Exploring academics' lived experience of managing academic and commercially-oriented activities in a UK university

M Hussam Krkjie

DEDICATION

First and foremost, I am thankful to God for giving me the strength and passion to complete this piece of writing.

Second, I could not have written this thesis without the help, support, wisdom and encouragement of the following significant people; Dr. Claeb Kwong, Dr. Danielle Tucker and Prof. Samantha Warren who have been patient, considerate and super supportive and helpful.

Through these years I tried my best to stop thinking about Syria, family, wife and friends there but I failed. I have been engaged too much in thinking of them. I would like to dedicate this thesis first to them for being part of my daily thinking.

Special thanks to my daughter and wife who gave me the motivation to work harder and accomplish this thesis.

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ABSTRACT

Within the shifting context of universities towards the third mission, establishing rich understanding of how the key actors, academics, manage the two conflicting demands of commercialisation and science requires deeper investigation of their contributing to this shift. Drawing on theories of ambidexterity, role identity, the boundary work, and self-efficacy, this study examines how academics make sense of different tensions resulting from performing commercialisation activities alongside traditional academic ones, and how the negotiate the boundaries and their role identities to manage simultaneously the two activities. To answer these questions, this research explores the experiences of academics in a UK university through conducting in-depth interviews with 14 academics with various involvement in commercialisation; ranging from zero to high involvements in several forms of commercialisation. Interviews were analysed using interpretative phenomenological analysis (IPA). The research suggests the following findings: First, the current experience of academics follows the logic of path-dependency in the sense that individuals seek to apply a previous pattern of behaviour; Second, this research reveals various identity negotiation and boundary work amongst academics confronting the commercialisation agenda. While academics with commercial involvement seek to converge between academia and commercial world and thus exhibiting a hybrid role identity, academics with no commercial involvement seek to diverge between the two worlds and exhibit a single identity, core academic identity. Whether they involve in commercialisation or not, academics take active steps to preserve their academic role identity; Third, academics involved in commercialisation engage in a cognitive process composed of building compromises, establishing synergies between academia and commercialisation, and building hierarchy between conflicting role identities. The findings clarify the socio-cognitive process, explain the behavioural mechanisms underlying academics' involvement in commercialisation activities, and offer fresh insights to research on ambidexterity at the individual level, and on ambidexterity within university context.

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Chapter 1: Introduction

1.1. Introduction

In a high uncertain, turbulent and highly competitive environment scholars have highlighted the need for organizations to enable ambidexterity from within by developing their structure and capacities to exploit their current capabilities and at the same time exploring and developing new competencies (Birkinshaw & Gibson, 2004; Duncan, 1976; Raisch & Birkinshaw, 2008; Tushman & O'Reilly, 1996). Increasing organisation adaptability to the new institutional changes, and achieving higher organisational performance and long-term competitive advantage have been viewed as fruits of reaching ambidexterity within organisations (O'Reilly & Tushman, 2004; Raisch & Birkinshaw, 2008). Pursuing two competing modes (such as exploration and exploitation) is proved to be challenging to organisations as well as its members (March, 1991). Literature, however, has documented different solutions for organisations to overcome the challenges of managing ambidextrous activities. Broad research believed in what is called "structural solution" that shows that the key to achieve organisation ambidexterity is to develop an organisation structure that separates structural units for exploration and units for exploitation where each of these units has different system, incentive, process, and culture. Therefore, the focus on the role of individuals' ability to act ambidextrously has been ignored in this stream of research. More recent research developed another solution for ambidexterity that shows more belief in the significant role of the individuals. This stream of research believes that with a supportive organisational context, dual demands can be achieved at the individual level through what they termed *contextual* ambidexterity (Gibson and Birkinshaw, 2004). Despite the acknowledging the role of individuals, this stream of research has rarely paid attention to the voices of individuals and examined their sensemaking while pursuing competing demands. This stream has rarely provided evidence on how an individual achieves ambidexterity in action (e.g. Papachroni, 2016; Ambos, et al., 2008). Providing a clear answer of these questions is considered a central step both in advancing theory and towards achieving ambidexterity (Mom et al., 2009; Simsek, 2009; Nosella et al., 2012; Papachroni, 2016).

A close look at the higher education context has shown valuable debates on the universities' ability to develop the capacities to produce commercialisation outcomes (required to transform into what is called the third role/mission) besides its traditional/pure scientific outcomes. In recent years, there has been an increasing national, institutional, and governmental pressure on universities to change its role to promote commercialization of

university research (Goldfarb and Henrekson, 2003; Gulbrandsen and Smeby, 2005; Etzkowitz et al., 2000). Similar to the literature on ambidexterity, research in the university context has highlighted the difficulties and the challenges of such transformation at both the university level as well as individual level (Ambos et al, 2008). Despite such difficulties, universities have shown its ability to apply the structural solution through establishing separate units such technology transfer office (TTO), research enterprise office (REO) to monitor the process of commercialisation (Shane, 2004). Also, with the strong belief in academics' crucial contribution to the success of university's pursuit of commercialisation (Ismail et al., 2011), universities have shown some attempts to create a supporting context for faculty members to manage both academic activities and commercial ones through creating supportive departmental, internal rules and procedures (Thursby et al., 2001). However, literature, to date, has not provided enough understanding of the involvement of a key actor-the individual academic.

At the individual level, it has been found that academics encounter difficulties and various types of tensions resulting from such transformation. The changing relationship between academic science and commercial world has raised doubts of academics' ability to go beyond the traditional academic science and explore new skills and abilities to perform commercialisation activities (Ambos, et al., 2008). In other words, it creates exploration-exploitation tension stemmed from the tendency to exploit the existing repertoire of knowledge and skills tied to the pure academic science versus the tendency to explore a new domain of knowledge and skills required to accomplish commercialisation activities (See Lockett et al., 2003; Shane, 2002). Furthermore, such transformation has led to an identity tension stemmed from the conflict between the core values and norms of science and those of commercialisation. Literature has displayed debates about the implications of the increasingly blurred boundaries between science and business for the norms and practices of academic scientific work (Owen-Smith and Powell, 2001; Trowler, 2001; Vallas and Kleinman, 2008). While some scholars state that such transformation is promising to converge between academia and business and lead to the emergence of a new class of academics who comfortably integrate academic activities with commercial ones, other scholars were critical of the convergence of science and industry due to the risk of losing academic freedom and erosion of academic norms (Beck and Young, 2005; Hackett, 2001). Missing from this conversation is the voices of the key actors, academics, and the responses and the sensemaking they produce to overcome the tensions resulting from the conflicting

logics of commercialisation world and science world. Also, a little is known about the inner cognitive process that academics engage in when they pursue the conflicting demands of academic activities and commercialisation ones, and about how they manage their work priorities within this changing context. This research seeks to go beyond these limitations by adopting a micro-level perspective to examine academics' personal sensemaking of their lived experience of managing the tensions stemmed from pursuing the two different goals of science and commercialisation. The next section explains the main research questions and the key contributions that this study achieves by answering them.

1.2. The research questions:

With a strong belief of the critical role of individual researchers in creating ambidextrous universities, this research aims to explore the lived experience of the key actors in universities' pursuit of the third mission. To address the gap in the literature, this research aims to answer the following questions:

The major question is *how do academics make sense of their lived experience of the multiple tensions resulting from performing commercialization endeavours alongside their academic activities*? , from this question, I created three sub-questions to answer in my research:

- How do academics respond to exploration-exploitation tension resulting from their involvement in commercialisation?
- How do academics with different commercialisation involvement (academics with commercial involvement vs. academics with no commercial involvement) make sense of the blurred boundaries between academia and commercialisation?
- How do they manage conflicting demands of commercialisation and academia in action?
  - ✓ How do they cognitively process the conflicting demands of commercialisation and academia? (how do they manage two competing role identities?)
  - ✓ How do they manage their work priorities within this shifting environment?

By answering these questions, this research contributes to the literature by offering an interpretive understanding of ambidexterity at the individual level as experienced by the key actors, academics (See key contributions in section 1.4).

1.3. Research methodology:

Scrutinising individual's voices, sensemaking and the meanings of their experience of managing conflicting logics of science and commercialisation requires an interpretive paradigm that strongly assumes that one cannot understand a social action unless the meanings- that social actors themselves ascribe to this specific action- is understood (Sandberg, 2005). The access to the thorough, special meanings that individual constructs while pursuing conflicting demands is required to reach deeper understanding of ambidexterity at the individual level.

Within a shifting and contested terrains of academic world and commercialisation world, individuals engage in creating and re-creating their role identity through a personal process of sensemaking. They tend to create their own version of meanings of the values of their academic work and hence construct their personal identity project to cope with such change (Lam, 2010). This research adopts the view that personal identities are not unitary, fixed or stable, 'never gained and maintained once and for all' (Sikes et al 1985, p.155) but rather are formed and re-formed, 'forged rehearsed and remade' (Lee and Boud, 2003, p.188) through discursive practice and social interactions... (Sikes 2006:562). This is highly consistent with the philosophical stance adopted in this research (Interpretivism) that assumes that the social world is not given, but the social world is produced and reinforced by human actions and interactions. The access to reality of different versions of the personal identity change is only through social constructions such as language, consciousness, and shared meanings (Myers, 2008). Importantly, recent research stresses the importance of an interpretivism approach to explore the individuals' lived experience of tensions and therefore gain more understanding of how ambidexterity is achieved in practice (Papachroni, 2016). Based on these points, the researcher argues that building robust theories -that offer rich knowledge and understanding of ambidexterity from the perspective of its key actors- is based on examining their own realities and meanings attributed to the lived experience of tensions resulting from the conflicting demands of science and commercialisation. Attaining such depth and richness of understanding has not hitherto been achieved by prior research that mainly focused on the positivism stance (e.g. Raisch et al., 2009; Mom, et al., 2009).

In addition, the qualitative research stance is adopted in this research and considered the most suitable to answer its main questions regarding exploration of lived experience, and most suitable to enable an in-depth analysis of the meaning-making activity of research participants (Larkin et al, 2006; Denzin and Lincoln 2005). My interest lies in understanding

the experience of academics and being able to get closer to the reality of working in a specific university setting. It is the 'situation as experienced by the participants' that interests me and means that a qualitative approach is required (Myers, 2008). Blaxter et al (2001) suggest that qualitative research tends to focus on exploring, in as much detail as possible, smaller numbers of instances or examples which are seen as being interesting or illuminating, and aims to achieve 'depth' rather than 'breadth'.

To collect the required data, in-depth semi-structured interviews were conducted with 14 purposively selected academics at a UK university[1]. These academics work in different departments such as economics, computer science, biology, law, film studies and human rights and business school. Interviews were firstly made with 11 academics who have experience of working in one form or multiple forms of commercialisation alongside their academics activities. With the aim of enriching the understanding of the lived experience of academics in these settings, the researcher decided to interview other 3 academics who have no experience in working in commercialisation and investigate their lived experience of the tensions resulting from the conflicting demands of commercialisation and science.

To analyse the interviews, the researcher chose an Interpretative Phenomenological Analysis (IPA) approach. The researcher argues that IPA is suitable for this research for several reasons. The first reason is IPA is mainly concerned with answering questions regarding how individuals make sense of their lived experience within a complex context. IPA offers the ground for researchers to explore how a person makes sense of his/her lived experience in a way that allows them to interpret these experiences and therefore to become part of the sense making activity (Eatough and Smith, 2008). Second reason; IPA also aims to explore a multidimensional perspective of individuals' experience that goes beyond common sense awareness and therefore, establish a new understanding of under-researched topics on a specific phenomenon (Smith et al. 2009). Form the review of literature on ambidexterity; it appears that previous research has not got close to individuals' experience of conflicting demands of exploration and exploitation. Also, it has not shown their interpretations and sensemaking of such experience. Consequently, there is no established understanding of how individual ambidexterity when compared to organisation ambidexterity (Nosella et al., 2012; Papachroni, 2016).   In this sense, by using IPA, the researcher addresses this gap by conducting research that is 'experience-close' (Smith et al. 2009:33). Third reason; research

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[1] The Contribution to innovation and economic value through universities' adoption of the third mission is a rather new one for many universities in the UK (Nilsson, et al. 2010). However, United Kingdom is among the most advanced countries in terms of public policy towards commercialization (OECD, 2002). Based on this fact, the researcher decided to study this phenomenon in the UK universities context.

concerned with identity modification and change has widely acknowledged the suitability of IPA to provide rich understanding of how individuals shape their identities and manage them. For instance, Smith (2009) stated that IPA is suitable for studying experiential accounts and therefore for examining individuals' identity constructions and their involvement in their context. Also, Alvesson and Willmott (2002) confirmed that in-depth understanding of identity regulation requires IPA approach. More recently, Gill (2015) adopted IPA as a main approach to explore the employees' identity construction and the dynamics process of identity regulation amongst management consultants.

