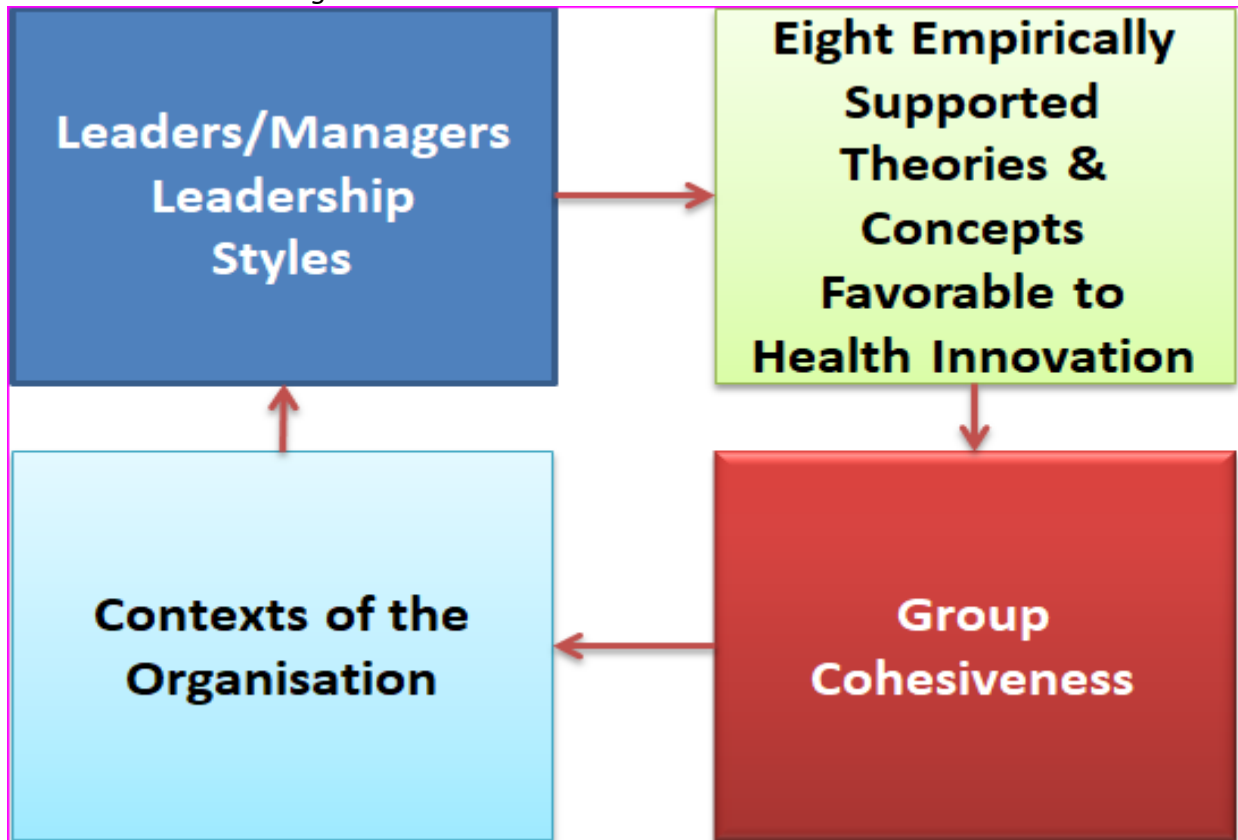
6.2 Study Recommendations for Policy Consideration

Contextually appropriate recommendations based on theory and empirical evidence are

summarized in Table 26.

Table 26: Study Recommendations

	Recommendations and Researcher's Comments
Chapter 5.2 Barriers & Facilitating Situations (Recommendations 1-5 for the NHS)	**Recommendation 1:** Develop an online clearing house of leadership training programmes accessible by cell phones or computers, including concise course descriptions and target audience, in terms of roles and experience. This should draw on the research on organisational '**Context'** and '**Group Cohesiveness**' mentioned in Chapter 5. **Comment:** There is a myriad of different leadership training programmes available in the UK, US and Europe. However, whether these courses clearly describe the competencies, learning outcomes and objectives that fit the career needs of each team member in different health organisation and their preferred manner of learning is not always clear. **Recommendation 2:** The NHS should commission a study, as soon as practical, to identify and analyse the many variables dampening collaboration among health organisations, including competition and conflicting Incentives. This too should draw on the research on organisational context proposed in Chapter 5. Once the findings are available the NHS should convene a meeting of representatives of different organisations and other stakeholders to solicit feedback and develop a plan of action. **Comment:** In this instance, the competition appears partially motivated by the funding and regulatory measures that each organisation must adhere to in order to have their funding or license renewed. In other words, researchers find themselves trying to please multiple masters each with a different set of measures. Also, some researchers confronted by this myriad of measures and conflicting incentives simply give up and the health innovation process ends before beginning the '***Capture'*** phase of the innovation process depicted in Figure 2. **Recommendation 3:** The role of bureaucracy in innovative health organisations should be subject to detailed scrutiny, with a focus on how it can support rather than impede innovation. This should be informed by the research mentioned in Chapter 5 on organisational '**Context**' and, especially, given their growing role in the workforce, the expectations of Millennials, who use technology in a quite different way than their predecessors. **Comment:** The interviewees in the US and UK recognized the necessity of a bureaucracy to deal with the process of documenting activities and various administrative actions. However, there was a general agreement that some, but not all the people tasked with these duties understood their role was to first make the organisation run effortlessly as well as in accords with good governance practices. Also, there is a strong case for a central contact point for researchers to obtain answers to their questions especially regarding the scaling up of innovations, fulfilling the role of a "help desk". **Recommendation 4**: I would recommend that the NHS and the other members of the 'Accelerated Access Partnership' begin a dialogue with the senior leadership of the 3M Company and the other organisations among the top 25 in a national survey in the recruitment and retention of Millennials-aged 35 and under, as a starting

	point for a complete research study of this barrier to health innovation. Again, this should be informed by the research on Millennials proposed in Chapter 5. **Comment:** The study's findings pointed to the recruitment and retention of Millennials-aged 35 and under as an issue for today and the future. This issue may pose considerations for the US and UK health organisation's senior administrative leadership regarding the improving innovation capacity of a health organisation. **Recommendation 5:** While the NHS' recent initiatives discussed herein are exciting and needed, a pathway for these more numerous smaller health innovations should be added to the added to the 'Framework 'to improve the '*Capture*' phase of the innovation process for the majority of health organisations. **Comment:** My interviewees repeatedly stated that many of their innovations were small and more than likely related to a quality process improvements which may directly affect the wellbeing of patients. It is important not to lose the '*Capture*' of these innovations because they do not fit a predetermined pathway.
Chapter 5.3 'Leadership Framework' (Recommendations 6-7 for UK Health Organisations)	**Recommendation 6:** To ascertain the collective leadership styles of an organisation and operationalise the results by the eight theories and concepts favourable to driving innovation, organisations should consider creating a 'Management Innovation Team' as described in the 'Leadership Framework', with an evaluation built into its implementation. **Comment:** Of course, implementation of this recommendation may vary considerably depending on the size and complexity of the health organisation. The 'Management Innovation Team' could be in an existing department in an organisation or a special task force. However, while the research in this thesis suggests that such a model could be effective, it will be essential to evaluate it in practice, and in particular to explore the role of **Context**, asking not just "does it work?" but "in what circumstances does it work?" **Recommendation 7:** The recruitment process of 'New Hires' should include the completion a confidential questionnaire to determine their leadership style aligned with the eight theories and concepts discussed in this thesis. For ease of use and to avoid any inordinate delays in the recruitment process, it is recommended that the survey questionnaire be included in an App. **Comment:** Building an innovative health organisation is not an overnight process. 'New Hires' are the building blocks of an innovative organisation.

Chapter 7 Conclusion

The overarching aim of my study has been to ascertain the leadership styles of health

leaders/managers of organisations charged with driving innovation in the UK (the primary focus of this

study) and a selected high-performing comparator in the US. I then sought to assess how these adopted

styles align with empirically supported leadership theories and concepts considered most likely to drive

much needed health innovation from an 'Organisation' and a 'Self perspective of the study participants.

With respect to the UK participants in this study, the leaders/managers, at multiple levels of

responsibility in six health organisations, presented a collective Transformational Style of Leadership

from an 'Organisation' and 'Self' perspective.

This positive style of leadership inspires the accomplishment of the mission/vision/values in the

health organisations studied and bodes well for the successful completion of all four phases of the

innovation process (searching for opportunities, selecting, and implementing, and capturing benefits)

within the NHS. However, as also discussed in this thesis, a focus solely on the leadership style of health

organisation leaders/managers and the alignment with the eight theories and concepts is no guarantee

of success in health innovation. Building an innovative health organisation is an iterative process where

the organisational '**Context**' (e.g., operating environment) and '**Group Cohesiveness**' of an

organisation's leaders/managers and staff charged with driving innovation must also be simultaneously

taken into consideration. The implications of organisational '**Context**' and '**Group Cohesiveness**' to

successful health innovation was also noted for further research.

Based upon the research performed, including a discussion of the barriers and facilitating

situations in connection with leadership of health innovation, seven contextually appropriate

recommendations were proposed for policy consideration to improve health innovation within the NHS

including a 'Leadership Framework.' As described in this thesis, the 'Leadership Framework' is a practical

tool that health organisations could use in-house to determine the leadership styles of health

leaders/managers and their alignment with eight empirically supported theories and concepts to best drive much needed health innovation.

My hope is this study can lead to improving the leadership of health innovation and the building of innovative health organisations. Thereby, making a contribution to reducing the estimated 17 years required to translate scientific discoveries into health actions in the UK and US (Brownson et al., 2006; Morris et al., 2011).