The data analysis has produced themes related to academics' experience of both types of tensions (exploration-exploitation tension and identity tension). The two themes and the subthemes emerged from the interview data are as follows:

- Retrieving previous behaviour patterns
- Negotiation of role identities (subtheme A: Redefining the skills and abilities, subtheme B: accommodation of the new commercialisation into academic identity; Subtheme C, Protection of the core academic values and norms; Subtheme D: Rejection of commercialisation)

1.4. Key research contributions:

This research produces several contributions to theory, methodology and practice, as follows: The first contribution of this research is theoretical. This study contributes to the research on how organizational key actors perceive and manage tensions stemming from an organization's pursuit of competing demands. This is considered a significant area in the study of organizational ambidexterity since empirical evidence on how individuals actively manage tensions remains scarce (Papachroni, 2016). More specifically, this research shows the inner socio-cognitive process made at the individual level to manage the tensions of two conflicting goals, and also shows how individuals shape and layer multiple, competing identities and how they use different mechanisms to protect them.

Another important contribution to theory is providing ambidexterity-focused literature with a new insight that supports the contextual form of ambidexterity. Despite its high acknowledgment of the role of individuals in achieving organisation ambidexterity, majority of the research on contextual ambidexterity focused on examining the features of supporting context required to help individuals act ambidextrously. Literature examined supporting

factors such as lack of necessary resources, leadership support, flexible processes, and supporting internal structure (e.g. Smith and Tushman, 2005, Markides and Oyon, 2010); teams, meta-routines and job enrichment schemes (Adler et al., 1999); transformational leadership and the learning culture (Nemanich et al. 2007). The research on contextual ambidexterity rarely delved into the responses, the voices and sensemaking of the key individuals while managing the two conflicting demands. Hence, answering such questions provides researchers with a more comprehensive clue on how the features of the supporting context should be integrated with the various individual's perceptions of and responses to the demands of two conflicting goals (e.g. Read, 2009; Lam, 2010). This opens a new area for research to study the extent to which the supporting context speaks to the various individuals' responses and cognitive understanding of the organisation ambidexterity phenomenon.

In addition, this research adds a new flesh to the literature on commercialisation of the university research. Employing the concept of role identity enables scholars in this field to obtain a richer understanding of the key actors, academics, contributing to building ambidextrous universities. Prior research on research commercialisation implicitly argues that academics smoothly transmit to a new role identity when they involve in commercial projects. Their approach overlooks the internal diversity in academic scientific work (Tuunainen, 2005), and the complex dynamics of the individual's personal identity change that permit the co-existence of contradictory institutional logics (Smith-Doerr, 2005; Murray, 2006; Vallas and Kleinman, 2008). Also, the literature hitherto paid a little attention to the inner cognitive processes that academics engage in while pursuing commercialisation roots and reshaping their career trajectory (Audretsch and Erdem, 2004). By contrast, this research highlights the subjective experience of academics and shows the careful sense-making and negotiated identity work that accompanies academics when they expose pressure to pursue commercialisation. It pays attention to the variation of academics' responses and sensemaking that result from the self-imposed boundaries that academics themselves construct while encountering commercialisation agenda. Therefore, my research suggests that academics hold multiple understandings of what it means to be "commercial". This, hence, leads to deeper understanding to their positions on the academic-entrepreneur continuum. Furthermore, by showing the way academics negotiate and manage multiple identities while pursuing commercialisation, this research responds to the calls of developing a more proactive stance to explore the complexity of academic identity at the individual level and

facilitates how the understanding of multiple identities influences engagement with academic work of all kinds (Read, 2009).

Besides the contributions to theory, this research contributes to the methodology of examining academics' ambidexterity. The research introduces an interpretive approach to study ambidexterity at the individual level. The interpretive approach of this research provides multidimensional perspective of academics' experience of managing commercialisation activities besides academic activities. Variation of theories is required to interpret individuals' personal perspectives of the experience of manging conflicting demands. As the research explains further in (chapter 5) using theories (such as role identity, self-efficacy, boundary work, and path-dependence) clearly displays multidimensional and the complexity of studying the individual ambidexterity and shows the high demands of dedicating more efforts to build solid theories in this area.

Adopting the interpretive approach in this research offers an alternative approach to study the phenomenon of ambidexterity at the individual level. Majority of prior research adopted quantitative approach that is used to show the supporting factors that assists individuals to juggle between two conflicting demands (Smith and Tushman, 2005; Markides and Oyon, 2010) or showing whether academics are able to manage these demands at the same time (Good and Michel, 2013). However, such approach failed to consider academics' voices and to show how they experience this phenomenon in practice. In other words, IPA facilitated a deeper immersion in participant's own world and the exploration of the various perspectives presented by these individuals-which is overlooked in quantitative research.

Above all, this research highlights several practical implications on academic profession, university-industry nexus, universities' main policies towards academic entrepreneurship and policies towards commercialisation role, and the education role of the university.

1.5. **Thesis structure:**

In the next chapter (chapter 2), the thesis begins with a review of the literature of organizational ambidexterity, the evolution of the concept and the key approaches to ambidexterity as these have appeared in the literature. Then, it defines the concept of ambidexterity in the context of Higher Education. In addition, the literature on organisation ambidexterity and university ambidexterity are discussed to show the key gaps regarding the lack of empirical research that could offers deep understanding of the ambidexterity at the

individual level. After that, the chapter discusses prior research conducted on ambidexterity at the individual level and shows how literature has discussed the tensions stemmed from managing the competing demands of exploration and exploitation and of commercialisation and academia. Finally, it introduces the concept of role identity and displays its key role to examine the lived experience of academics dealing with competing identities.

In the following chapter (Chapter 3.), the researcher discusses the methodology and the philosophical commitments that have guided my research. It begins with providing justifications of selecting interpretivism as a main approach and explains how it contributes to our understanding of the individual experience of dealing with academic and commercialisation. It moves to explain why qualitative approach fits this study and helps answering its main questions. The chapter also introduces Interpretative Phenomenological Analysis and show its suitability to answer the research questions articulated in the present study. Then, it discusses the main method and the process of data collection. The chapters also explains how the data emerged from the 14 interviews are analysed using IPA approach. Finally, it explores the ethical considerations aroused form this research.

Chapter 4 presents the results of the data analysis yielded from the interviews. The chapter is organised around two main dimensions of academics' experience of performing two competing logics of commercialisation and academia. The first dimension emphasises on academics' responses to an exploration-exploitation tension. In this regard, it answers how academics make sense of the exploration-exploitation tension resulting from the management of commercialisation and academic role. The second dimension emphasises on how academics respond to an identity tension resulting from dealing with two distinct role identities; commercial identity and pure academic identity.

In the final chapter (Chapter 5), the researcher answers the research questions by providing thorough discussion of the main findings and emerging patterns from the research in relation to the current theories on ambidexterity, path depending, role identities, boundary work, and self-efficacy. The contribution of the thesis is discussed and the thesis ends with discussing the theoretical and practical implications, and the opportunities for further research as they emerge from the research.

Chapter 2: Literature Review

2.1. Introduction:

The concept of organisational ambidexterity has received a growing attention from organisational theorists. The general agreement in literature is that ambidextrous firms are able to adapt to the changing environment and then achieve improvement in organisation performance and competitiveness because they are capable of both exploiting existing competencies and, at the same time, exploring new opportunities. However, research has found that due to the conflict and contradictory nature of exploration and exploitation, these ambidextrous firms find difficulties in performing both modes (March, 1991). Despite this fact, organisations were able to develop different solutions to deal with these difficulties. This attracted the attention of scholars from different fields to study how both tasks can be achieved in the same organisation at different levels; organisation, unit, and individual (e.g. Duncan, 1976; Tushman & O'Reilly, 1996; Gibson & Birkinshaw, 2004; Raisch & Birkinshaw, 2008). Literature on organisation ambidexterity acknowledged that achieving ambidexterity requires not only understanding of the changes in the whole organisation or the whole unit but also scrutinizing the changes in the individual behaviour since individuals have a key role in their organisation towards ambidexterity. Despite this fact, ambidexterity at the level of individuals did not receive enough attention.

An important context to study the individual level of ambidexterity and answer how individuals experience the tensions of competing demands is the university context where universities and their constituent faculties face pressure to move from one main orientation (pure academic activities) towards a new orientation (e.g. commercialisation of knowledge) to increase their competitiveness and contribute in the economic growth. More importantly, in the last fifteen years, universities are seen an important context for researchers to study organisation ambidexterity as they are seen as a main deriver for national competitiveness (Etzkowitz and Webster, 1998); therefore, they have been placed under pressure to generate commercial outcomes or to perform what is called third role (research commercialisation) besides its traditional duties such as teaching and research. Therefore, universities had to take great steps to create solutions and build suitable platforms to push commercialisation agendas (Shane, 2004; Nelson, 2001). However, such transformation has created various more difficulties and challenges for the university individuals than the university as a whole (Ambos et al, 2008). The growing shift towards the third role has left a profound organisational change that has shaped the work experiences of academic scientists over the past two decades. According to some authors, academic science is undergoing transformation

in response to the growth of an 'entrepreneurial academic paradigm' that stresses the capitalisation of knowledge (Clark, 1998; Etzkowitz et al., 2000). Universities and industry are converging towards a hybrid order where the boundaries between academia and commercial logic are becoming ambiguous. This adds another layer of complication to academic identity that is characterised with fluidity, flexibility and ongoing change. The loosely coupled nature of academia and industry makes it difficult for academics to define their roles' priority; who they are and what the best response to this shift is. Literature acknowledged that academics performing commercially oriented activities experience several tensions due to the contradictory nature of commercialisation and academia (Henkel, 2000; Winter and Sarros, 2002; Owen-Smith, 2003; Jain et al, 2009). However, how is ambidexterity achieved in action amongst academics, how do academics reconstruct and modify their identity to adopt a hybrid role, and how do they make sense and interpret their experience of commercialisation endeavours are all questions that still remain unexplored.

This chapter starts off by providing an introduction on the background of the concept of ambidexterity. Then, it defines the concept of organisation ambidexterity both in general and in the context of Higher Education. Also, it identifies and critically engages with the main approaches to ambidexterity as these have appeared in the literature and introduced the concept in the university context and then it critically shows the needs for understanding the main actor's response and experience of dealing with the new introduced mission, commercialisation. Then, it shows the main literature that examines the ambidexterity at the individual level and identifies the main gaps. Then, it reviews how the current literature has viewed the main tensions which resulted from dealing with the competing demands of academia and commercialisation. Finally, it introduces the concept of role identity and shows its importance and role as a promising perspective to examine the lived experience of academics dealing with competing identities.

2.2. Overview of research on ambidexterity

2.2.1. Overview on the Ambidexterity concept

Since it was first proposed by Duncan (1976), the concept of organizational ambidexterity has received an increasing attention in research on organizations that the number of studies in top management journals that explicitly refer to the concept of ambidexterity has increased from 10 in 2004 to more than 100 today, in 2017. The need and the importance of

ambidextrous organisations come as a response to dealing with a high uncertain, turbulent and highly competitive environment that requires organisations to be adaptive to these changes and at the same time efficient of exploiting their existing capabilities (Birkinshaw & Gibson, 2004; Duncan, 1976; Raisch & Birkinshaw, 2008; Tushman and O'Reilly, 1996). In other words, achieving ambidexterity is increasingly connected to the tensions stemming from the need for organisational adaptation (Ingram et al., 2008). Therefore, achieving this balance is believed to affect positivity organisational performance. Although some research has found no effect, the final conclusion that O'Reilly and Tushman (2013) drew after reviewing literature on the relationship between ambidexterity and firm performance is that "*In uncertain environments, organizational ambidexterity appears to be positively associated with increased firm innovation, better financial performance, and higher survival rates*" p7. This is the reason for the rising academic interest in studying this phenomenon in different organisation literature and different contexts. In fact, organization ambidexterity has been used in different domains within organization studies: Organization learning (e.g. Argyris & Schon, 1978; March, 1991; Levinthal & March, 1993; Gupta et al., 2006), organization design (eg. Duncan, 1976; Jansen et al., 2005; Lewis, 2000), organization strategies (e.g. Burgelman's 1991, 2002); innovation (e.g. O'Reilly III and Tushman, 2004, Tushman & O'Reilly III, 1996); Organisation change (e.g. Tushman et al., 1996) and organizational adaption (e.g. Brown and Eisenhardt, 1997; Miller and Friesen, 1984; Probst and Raisch, 2005; Tushman and Romanelli, 1985). All these studies highlight the importance of managing different types of conflicting demands within the organisation as a response to the changes in the market and environment surrounding nowadays organisations.

By focusing on the individual perspective, this research investigates ambidexterity within the higher education institutions and looks at this phenomenon from the organisation adaption perspective to find out about an organization members' ability to respond to the change in the market and capitalise the knowledge of their research in the course of heading towards "the third mission" while running its traditional functions efficiently. Additionally, this study investigates exploration-exploitation experience of academics when dealing with commercially oriented activities besides their academic duties and explores whether this type of academics experience tension of exploration and exploitation. Hence, the next section sheds the light on the definition of organisation ambidexterity in general and within the university context in order to provide enough understanding to the atmosphere where individual academics operate.

2.2.2. Organisation Ambidexterity in the University Context:

Before moving to discuss the concept of ambidexterity in university settings, the researcher reviews its definition in a general setting. Generally speaking, organizational ambidexterity is defined as the ability of an organisation to be aligned and efficient in responding to market demands, whilst simultaneously being adaptive to changes in the environment (Gibson & Birkinshaw, 2004). The same concept has been applied to organizations' ability to balance incremental and radical innovation, exploration and exploitation, stability and transformation in organizational adaptation, and efficiency and flexibility in organizational design (Birkinshawand Gibson, 2004; Raisch & Birkinshaw, 2008; Tushman & O'Reilly, 1996). Applying this concept in different areas has resulted in confusions and ambiguity which comes from the oversimplification of its definition. The generic use of organizational ambidexterity is vague and simply refers to the ability of a firm to do two things simultaneously (O'Reilly & Tushman, 2013). This allows researchers from different fields of knowledge such as strategy, networks, new product development, technology, intellectual capital, etc. to apply this definition to phenomena even if it moves it away from its original meaning. In other words, *the risk in applying the term so broadly is that the research moves away from the original phenomenon and loses its meaning. The term "ambidexterity" becomes a management Rohrschach test in which one sees whatever one wants as researchers apply the term to phenomena that have little to do with the tensions in ensuring firm survival*" (O'Reilly and Tushman, 2013, p15). To avoid such ambiguity, the study found that ambidexterity in the context of university is consistent with the original purpose of examining ambidexterity phenomenon. More specifically, enabling ambidexterity amongst universities[2] aims to ensure their survival since it increases their contribution to the economy and to society growth (Gibbons et al., 1994; Etzkowitz & Webster, 1998), and allows them to create an economic and innovation value and therefore increases their competitiveness in the market (e.g. Etzkowitz, 2003; Dzisah, 2010).

In this study context, this study's main interest is to examine the ambidexterity phenomenon within the university context. Literature has introduced the concept of ambidextrous universities referring to them as universities that are able to move beyond conducting teaching and high quality research towards capitalisation of their knowledge through taking up entrepreneurial role and commercialisation of the research and adopting technology and

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[2] Ambidextrous university in this context refer to the university's ability to manage the tensions between conducting traditional academic duties and applying the third mission, commercialisation (Etzkowitz, 2003).

knowledge transfer projects (Gibbons et al., 1994; Etzkowitz & Webster, 1998). In order to increase its competitiveness and contribute in the economy growth and society welfare (Gibbons et al., 1994; Etzkowitz & Webster, 1998), higher education institutions have to develop their capabilities to manage and balance between the traditional roles and the new role, commercialisation. Therefore, the concept of ambidexterity and ambidextrous organisation in this study derives its meaning from the study context and the importance of exploring how universities and its individuals experience the tensions resulting from the adaption to the third role and how they can manage to deal with these tensions.

Although universities' movement towards capitalisation of their knowledge have been criticised since it was believed that this movement limits the freedom and autonomy of academic scientists, erects institutional constraints to flow of the knowledge and allows pressure to engage in revenue generation to shape the questions that researchers seek to answer (Hart, 1989; Louis & Anderson, 1998; Hackett, 2001; Bok, 2003), the movement, according to its proponents, created a new type of knowledge production and produced forms of collaboration with both government and industries, which increases universities contribution in the economy and society growth (Gibbons et al., 1994; Etzkowitz & Webster, 1998) and in creating economic and innovation value which subsequently increases their competitiveness in the market (e.g. Etzkowitz, 2003; Dzisah, 2010). Universities' contribution to economic growth takes different forms such as "creators, receptors, and interpreters of innovation and ideas; as sources of human capital; and as key components of social infrastructure and social capital" (Lester, 2005, p 12). The so-called "third role" of universities - i.e., to diffuse knowledge and value to society at large - has been discussed and researched for some time now (Etzkowitz & Leydesdorff, 1999; Etzkowitz, 2002; Mazzoleni & Nelson, 2005).

The last fifteen years, the call for generation of commercial outcomes from universities has witnessed a remarkable increase. The pressure on universities to produce more diverse outcomes has been increased. US universities have been leaders in the Higher Education market through adding the commercialisation aspect to their roles. It is well documented that the Bayh–Dole Act of 1980 and related legislation in the U.S. have encouraged research institutions to conduct patenting (Nelson, 2001). Since then, other universities around the world, including UK universities, have started the movement towards the third role. According to Nilsson, et al. (2010), contributing to innovation and economic value through technology transfer is a rather new one for many universities in the UK. However, the United

Kingdom is among the most advanced countries in terms of public policy towards commercialization (OECD, 2002). The pressure has been exercised by the government on universities to take this role. For instance, over the past two decades, the UK governments have become ever more directive in their funding of the higher education sector with more pressure for relevance in research and teaching tied into contribution to economic growth, social mobility, technical innovation and employability (Coyle, et al., 2013). Over the past twenty two years, the UK government's science and technology policy has sought to exploit the scientific knowledge base for innovation and economic competitiveness by promoting stronger collaboration between university and industry, and hence, stimulating academic entrepreneurship (Lambert, 2003). Many universities are experimenting with new modes of governance and institutional practices to engage in commercial exploitation of research (Lam, 2010). At the same time, universities themselves have become willing actors in a range of markets in response to growing constraints on public funding and to adapt to a more competitive environment (Henkel, 2007). They started looking for ways to increase researchers' involvement in commercialisation and engagement in capitalisation of the knowledge. The institutional transformation associated with the entrepreneurial university has broadened the acceptable roles of academic researchers to accommodate engagement in commercial activities (Lam, 2010). Many universities have taken great efforts in pushing commercialisation agendas to generate more financial value from their research by creating new structures and encouraging entrepreneurial activities (Hackett, 2001; Phan & Siegel, 2006).

Despite the positive outcomes of pursing ambidexterity, research has implied that achieving such situation creates different forms of tensions and produces different types of difficulties for organisations as well as their individuals since it requires special capabilities, knowledge and structure. For instance, it was believed that managing exploration and exploitation situates organisations or individuals in an unpleasant situation since each of them tries to attract the individual to its side (Levinthal & March, 1993) and both compete with each other on scarce resources (March, 1991) and each mode of governance requires different processes, affiliation and structures (Ahuja & Lampert, 2001; McGrath, 2001). For universities to achieve ambidexterity, it has documented that shifting towards the third mission and gaining the ability to generate commercialisation outcomes alongside performing the traditional roles such as teaching and research is likely to be both painful and difficult to achieve and it holds many challenges at both the university and individual level (Ambos et al, 2008). Therefore, the ability of university and its faculties to manage the tensions resulting from balancing the

old role and new role have been under question. The challenge, at its heart, is essentially about taking an organization as that is meant to do one thing (academic research) along with its individuals and require that it build a capacity for doing something entirely different (commercialization of technologies and ideas) simultaneously. The critical challenge here is that universities and their faculties are not simply required to switch from one (single-handed) activity to another. Rather, it is about building the simultaneous capacity for two activities (academic research and commercialization). Thus, tensions arise at the level of the organization as a whole as it strives to manage these two activities at the same time, and also at the level of the individual level where the staff have to work out how to balance the time between these competing demands. In spite of these challenges and difficulties, research has found that organisations have been able to manage the tensions and create solutions to deal with them. The next section sheds the light on the main approaches to deal with ambidexterity in both general setting and university setting.

2.2.3. Approaches to ambidexterity

The possibility of balancing between two contradictory things has been addressed in different ways. While some researchers raises doubts on the possibility of following to competing demands (Levinthal and March 1981), other researchers argue that it is possible in organisation and unit levels but not at individual level (e.g. March, 1991; Ambile, 1996; Gupta et al., 2006). Recently, literature introduced a new view that makes it possible for individuals to manage between conflicting demands. This part explains the main views on managing two conflicting demands such as academic rigor and commercialization simultaneously, and how ambidexterity at the individual level becomes an interesting and important field for research.

Scholars in this field have endeavoured to explain how organization, business units and individuals deal with conflicting tasks. The following are the suggestions found in the literature.

2.2.3.1. Structural ambidexterity (based on space):

This solution is based on a top-down approach to achieve organisation ambidexterity. According to literature, organisations can achieve ambidexterity based on separation of organisation units so that some units are assigned to deal with single mode such as exploration and other units are specialized in dealing with the other mode such as exploitation

(Tushman & O'Reilly, 1996). This approach is known as structural ambidexterity. According to O'Reilly and Tushman (2008), this "entails not only separate structural units for exploration and exploitation but also different competencies, systems, incentives, processes, and cultures—each internally aligned (p. 192)." Therefore, at its heart, the key to achieve ambidexterity rests on the organisation' ability, rather than the individual's ability, to seize new opportunities through simultaneous exploration and exploitation. More importantly, it implies using differentiation between exploration and exploitation rather than integration between them within one setting - unit or individual.

In the university settings, studies suggest that universities have taken great efforts in pushing commercialisation agendas to generate more financial value from their research, by creating new structures and encouraging entrepreneurial activities (Hackett, 2001; Phan & Siegel, 2006). To deal with conflicting demands, many universities establish a separate unit such as Technology Transfer offices (TTOs) research enterprise office (REO) to monitor, evaluate, and commercialize research results, which account for the profits from inventions (Henderson et al., 1998; Shane, 2004) while other university units follow their traditional academic activities. It means that there must be an overarching entity which simultaneously manages and fulfils the needs of a lot of small, differentiated, non-centralised knowledge-creating subunits and few but large centralised subunits focusing on stability, routinisation and efficiency under the roof of a common mission, strategy and set of values.

Literature on structural ambidexterity raises a doubt of simultaneous existence or application of both exploration and exploitation in the same unit since they compete with each other on scarce resources (March, 1991) and each mode requires different processes, affiliation and structures (Ahuja & Lampert, 2001; McGrath, 2001). It believes in an individual's inability to exhibit ambidextrous behaviour. It argues that individuals are either explorative or exploitative but not both. Researchers following this approach claim that such a dual mode cannot exist in one individual since those who focus on exploration are quite different from those who emphasize exploitation in terms of their personalities and abilities (e.g. Ambile; 1996). They argue that each mode requires different skills that sometimes contradict each other (e.g. Markides, 2007). Tracing literature into ambidexterity suggests that the structural form of ambidexterity is the most studied in a management area of research. This defers the emergence and development of research on ambidexterity at the individual level. Unsurprisingly, their focus on individual was nearly absent.

2.2.3.1. Contextual ambidexterity:

Unlike the structural solution, the contextual solution rests on the belief in integration between exploration and exploitation in a single unit. Therefore, it adopts a bottom-up approach, which encourages individuals to juggle their time and roles between two competing modes (such as exploration and exploitation), hence achieve ambidexterity. Whilst structural ambidexterity relies on the structural means between exploration and exploitation, *contextual ambidexterity i*s based on the belief that each employee has a behavioural orientation towards dual capacities (Gibson & Birkinshaw, 2004 Jansen et al., 2008). In other words, the tension between exploration and exploitation could be resolved at the individual level through what they termed contextual ambidexterity, which is defined as "the behavioural capacity to simultaneously demonstrate alignment and adaptability across an entire business unit (Gibson & Birkinshaw, 2004: p. 209)." Based on this perspective, the ability to deal with this tension rests on organisation supporting context that is characterized by, for instance, an interaction of stretch, discipline, and trust (Gibson & Birkinshaw, 2004; p. 214)". That means a firm establishes the appropriate context that supports and continuously encourages each of its individuals in allocating his/her time and effort to explore new knowledge and concurrently cultivate value-creating ideas. This approach needs a collective movement of individuals towards dual capacities rather than focusing on one mode at the expense of the other (ibid). In the university context, for example, this approach would suggest that each faculty can switch between academic and commercial roles as long as a supportive context is in place, i.e. when undertaking commercial activities alongside academic ones is valued, and doing so does not constrain their academic careers.

Unlike other approaches, this approach suggests that ambidextrous organizations are basically rooted into individual knowledge and ability. Therefore, it opens up the opportunities for researchers to explore this phenomenon at the individual level. Through believing in people's ability to be ambidextrous, this approach allows researchers to seek for enhancing organisation ambidexterity through individuals.

Contextual ambidexterity is, therefore, different from structural ambidexterity. First, the focus is on individuals rather than units/organisations in achieving ambidexterity. Second, ambidexterity is achieved when an individual agrees that the unit is aligned and adaptable. Third, the organizational systems and processes that enable this individual adjustment are never concretely specified, except that it is mentioned that they promote stretch, discipline and trust.