Chapter 8 Integrating Statement

In September 2014, I enrolled in LSHTM's DrPH Programme (the "Programme") with the

principle objectives of: 1.) improving upon my prior experience, education and training in leadership and

management; 2.) acquiring skills in applying the evidence base for public health outcomes to the

formation of policy; 3.) learning effective techniques for communication of public health policies to

health organisations and policymakers; and 4.) raising the level of my knowledge with respect to the

preceding objectives so I could confidently assume a senior public health leadership role in an

organisation in the private or public sectors. I believe I have achieved these objectives. As explained in

this integrating statement, this achievement was due to a variety of factors including:

a.) outstanding course instructors, instruction materials and opportunities to apply what I have

learned;

b.) the exceptional and timely guidance provided by my supervisor, Professor Martin McKee,

and members of my advisory committee; and

c.) the knowledge gained from my fellow research degree students and research study

participants.

The Programme is divided into the following three components:

1.)   **Taught Component**. This part of my studies was critical to successfully completing the

Organisational and Policy Analysis Project **(OPA)** and **Research-based Thesis** components of the

Programme.

The **Taught Component** included the 'Evidence based Public Health Policy & Practice Module

Session' (EBPHP) and the 'Understanding Leadership, Management & Organisations' Module Session

(ULMO).

The EBPHP course was focused on getting research evidence into policy and practice. The

course's objectives included:

a.) developing an understanding of the relationship between research and policy/practice;

 b.) critically evaluating published evidence;

 c). viewing cost-effectiveness and cost-benefit studies;

d.) ethnography and interviewing techniques; and

 e.) performing a systematic literature review.

 For example, the skills acquired in my EBPHP course enabled me to perform a literature review for my thesis which identified leadership styles and their implications to health innovation. I then related the leadership styles of senior leadership and management (leaders/managers) to eight empirically tested leadership theories and concepts favourable health innovation. This led to developing the overarching aim of my study which is to ascertain the leadership styles of health leaders/managers of organisations charged with driving innovation in the UK and in a selected high-performing comparator in the US. Going forward, I assessed how these adopted styles align with empirically supported leadership theories and concepts considered favourable to needed health innovation.

The ULMO course of instruction included a discussion of:

a.) comparative health systems;

 b.) management theory;

c.) management in the public sector;

d.) leadership styles held in a residential setting outside of the classroom;

e.) organisational culture;

f.) strategic management, management skills and evaluating a public health programme;

g.) working in networks and collaborating; and

h.) managing change.

The ULMO course prepared me to perform a strategic analysis of a health organisation in the United Kingdom (UK) as part of my **OPA**.

2.)   **OPA.** The **OPA** component of my professional doctorate was undertaken in an

Academic Health Science Network (AHSN); an organisation charged with fostering innovation in the

English National Health Service (NHS) in which I was embedded in for approximately three months in

2015. The objectives of the **OPA** as described in Weintraub (2016) included:

a. *"outlining the context and key influences on policy in relation to the specific public health issue*

and organisation chosen for the project;

b. *assessing the extent to which organisational factors and/or external relationships constrain or*

enhance the organization's ability to deliver its mandate;

c. *developing a clear, actionable policy or practical recommendations to increase the*

effectiveness of the organization in influencing or delivering its public health goals; and

d. *gaining experience in applying policy science and/or organisational management theories to*

the critical analysis of a real world organisational case study (Jonathan Cox, Course Director of DrPH

programme, personal communication, Introduction to the Organisational and Policy Analysis Project,

presented 28 October 2014)."

Consistent with the preceding course objectives, the aim of my **OPA** was to analyse how the

AHSN could meet both local/member objectives and national policy, whilst transferring from centrally to

locally funded over the next few years (P.Weintraub, personal communication to Joint EBPHP-ULMO

OPA Session, 16 December 2014).

The instruction in the **Taught Component** prepared me to achieve the aim of the **OPA**. For

example, a Strategic Analysis of the AHSN was performed to: 1.) develop clear, actionable policy and

practical recommendations to increase the effectiveness of the AHSN in influencing and/or delivering its

public health goals; and 2.) identify issues for further consideration by the AHSN arising from the

analysis performed. This Strategic analysis included suggesting improvements to the AHSN's value

proposition to potentially attract independent funding (Weintraub, 2016).

In connection with my **OPA**, I gained experience in interview techniques by performing semi-structured interviews of 18[22] study participants. Certain members of the Central Management Team were interviewed on multiple occasions to enhance triangulation of data sources over the course of the study. The interviews were then transcribed and coded line-by-line using NiVivo 10 to identify recurring themes. These themes informed and underpinned the Strategic Analysis of the AHSN I performed (Weintraub, 2016).

3.) Research-based Thesis.

Following completion of my **OPA**, I prepared a DrPH Review Report in order to demonstrate that I should be allowed to proceed to data collection and fieldwork and complete my thesis. The DrPH Review Committee approved my DrPH Review Report on 5 August 2016. As discussed in my **research-based thesis**, I asked one main question and one subsidiary question, including:

a. Do the styles of leadership adopted by leaders/managers in organisations charged with innovation in the health sector in the UK align with leadership theories and concepts empirically shown to encourage innovation? and

b. How do the leadership styles adopted by leaders/managers in these UK organisations compare with those seen in organisations adopting similar roles in the US that many of them aspire to emulate?

These research questions were inspired by my experience performing my **OPA**. While the AHSN's management and the wider NHS agreed that leadership was the key to health innovation, there was no practicable framework to guide leadership development. I developed a 'Leadership Framework' which aligned leadership styles of leaders/managers responsible for health innovation with empirically supported leadership theories and concepts shown favourable to health innovation (Weintraub (2016).

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[22] The AHSN had a total of 48 full-time and part-time management and staff including volunteers.

As part of my **research-based thesis**, I performed a literature review using skills gained in the

Taught Component and experience gained in performing interviews in my **OPA**. The literature review

convinced me that an Explanatory Sequential Mixed Methods approach would be a preferable method

to accomplish the aim and objectives of my **research-based thesis**. For example, in an Explanatory

Sequential Mixed Methods approach, data collection is performed "*in two distinct phases…"*

*T*he intent of this method is to use the qualitative phase to more fully explain the quantitative results.

However, the quantitative results in this approach can inform the qualitative questions posed (Creswell,

2014b, p. 224). Antonakis et al. (2003) reached a similar conclusion and recommended that future

leadership studies use a mixed-methods approach.

A survey questionnaire was employed in the quantitative phase of the study. There are

established questionnaires developed to test for leadership styles among leaders/managers which may

incorporate selected leadership theories and concepts that drive innovation (e.g., Bass and Avolio's

Multifactor Leadership Questionnaire [MLQ-Form 5X]) Antonakis et al. (2003). However, there is no

questionnaire to test for the alignment of leadership styles adopted by health organisation

leaders/managers covering the eight theories and concepts which, as described in my literature review,

may contribute to successful health innovations. As a result, I developed a questionnaire for this

research study to test for the relationship of different leadership styles and the eight leadership theories

and concepts innovation to accomplish the aim and objectives of this study.

The qualitative component of my research study began once an organisation's survey results had been

collected and analysed. It involved semi-structured interviews with approximately twenty percent of the

leaders/managers of the organisations who were selected to receive survey questionnaires. The initial

survey and interview questions were influenced by the literature review performed using skills learned

in the **Taught Component** and refined in my **OPA**.

I believe I achieved the objectives I set for myself in undertaking the Programme. A strong

indication of the achievement of these objectives is based upon the positive receptivity shown by senior

management representatives of leading health organisations to participate in my research study on

leadership of health innovation.

References

3M Company. (2002). A Century of Innovation. The 3M Story.   Retrieved from
    http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=9&ved=0ahUKE
    wia-
    Nr_0d7JAhVjzoMKHeeLAIkQFghRMAg&url=http%3A%2F%2Fmultimedia.3m.com%
    2Fmws%2Fmedia%2F171240O%2F3m-coi-book-
    tif.pdf&usg=AFQjCNFW9ayrJq15zMj4mi5mZ3qyj-2m0Q

3M Company. (n.d.). 3M. A culture of Innovation.

Aarons, G. A., Ehrhart, M. G., Farahnak, L. R., & Hurlburt, M. S. (2015). Leadership and
    organizational change for implementation (LOCI): a randomized mixed method pilot
    study of a leadership and organization development intervention for evidence-based
    practice implementation. *Implementation Science, 10*(1), 11.

Alderwick, H., Dunn, P., McKenna, H., Walsh, N., & Ham, C. (2016). Sustainability and
    transformation plans in the NHS How are they being developed in practice? *The King's
    Fund*.

Antes, A. L., Mart, A., & DuBois, J. M. (2016). Are Leadership and Management Essential for
    Good Research? An Interview Study of Genetic Researchers. *Journal of Empirical
    Research on Human Research Ethics, 11*(5), 408-423.

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.

Ardichvili, A., & Kuchinke, K. P. (2002). Leadership styles and cultural values among managers
    and subordinates: a comparative study of four countries of the former Soviet Union,
    Germany, and the US. *Human Resource Development International, 5*(1), 99-117.

Avolio, B. J. (2010). *Full range leadership development*: Sage.

Baker, W. E., Grinstein, A., & Harmancioglu, N. (2015). Whose Innovation Performance
    Benefits More from External Networks: Entrepreneurial or Conservative Firms? *Journal
    of Product Innovation Management*.

Balkundi, P., & Kilduff, M. (2006). The ties that lead: A social network approach to leadership.
    The leadership quarterly, 17(4), 419-439.

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.

Bernard, A. W., Lindsell, C. J., Handel, D. A., Collett, L., Gallo, P., Kaiser, K. D., & Locasto, D.
    (2007). Postal survey methodology to assess patient satisfaction in a suburban emergency
    medical services system: an observational study. *BMC emergency medicine, 7*(1), 5.

Borgatta, E. F., Bales, R. F., & Couch, A. S. (1954). Some findings relevant to the great man
    theory of leadership. *American Sociological Review, 19*(6), 755-759.

Brownson, R. C., Kreuter, M. W., Arrington, B. A., & True, W. R. (2006). Translating scientific
    discoveries into public health action: how can schools of public health move us forward?
    Public health reports, 97-103.