In general, that empirical work on ambidexterity at the individual level is still scarce in number and research to date has left many questions unexplored. Whereas there is almost consensus on the need for simultaneous pursuit of exploration and exploitation within ambidexterity literature, there is still ambiguity on how this challenge can be overcome in action. As a result research began to call for more focused views of how ambidexterity is achieved (Raisch et al., 2009). More fundamentally, it remains unclear how individuals experience dealing with dual modes and how actually they are able to reconcile the tensions resulting from dealing with conflicting demands (such as exploration and exploitation) (Bonesso et al. 2013). In order to fill the gap in the research, the next section sheds the light on the studies that examine how research views ambidexterity at the individual level.

2.3. Ambidexterity at the individual level:

2.3.1. Main debates and gaps in the literature:

Shifting from the organizational level the concept of ambidexterity is also complemented by research at the individual level resting on the notion that ambidextrous organizations require special individuals that are able to understand and be sensitive to the demands of both **exploration and exploitation** (O'Reilly III & Tushman, 2004). The recent studies on ambidexterity rest on a strong belief that:

> "Although ambidexterity is a characteristic of a business unit as
> a whole, it manifests itself in the specific actions of individuals
> throughout the organization" (Gibson & Birkinshaw, 2004:
> 211).

They have acknowledged the importance of the individual in achieving ambidexterity at the organisation level. The individual view-oriented research assumes that not all people are able to engage with ambidextrous duties. Only those who have specific qualities and working in a supporting organisational context are able to do so. This view has received support in psychology and neuroscience research (e.g. Daw, et al., 2006), and in organisation research (Tushman and O'Reilly 1996; O'Reilly & Tushman, 2004, Gibson & Birkinshaw, 2004; Smith & Tushman, 2005; Jansen et al., 2008).

Studies of ambidexterity at the individual level have focused on the supporting context and culture that enables individuals to juggle their time between the dual demands without considering how the individuals experience them and how they see the process of managing the two conflicting demands. For instance, Adler et al. (1999) found that a supportive management system which takes the form of different teams, meta-routines and job enrichment schemes is a useful factor that enables factory workers in Toyota to balance between flexibility and efficiency. Another study undertaken by Gibson and Birkinshaw (2004) found that individuals need a supportive context to manage conflicting demands for alignment and adaptability. They found that this context is characterised by an interaction of stretch, discipline, support, and trust. Other studies focused on the role of top management support in achieving ambidexterity. The research of Carmeli and Halevi (2009) argues that behavioural integration cultivates behavioural complexity within a top management team, leading to organizational ambidexterity. Additionally, Nemanich et al. (2007) explore both the impact of transformational leadership and the learning culture on promoting ambidexterity. They found that transformational leadership behaviours and the development of a learning culture are important in managing the balance between exploration and exploitation at the team level. Other studies have found that dealing with conflicting demands for alignment and adaptability is a function of the culture that the unit promotes (i.e. Khazanchi, Lewis & Boyer, 2007; Hargadon & Sutton, 1997). Recently, it was found that the culture that supports flexibility and control are an important factor to promote the alignment and adaptability within the unit (Bueschgens, et al., 2010).

Mom et al. (2007) explore the role of bottom-up /top-down and horizontal knowledge inflows in supporting managers' exploration and exploitation activities. They conclude that top-down knowledge inflow is positively linked to exploitation activities whereas bottom-up and horizontal inflows positively linked to exploration activities. Besides, their study supports the notion that exploration and exploitation can be simultaneously achieved at the individual level.

In addition to the focus on the supporting context, studies have explored the role of individual characteristics on managing exploration and exploitation. There are no censuses on a specific set of characteristics that help individuals deal with conflicting demands. For instance, Smith and Tushman (2005) state that managing exploitation and exploration is based on one's ability to engage in paradoxical thinking while O'Reilly and Tushman (2004) note that this is reliant on having both a short-term and a long-term orientation. In the same vein, Cohen and Levinthal (1990) argue that ambidexterity is more likely to be achieved when an individual

has a breadth of prior knowledge categories, as well as various linkages across them. Also, Jasmand et al. (2012) states that customer service representatives with locomotion orientation are able to act ambidextrously. In other words, people with high locomotion orientation have characteristics that enable them to behave ambidextrously. People with high locomotion orientation are flexible, welcome changing conditions and new experience, prefer to deal with various tasks, and prefer to work in changing tasks (Avnet and Higgins 2003; Kruglanski et al. 2007; Pierro, et al. 2006). Also, a recent study by van den Top (2010) investigates the role of personal characteristics, (especially cognitive style) in supporting managers' ambidexterity. They found that managers with an analytical cognitive style are more likely to involve in exploitation activities. Compared with managers with an intuitive or mixed cognitive style, managers with an analytical cognitive style are more prone to conducting ambidextrous tasks. In short, the importance of each characteristic stems from the context in which each individual works.

Despite offering clarification of the main characteristics or features of the supporting context and the individual characteristics, previous studies have not provided enough understanding of the actors themselves, how they view the whole process, how they make sense of such experience and how they are able to adapt and manage it. Understanding the supporting context requires also deep scrutiny of the main player that represents the whole core and the centre of the balance process around which all other factors revolve. In fact, much of the literature ignores the voice of the individual, making generic assumptions about the nature and structure of universities and the impact of the changing context without a consideration of the careers and lives of individual academics (Duberley et al., 2007). Whereas there is a growing recognition that individuals pay a key role for the pursuit of organizational ambidexterity, there is limited empirical research that explores tensions of ambidexterity at the individual level (Mom et al., 2007). More specifically, what ambidexterity means for the main actors in the organization especially on a behavioural level of individuals and teams has received limited attention (Rosing et al., 2011). In other words, there is limited empirical evidence on how exploration and exploitation are perceived and managed at the individual level of analysis.

Additionally, it was taken for granted that individuals are able to balance both modes without questioning their perception of the whole process, what this experience means for them, and their reflection on this experience. For example, Rosing et al., (2011) studied the impact of ambidextrous leadership on team innovation supposing that leaders are ambidextrous and portraying their understanding of different modes of leadership as ambidextrous in nature. In

addition, Lubatkin et al. (2006) looked at the impact of behaviour of the whole team on attaining ambidexterity at SMEs. Therefore, they overlook each individual's perception of exploration and exploitation and they do not show how the team as well as each individual in the team interact in order to address the tensions resulted from managing the conflicting demands.

2.3.2. What do we mean by commercialisation?, and what does individual ambidexterity mean in this research context?

Since one essential part of academic ambidexterity is adoption of commercial activities, it is important to define the meaning of commercialisation in this research before discussing the issue of academic ambidexterity and its ramifications in literature. It is important to note in the beginning that research commercialisation has been studied based on different theories and from various perspectives such as social learning and dynamic capabilities, organisational learning theory, ambidextrous organisations, and knowledge spillover theory (Markman et al., 2008). However, this research is interested to study commercialisation in the UK from the perspective of the ambidexterity theory. In other words, it shows research commercialisation as "a new hat" that is worn by academics at universities who are involved at the same time in conducting the traditional academic activities in order to help the organisation, the university, to accomplish what is called the third role. This research is interested in commercialisation as it represents a highly significant activity for the universities in the UK in terms of the income (HE-BCI Survey Report, 2014). But, what do we mean by research commercialisation?

Research commercialisation is usually confused with another term which is academic engagement. Hence, it is important here to distinguish between the two. In general, academics are engaged with several activities with a third party organisation that aims to transfer knowledge or technology. These activities include collaborative research, contract research, consulting, informal networking with practitioners, patenting, licensing, and spin-off companies (Ismail, et al., 2011, Perkmann et al., 2013). However, academic engagement with these activities may not generate financial outcomes. According to pervious research, unlike academic engagement, fewer academics are involved in commercialisation (Lissoni et al., 2009). Among different the activities that a researcher at a university performs in order to transfer knowledge, commercialisation has been considered a unique activity that a university performs. Commercialisation is mainly an outcome or a follow-on activity, whether intended or unintended, of academic engagement with knowledge transfer (Perkmann et al., 2013). In

this study, I adopt the view of Jain et al (2009) which takes the extended view of commercialisation that refers to academics engagement in contract research, consultancy, collaborative research, patenting, licensing and spin offs to generate financial outcomes or income for the university.

Collaborative (or joint) research is defined as formal collaborative arrangements aimed at cooperation on R&D projects (Hall et al. 2001). In many cases, the content of this research is 'pre-competitive', and these projects are often subsidized by public funding. Consultancy can be defined research or advisory services provided by individual academic researchers to an industry client (Perkmann and Walsh 2008). Consultancy is usually commissioned directly by the industry partner and the income resulting from them often accrues to individuals and the university takes part of through its account. Contract research is defined as a research that is directly commercially relevant to firms and, therefore, is usually ineligible for public support. Contract research is explicitly commissioned by firms and it is usually more applied than collaborative research arrangements (Van Looy et al. 2004). Patenting and licensing of academics' research outputs represents an important source of income injected to university. Spin off company refers to a creation of new venture to commercialise the university research founded by its staff (Fini, et al, 2017).

On the other hand, traditional academic activities are those activities stemmed from the traditional academic norms and pure scientific science (Lam, 2010). These activities are linked to the traditional university's main role, which is Teaching and Research (Etzkowitz, 2004).

There has been established empirical evidence on the difficulties and challenges for universities and its members to perform simultaneously traditional academic activities (that are linked to the traditional university's main mission and core values), and commercialisation activities (that are linked to the new mission of the university) (e.g. Bercovitz & Feldman, 2003; Owen-Smith, 2003) - see next section for further understanding.

Based on the previous discussions, individual ambidexterity in this research can be defined as *academics' ability to perform traditional academic activities such as teaching and research, on the one hand, and perform at least one form of commercialisation activities, on the other hand.* Hence, this research excludes academics who are involved in commercialisation projects not as part of the university commitment. All researchers in the sample are performing commercialisation as a part of their job responsibility. Therefore, universities should be part of this process because at the end we need to understand ambidextrous behaviour as part of the university system rather than the individual academic life system. It

is worthy to note here that the researcher clarifies how exploration-exploitation concept is linked to the management of commercial and academic roles, in section (2.3.3.1).

2.3.3. Ambidexterity for academic researchers:

Individual academics represent a unique unit for analysing ambidexterity at the individual level. The context of university represents a clearer definition of ambidexterity where concept of ambidexterity is not oversimplified as is the case in the other contexts - as explained earlier in section 2.2. The university context offers a unique context where the ambidexterity phenomenon is applied clearly at the individual level. More importantly, achieving organisation ambidexterity in the university context is clearly reliant on individuals' ability to balance between two sets of different activities (pure academic activities and commercialisation activities). It is the context where individuals are enabled to juggle their time between different conflicting tasks. Without the academic's contribution and involvement in research commercialisation, universities' chances of success are very limited (Ismail et al., 2011). Research has found that academia is unique in allowing individuals to engage in a wide range of diverse activities from start-up entrepreneur, to government advisor and other civil society roles (Tartari et al., 2014). Academics offer an interesting case to study with a more dynamic view of ambidexterity where individuals experience various forms of tensions (i.e. Ambos et al., 2008; Vallas & Kleinman, 2007; Markman et al., 2008; Coaldrake & Stedman, 1999) and hence they develop unique experience of dealing with these tensions.

Working in the higher education environment leads academics to get exposed to different sources of challenges and conflicts. Within higher education institutions, academics are exposed to a collegial versus managerial governance; quality of teaching and research versus quantity in participation; broad versus narrow curricula; curiosity-motivated versus mission-oriented research and academic freedom versus ideological conformity (Karmel, 1990); traditional academic role versus commercial role (Churchman, 2006). Amongst these tensions, researchers have examined the academics' ability of managing their academic role besides the commercial role, arguing for the key role of the main actors in achieving the shift toward the third mission.

The changes and the pressure on Higher Education to adopt the third role have created more need for ambidextrous academics to help the universities to adopt this role and therefore

increase value in society. The movement towards achieving commercialization outcomes was not easily adopted by academics. Prior research empathises that academics experience risk and pressure of conducting academic activities alongside commercial ones because of the multiple contradictory characteristics of each type. This is clarified further in the following table.

Table 1: comparisons between academic and commercial roles

	Academic role	Commercial role
Norms	Universalism Communism Disinterestedness Scepticism	Uniqueness Private property Passion Optimism
Processes	Experimentation Long-term orientation Individualistic/Small group	Focus Short-term orientation Team management
Outputs	Papers Academic recognition/status	Products Profit

Modified from the source: Jain et al, 2009: 924.

Unlike the university level that displays evidence of its ability to reconcile the tensions, research has shown that reconciling such tensions at the individual level presents an enormous challenge. Studies showed that academic scientists vary significantly in their tendency and readiness to adopt the commercial role (D'Este & Patel, 2007; Louis et al., 1989). Fewer academics are able to commercialise their knowledge. But what are these tensions that academics might experience?