Bucciarelli, L. (2015). A Review of Innovation and Change Management: Stage Model and
    Power Influences.

Bullock, A., Dimond, R., Webb, K., Lovatt, J., Hardyman, W., & Stacey, M. (2015). How a
    mobile app supports the learning and practice of newly qualified doctors in the UK: an

intervention study. *BMC medical education, 15*(1), 71.

Bureau Of Labor Statistics. (2016). News Release-Employee Turnover in 2016.   Retrieved from http://www.bls.gov/news.release/pdf/tenure.pdf

Canedo, J. C., Graen, G., Grace, M., & Johnson, R. D. (2017). Navigating the new workplace: Technology, millennials, and accelerating HR innovation. *AIS Transactions on Human-Computer Interaction, 9*(3), 243-260.

Caridi-Zahavi, O., Carmeli, A., & Arazy, O. (2015). The Influence of CEOs' Visionary Innovation Leadership on the Performance of High-Technology Ventures: The Mediating Roles of Connectivity and Knowledge Integration. *Journal of Product Innovation Management*.

Center for Evidence Based Management. (n.d.). Critical Appraisal Questionnaires.   Retrieved from http://www.cebma.org/frequently-asked-questions/what-is-critical-appraisal/

Chesbrough, H., Vanhaverbeke, W., & West, J. (2006). *Open innovation: Researching a new paradigm*: Oxford University Press on Demand.

CLAHRC Partnership Programme. (2014). About CLAHRCs.   Retrieved from http://www.clahrcpp.co.uk/#!clahrcs/cjg9

Cohen, J. (1988). Statistical power analysis for the behavioral sciences. Erlbaum. *Hillsdale, NJ*.

Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management, 23*(3), 239-290.

Colbert, A. E., Judge, T. A., Choi, D., & Wang, G. (2012). Assessing the trait theory of leadership using self and observer ratings of personality: The mediating role of contributions to group success. *The leadership quarterly, 23*(4), 670-685.

Creswell, J. W. (2014a). *A concise introduction to mixed methods research*: Sage Publications.

Creswell, J. W. (2014b). *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage publications.

Currie, G., Lockett, A., & Enany, N. E. (2013). From what we know to what we do: lessons learned from the translational CLAHRC initiative in England. *Journal of health services research & policy, 18*(3_suppl), 27-39.

Currie, G., & White, L. (2012). Inter-professional barriers and knowledge brokering in an organizational context: the case of healthcare. *Organization Studies, 33*(10), 1333-1361.

Darzi, A. (2008). High quality care for all: NHS next stage review final report. *London: Department of Health*.

Deng, B. H., Bligh, M. C., Kohles, J. C., Schyns, B., & Hansbrough, T. (2010). *To err is human, to lead is divine? The role of leaders in learning from workplace mistakes*.

DePass, D. (2016, 14 June). 3M bumps Google out of top preferred workplace for millennials in survey. *Star Tribune*. Retrieved from http://www.startribune.com/3m-bumps-google-out-of-top-workplace-for-millennials-in-survey/383014671/

Directorate, R. a. D. (2006). Best Research for Best Health. A new national health research strategy.   Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/136578/dh_4127152.pdf

Elenkov, D. S., Judge, W., & Wright, P. (2005). Strategic leadership and executive innovation influence: an international multi-cluster comparative study. *Strategic Management Journal, 26*(7), 665-682.

England, N. (n.d.). NHS Innovation Accelerator.   Retrieved from https://www.england.nhs.uk/ourwork/innovation/nia/

Ferlie, E., Nicolini, D., Ledger, J., D'Andreta, D., Kravcenko, D., & de Pury, J. (2017). Health Services and Delivery Research *NHS top managers, knowledge exchange and leadership: the early development of Academic Health Science Networks - a mixed-methods study*. Southampton (UK): NIHR.

Fish, D. R. (2013). Academic health sciences networks in England. *The Lancet, 381*(9882), e18-e19.

Gapenski, L., Reiter, KL. (2016). Healthcare Finance: An Introduction to Accounting & Financial Healthcare Finance: An Introduction to Accounting & Financial Management, Sixth Edition. Chicago, IL. *43*(2).

Garrard, J. (2014). *Health sciences literature review made easy*: Jones & Bartlett Publishers.

Goffin, K., & Mitchell, R. (2010). *Innovation management: Strategy and implementation using the pentathlon framework* (Vol. 2): Palgrave Macmillan Houndmills, Basingstoke.

Gorton, W. A. (2012). *Karl Popper and the social sciences*: SUNY Press.

GOV.UK. (2016, 24 October). *Accelerated Access Review: Final Report: Review of innovative medicines and medical technologies*. Retrieved from https://www.gov.uk/government/organisations/accelerated-access-review.

GOV.UK. (2017 14 July). *£86 million funding announced for new medicine and technology*. Retrieved from Department of Health and Department for Business, Energy & Industrial Strategy.

Green, J., & Thorogood, N. (2013). *Qualitative methods for health research*: Sage.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational evaluation and policy analysis, 11*(3), 255-274.

Grootaert, C., & Van Bastelaer, T. (2002). *Understanding and measuring social capital: A multidisciplinary tool for practitioners* (Vol. 1): World Bank Publications.

Handy, C. B. (1996). *Gods of management: The changing work of organizations*: Oxford University Press, USA.

Harzing, A.-W., Baldueza, J., Barner-Rasmussen, W., Barzantny, C., Canabal, A., Davila, A., . . . Koester, K. (2009). Rating versus ranking: What is the best way to reduce response and language bias in cross-national research? *International Business Review, 18*(4), 417-432.

Helfrich, C. D., Weiner, B. J., McKinney, M. M., & Minasian, L. (2007). Determinants of implementation effectiveness adapting a framework for complex innovations. *Medical care research and review, 64*(3), 279-303.

Henderson, R. M., & Clark, K. B. (1990). Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms. *Administrative science quarterly*, 9-30.

Herbig, P., & Dunphy, S. (1998). Culture and innovation. *Cross Cultural Management: An International Journal, 5*(4), 13-21.

Hersey, P., Blanchard, K. H., & Johnson, D. E. (2007). *Management of organizational behavior* (Vol. 9): Prentice hall Upper Saddle River, NJ.

Hitt, M. A., Hoskisson, R. E., & Kim, H. (1997). International diversification: Effects on innovation and firm performance in product-diversified firms. *Academy of management journal, 40*(4), 767-798.

Hofstede, G. (1980). Motivation, leadership, and organization: do American theories apply abroad? *Organizational dynamics, 9*(1), 42-63.

Hogan, S. J., & Coote, L. V. (2014). Organizational culture, innovation, and performance: A test

of Schein's model. *Journal of Business Research, 67*(8), 1609-1621.

Jacobs, S. R., Weiner, B. J., Reeve, B. B., Hofmann, D. A., Christian, M., & Weinberger, M. (2015). Determining the predictors of innovation implementation in healthcare: a quantitative analysis of implementation effectiveness. *BMC health services research, 15*(1), 6.

James, L. R., James, L. A., & Ashe, D. K. (1990). The meaning of organizations: The role of cognition and values. *Organizational climate and culture, 40*, 84.

Jung, D. I., Chow, C., & Wu, A. (2003). The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings. *The leadership quarterly, 14*(4), 525-544.

Kirkbride, P. (2006). Developing transformational leaders: the full range leadership model in action. *Industrial and commercial training, 38*(1), 23-32.

Kyratsis, Y., Ahmad, R., & Holmes, A. (2012). Making sense of evidence in management decisions: the role of research-based knowledge on innovation adoption and implementation in healthcare. study protocol. *Implementation science : IS, 7*, 22.

Landry, R., Amara, N., & Lamari, M. (2002). Does social capital determine innovation? To what extent? *Technological forecasting and social change, 69*(7), 681-701.

Lewin, K., Lippitt, R., & White, R. K. (1939). Patterns of aggressive behavior in experimentally created "social climates". *The Journal of social psychology, 10*(2), 269-299.

Lewis, J., & Ricard, L. M. (2014). *Innovation capacity in the public sector: Structures, networks and leadership. LIPSE Working papers*. Rotterdam: Erasmus University.

Likert, R. (1967). The human organization: Its management and values.

LLC, Q. (2015). About Us. Retrieved from http://www.qualtrics.com/about/

Maxwell, J. A. (2012). *Qualitative research design: An interactive approach: An interactive approach*: Sage.

Mazzucato, M. (2015). *The entrepreneurial state: Debunking public vs. private sector myths* (Vol. 1): Anthem Press.

Miller, K. D., & Tsang, E. W. (2010). Testing management theories: critical realist philosophy and research methods. *Strategic Management Journal, 32*(2), 139-158.

Mintzberg, H. (2011). *Managing*: Berrett-Koehler Publishers.

Morris, Z. S., Wooding, S., & Grant, J. (2011). The answer is 17 years, what is the question: understanding time lags in translational research. *Journal of the Royal Society of Medicine, 104*(12), 510-520.

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.

National Science Foundation. (2014, June 14). NSF and NIH collaborate to accelerate advance of biomedical innovations into the marketplace. Retrieved from https://nsf.gov/news/news_summ.jsp?cntn_id=131760

NHS England. (2011, December 5). Innovation, Health and Wealth: Accelerating Adoption and Diffusion. Retrieved from http://webarchive.nationalarchives.gov.uk/20130107105354/http:/www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_134597.pdf

NHS England. (2011, December 5, p.1). Letter from Sir David Nicholson: Innovation Health and Wealth, Accelerating Adoption and Diffusion in the NHS. Retrieved from http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_131785.pdf

NHS England. (2012, June 20). Academic Health Science Networks.   Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/212789/Academic-Health-Science-Networks-21062012-gw-17626-PDF-229K.pdf

NHS England. (2015). News. We must meet the demands of a growing ageing population – Sir Bruce Keogh.   Retrieved from https://www.england.nhs.uk/2015/01/20/meet-demands-ageing-pop/

NHS England. (2017, 6 July). *NHS England-Board Paper-Developing our Academic Health Science Networks*. Retrieved from https://www.england.nhs.uk/wp-content/uploads/2017/07/06-pb-21-07-2017-developing-our-ahsns.pdf.