This research examines the lived experience of individuals regarding two forms of tensions; the exploration-exploitation tension and the identity-related tension.

2.3.3.1. **Exploration-exploitation tension**

This section reviews how literature views the exploration-exploitation tension amongst academics and expounds their views over the relationship between exploration and exploitation. It also shows how exploration and exploration are understood in relation to academics experience of managing commercial and academic roles together.

Before explaining the tension, the researcher introduces the meaning of exploration and exploitation adopted in this study. This study adopts the view that defines exploitation activities as activities creating reliability in experience (Bontis et al., 2002; Holmqvist, 2004; Levinthal & March, 1993) which is associated with deepening an individual's existing knowledge base (Levinthal & March, 1993). Such exploitation activities of individuals include using and refining their existing knowledge (Levinthal & March, 1993), focusing on applying, improving, and extending existing competences, (March, 1991), and elaborating on existing beliefs and decisions (Floyd & Lane, 2000; Ghemawat & Ricart I Costa, 1993; Rivkin & Siggelkow, 2003). On the other hand, exploration activities are activities creating variety in experience and resulting in learning by exploring new possibilities (Holmqvist, 2000). In this sense, academics involved in commercialisation besides academic activities encounter tension between exploitation relying on the existing knowledge, abilities and skills tied to their traditional academic duties, and exploration departing away from the science track and norms and explore a new set of skills and abilities required to perform the other competing activity-commercialisation (Levinthal & March, 1993).

In general, prior research views that balancing between exploration and exploitation is challenging, difficult to reach, and complicated to comprehend due to the contradictory requirements of both exploration and exploitation (e.g. Floyd & Lane, 2000). The trade-off between exploration and exploitation can be described as a battle or conflict, and the interaction between them "may turn out to be negative," (He and Wong, 2004: 483).

According to Levinthal and March (1993), each of them tries to attract an individual to its side, which puts him/her in an unpleasant situation. In other words, exploration leads to another exploration and exploitation leads to another exploitation. Exploration and exploitation compete with each other on scarce resources (March, 1991) and each mode requires different processes, affiliation and structures (Ahuja & Lampert, 2001; McGrath, 2001). The conflict can be seen from different lenses. In terms of the focus, exploitation is short-term focused and tries to respond to the current environment conditions. In contrast, exploration is long-term focused and tries to respond to latent environment changes (Harry &

Schroeder, 2000; March, 1991). The conflict is also between two styles of learning, between learning in the short-run and near current experience, on the one hand and learning in the long-run and from a distant experience, on the other hand (Levinthal & March, 1993). Individual's tendency toward learning new things is confronted by his/her learning experience of old things. Knowledge relevant to one's old competencies stifles his/her efforts to learn new capabilities (Levinthal & March, 1993). Since learning something related to one's previous experience reduces failures in the short term, people try to stick to exploitation in order to be more secure and certain without considering the future risks and errors (Levinthal & March, 1993). In terms of skills, exploration, unlike exploitation, requires capturing new skills needed to deal with the new situation (alternatives such as product market and technology trajectory) (Burgelman, 1991). In terms of variety, exploration requires exposure of a variety of knowledge domains while exploitation needs more specialisation and specific- domain focus (Quintana-Garcia & Benavides-Velasco, 2008). All the previous claims have been applied to the context where academics view commercialisation contradicts academia.

According to literature on academic ambidexterity, it has been claimed that academic and commercial activities are fundamentally different and potentially contradictory endeavours (Bercovitz & Feldman, 2003; Owen-Smith, 2003) (also see table 1). According to Ambos et al., (2008) most of these challenges and tensions occur because of the path-dependency, which tends to push individuals as well as organisations to follow existing pattern of behaviours and therefore increase their tendency toward resisting the change. Individual researchers have specific social and research norms to conduct academic research. Following commercial oriented activities leads academics to deviate from the social norms of conducting academically rigorous research.

Another notion introduced in the literature is that academics are locked in the skills and abilities related to science. Some literature suggests that scientists lack the competence to conduct commercial activities since they require different skills and abilities than purely academic ones (Clarysse & Moray, 2004; Lockett et al., 2003; Shane, 2002). Therefore, the change of their role towards commercialization activities means taking a risk to explore new skills and abilities required to conduct such activities.

Furthermore, academics were seen as knowledge workers who specialise in producing scientific outcomes such as paper publications, reviews, etc. Therefore, their repertoire of skills will limit their opportunities to work outside their specialised area and then they are less likely to get involved in commercialisation projects that require a new set of skills and

knowledge (Clarysse and Moray, 2004; Daniels and Hofer, 1993; Lockett et al., 2003; Shane, 2002).

Therefore, previous research implicitly argues that academics view the relationship between commercial side and academic side as contradictory. They claim that academic activities and commercialisation are competing on scare resources and movement towards one will harm the involvement in the other.

Literature adopting such view of the relationship between both activities finds it possible for individuals to manage contradictory demands while applying cognitive processes. For example, Eisenhardt et al. (2010: 1263) conclude that organizational actors can accomplish what they call 'cognitively sophisticated, single solutions' while simultaneously holding dual, contradictory tensions. Another author suggests that the development of paradoxical cognition plays a central role in senior managers' ability to manage the contradictions of explorative and exploitative innovation (Smith & Tushman, 2005). O'Reilly III and Tushman (2008) define ambidexterity as the paradoxical capabilities of senior management, manifested as a set of senior team decisions including structure and linking mechanisms, culture and senior team processes. Finally, Adler et al. (1999) identified 'switching' as a coping mechanism used by employees in the Toyota production system that allowed them to perform tasks that were either systematic and predictable or flexible and novel. Despite their acknowledgment of the role of individuals in ambidextrous organizational settings, key issues regarding how tensions from the pursuit of ambidexterity are experienced and interpreted amongst the key actors in practice remain largely unexplored (Papachroni, et al, 2016).

Previous research has ignored how the individual interpretation of the relationship helps in managing contradictory demands and overlooked the various responses which they develop when they are involved in commercialisation. They adopted only one side of the story which believes in the contradictory nature of academia and commercial/corporate agenda. They ignored the voice of the individual and his own sense-making while dealing with such demands. In short, despite the consensus on the need to balance exploitation and exploration, there is no general agreement on how it is experienced and achieved from the individual's perspective (Gupta et al., 2006).

2.3.3.2. Identity related tension

Previous research on ambidexterity overlooked the importance of identity change and the tension tied to identity that individuals might experience when conducting competing demands, especially when the new demand represents an essential aspect of the organisation adaptation to the changing environment. However, having reviewed literature in the university context, this research finds that an identity tension is an essential part of academics experience of managing conflicting logics of commercialisation and science (e.g. Ashforth & Humphrey, 1993; Brown & Humphreys, 2006; Parker and Jary, 1995). Based on this, the researcher decided to investigate the identity change and integrate with the concept of ambidexterity at the individual level.

Managing both commercialisation and academics simultaneously leaves academics with tension resulted from a conflict of identities. In the context of Higher Education sector, it was suggested that these institutions are an ongoing attempt to keep traditional academic cultures while simultaneously promoting and developing commercial ideologies and structures, where academics are characterised by a multiple or hybrid identity (Foreman & Whetten, 2002). The shift towards the third mission leads academics to experience conflict between traditional academic culture and commercialisation ideology. The complexity of academic identity is rooted in their history, traditional perceptions of their role and their contributions to society, in the growing complexity of academics profession (Marginson, 2000). This conflict causes a blurred vision of the boundaries between traditional academic role and the new corporate-oriented role.

One source of the conflict is the contradiction between one's own values and organisation's new values. Research found that conducting commercialisation activities might evoke a conflict between an academic's values and the organisation values. It is suggested that a faculty often holds contradictory values simultaneously, expressing some values that fit with traditional Mertonian science, while other values fit with the new entrepreneurial norms (Owen-Smith & Powell, 2001). Central to the identified identity schism is the notion of values fit and organisational situations in which academics and managers' ideological beliefs and values may not overlap in respect to the roles and obligations of academics and the primary purpose of the institution (Brown & Humphreys, 2006; Parker and Jary, 1995). Involving in commercialisation embodies corporate ideologies and values (such as profit making and serving customers) that might contradict academics' own values (valued and professional self) (Ashforth & Humphrey, 1993). At the heart of the identity schism that

academics might experience is the notion of professional identity (Nixon, 1996) and the extent to which an academic attempts to separate her/his inner professional self from an outer organisational self that favour commercial principles and practices over the established and traditional academic norms and principles (Winter, 2009). While academics perform their professional roles, they are influenced by academic (traditional) and managerial (contemporary) identities and the contradictions and conflicts that arise from these competing identity claims (Henkel, 2000; Parker & Jary, 1995; Winter & Sarros, 2002). Schisms in academic identity are expected to appear whenever academic work is reorganised around values that might 'violate traditional academic values' (Harley, 2002, p. 187).

Moreover, the organisation adaptation and the multiplicity of organisation identity produce considerable impact on an individual identity and evoke reconstruction of their identity. To respond to the high uncertain, turbulent and highly competitive environment and respond to the growing and various needs of stakeholders, higher education institutions have to be adaptive to these changes and at the same time efficient of exploiting their existing capabilities (Birkinshaw & Gibson, 2004; Duncan, 1976; Raisch & Birkinshaw, 2008; Tushman & O'Reilly, 1996), and they also have to hold multiple and contradictory identities (Henkel, 2005). Such situation has a great impact on individuals' identity. It was suggested that the adaptation and changing organisation image acts as destabilising force on identity and this requires its individuals to reconstruct their identity to respond to such change (Gioia et al., 2000). Such change triggers ongoing comparisons between the old self and the new self when involved in adaption actions. Organizations with multiple identities affect how individuals interpret issues as well as how they behave toward them (Albert & Whetten, 1985; Ashforth & Mael, 1989). Competing identities creates confusions amongst individuals and force them to generate heterogeneous responses and take different actions to control them (Churchman, 2006).

According to literature, these changes in the higher education context have created situations which require rapid and complex responses by tertiary institution management. In such system, academics are exposed to an ongoing process of identity change/reconstruction. Identify tension generates multiple responses ranging from disagreement to acceptance. For some, they completely resist these commercial activities and voice against their values since they view them as contradictory with traditional academic values (Sharrock, 2000; Winter & Sarros, 2002) such as independency and academic freedom. Academics may have the risk of losing their academic freedom since they are less able to choose the academic areas which

they consider more relevant and important for them. Instead, their research choice is structured by the extent to which projects are likely to attract commercialisation interest (Marginson, 2000). In addition, academic freedom and autonomy might be affected because of the pressure that commercialisation produces, which reduces their time available for teaching and research (Vidovich & Currie, 1998). Conversely, some academics might generate complete acceptance to commercial endeavours. Instead of viewing the university as a business and engaging in commercial activities that benefit all members of the organisation, some academic staff 'construct and protect their individual academic identity' which 'correspond[s] with their understandings of the [changed] academic role' (Churchman, 2006: 7). As a response to the commercialisation calls, academics have internalised business-related values and profit-making ideals. The adoption of these values by the academics is a by-product of research being directly linked to business needs, after universities and other higher education institutions were drawn to operate in market-oriented, utilitarian terms due to the change of funding resources, from solely public funding to private organization funding (Henkel, 1997; Slaughter & Leslie, 1997; Winter & Sarros, 2002).

Additionally, holding multiple identities means changing academics 'roles. The multiplicity of roles required to perform represents an essential source of conflict might appear in front of academics while performing a commercial role. An in-depth investigation of academic work shows that many academics were engaged in multiple activities (not all of them are rewarded and considered part of their roles) and they also work to satisfy more complex goals. Activities such as writing proposals, developing contracts, elaborating e-learning programmes, or involvement in technology transfers are all roles of an academic nowadays. These activities are no longer considered as peripheral or secondary; rather, they are regarded as important aspects of academic work. These activities are no longer something academics can do; rather, they are something which academics must do (Musselin, 2007). Also, academics are required to be multifunctional. Research and teaching have become more as professional (and managed) activities, which has started to split them so apart that academics in universities now have to pursue multiple careers. They are not only just researchers, but are also research managers and research entrepreneurs; they are not only teachers, but also course designers, quality managers and (even) sales and marketing people (Scott, 2006). Consequently, when involved in such role, academics have to establish priorities amongst different roles they are undertaking. To be a successful academic career, you should dedicate significant efforts to do a specific style of research, paper-writing and network-building, which essentially means little time for pursuing other – commercial – activities (Stephan and

Levin, 1992). In such a situation where a conflict between different roles exists, it remains unclear how academics manage their priorities. Literature on organisation ambidexterity overlooked the identity perspective and the impact of competing demands on the individuals. It ignores how individuals experience identity change and the role of identity in managing the tension tied to the competing demands.