NHS England. (2017, 9 May). *The NHS England Innovation and Technology Tariff 2017 to 2019 Technical notes*. Retrieved from https://www.england.nhs.uk/resources/pay-syst/development/tech-tariff-17-19-technical-notes/.

NIHR. (2018). NIHR Collaborations for Leadership in Applied Health Research and Care (CLAHRCs).   Retrieved from https://www.nihr.ac.uk/about-us/how-we-are-managed/our-structure/infrastructure/collaborations-for-leadership-in-applied-health-research-and-care.htm

Nuffield Trust. (2016). NHS in Numbers: Key Charts.   Retrieved from http://www.nuffieldtrust.org.uk/nhs-numbers

Onwuegbuzie, A. J., & Collins, K. M. (2007). A typology of mixed methods sampling designs in social science research. *The qualitative report, 12*(2), 281-316.

Organisation for Economic Co-operation and Development. (2015, March 13). OECD.StatExtracts
 Retrieved from http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT

Oshagbemi, T., & Gill, R. (2004). Differences in leadership styles and behaviour across hierarchical levels in UK organisations. *Leadership & Organization Development Journal, 25*(1), 93-106.

Ovseiko, P. V., Heitmueller, A., Allen, P., Davies, S. M., Wells, G., Ford, G. A., . . . Buchan, A. M. (2014). Improving accountability through alignment: the role of academic health science centres and networks in England. *BMC health services research, 14*(1), 24.

Passariello, C. (n.d., 27 July 2017). How Jony Ive Masterminded Apple's New Headquarters. *Wall Street Journal*. Retrieved from https://www.wsj.com/articles/how-jony-ive-masterminded-apples-new-headquarters-1501063201

Patton, M. Q. (1999). Enhancing the quality and credibility of qualitative analysis. *Health services research, 34*(5 Pt 2), 1189.

Phillips, W., Johnsen, T., Caldwell, N., & Lewis, M. A. (2006). Investigating innovation in complex health care supply networks: an initial conceptual framework. *Health Services Management Research, 19*(3), 197-206.

Pihlainen, V., Kivinen, T., & Lammintakanen, J. (2016). Management and leadership competence in hospitals: a systematic literature review. *Leadership in Health Services, 29*(1), 95-110.

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., . . . Duffy, S. (2006). Guidance on the conduct of narrative synthesis in systematic reviews. *A product from the ESRC methods programme Version, 1*, b92.

RAND Corporation. (2016). Evaluating the role and contribution of innovation to health and wealth ... A review of Innovation, Health and Wealth: Phase 1 Appendix.   Retrieved from http://www.rand.org/pubs/research_reports/RR1143z1.html

Rea, L. M., & Parker, R. A. (2014). *Designing and conducting survey research: A comprehensive guide*: John Wiley & Sons.

Reporter (2017). ... faculty …leadership. …*Review*.

Rogers, E. M. (2010). *Diffusion of innovations*: Simon and Schuster.

Rowley, T. J. (1997). Moving beyond dyadic ties: A network theory of stakeholder influences. *Academy of management Review, 22*(4), 887-910.

Scarbrough, H., D'Andreta, D., Evans, S., Marabelli, M., Newell, S., Powell, J., & Swan, J. (2014). Networked innovation in the health sector: comparative qualitative study of the role of Collaborations for Leadership in Applied Health Research and Care in translating research into practice. *Health Serv Deliv Res, 2*, 13.

Schein, E. H. (2010). *Organizational culture and leadership* (Vol. 2). Chichester: John Wiley & Sons.

Schermuly, C. C., Meyer, B., & Dammer, L. (2013). Leader-Member Exchange and Innovative Behavior: The Mediating Role of Psychological Empowerment. *Journal of Personnel Psychology, 12*(3), 132-142.

Schippers, M. C., West, M. A., & Dawson, J. F. (2015). Team reflexivity and innovation: The moderating role of team context. *Journal of Management*, 0149206312441210.

Schumpeter, J. A. (2010). *Capitalism, socialism and democracy*: routledge.

Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of management journal, 37*(3), 580-607.

Storey, J., & Holti, R. (2013). Towards a New Model of Leadership for the NHS.

Swinscow, T. D. V., & Campbell, M. J. (2006). *Statistics at square one*. London: BMJ.

The Commonwealth Fund. (2015, October 8). U.S. Health Care from a Global Perspective. Retrieved from http://www.commonwealthfund.org/publications/issue-briefs/2015/oct/us-health-care-from-a-global-perspective

Tidd, T., & Bessant, J. (2013). *Managing Innovation: Integrating Technological, Market and Organizational Change-5/E.*

Torres, F. C., Espinosa, J. C., Dornberger, U., & Acosta, Y. A. C. (2017). Leadership and Employees' Innovative Work Behavior: Test of a Mediation and Moderation Model. *Asian Social Science, 13*(9), 9.

Vroom, V. H., & Yetton, P. W. (1973). *Leadership and decision-making* (Vol. 110): University of Pittsburgh Pre.

Walshe, K., & Davies, H. T. (2013). Health research, development and innovation in England from 1988 to 2013: from research production to knowledge mobilization. *Journal of health services research & policy, 18*(3 suppl), 1-12.

Way, N., Stauber, H. Y., Nakkula, M. J., & London, P. (1994). Depression and substance use in two divergent high school cultures: A quantitative and qualitative analysis. *Journal of Youth and Adolescence, 23*(3), 331-357.

Weberg, D. (2009). Innovation in Healthcare: A Concept Analysis. *Nursing Administration Quarterly Innovations in Transforming Organizations, 33*(3), 227-237.

Weintraub, P. (2016). *Organisational and Policy Analysis Report*.

Weng, R.-H., Huang, C.-Y., Chen, L.-M. M. S., & Chang, L.-Y. M. S. (2015). Exploring the impact of transformational leadership on nurse innovation behaviour: a cross-sectional study. *Journal of Nursing Management, 23*(4), 427-439.

Weng, R. H., Huang, C. Y., Huang, J. A., & Wang, M. H. (2012). The cross-level impact of patient safety climate on nursing innovation: a cross-sectional questionnaire survey.

Journal of clinical nursing, 21(15-16), 2262-2274.

West, M., Armit, K., Eckert, R., West, T., & Lee, A. (2015). Leadership and leadership development in health care: The evidence base. (February 2015), 33.

West, M. A., & Anderson, N. R. (1996). Innovation in Top Management Teams. *Journal of Applied Psychology, 81*(6), 680-693.

West, M. A., Borrill, C. S., Dawson, J. F., Brodbec, F., Shapiro, D. A., & Haward, B. (2003). Leadership clarity and team innovation in health care. *The leadership quarterly, 14*(4), 393-410.

Wisdom, J. P., Chor, K. H. B., Hoagwood, K. E., & Horwitz, S. M. (2014). Innovation adoption: a review of theories and constructs. *Administration and Policy in Mental Health and Mental Health Services Research, 41*(4), 480-502.

Yan, Q., Bligh, M. C., & Kohles, J. C. (2014). Absence Makes the Errors Go Longer: How Leaders Inhibit Learning From Errors. *Zeitschrift fur Psychologie/Journal of Psychology, 222*(4), 233-245.

Yukl, G. A. (2006). *Leadership in organizations*. London: Pearson.

Zachariadis, M., Oborn, E., Barrett, M., & Zollinger-Read, P. (2013). Leadership of healthcare commissioning networks in England: A mixed-methods study on clinical commissioning groups. *BMJ Open, 3*(2).

Zampieron, A., Spanio, D., Bernardi, P., Milan, R., & Buja, A. (2013). Nurse managers' preferred and perceived leadership styles: a study at an Italian hospital. *Journal of Nursing Management, 21*(3), 521-528.

Appendices

Appendix A: Survey Questionnaire

Research Study- Leadership of Health Innovation: Building an Innovative Health Organisation

Thank you for taking part in this research study.

To complete the survey questionnaire:

A.) Please complete questions 1-6 regarding your organisational role and the number of people who work in your organisation.

B.) For questions 7-14 you will be asked to rank the four statements in order of 'best fit' to the leadership styles that characterise your organisation, as a whole (i.e., Organisation Column) and 'best fit" reflecting your personal leadership style (i.e., Self Column). To rank the four statements, put a "1" by the statement that is the 'best fit', "2" by the next best, and so forth (e.g., 1 = Best Fit; 4 = Lowest Fit) in the 'Organisation' and 'Self' columns. Please indicate a single response for each of the statements (a.-d.) for the 'Organisation' and 'Self'. Thereby, completing a single ranking of each statement for the 'Organisation' and 'Self'. From your organisation and personal perspectives, please consider the main drivers which provide impetus or motivation and drive innovation which are typical, respectively, of your organisation and then your personal leadership style. For purposes of this survey, leaders include senior leadership and managers unless otherwise noted. Innovation is defined as the multi-stage process of creating, selection, implementation and capture of the value of new concepts, processes and/or products.   When you have completed the survey press the 'Submit' button located after Question 14 as described in the email instructions. Again, your responses will remain anonymous.

Thank you for your participation.

Kind regards,

Philip

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Q1 What is your current role in the organisation?
○ Executive Leadership
○ Managerial leadership
○ Professional specialty
○ Technical support
○ Administrative support or incl. clerical

Q2 What is your age?
○ Under 35
○ 35-44
○ 45-54
○ 55 and over

Q3 What is your length of time with the Organisation?
○ Below 1 year
○ 1-2 years
○ 2-5 years
○ 5 -10 years
○ Over ten years

Q4 What is the highest level of education you have completed?
○ Degree
○ Master's Degree
○ Doctoral Degree
○ Professional Degree (JD, MD)
○ Other _____

Q5 What is your gender?
○ Other
○ Male
○ Female

Q6 How many people work in your organisation including independent contractors and volunteers?
○ 1–50
○ 51–100
○ 101–999
○ 1000–4999
○ 5000+

For the following questions, 7-14, you will be asked to rank the four statements in order of 'best fit' to the leadership styles that characterize your organisation, as a whole (i.e., Organisation Column) and 'best fit" reflecting your personal leadership style (i.e., Self Column). To rank the four statements, put a "1" by the statement that is the 'best fit', "2" by the next best, and so forth (e.g., 1 = Best Fit; 4 = Lowest Fit) in the 'Organisation' and 'Self' columns. Please indicate a single response for each of the statements (a.-d.) for the 'Organisation' and 'Self' with a single ranking for each of the four statements. However, what if you receive in an Error Message and cannot advance to the next page in the survey? Please click here: https://www.screencast.com/users/HealthInnovation/folders/Default/media/c1200dc2-38c5-4af2-ade1-130fc93c432e

Q7 Please rank the 'Psychological Climate' of your organisation from the 'Organisation' perspective and your 'Self ' perspective with respect to health innovation. The Psychological Climate of an organisation includes the: 1.) level of leadership support; 2.) extent to which innovation is championed; 3.) setting of expectations for innovation and 4.) use of rewards.

	Rank 'Organisation'				Rank 'Self'			
	1	2	3	4	1	2	3	4
a. Leaders set high expectations for health innovation with commensurate rewards for success.	○	○	○	○	○	○	○	○
b.Health innovation is included in standard policies and procedures.	○	○	○	○	○	○	○	○
c. Health innovation ideas, if any at all, flow down from the top of the organisation and failure to implement an idea is not an option.	○	○	○	○	○	○	○	○
d. Leaders offer freedom to pursue health innovation, but proponents of ideas are on their own to succeed or fail.	○	○	○	○	○	○	○	○

Q8 Leader Member-Exchange (LM X) is the quality of the leaders' relationships with workers. Please rank the 'LMX' of your organisation from the 'Organisation' perspective and your own 'Self' perspective.

	Rank 'Organisation'				Rank 'Self'			
	1	2	3	4	1	2	3	4
a. Leaders encourage quality individual LMX relationships.	○	○	○	○	○	○	○	○
b. Quality LMX relationships develop as a consequence of individual initiative unless discouraged by specific organisation policies and procedures.	○	○	○	○	○	○	○	○
c. Quality LMX relationships exist, but at a risk. Failure to precisely follow the organisation rules with respect to these relationships could result in a harsh reaction from senior leaders.	○	○	○	○	○	○	○	○
d. Leaders of the organisation are detached with respect to these LMX relationships.	○	○	○	○	○	○	○	○

Q9 Social Capital is the knowledge gained by leaders through participation in associations, conferences, business networks and social media and its dissemination within the organisation. Please rank the 'Social Capital' of your organisation from the 'Organisation' perspective and your own 'Self' perspective.

	Rank 'Self'				Rank 'Organisation'			
	1	2	3	4	1	2	3	4
a. Leaders continuously leverage Social Capital to transfer innovative ideas to workers.	○	○	○	○	○	○	○	○
b. Leaders leverage Social Capital only as specified by organisation policies and procedures.	○	○	○	○	○	○	○	○
c. The exchange of knowledge outside of the organisation is strongly discouraged. Violation of this policy may lead to dismissal from the organisation.	○	○	○	○	○	○	○	○
d. A leader's acquisition of Social Capital is not supported.	○	○	○	○	○	○	○	○

Q10 Leadership Clarity is when leaders understand and communicate organisational objectives, worker expectations and a commitment to excellence to health innovation. Please rank the 'Leadership Clarity' of your organisation from the 'Organisation' perspective and your own 'Self' perspective.

	Rank 'Organisation'				Rank 'Self'			
	1	2	3	4	1	2	3	4
a. Leaders clearly understand and communicate the vision, mission and values of the organisation.	○	○	○	○	○	○	○	○
b. Leadership Clarity is defined as following the organisation's policies and procedures.	○	○	○	○	○	○	○	○
c. Leadership Clarity is absent and workers are cautious whether to discuss innovative ideas.	○	○	○	○	○	○	○	○
d. Leaders' responsibilities are unclear making it difficult to set worker expectations to generate new ideas.	○	○	○	○	○	○	○	○

Q11 The degree of 'Organisational Reflectivity' refers to whether leaders create opportunities for workers to discuss health innovation projects inside and outside the traditional work environment with colleagues or others. Please rank the 'Organisational Reflectivity' of your organisation from the 'Organisation' perspective and your own 'Self' perspective.

	Rank 'Organisation'				Rank 'Self'			
	1	2	3	4	1	2	3	4
a.) Leaders facilitate opportunities for workers to discuss innovative projects by organizing forums both inside and outside of the organisation or providing time off to generate new ideas.	○	○	○	○	○	○	○	○
b.) Organisation policies and procedures govern the extent workers can discuss innovative projects.	○	○	○	○	○	○	○	○
c.) Communication between organisation project teams is discouraged.	○	○	○	○	○	○	○	○
d.) Leaders are ambivalent regarding the need for project teams to discuss innovative ideas.	○	○	○	○	○	○	○	○

Q12 'Growth' mindset workers have a willingness to learn from errors and accept change. 'Fixed' mindset workers prefer long-term stability. Please rank the mindset of your organisation from the 'Organisation' perspective and your own 'Self' perspective.

	Rank 'Organisation'				Rank 'Self'			
	1	2	3	4	1	2	3	4
a. Leaders encourage workers to accept change and exceed their job description.	❍	❍	❍	❍	❍	❍	❍	❍
b. Leaders principally recruit 'Fixed' Mindset workers who prefer long-term stability.	❍	❍	❍	❍	❍	❍	❍	❍
c. Leaders principally recruit workers who do not challenge them.	❍	❍	❍	❍	❍	❍	❍	❍
d. Leaders recruit workers without regard to their mindset.	❍	❍	❍	❍	❍	❍	❍	❍

Q13 Organisation 'Culture' refers to the values and beliefs which set the expectations for innovative behaviour. Please rank the 'Organisation Culture' of your organisation from the 'Organisation' perspective and your own 'Self' perspective regarding health innovation.

	Rank 'Organisation'				Rank 'Self'			
	1	2	3	4	1	2	3	4
a. Leaders encourage workers to be open to new innovative ideas and take risks to develop them.	○	○	○	○	○	○	○	○
b. Leaders expect workers to follow policies and procedures in connection with developing new ideas.	○	○	○	○	○	○	○	○
c. Leaders expect workers to not challenge the status-quo.	○	○	○	○	○	○	○	○
d. Leaders do not appreciate the efforts of workers to develop new ideas.	○	○	○	○	○	○	○	○

Q14 Please rank the following question responses solely with respect to senior leadership's impact upon the 'Organisation' and then solely from your 'Self' perspective.

	Rank 'Organisation'				Rank 'Self'			
	1	2	3	4	1	2	3	4
a. Senior leadership leads the organisation by example by inspiring and motivating workers to experiment with new ideas.	○	○	○	○	○	○	○	○
b. Senior leadership leads by issuing organisational policies and procedures.	○	○	○	○	○	○	○	○
c. Senior leadership does not tolerate errors and promotes a risk-averse culture.	○	○	○	○	○	○	○	○
d. Senior leadership delegates organisational responsibilities and does not lead by example and refrains from motivational efforts.	○	○	○	○	○	○	○	○

Appendix B: Information Note

Research Study- Leadership of Health Innovation: Building an Innovative Health Organisation

Information Note

Date: _____

You are being invited to take part in a research study. Before you decide to participate it is important for you to understand why the research study is being performed and what it will involve. Please take time to read the following information carefully and to talk to others about the study, if you wish. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

My name is Philip Weintraub and I am a doctoral student at the London School of Hygiene and Tropical Medicine. I would like to invite you to take part in a research study of the leadership of health innovation of the _____. This research study is being conducted with the full support of London School of Hygiene and Tropical Medicine (LSHTM) to help health organisations and their leaders/managers reflect on their ways of improving the leadership of health innovation throughout the health industry sector, but also as part of my doctoral training.

Study Aim: The overarching aim of the research study is to ascertain the leadership styles of health leaders/managers of organisations charged with driving innovation in the UK and in a selected high-performing comparator in the US and assess how these adopted styles align with leading management theories considered most likely to drive much needed health innovation.

Study Objectives: Objectives will include: 1.) Identify empirically tested concepts and theories that should promote health innovation; 2.) Map the leadership styles adopted by senior management in the UK and US organisations promoting innovation onto the leadership theories and concepts identified in the literature review; 3.) Assess the extent to which senior leadership styles in these organisations align with the leadership styles of lower levels of leaders/managers of the same organisations; 4.) Assess the extent to which the survey instrument captures the leadership styles of the organisations; 5.) Identify the ways in which the leadership styles adopted either promote or inhibit innovation in each of the organisations and the extent to which this varies in the different '**Contexts**' in the two countries; and 6.) Compare and contrast leadership styles in each country to critically assess the potential to impact on innovation.

Research Methodology:

To accomplish the aim of this research study, the study uses a mixed method approach commencing with a review of the literature on leadership styles and innovation, which in turn informs the development of an instrument that will be used in a survey questionnaire (estimated 15 minutes completion time) for those in leader/manager roles. The survey questions are linked to each supported management theory and concept identified in a literature review and seeks to identify the leadership style adopted in a health organisation.

I will email the survey questionnaire to participants using the Qualtrics web-based software assuring the

each respondent's completed survey will remain anonymous and secure. Approximately twenty percent of the participants (including respondents and non-respondents) will be purposively selected for an interview which will last approximately 30 minutes. Questions will be entirely focused on your experiences. If at any point you feel uncomfortable and would like to stop, you may withdraw from the interview and study without giving a reason.

I, Philip Weintraub, will be responsible for maintaining confidentiality of survey and interview materials. All anonymous respondent survey questionnaire replies and transcripts of the interviews will be stored in password-secured files. These might be quoted in scientific publications with no reference to your name, age, gender or profession, in order to ensure confidentiality. However, you have the option of not being quoted anonymously. Along with this information sheet, you will be provided with a separate form giving consent to your participation in the interview. The London School of Hygiene and Tropical Medicine Ethics Committee has approved the study. My contact details are written below. You can contact me at any point with any questions or comments.