In a nutshell, in the era of blurred boundaries between academia logic and commercialisation logic it is still ambiguous how academics make sense of their participation in commercialisation and how they perceive their participation in commercialisation as impacting their academic identity, how they reconstruct their identity to respond to commercial agenda and how they manage their work priorities within this shifting landscape. All these questions remain unsatisfactorily answered.

2.3.3.2.1. Role identity as a lens to interpret individual responses to identity tension:

This research applies the foundation of a role identity theory to examine how academics respond to competing demands of academia and commercialisation. This theory provides a solid guide to each individual to interpret and make sense of his/her multiple, conflicting identities and establish mechanisms to manage the tension between them. A promising approach for exploring the sensemaking processes of academics engaged in commercialization activities lies in invoking the concept of role identity from the social psychology literature (Jain et al, 2009).

The concept of role identity has been developed to emphasise the proximity between socially defined elements that underlie a role and an individual's interpretation of that role (McCall and Simmons, 1978). That is, roles guide action in a broad way, but are given fuller meaning when individualised by the actor (Ibarra, 1999). As a role becomes closely tied to an individual's sense of self or identity, the individual tends to behave in accordance with this role identity. Indeed, there is an established tradition of coupling the role and identity constructs within the field (Barley, 1989; Hughes, 1958; Mead, 1934).

According to role identity theory, the self consists largely of the various social roles in which an individual engages (Piliavin & Callero, 1991). A sense of role identity stems from two main sources: (1) feedback about the self from social relations and (2) associated self-views (Riley & Burke, 1995). The generation of self-meaning by a role identity reflects a self-regulatory interpretative process of sense making in which relevant inputs from others and oneself are reconciled in an attempt to verify, support, and validate the identity (Riley &

Burke, 1995). Ultimately, a role identity reflects an internalized set of role expectations, with the importance of the identity being a function of commitment to the relevant role.

The majority of prior research adopted by this concept is centred within literatures on the careers and professions and empathises on the subjective experiences – i.e. the perceptions and interpretations – and related actions that actors undertake as part of crafting their role identity. For instance, Ibarra (1999) described how junior consultants and investment bankers adapt to senior roles by experimenting with provisional selves that serve as trials for possible, but not yet fully elaborated role identities. Additionally, Pratt et al. (2006) examined how medical residents employ customization mechanisms – to wit; enriching, patching and splinting – to develop their professional role identity. In the literature of role identity, it was suggested that individuals exposed to multiple identities chose their reaction and responses based on their view of the link between these identities. Pratt and Foreman's (2000) suggest that individuals usually choose between four forms of responses to manage multiple identities. First, compartmentalization, in which the different identities are maintained but no synergy or connection is built between them; second, deletion, where individuals actually rid themselves of one or more of their identities; third, integration, where individuals fuse identities into a distinct new whole; forth, aggregation, where individuals attempts are made to retain all their identities while forging links between them. In a nutshell, these studies feature how the concept of role identity is integral to the way in which each individual's interpretation and action in work situations, where they are provided normative support and cognitive focus regarding what represents appropriate action within one's own profession.

Regarding this study context, as it was mentioned previously in this section, academics' involvement in commercialisation requires change of their roles and their own identities. Beck and Young (2005) argue that the contemporary transformation in the relationship between academia and the marketplace presents a major challenge not only to the external conditions of academic work, but more fundamentally, to the core elements of academic professional identities. The professional role identity of academic scientists has historically been deeply rooted in a distinctive scientific community marked by strong external boundaries and a special relationship to knowledge production (Henkel, 2005; Kogan, 2000). In other words, they are subject to role identity modification[3]. Such modification is established at various levels. This includes: altering the set of activities that constitute a scientist's normal workload, addressing conflicting pressures that originate from the differing

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[3] In the social psychology literature, Role identity refers to a self-view or a meaning attributed to oneself in relation to a specific role (Burke and Tully, 1977)。

normative cultures of the academic and business worlds, reassessment of their abilities, beliefs and priorities, and reestablishment of the meaning of their work. Such role identity modification, in turn, impacts on both the manner in which these individuals participate in technology transfer and the mechanisms that they put into place (or rely on) to do so (Jain et al, 2009). Therefore, taking such view to examine the lived experience of academics provides a deeper theoretical understanding of how role identity modification is manifested in the key actors of the process of transferring the university towards the third mission.

While prior research highlights the significance of role identity modification as part of an individual's career transitions and coping with the shift occurring in the Higher Education sector (e.g. Read, 2009; Jain et al., 2009), they overlooked the impact of the role identity modification on promoting academic ambidexterity through manging competing demands. This research explores how academics employ mechanisms to manage the two roles at the same time and how this affects the study of ambidexterity. In this research, I examine this perspective to answer how ambidexterity is achieved at the individual level in practice.

2.4. Conclusion

The review of the literature on ambidexterity to date highlights deep insights relating to how ambidexterity is approached and achieved in different domains of science. More specifically, approaches to resolving the tensions of ambidexterity vary from structural separation (Tushman & O'Reilly, 1996), to integration within the same unit (contextual approach) (Birkinshaw & Gibson, 2004). However, the study of structural approach- that believes in the possibility of balancing between competing demands is possible at the organisation level but not at the level of individual- remains dominant. Despite its acknowledgment of the role of individuals and its ability to manage competing demands at the same time, contextual ambidexterity research has only focused on studying the features of the supporting context of individual behaviour and the characteristics of these individuals but failed to examine their perception and the sense making they experience tensions of competing demands. Additionally, recent research has recently concluded that the structural solution is not enough to achieve ambidexterity. Rather it needs to be supported with deep research and understanding of behaviour and actions of the individuals who work within the supporting context (Read, 2011; Papachroni et al, 2016).

The context of Higher Education is considered a unique context to analyse the individual experience of ambidexterity at the individual level. Academics represent the backbone of a university's successful shift towards achieving the third role/commercialisation (Ismail et al.,

2011). The key challenge here is that universities and their faculties are not simply required to switch from one (single-handed, traditional) activity to another, but also develop simultaneous capacity for two activities (academic rigor and commercialization). Thus, tensions arise at the level of the organization and also at the level of the individual. According to prior research, the tensions are more acute at the individual level since individuals vary in their ability and readiness to adopt the new role and cope with it constantly (Ambos, et al, 2008).

The reviewed literature reveals that academics are subject to experience a tension that originates from their tendency to exploit their previous experiences, routine, skills and knowledge versus their tendency to explore complexly new skills, experiences and knowledge. This is due to academics' view of the contradictory nature of commercialisation activities and academic ones, so that each type of activities requires a different set of skills and knowledge and a different pattern of behaviour. In addition, literature have shown that academics are also subject to an identity tension that originates from dealing with multiple competing identities, responding to pressure of prioritising different roles, and exposing to contradictory values.

In short, academics experience a blurred vision of the boundaries between commercialisation and academia, which leads them to generate various responses and makes their lived experience and sensemaking of it worth examining. Therefore, this research is interested in examining the lived experience of academics of the various tensions that resulted from dealing with commercialisation activities alongside academic activities - more specifically, the exploration and exploitation tension and identity tension. By focusing on these questions, this study aims to contribute to the literature of ambidexterity by providing empirical evidence on how tensions are perceived, experienced, shaped and managed amongst academics, and what type of mechanisms they employ to manage them.

Exploring in details such experience requires robust methodology and methods that enable the researcher to bring the voice of the key actors and investigate their sense making and perceptions of these tensions with some direction from the researcher. The next chapter discusses how the main methodology and research are method employed in this research to help the researcher answer the study questions and fill the gap identified in the literature review.

Chapter 3: Research methodology

3.1. Introduction:

The key challenge for the researcher is to identify a research approach that is to guide the process of researching the concerned topic and meeting the main research objectives (Silverman, 2010). For this study, the research objective is to gain a deeper understanding of the individuals' lived experience in pursuing academic and commercial outcomes. Achieving this objective requires a philosophical approach that allows the researcher to study the lived experience of the academics. This research believes that academics' views of their experience construct the reality on how ambidexterity is achieved in practice. Amongst all philosophical approaches in science, the interpretivism approach is decided the most suitable approach for this study since its main purposes assist the research to rich in-depth understanding of ambidexterity phenomenon as experienced by its actors. Also, this study argues that achieving such depth requires a qualitative stance that is based on helping researchers be active learners and allow them to dig deep to reach in-depth understanding of a phenomenon. This research seeks to reach in-depth understanding of how academics make sense of their lived experience and how they manage to act ambidextrously. Such depth cannot be achieved without allowing the participants to share their own views and offer them the chance to construct their own meanings and interpretation of two conflicting demands. This research gives a special attention to the voices of the key actors in the process of transforming the university into its third mission. Therefore, for this research each of these actors' interpretation and sense making is considered unique and should be deeply scrutinised. To go in line with this view, I chose an Interpretative Phenomenological Analysis approach (IPA) for data analysis. Research noted that Phenomenological research is useful in reaching the details on what individuals experienced and how they experienced a specific phenomenon (Moustakas, 1994). IPA considers each individual to be a creative agent in their contexts since they establish unique meanings for events, which makes them more significant to their context (Smith 1996, Eatough & Smith 2008).

The chapter is divided into eight sections. Section 3.2. begins with providing justifications of selecting interpretivism as a main approach and explains how it contributes to understanding of the individual experience in dealing with academic and commercialisation. Then, section 3.3. moves to explain why qualitative approach fits this study and helps answering its main questions. The next section, section 4.3., provides a clear discussion on the reasons of choosing IPA for analysing the data. After that, in section 5.3, the chapter discusses the main method adopted in this research for data collection. After that, section 6.3 illustrates the

process of data collection explaining the main stages that the researcher went through in the data collection process. Section 7.3 describes the process of data analysis starting from the data transcription and ending with categorising the emergent themes and turning them into meaningful narratives. Section 8.3 discusses the main ethical considerations that the researcher took into account when conducting his research.

3. 2. Interpretivism

This research seeks to come by an in-depth understanding of the experience of academics in managing the conflicting demands of academic rigour and commercialisation. Therefore, the main task for the researcher is to identify a research approach that could direct the process of studying the research topic, and meeting this research goal (Silverman, 2010).

According to Burrell and Morgan (1979), there are three main paradigms of social structure: Positivism, Interpretivism and Critical paradigms. In their view, the relationship between paradigm assumptions starts from the ontological perspective that feeds into the epistemological perspective which in turn, feeds into the research methodological approach. In the social sciences, researchers need to have their own personal view of how they experience a researched phenomenon in terms of what counts as reality (ontology), whether this phenomena is in an objective or subjective position, and how they came to know about this reality or knowledge (epistemology). Whilst subjectivism is based on a deep understanding of social actions and implies the interpretation of the social phenomena being investigated against the concepts of literature (Bryman, 2008), Objectivism, on the other hand, which lies in the Positivistic paradigm, is about the application of existing theories on the basis of developing hypotheses and examining their applicability using quantification methods (Saunders et al., 2007).

In terms of ontology, this research adopts the view that personal identities are not unitary, fixed or stable, 'never gained and maintained once and for all' (Sikes et al 1985, p.155) but rather are formed and re-formed, 'forged rehearsed and remade' (Lee and Boud, 2003, p.188) through discursive practice and social interactions... (Sikes 2006:562). Therefore, it assumes that the social world is "not given, rather, the social world is produced and reinforced by humans through their actions and interactions". In terms of epistemology, this research argues that the access to reality of different versions of the personal identity change is only through social constructions such as language, consciousness, and shared meanings (Myers, 2008).

Therefore, it takes the subjective position that is based on the belief that academics' identities and experience related to it can be shared between the researcher and the researched. Similarly, literature on ambidexterity suggests that understanding of the individuals' experience ambidexterity tensions in action requires an interpretive approach (Papachroni, 2016). The following section discusses in more details how interpretivism fits the aims of this research and answer its questions.

For this research, the researcher adopts a philosophical stance that believes in the uniqueness and distinctive version of reality amongst academics encountering identity change resulting from the conflicting demands of academia and commercialisation.

In ambidexterity research, the need for an interpretivist approach comes from the fact that researchers who adopted the rationalist approaches have been discussing issues such as, whether an individual can be ambidextrous (e.g. Gupta, et al, 2006; Mom, et al, 2009) and the factors that affect people's ambidexterity (e.g. Mom, et al, 2007; Jasmand, 2012; Top, 2010). Their view of ambidexterity neglected the complication of the ambidexterity phenomenon as it does not pay attention to the peculiarity of each individual experience and context that makes him/her different in dealing with the conflicting demands. Positivists approach fails to reach this depth and offered a simplistic view on ambidexterity at the individual level, ignoring the dynamic and complication of individual experiences in managing ambidextrous duties (e.g. Jasmand, et al, 2012; Mom, et al., 2009). Their main focus, therefore, was answering questions related to cause-effect relationships without knowing why and how people experience ambidexterity. This made their contribution in understanding this phenomenon limited (Raisch et al., 2009). However, this research argues that each academic's experience and interpretation of tensions is unique because of the variety of motivations that attract academics to perform commercialisation activities; and because of the variation of academics' research experience, history of doing research, and exposure to commercialisation opportunities. Academics are products of their past in the sense that they accumulate certain skills and experiences and abandon others while they develop their career in a certain environment (Adkins, 1995; Floyd & Wooldridge, 1999). That is, my research needs an interpretive approach to enable the researcher to capture people's unique perceptions and experiences. Interpretive is used to interpret events and phenomena in terms of how people perceive and understand their own experience (Patton, 2002). Reality in interpretive approach is interpreted through people's thoughts and purposes (Lee, 1991).