Kind regards,

Philip Weintraub
Public Health & Policy, DrPH Student

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Appendix C: Consent Form

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Informed Consent Form

Project title: Research Study- Leadership of Health Innovation: Building an Innovative Health Organisation

Consent form version and date: Version.101, _____
Investigator: Philip Weintraub

Please initial:

I confirm that I have read and understood the Information Note dated _____for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily	
I understand that my participation is voluntary and that I can stop the survey questionnaire and the interview at any time without giving a reason	
I understand that if I decide to stop the survey questionnaire and the interview all data collected will be destroyed	
I agree to take part in the research study	
I understand that recording the interview is optional. By ticking this box, I agree to have this interview recorded	
I understand that any quotations used in writing up the study findings will be used anonymously and I consent to this	

 Name of Participant (please print):

Signed: Date:

Name of Researcher (please print):

Signed: Date:

Complete in duplicate
One copy to be retained by participant
One copy to be retained by researcher

Appendix D: Research Protocol

Research Study Summary

The research study is titled: Leadership of Health Innovation: Building an Innovative Health Organisation

Philip Weintraub is the sole investigator under the supervision of Professor Martin McKee, CBE. In addition, each health organisation selected for study will be asked to provide a named main contact for Philip Weintraub to help ensure that his purpose and objectives are obtained. The named main contact will make staff available to meet with Philip Weintraub as required by his research and provide documents as required by his research.

Leadership of innovation has been shown to be a critical element in innovative health research, education and improvements in high-quality health care (Storey & Holti, 2013). Yet while leadership has been researched extensively, there is a paucity of studies within the health sector, and even less on senior leadership and innovation (Goffin & Mitchell, 2010; Ovseiko, et al., 2014; Weberg, 2009; West et al., 2015).

This research study will be undertaken at the office of the: 1.) single researcher in the UK and the US; 2.) London School of Hygiene and Tropical Medicine (LSHTM); and 3.) selected participating health organisations in connection with interviews. This research study uses a mixed-methods approach. In this

instance, an Explanatory Sequential Mixed Method approach was used. This research design initially

uses quantitative data collection and analysis employing a survey questionnaire to assess theories

supporting innovation. The survey questions are organized under each supported management theory and

concept identified and is linked with an organisation's leadership style. This quantitative approach is followed-

up with qualitative data collection using interviews and analysis. The combined results are then interpreted

to develop a feasible framework to determine which leadership styles of health leaders/managers are

most likely to drive much needed health innovation. Consideration has been given to data management,

dissemination of the research study results and ethical issues.

General information
**Protocol: Research Study- Leadership of Health Innovation: Building an Innovative Health
Organisation**-Dated: _____ At this time, there is no sponsor.

Supervisor: Professor Martin McKee CBE
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Rationale and background information

The UK and the US health systems are both focused on improving leadership of health innovation as a means

of improving health outcomes and reducing health system costs. For example, both health systems

recognize the importance of the diffusion and spread of research innovation to improve health

outcomes. This is considered the key to meet the health challenges posed by, among other factors, an

aging UK and US population. The publication, *High quality care for all: NHS next stage review final

report,* recommended the formation of "*Academic Health Science Centers (AHSCs) to bring together a

small number of health and academic partners to focus on world-class research, teaching and patient

care*". AHSCs were originally formed in the US decades prior to this recommendation (Research and

Development, Directorate, Department of Health, 2006, p.2; Darzi, 2008, p.57). In 2009, this led to the

formation of the first AHSCs *"to foster medical innovation and high quality care throughout hospitals"*

which were initially funded in October 2008 (Ovseiko, et al., p. 4). In 2012, this recognition led to the

invitation to form AHSNs as an organisation to network with CLAHRCs, ACHSCs, all parts of the NHS and

the local community to improve health and wealth.

In order to accomplish the aim of this research study, a pragmatic worldview (i.e., a conceptual framework)

is used in this research study. A pragmatic conceptual framework focuses attention on the research

problem and uses *"pluralistic approaches to derive knowledge about the problem"* (Creswell, 2014a,

p.11).

Study design: An Explanatory Sequential Mixed Method approach.

A. Quantitative Data Collection and Analysis

The survey questionnaire will be applied to the senior leadership and management of health

organisations who have the responsibility for leading health innovation in the UK or the US.

To distinguish these health organisations, selection will be limited to organisations designated

either as AHSNs, CLAHRCs or AHSNs to determine a pattern of leadership style(s).The survey

questionnaires would be developed using the Qualtrics web-based survey software tool[23]. This

survey software tool is used by over 7,000 organisations in 75 countries including over 1600

colleges/universities (Qualtrics, LLC, 2015).

As noted in the High Timeline, this study is being self-funded by the single researcher who will be

responsible to arrange for the participation of health organisations in the UK and US. The

Investigator's Curriculum Vitae is summarized in the accompanying Research Protocol. The

survey questionnaires will be emailed to selected participants under the control of the single

researcher. The survey questionnaire will be structured to facilitate statistical analysis according to pre-

determined respondent categorical nominal variables [i.e., 1.) Individual Respondent: age; sex;

organisational role; tenure with organisation; years in current role; years employed; and education

level achieved; and 2.) Organisation: Company age; number of employees] (Mumford et al., 2002 &

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[23] *Security Statement*

Qualtrics, LLC (2015*) "uses Transport Layer Security (TLS) encryption (also known as HTTPS) for all transmitted data. We also protect surveys with passwords and HTTP referrer checking. Our data is hosted by third party data centers that are SSAE-16 SOC II certified. All data at rest are encrypted, and data on deprecated hard drives are destroyed by U.S. DOD methods and delivered to a third-party data destruction service. Qualtrics deploys the general requirements set forth by many Federal Acts including the FISMA Act of 2002. We meet or exceed the minimum requirements as outlined in FIPS Publication 200.*

HIPAA Statement: With some restrictions, Qualtrics may be designated as a Business Associate when the Qualtrics BA Agreement is signed with a Covered Entity—those organizations that are required to comply with HIPAA privacy rules. All client data are considered confidential, and treated as such, with no specific designation (such as medical (PHI), PII, or public). Therefore there is a duty of care that Qualtrics must have with PII data.

Related to HIPAA, HITECH (Health Information Technology for Economic and Clinical Health Act) are updated assessment rules to ensure that data are properly protected and best security practices followed. By using secure and certified data centers, Qualtrics ensures the highest protection and testing as per HITECH requirements."

Hitt et al., 1997, as cited in Jung, 2003)].

B. *Qualitative Data Collection and Analysis*

Upon completion of the quantitative data collection, the single researcher will conduct purposively

selected interviews of approximately twenty percent the leaders/managers of these

organisations which were selected for testing by survey questionnaires. These interviews will

complement the collective results of the survey questionnaires (e.g., offer insight into the operating

environment of the organisation) and will be conducted either face-to-face, by telephone, email or

other communication technology depending on the locality and availability of key informants. It is

estimated that these interviews will last approximately 30 minutes each. The interviews will follow a

semi-structured, open-ended format allowing the participant to offer further information and

provide opinions for the interviewer to pursue other lines of questioning where relevant.

It is initially estimated that survey data will be collected from no more than 150 persons while interviews

will be conducted with approximately 30 individuals. This is not a hypothesis testing study, but rather one

to identify emerging themes, so formal sample size testing is not appropriate (Swinscow & Campbell,

2006).

Methodology

It is estimated that survey data will be collected from no more than 150 individuals and interviews of
approximately 30 survey questionnaire recipients. Particular attention will be given to preserving
confidentiality and anonymity. In order to maintain confidentiality, the following steps will be taken:

1.) The Qualtrics web-based software will be used. This system allows for the survey questionnaire to: 1.) be

communicate by email; 2.) protect identities of the respondents to remain anonymous; 3.) include pre-

set email reminder notices and 4.) export the results of the survey to perform further analysis.

2.) To protect the confidentiality of the purposively selected interview participants, each participant

will be assigned a unique Study Identification Number (SID) and the coding book linking them to

personal identifiers will be maintained securely. At the completion of the study, the

identification numbers will be de-linked from personal identifiers. This procedure will ensure

that no data can be linked back to an individual.

3.) Data will, in general, be presented in aggregate form in all reports (with the exception of specific

quotes – see item 4 below).

4.) If quotations are used to illustrate a point, each participant will be given the opportunity to read

their section/quotations of the analysis before it is included in any reports and will be given the

option of not being quoted at all, anonymously or otherwise.

Data management and analysis

The data will be stored anonymously on a dedicated PC hard disk and appropriate backup on the LSHTM

server. All data analysis will be performed by Philip Weintraub and reviewed by Professor Martin Mckee,

CBE.

Dissemination of results

1.) Except as required for the evaluation of Philip Weintraub's professional doctorate studies the

research study will be confidential except as specifically agreed with the selected participating

health organisations. This will include the use of the research by the researcher for articles in

published journals.

2.) The selected participating health organisations will be free to make any use of any analysis and

recommendations contained within any reports as they see fit without either seeking further

permission from, or by paying any consultancy fee to, either Philip Weintraub or the London

School of Hygiene and Tropical Medicine.

3.) The selected participating health organisations shall suitably acknowledge Philip Weintraub's

work alongside any subsequent reprinting or quoting of his research.

4.) Philip Weintraub will periodically discuss the results of his work with selected participating

health organisations and a final graded copy of the research study included in his thesis will be

provided, if requested.

Problems anticipated: None noted-however-the investigator may be contacted at any point with any

questions or comments.

Project management

Philip Weintraub is the sole investigator under the supervision of Professor Martin Mckee, CBE. In

addition, selected participating health organisations will provide a named main contact for Philip

Weintraub to help ensure that his purpose and objectives are obtained. The named main contact will

make staff available to meet with Philip Weintraub as required by his research and provide documents

as required by his research.