In addition, interpretivism is the suitable approach to enrich our understanding of the shifting nature of academics' identities while managing conflicting demands of commercial world and academia, hence increase our understanding of individual ambidexterity is achieved. Within a shifting and contested terrains of academic world and commercialisation world, individuals engage in creating and re-creating their role identity through a personal process of sensemaking. They tend to create their own versions of meanings of the values of their academic work and hence construct their personal identity project to cope with such change (Lam, 2009). This research adopts the view that personal identities are not unitary, fixed or stable, 'never gained and maintained once and for all' (Sikes et al 1985, p.155) but rather are formed and re-formed, 'forged rehearsed and remade' (Lee and Boud, 2003, p.188) through discursive practice and social interactions... (Sikes 2006:562). This is highly consistent with the philosophical stance adopted in this research (Interpretivism) that assumes that the social world is not given, but the social world is produced and reinforced by human actions and interactions. The access to reality of different versions of the personal identity change is only through social constructions such as language, consciousness, and shared meanings (Myers, 2008). Raisch et al. (2009) stated that the literature is lacking a conceptual and empirically validated understanding of ambidexterity at the individual level. Recent research stresses the importance of an interpretivism approach to explore the individuals' lived experience of tensions and therefore gain more understanding of how ambidexterity is achieved in practice (Papachroni, 2016). Based on these points, the researcher argues that building robust theories that offer rich knowledge and understanding of ambidexterity from the perspective of its key actors is based on examining their own realities and meanings attributed to the lived experience of tensions resulting from the conflicting demands of science and commercialising. Attaining such depth and richness of understanding has not hitherto been achieved by prior research adopting the positivism stance (e.g. Raisch et al., 2009; Mom, et al., 2009). Following such an approach a researcher is able to explore the logic of practice (Bourdieu, 1998) namely how organizational practices are constituted and enacted by actors.

Achieving this understanding of the lived experience from the viewpoint of who live it, is based on interaction and collaboration between the researched and the researcher (Baxter and Jack, 2008). When those participants share their own interpretation and experience of management of conflicting demands, the researcher is more able to understand how ambidexterity is achieved in practice and how identities are negotiated to reach balance between two conflicts logics. Therefore, this enables the researcher to understand the gap

between theory and practice (Sandberg & Tsoukas, 2011). In order to achieve these points, this research adopts the interpretive approach that assumes that one cannot understand a social action unless the meanings- that social actors, themselves, ascribe to this specific action- is understood.

To summarise, adopting this interpretive stance in ambidexterity research offers an alternative way of understanding how ambidexterity can be achieved in practice and helps the researcher understand the lived experiences of each form of tensions of the conflicting demands of commercialisation and academia. Also, it helps to understand the individuals' view regarding how they activate the socio-cognitive principle, how they negotiate the boundaries between academia and industry, and how they play with the structure of multiple role identities to manage the conflicting logics of academia and commercialisation. Answering these questions has not hitherto been achieved by prior research adopting the positivism stance.

3.3. Qualitative stance:

This section discusses the main reasons for choosing qualitative approach to achieve this study's main objectives and answer its main questions. It argues that qualitative stance is most suitable to answer the research questions and allow the researcher to explore the complexity of the identity changes and the experiences of academics managing hybrid roles. It also enables the researcher to be more reflexive on the data interpretation by making him an active learner.

To comply with the interpretivist approach that aims to reach in-depth understanding of individuals' experience, this research adopted a qualitative stance that enables the researcher to deeply understand human beings' experience in their context. Prior studies confirm that interpretivists tend to favour a qualitative method since it allows them to fully understand contexts and examines the individuals' versions of reality (Willis, 2007; Thanh & Thanh, 2015).

Studies on academics' experience of dealing with ambidextrous tasks appreciate the application of a qualitative stance to reach deeper understanding of this phenomenon. They suggest that understanding ambidexterity at the individual level cannot be achieved through pre-defined questions and per-suppositions about the individuals' perceptions. The complication of individuals' perceptions and the changing nature of their behaviour in

dealing with conflicting demands cannot be captured by quantitative research (Bonesso et al. 2013). Also, Jian et al (2009) stressed on the fact that understanding various academics' perceptions related to their involvement in commercially-oriented projects needs a research that supports theory-building. In other words, understanding the individual experience within the context cannot be reached through adopting a quantitative stance. Research on academics' experience in university settings at a particular time confirms the importance of adopting a qualitative approach since it enables the researcher to gain an insight of the reality of each academic's experieince and get closer to its context (Read, 2009).

A qualitative research approach was opted out for as a methodology for this study because it provides appropriate ways of answering the research questions of this study. This research's key questions require probing on how academics make sense of their experience in managing commercially-oriented activities besides their academic activities, how their academic identities are constructed and how identities are used to create meaning of their experience, and how they manage their identities and deal with the resulted tensions. Hence, the research questions require academics to construct and provide meanings based on their self-perceptions. The qualitative research methodology suits this study best as its main objectives are based on exploring and uncovering individual academics' views on their own experience and the meanings which they create in their narratives. This view of the suitablity of qualitative research is confirmed by some scholars who suggest that "qualitative researchers study things in their natural settings, attempting to make sense of or interpret phenomena in terms of the meanings that people bring to them. Qualitative research involves the studied use and collection of a variety of empirical materials ……That describes routine and problematic moments and meanings in individual's lives" (Denzin & Lincoln, 2005, P:3-4).

In addition, the other reason for choosing a qualitative stance is that examining the individual experience of ambidexterity requires describing the complications and the details of managing two conflicting demands and exploring the dynamics and detailed changes of academics' role identities that occur on a daily or weekly basis. According to Bonesso et al (2013), "In ambidextrous organisations, individuals face complex and changing job demands; thus, they are expected to switch between different tasks in the course of a day's work and to partition their activities to meet the conflicting dual demands" (p.394). In other words, it requires a detailed scrutiny of each academic's experience in the workplace and requires a closer look at each individual's own experience of working in specific settings. Achieving such objectives is the core feature of a qualitative methodology. Maykut and Morehouse

(1994) confirm these claims. They suggest that "Qualitative research ... generally examines people's words and actions in narrative or descriptive ways more closely representing the situation as experienced by the participants" (p. 2). Similarly, Creswell (1998) suggests that the qualitative research assists the researcher to reach a complex and detailed picture of the informants' views.

The main focus of this study is exploring the situation in depth and as is experienced by the researched participating academics. That is why a qualitative stance is required as it:

> ... tends to focus on exploring, in as much detail as possible, smaller numbers of instances or examples which are seen as being interesting or illuminating, and aims to achieve 'depth' rather than 'breadth'. (Blaxter et al 2001:p.64)

Reaching deep understanding of the process of managing conflicting demands of commercial and academic activities cannot be done by using quantitative approach. Qualitative approach provides an in-depth and interpreted understanding of the social world of participants by learning about their experience, perspectives and histories (Snap and Spencer, 2003). Understanding the detailed lived experience and individuals' perceptions and meanings cannot be achieved through questionnaires or surveys (Rubin and Rubin, 2011). It does not require testing a hypothesis using predefined questions of what is there. According to Strauss and Corbin (1998), qualitative research is identified as: "Any type of research that produces findings not arrived at by statistical procedures or other means of quantification" (p.10). Rather, it requires discovering of new knowledge. It is about opening the chance for the researcher to explore and find meanings and perspectives that emerge through the process of asking and probing. Essential part of my research process has included cycles of exploring and thinking, then reflecting and recognition of emerging lines of interest. Hence, I needed an approach **that allows me to live with ambiguity of the conflicting ideas that appeared from interviewing different academics and then allows me to resolve this ambiguity with further investigation and reconstruction of research questions**. According to Maykut and Morehouse (1994), the advantage that a qualitative researcher holds is tolerance of ambiguity that allows him/her to hold different interpretations of one event or phenomenon in mind while waiting to find out which of these interpretations is merited during the data collection.

Another important reason for adopting a qualitative stance is that this approach assists the researcher to achieve `reflexivity' in research through offering him/her the chance to write a

detailed view of an experience and to bring her or himself into the study as an "active learner" who can narrate stories from the participants' perspectives (Creswell, 1998). My interest in this study lies on drawing out subjective experiences of academics across their history and career path. This needs an active learner who is able to understand the line in the career path that shape academics' recent experience of hybrid role identities (see chapter 1).

3.4. Interpretative Phenomenological Analysis approach (IPA):

Determining the most suitable approach for my research questions was challenging. Although qualitative research encompasses a wide range of methodologies such as Grounded Theory, Ethnography, Biography, Phenomenology, Case Study and Discourse Analysis (DA), they all share a concern on the quality and texture of the experience (Wetherell, 2008); they all share the interest in individuals' everyday social problems; they all share focus on the richness of phenomenon description; and they all share the notion of multiple version of reality (Denzin and Lincoln, 2000).

This study aims to explore the detailed narrative accounts of academics who have experienced/never experienced the phenomenon of ambidexterity and find out how these academics made sense of this experience. I am interested in reaching in-depth understanding of the complex aspects of the individual experience of ambidexterity. The researcher is interested to establish what all these individuals-who have the same experience of ambidexterity within academic settings - have in common. The aims of this research is consistent with the major feature of phenomenological research, which is allowing the participants the opportunity to share the common ground they build as they experience a concept or phenomenon (Creswell, 2012). The sharing includes what they experienced and how they experienced it (Moustakas, 1994).

In phenomenology, there are several stances that can be adopted to explore the meaning of the individual experience. Interpretative Phenomenological Analysis (IPA) (Smith et al, 2009), Hermeneutic Phenomenology (Van Manen, 2007) and Descriptive Phenomenology (Giorgi & Giorgi, 2008) are main stances in Phenomenology. For this study, IPA appears to be most suitable since it considers that researchers cannot reach full exploration of the meaning by themselves and that a double hermeneutic process should occur because both myself (the researcher) and the participants are interpreting meaning (Smith & Osborn, 2003). This does not exist in both descriptive phenomenology- that is based on reduction of the meaning and therefore it limits the room for researcher to add his interpretation – and

Hermeneutic Phenomenology -that is too flexible in a way that allows the researcher to play with the texts and then to get lost in deep conversation with them and consequently leads to confusion in creating a clear framework for data analysis.

IPA is based on the belief that individuals are creative agents in their contexts (Smith 1996, Eatough & Smith 2008). Individuals are creative agents since they establish meanings for the event that matters for their life experience, which makes them more significant to their context. This substantial feature of IPA allows researchers to get closer to the context-dependent lifeworld of the individual and then create a unique meaning to this activity (Smith et al 2009). This aspect is highly important in this study context because reaching the special interpretations and the meanings of the key actors will enable the researcher to reach better understanding of how ambidexterity is achieved and how individual academics react and respond to various types of tensions.

In this research, I am interested in how academics make sense of their lived experience within their complex context that witnesses change in identity towards commercial agenda, and how they academics create meanings of their involvement in commercial activities while they preserve their academic focus/academic identity. Answering these questions is the main focus of IPA. According to Eatough and Smith, 2008, the IPA offers the ground for researchers to explore how a person makes sense of his/her lived experience in a way that allows them to interpret these experiences and therefore to become part of the sense making activity . IPA is based on the researcher's involvement in an intense interpretative activity with the personal verbal material obtained from each participant in order to gain a rich, in-depth account of their personal experience within their contexts (Smith et al 2009, Larkin et al 2011). Hence, IPA separates itself from other qualitative approaches, such as discourse analysis, which is based on the use of language (Chapman & Smith, 2002) and 'how subjects and objects are constructed' through discourse (Frost et al 2010:444). For this research, the lived experience is much more than 'textual and linguistic interactions between people' (Eatough & Smith 2008: 184). It is about analysing what is beyond the interview text and shedding the light on the way individuals construct the meaning of their experiences and their identity change within a specific context.