Ethical considerations

Prior to the commencement of the research study at the selected participating health organisations,

participants in this research study will be informed that the student/investigator is involved in DrPH

research study in connection with his thesis. They will be provided with information about the research

study (see attached *Information Note*) and their agreement for the commencement of the research

study will be obtained. In addition, an *Informed Consent Form* will be provided to each interview

participant, as necessary. This Research Protocol has been approved by the Observational /

Interventions Research Ethics Committee of the London School of Hygiene and Tropical Medicine.

Informed Consent Form- Enclosed.

Investigator Curriculum Vitae: Summary[24]

Mr. Weintraub's prior business experience includes serving as president and chief executive officer of companies in the computer information services, investment banking, healthcare consulting and the financial services industry as well as an audit partner with the international public accounting firm of Deloitte LLP (formerly Deloitte Haskins & Sells). His prior government service includes serving as the Special Assistant to the Vice-Chairman of the Board of Governors of the Federal Reserve System. Mr. Weintraub received an award recognizing his service to the federal government by a President of the United States of America.

Mr. Weintraub was awarded an MSc in Public Health from the University of London and a Post-Graduate Diploma in Public Health (DLSHTM) from the London School of Hygiene and Tropical Medicine; the United Kingdom's Graduate Medical School. Mr. Weintraub is attending the London School of Hygiene & Tropical Medicine's DrPH programme in Public Health & Policy, Department of Health Services Research and Policy.

Mr. Weintraub has focused on the delivery of quality public health including serving as a trustee, member of the executive and finance committees and the treasurer of a medical center. He subsequently served as a member of a county's healthcare district's finance committee and as a member of selected task groups. He has served as a manuscript reviewer for the Annals of Internal

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[24] A complete Curriculum Vitae is available upon request.

Medicine, American College of Physicians, as part of its peer review process. In April 2011, he was

recognized by the Annals of Internal Medicine as one of the best manuscript reviewers of 2010. In June

2013, he completed the *Quality Matters Applying the QM Rubric* (*APP*) online workshop. In 2015, he

served as a Doctoral Researcher in connection with an organisational and policy analysis of an AHSN in

the United Kingdom. As a consequence of his experience, he has high level contacts with leading health

organisations in the UK and the US.

Since 2011, Mr. Weintraub has developed and taught long distance courses at the Kent State University,

College of Public Health. These courses include *Health Care Finance* for the University's Ph.D.

programme in Public Health in the specialization of Health Policy and *Financial Management for Public

Health Organisations* in the Masters of Public Health in Health Policy and Management Leadership and

Organisational Change Elective Option*.* He is an experienced instructor using an integrated instructional

approach including computer based learning systems such as the Blackboard Learn™ system and ISpring

Pro© with emphasis on collaborative applications to motivate student performance.

References

Creswell, J. W. (2014a). *Research design: Qualitative, quantitative, and mixed methods approach*. Sage

      publications.

Creswell, J. W. (2014b). *A concise introduction to mixed methods research*. Sage Publications.

Darzi, A. (2008). *High quality care for all: NHS next stage review final report* (Vol*.* 7432). The Stationery

      Office.

Goffin, K., & Mitchell, R. (2010). *Innovation management: Strategy and implementation using the

      pentathlon framework* (2nd Ed.). Houndmills, Basingstoke: Palgrave Macmillan.

Hitt, M. A., Hoskisson, R. E., & Kim, H. (1997). International diversification: Effects on innovation and

firm performance in product-diversified firms. *Academy of Management journal*, *40*(4), 767-798.

Jung, D. I., Chow, C., & Wu, A. (2003). The role of transformational leadership in enhancing

Organisational innovation: Hypotheses and some preliminary findings. *The Leadership Quarterly,*

14(4), 525-544.

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.

Ovseiko, P. V., Heitmueller, A., Allen, P., Davies, S. M., Wells, G., Ford, G. A., ... & Buchan, A.M. (2014).

Improving accountability through alignment: the role of academic health science centres and

networks in England. *BMC health services research*, *14*(1), 24.

Qualtrics, LLC, 2015. *About Us.* Retrieved from http://www.qualtrics.com/about/

Research and Development, Directorate, Department of Health. (2006, January). Best Research for Best

Health. A new national health research strategy. Retrieved from

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/136578/dh_4

127152.pdf.

Storey J. & Holti, R. (2013).Towards a New Mode l of Leadership for the NHS. *NHS Leadership*

Academy. Retrieved from *http://www.leadershipacademy.nhs.uk/wp-*

content/uploads/2013/05/Towards-a-New-Model-of-Leadership-2013.pdf.

Weberg, D. (2009). Innovation in healthcare: A concept analysis. *Nursing administration quarterly*, *33*(3),

227-237.

West, M., Armit, K., Loewenthal, L., Eckert, R., West, T., & Lee, A. (2015). Leadership and leadership

development in healthcare: the evidence base. *Faculty of Medical Leadership and Management,*

London.

Appendix E: UK Health Organisations and US Comparator Organisations

	Managing Director/Chair
AHSNs	
East Midlands	Rachel Munton
Eastern	Elisabeth Buggins
Imperial College Health Partners	Dr Adrian Bull, Chair, Joint Steering Committee-AHHSN/AHSC/CLAHRC
Greater Manchester	Mike Burrows
Kent, Surrey & Sussex	Guy Boersma
North East & North Cumbria	Seamus O'Neill
North West Coast	Liz Mear
Oxford	Gary Ford
South London (HIN)	Tara Donnelly
South West Peninsula	Rosie Benneyworth
UCL Partners	Lord Ajay Kakkar
Wessex	Martin Stephens
West Midlands	Christopher Parker
West of England	Deborah Evans
Yorkshire & Humber	Andrew Riley
CLAHRCs	
East Midlands	Kamlesh Khunti
East of England	Peter Jones
Northwest London	Derek Bell
Greater Manchester	Ruth Boaden
North West Coast	Mark Gabbay
Oxford	Richard Hobbs
South London	Graham Thornicroft
South West Peninsula	Stuart Logan
North Thames	Rosalind Raine
Wessex	Jessica Corner
West Midlands	Richard Lilford
West of England	Jenny Donovan
Yorkshire & Humber	Sue Mawson

AHSCs	
Imperial College Healthcare (London)	Sir Peter Dixon, Chair-Joint Partnership Board
King's Health Partners (London)	Professor, Sir Robert Lechler, Executive Director of King's Health Partners
UCL Partners (London)	Lord Ajay Kakkar, Chair
Cambridge University Health Partners (Cambridge)	Malcolm Lowe-Lauri CBE, Executive Director of Cambridge University Health Partners.
West Midlands Academic Health Science Network (Birmingham)	Dr Christopher Parker CBE, Managing Director
Manchester Academic Health Science Centre (Manchester)	Sir Howard Bernstein MAHSC Chairman
Oxford Academic Health Science Network (Oxford)	Nigel Keen, Chair
Health Science Scotland	Charles Weller, General Manager
Leading US Health Organisations with Interest in Participating in Research Study	**Principle Contact Person**
University, Medical Center and members of University Administration and Faculty and AHSC	Vice Provost for Academic and Strategic Planning, Office of Academic Affairs

Appendix F: Semi-Structured Interviews—Areas of Inquiry

Interview Outline:

Thank you for agreeing to participate in this Research Study- Leadership of Health Innovation: Building an Innovative Health Organisation.

[Please execute the following consent to participate. Thank you.]

1. Please briefly describe:

Your role in the Organisation
Number of People in your Department, Overall Organisation
Length of time with the Organisation
Your Professional Education and Training for your role

Lead-in Question: In addition, scientific knowledge and technical expertise, what skills are necessary to do your role effectively?

How would describe the leadership style of senior management of the _____. For example, would you say it is leadership by example or inspirational? Would you say it is pretty much by the book-that is-you fulfil your job specifications and you will receive an award? Or would you say it is described as my way or the highway? Or just do your job and not bother me with the details? A hands –off call me when you get there attitude?

Today, we are focusing on health innovation. This is defined as the multi-stage process of creating/searching, selection, implementation and capture of the value of new concepts, processes and/or products. In the following broad questions, please respond solely to the implication to health innovation. In addition, I would like you to focus your responses on how the organisation's leadership attempts to gain cooperation and motivate people (i.e., the style of leadership) and whether you agree with this form of leadership.

2. Please discuss the Psychological Climate' of the organisation which includes the: 1.) level of leadership support; 2.) championing of innovation; 3.) innovation expectations; and 4.) rewards. That is, the extent organisation members believe health innovation is expected, supported and rewarded.

Do you think the physical setting of the campus has an impact on the generation of health innovation?

3. Describe the Leader Member-Exchange (LMX). That is the quality (trust) of the leaders/managers relationship with organisation members.

4. Describe the use of Social Capital in the form of relational and network assets. Social Capital possessed by leaders/managers enables them to effectively interpret and use the exponential expansion of information/knowledge available to organisations through multiple channels including participation in associations, conferences/meetings, business networks and social media. This is especially important to break down hierarchical barriers in the health sector.

5. Regarding Leadership Clarity, how well do leaders/managers, at all levels of an organisation, understand organisational objectives, the expected levels of team participation and commitment to excellence.

6. Does the organisation promote Reflectivity [refers to whether leaders/managers create opportunities for team members to reflect on health innovation projects inside and outside the traditional work environment with colleagues or others].

7. Organisation members' mind-sets vary from a willingness to learn from errors and accept change (i.e., a growth orientation) versus a fixed mindset that prefers long-term stability. What is your opinion of this organisation?

8. Organisation culture refers to the values and beliefs which set the expectations regarding innovative behaviour. It is suggested that Organisational Culture significantly influences the performance of the organisation to achieve its mission, vision and values. What role does culture serve in this organisation with respect to innovation?

9. The preceding questions encompassed all levels of leadership within an organisation adopting the viewpoint of Mintzberg (2011) that "leadership is a necessary component of management". What role does the CEO play with respect to leading health innovation with respect to senior leadership's impact upon the 'organisation' and then solely from your 'self' perspective.

10. Did you complete the Qualtrics Survey Questionnaire?

Box 5—Interview questions regarding Survey

The draft interview schedule will be piloted among a group of at least 5 people working in health

organisations in each country. The piloting will address the following issues:

1. Will each question measure what it is supposed to measure?

2. Are all the words used understood?

3. Do all respondents interpret the interview question in the same way?

4. Does the interview process create a positive impression that motivates people to respond to the

questions posed?

5. How long does it take to complete the interview?

6. Is the information you want collected?

11. Anything else you would like to add that affects the innovation capacity of the organisation?

Appendix G: Search of Electronic Data Bases

A keyword search string (using the PEO and PIO structure) was prepared using the following electronic databases: [Database Field Guide] Books@Ovid July 20, 2015, [Database Field Guide] Global Health 1910 to 2015 Week 28, [Database Field Guide] HMIC Health Management Information Consortium 1979 to May 2015, [Database Field Guide] Journals@Ovid Full Text July 23, 2015, [Database Field Guide] Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily, Ovid MEDLINE(R) and Ovid OLDMEDLINE(R) 1946 to Present, [Database Field Guide] PsycEXTRA 1908 to July 13, 2015, [Database Field Guide] PsycINFO 1806 to July Week 2 2015, [Database Field Guide] LSHTM Journals@Ovid, [Database Field Guide] Northern Light Life Sciences Conference Abstracts 2010 – 2015 Week 27, [Database Field Guide] Econlit 1886 to June 2015, [Database Field Guide] Embase Classic+Embase 1947 to 2015 July 22, [Database Field Guide] Social Policy and Practice 20150.

Appendix H: High Level Timeline

Year	2015												2016												2017												2018				2018	
Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
Preparatory work:																																										
Formulated Research Questions						■	■	■	■	■	■	■	■	■	■	■	■	■	■																							
Formulated Research Aims					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																							
Created Preliminary conceptual Framework					■	■			■	■	■	■	■	■	■	■	■	■	■																							
Completed Organisational & Policy Analysis Report	■	■	■	■	■			■	■				■	■	■	■		■																								
Initial Faculty Discussions of Research Aims & Planned Work			■	■	■	■	■	■	■				■	■	■	■	■	■																								
Commenced Literature review					■	■	■	■	■	■	■	■	■	■	■	■	■	■																								
Prepared Research Proposal Outline to Identify Participating Health Organizations						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■															
Ethical clearance from LSHTM										■			■	■	■	■																										
Identified Theories Driving Innovation						■	■	■	■	■	■	■	■	■	■	■	■	■	■																							
Developed Research Objectives						■	■	■	■	■	■	■	■	■	■	■	■	■																								
Developed Research Methods						■	■	■	■	■	■	■	■	■	■	■	■	■																								
Wrote & Presented Review Report							■	■	■	■	■	■	■	■	■	■	■	■	■																							
Finalize Agreements with participating USA Health Organizations																			■	■																						
Finalize Agreements with participating UK Health Organizations																					■	■	■	■	■	■	■	■														
Disseminate Qualtrics Questionnaires to selected Participating Health Organizations																					■	■	■	■	■	■																
Collect & Analyze Survey Results																					■	■	■	■	■	■	■	■	■													
Purposive Select Participants to Interview																					■	■	■	■	■	■																
Conducts Interviews-USA																					■																					
Conduct Interviews-UK																									■		■	■														
Collect & Analyze Interview Results																					■	■	■	■	■	■	■	■	■													
Use Qualitative Results to Refine Survey Questionnaire																						■	■	■																		
Final write-up & Viva																									■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■
Year	2015												2016												2017												2018				2018	
Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
Monitoring of Thesis:																																										
· Completion of data analysis:																																										
Pilot Study						■	■	■	■	■	■	■																														
Other US & UK Studies													■	■	■	■	■	■	■	■	■	■	■	■	■	■																
· Complete structure of the thesis (with detail of all planned chapters)													■	■																												
· First and final drafts of:																																										
Literature review					■	■	■	■	■	■	■	■	■	■	■	■	■	■																								
Methods						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																			
Results section																					■	■	■	■	■	■	■	■	■													
Remaining chapters																									■	■	■	■	■	■												
Discussion and Conclusions																														■	■	■	■	■	■							
· Examiners selected																																										
· Examination form submitted																																										
· Approximate date planned of viva																																							■			
· Corrections due and completed																																									■	

Note: This study is self-funded by the single researcher.

Appendix I: Analysis of Pre-determined Categorical Respondent Variables

A. US Pilot Study

Q1 - What is your current role in the organisation?

Field	Minimum	Maximum	Mean	Std. Deviation	Variance	Count
What is your current role in the organisation?	1	3	2.38	0.86	0.73	8

#		Answer	%	Count
	1	Executive Leadership	25.00%	2
	2	Managerial leadership	12.50%	1
	3	Professional specialty	62.50%	5
	4	Technical support	0.00%	0
	5	Administrative support or incl. clerical	0.00%	0
		Total	100%	8

Q2 - What is your age?

Field	Minimum	Maximum	Mean	Std. Deviation	Variance	Count
What is your age?	2	4	2.88	0.78	0.61	8

#		Answer	%	Count
	1	Under 35	0.00%	0
	2	35-44	37.50%	3
	3	45-54	37.50%	3
	4	55 and over	25.00%	2
		Total	100%	8

Q3 - What is your tenure with the Organisation?

Field	Minimum	Maximum	Mean	Std. Deviation	Variance	Count
What is your tenure with the Organisation?		3	5	4.14	0.83	0.69	7

#	Answer	%	Count
1	Below 1 year	0.00%	0
2	1-2 years	0.00%	0
3	2-5 years	28.57%	2
4	5 -10 years	28.57%	2
5	Over ten years	42.86%	3
	Total	100%	7

Q4 - What is the highest level of education you have completed?

Field	Minimum	Maximum	Mean	Std. Deviation	Variance	Count
What is the highest level of education you have completed? - Selected Choice		3	4	3.25	0.43	0.19	8

#	Answer	%	Count
1	4-year College Degree	0.00%	0
2	Master's Degree	0.00%	0
3	Doctoral Degree	75.00%	6
4	Professional Degree (JD, MD)	25.00%	2
5	Other	0.00%	0
	Total	100%	8

Q5 - What is your gender?

Field	Minimum	Maximum	Mean	Std. Deviation	Variance	Count
What is your gender?		1	2	1.63	0.48	0.23	8

#	Answer	%	Count
1	Male	37.50%	3
2	Female	62.50%	5
	Total	100%	8

Q6 - How many people work in your organisation including independent contractors and volunteers?

Field	Minimum	Maximum	Mean	Std. Deviation	Variance	Count
How many people work in your organisation including independent contractors and volunteers?		1	5	3.63	1.58	2.48	8

#	Answer	%	Count
1	One-fifty	12.50%	1
2	51-100	25.00%	2
3	101-999	0.00%	0
4	1000-4999	12.50%	1
5	5000+	50.00%	4
	Total	100%	8

Source: Qualtrics LLC survey responses.

Note: 1.) Seven out of eight respondents answered the question regarding tenure. For example, the resulting percentage of over 10 years in tenure of 42.86% compares reasonably to the actual percentage for the population of approximately 46%. This is based upon the researcher's analysis of the University's web-site profiles as of 6 October 2016.

B. UK Health Organisations

Q1 - What is your current role in the organisation?

Field	Minimum	Maximum	Mean	Standard Deviation	Variance	Count
What is your current role in the organisation?	1.00	5.00	2.37	0.82	0.67	59

#	Answer	%	Count
1	Executive Leadership	16.95%	10
2	Managerial leadership	32.20%	19
3	Professional specialty	49.15%	29
4	Technical support	0.00%	0
5	Administrative support or incl. clerical	1.69%	1
	Total	100%	59

Q2 - What is your age?

Field	Minimum	Maximum	Mean	Standard Deviation	Variance	Count
What is your age?	1.00	4.00	2.70	0.98	0.96	61

#	Answer	%	Count
1	Under 35	9.84%	6
2	35-44	37.70%	23
3	45-54	24.59%	15
4	55 and over	27.87%	17
	Total	100%	61

Q3 - What is your length of time with the Organisation?

Field	Minimum	Maximum	Mean	Standard Deviation	Variance	Count
What is your length of time with the Organisation?	1.00	5.00	3.39	1.01	1.03	61

#	Answer	%	Count
1	Below 1 year	3.28%	2
2	1-2 years	16.39%	10
3	2-5 years	31.15%	19
4	5 -10 years	36.07%	22
5	Over ten years	13.11%	8
	Total	100%	61

Field	Minimum	Maximum	Mean	Standard Deviation	Variance	Count
What is the highest level of education you have completed? - Selected Choice	1.00	5.00	2.74	1.01	1.01	61

Q4 - What is the highest level of education you have completed?

#	Answer	%	Count
1	Degree	13.11%	8
2	Master's Degree	24.59%	15
3	Doctoral Degree	40.98%	25
4	Professional Degree (JD, MD)	18.03%	11
5	Other	3.28%	2
	Total	100%	61

Field	Minimum	Maximum	Mean	Standard Deviation	Variance	Count
What is your gender?	2.00	3.00	2.59	0.49	0.24	61

Q5 - What is your gender?

#	Answer	%	Count
1	Other	0.00%	0
2	Male	40.98%	25
3	Female	59.02%	36
	Total	100%	61

Field	Minimum	Maximum	Mean	Standard Deviation	Variance	Count
How many people work in your organisation including independent contractors and volunteers?	1.00	5.00	2.50	1.19	1.42	60

Q6 - How many people work in your organisation including independent contractors and volunteers?

#	Answer	%	Count
1	1–50	18.33%	11
2	51–100	45.00%	27
3	101–999	13.33%	8
4	1000–4999	15.00%	9
5	5000+	8.33%	5
	Total	100%	60

Source: Qualtrics LLC survey responses.