As mentioned in Chapter 1, a substantial part of academics' experience of ambidexterity is managing multiple identities and the process of producing and reproducing the original academic identity (Jian et al 2009, Barnett & Di Napoli 2007). Scholars in identity research

have confirmed the suitability of IPA for studying individuals' identity constructions. For instance, Smith (2009) stated that IPA is suitable for studying experiential accounts and therefore for examining individuals' identity constructions and their involvement in their context. Additionally, Alvesson and Willmott (2002) confirmed that in-depth understanding of identity regulation requires IPA approach. More recently, Gill (2015) adopted IPA as a main approach to explore the employees' identity construction and the dynamics process of identity regulation amongst management consultants.

In summary, the researcher selected the most suitable approach to achieve the aims of his research (offering in-depth understanding of the complex aspects of the individual's lived experience of managing two conflicting logics (academia and commercialisation) and examining the unique meanings and the sensemaking of academics exposed to commercial agenda). Revision of literature on IPA approach has revealed that its main functions are highly consistent with the previously mentioned aims of this research. However, achieving these aims also requires the appropriate method to collect the data in a way that ensures that the voices of the key actors are explored, facilitates the researcher's participation in the construction of the meaning of their experiences, and gives the researcher the possibility to probe on interesting themes and ensure the coverage of his research questions. The next section clearly discusses how interviews enable the researcher to achieve these goals.

3.5. Research method:

3.5.1. Interviews:

To achieve the objective of this study which is exploring the lived experience of academics involved in commercial projects, in-depth semi-structured interviews are employed as a main method for data collection.

Importantly, interviewing is a particularly effective technique that facilitates a privileged access to the lived experience of the participants (Kvale, 1996; Van den Berg, 2005). The main advantage of interviews is offering the participants the chance to explain their own world in terms of what is going on and why they do what they do and how they understand their world. Interviews provide researchers with deep and detailed understanding of a phenomenon as experienced by the participants (Rubin & Rubin, 1995). Furthermore, it allows the researcher to be part of meaning construction of the participants' experience.

Interviewing is not only a neutral exchanging of questions and answers; it is based on an active process of bounding and construction of meanings (Fontana & Frey, 2005).

This study relies on qualitative interviews to obtain rich data that help in building theories about the experience of academics, which is still a virgin area to be researched. The experience of participants as well as the examples they provide during the interview enrich the study with the depth needed for understanding this phenomenon (Rubin & Rubin, 1995). Interviews provide access to narratives of the constituent elements of academic experience. Interviews are considered a useful method for gaining a deeper appreciation of the everyday lives, controversies, and exemplary moments that defined these participants' experiences.

Semi-structured interview practices have been employed widely amongst scholars using IPA approach. These scholars suggested this type of interviews as an exemplary form of data collection for this methodology (Smith et al, 2009; Eatough & Smith 2006; Pietkiewicz & Smith, 2014; Gill, 2015). A semi-structured approach is employed in this study to allow the researcher to follow up interesting issues that arise during the interview, on the one hand, (Smith, 2004; Pietkiewicz & Smith, 2014), which facilities exploratory discussions and enables the collection of interviewees' reflections (Rubin & Rubin, 2005) and to focus on a particular predetermined subject, that is, academic experience of ambidexterity, on the other hand. Unlike unstructured interviews that aim to address broad issues, the semi-structured interview technique allows the researcher to address specific issues (Bryman & Bell, 2003; Rubin & Rubin, 1995). This makes the process of data collection more systematic and ensures that certain topics and issues of interest are covered (Patton, 2002; Pietkiewicz & Smith, 2014). In some interviews, I had to stop the participants and redirect the conversations to the issues on the interview agenda since they went off the topic to discuss unrelated issues such as how much they earn from each of the commercial projects, details on the scientific contribution of projects they take part in, and discussion of projects that have no commercial focus.

The challenge with semi-structured interviewing is that it is highly reliant on the interviewer's skills of active listening and asking open ended questions that reveal hidden assumptions and clarify unclear points (Pietkiewicz & Smith, 2014). Membership of the same field, research in Higher Education, was an asset for me to develop the correct sense of academics' experience. Conducting pilot interviews, revision of the relevant literature and involvement in discussions with the supervisors who are members of the same field assisted

me to develop the questioning skills that allows me to probe on interesting points appeared during the interviews; and assisted me make an appropriate sense of the narratives and the evolved meanings. In the interviews, the role of the research was highly important to direct the discussion towards the significant events related to academics' lived experience. In some interviews, interviewees deviated from the main aspects of the interview guide and began discuss unrelated issues such as how much they are paid for their efforts, the involvement in events that are not commercially oriented, and the details of the companies they worked for when they were in the industry. In these occasions, the researcher had to interrupt them and direct the discussion into its main objectives. Also, the researcher' active listening played an important role to go back and explore more on the interesting points appeared during the interviews and skipped quickly by the participants.

3.6. Data collection process

The data collection process began by selecting the participants whose views are important to answer the research questions. To ensure this, I deployed a purposive sampling to choose the proper participants. After that, the interview guide is designed to ensure that all research questions and probes are covered. Also, the process included conducting one pilot interview to enable the researcher to practice interviewing within the same context and gain some confidence to start the actual data collection. Additionally, the data collection is followed by collection of more data from participants who did not involve in commercial activities.

3.6.1. Recruitment of Participants:

In order to reach proper participants who can answer the research questions and enrich our understanding of the experience of managing commercially-oriented activities besides academic duties, this research advocates a small and purpose sample. According to research in IPA, the commitment to a detail interpretative account and the achievement of the depth (rather than the breadth) of individual experience can be reached with a small sample (Larkin et al, 2006; Smith, 2011). IPA does not aim to achieve theoretical saturation, nor does it aim to achieve generalisation of findings to a population. IPA has a sample size usually towards the lower end of 1 to 30 (Brocki & Wearden, 2006) as per phenomenological studies (Starks & Brown-Trinidad, 2007). The purpose is to have sufficiently rich data as opposed to

sufficient numbers of participants. Adhering to the recruitment perspective proposed by the IPA methodology, 14 participants (3 women and 11 men) were selected purposefully to be interviewed. This number of participants is considered sufficient to explore their lived experience of managing ambidextrous activities (Smith, 2011). This small sample also enabled me to establish good rapport with the participants and to fully engage with their accounts. It also allowed me to intensively discuss and understand the common perceptions and experiences of ambidexterity amongst the purposively selected group of academics within a higher education context. Guest et al., (2006) noted that 'For most research … in which the aim is to understand common perceptions and experiences among a group of relatively homogeneous individuals, twelve interviews should suffice.' (p.79).

For selecting the participants, the research deign necessitates selecting specific individuals who have experienced this phenomenon, so that they can provide meaningful input towards answering the research questions (May, 2001). Individuals were selected based on one main criterion; to wit, they are full time academics who have experience in dealing with commercially oriented activities that generate funds to their university. The recruitment process began by looking at each participant's profile and contacting the Technology Transfer office TTO to ensure that I can reach the right participants and gather information about the departments that have are active in commercialisation. Then, a list of 25 potential participants was developed. After that, a recruitment email was sent to all the participants to call them for interviews. Out of 25 participants, 11 agreed to be interviewed. Then, in later stage, the researcher emailed additional three academics who have not involved in commercialisation. The recommendation of some interviewed academics helped the researcher to recruit them.

Participants were full time academics working in a UK university. Participants have rich experience in the Higher Education ranging from 7 to 26 years. In terms of commercialisation projects, participants were involved in different forms of commercialisation (consultation, research partnerships, start-up companies, Knowledge Exchange project, Contract research, Spin-off company). Some of them have experience only in one form and others have been working in multiple forms. Others have no experience of any form of commercialisation and only immersed themselves into pure academic field. The following is a table describes the research participants.

Table 2: Summary of research participants:

Participant code	Job level	Department	Gender	Forms of commercialisation	Experience in research	Career experience s
001	Professor	Computer Science and Electronic Engineering	M	Collaborative research, consultancy, contract research	17 years	Worked in various projects for the industry but all were performed as part of his academic work. Worked for two different universities in the UK
002	Professor	Economics	M	Consultancy	26 years	Worked for the industry and government as consultant, worked in two universities in Europe
003	Senior lecturer	Economics	M	Consultancy	11 years	No experience in industry, Worked for only one UK university
004	Senior lecturer	Business School	M	Knowledge Exchange project	26 years	No experience in industry, worked for three different UK universities. Worked in research projects for three public organisations.
005	Professor	Business School	F	Consultancy	12 years	No experience in industry, worked for two different UK universities
006	Professor	Human Rights	F	Consultancy	14 years	No experience in industry, Worked for only one UK university. she did some work for NGO.
007	Senior lecturer	Biological science	M	Contract research	16 years	Worked for only one UK university. Worked in public university for 2 years.
008	Professor	Computer Science and Electronic Engineering	M	Contract research	14 years	Worked for only one UK university. No industry experience
009	Senior lecturer	Computer Science and Electronic Engineering	M	Spin-off company	18 years	Worked 6 years in industry, worked for three UK universities
010	Prof	Computer Science and Electronic Engineering	M	Start-up company	18 years	Worked for university for five years, then worked in industry for 15 years, and then returned to university for 13 years again.
011	Prof	Computer Science and Electronic Engineering	M	Spin-off company	16 years	Worked in industry for two years. Worked for two UK universities
012	Senior lecturer	Business school	M	None	15 years	10 years worked as a manager for different private companies, then decided to stay in academia. Worked for one UK university
013	Senior lecturer	Film studies	F	None	19 years	No experience in industry, Worked for only one UK university.
014	Lecturer	Sociology	M	None	7 years	No experience in industry, Worked for only one UK university

3.6.2. Designing the Interview guide:

After choosing the participants, an interview guide is developed. An interview guide ensures that the researcher has mapped the areas considered to be important to cover in the interview, and that careful consideration is given to potentially difficult topics and the placement of sensitive questions (Smith et al. 2009).

In this research, the interview guide has been in a continuous process of improvement. Questions were written and re-rewritten. Follow-up questions, probing questions were being added throughout the interviewing period. Kvale and Brinkmann (2009) suggested that follow up questions are critical to the interview process to develop more detailed or participant-led responses but are, more often than not, constructed on the spot in direct response to what has just been said. This ensured the inclusivity of the emergent topics and issues in the interview guide and the depth of understanding of the core issues and hence the development of meanings and sense making of the experience are fully exploited throughout the interviews. The final form of the interview guide (questions and probes) is described in the following table:

Table 3 : Interview guide (Questions and Probes)

1. Would you tell me briefly about your career as an academic since you began until now?
Probes: History in working in Higher Education, number of universities the participants worked for, any experience in industry.
2. Could you tell me about your previous work in commercial activities?
2.1. Tell me about your experience in working commercial projects outside academia
Probes: what form of commercialisation, skills did you develop during this work, how did you find the first experience?
2.2. Tell me about your experience of working in commercial activities alongside the academic duties before joining this university? (If applicable)
3. Could you tell me about your experience of commercialisation activities at this university?
3.1. What form/ forms of commercialisation activities have you involved in? why did you choose this form?
3.2. How the opportunities come to you? What helped you to get it?
3.3. Who do you think help you to get this opportunity?
3.4. Why did you involve in such activities?
4. Could you tell me about your experience of managing commercially-oriented activities alongside your academic duties?
4.1. Tell me about time you had to work in commercial activity alongside your academic activities

4.1.1. What difficulties did you encounter?

Probes: the nature of these difficulties, why do you think you had them.

4.1.2. How did you manage to do it all at the same time?

Probes: How your experience (in industry and in academia) helped you to manage both? How your skills helped? What helped you to address them?

4.2. What do you think the relationship between commercial activities and your academic work?

Probes: relationship with teaching, relationship with research, relationship with career, any conflict between the two.

4.3. Why do you think these commercialisation projects are important? (Important for yourself, your career, for your role, for the university?); how would you increase your involvement in such activities?

5. At the end, would you like to add any interesting thing about your experience of working such projects?

3.6.3. Conducting a pilot interview:

The actual data collection began by conducting a Pilot interview. Running a pilot study before embarking on the real interviews was crucial as qualitative research about ambidexterity in academia is rare and, therefore, there is lack of guide for interview questions. The interview was conducted with a lecturer from a university in the North of the UK, in summer 2013. It was a friendly conversation that went through his career, projects and experiences in industry and academia. This interview lasted 40 minutes.

Boeije (2010) advises researchers not to perpetuate their state of mind usually developed during the literature review stage. Rather, researchers should be open and attentive to conceiving possible new emerging research themes and, following this, redesign the interview questions accordingly. The researcher in this study followed this advice and conducted one pilot interview, which helped broaden his perspective to new themes and offered the chance for the researcher to be away from the literature review and get closer to a real experience and real actor. The pilot interview helped the researcher to refine the interview questions, add more probing questions and enhance the understanding of the context of the research generated from real cases and away from literature. A clear example of this, the first draft of questions used in the pilot interview did not include enough probes on the previous experience of academics in industry and how it helped them to commercialise their work. Having looked at the transcript of the interview, I have noticed that the interview is so broad and does not give enough depth of academics' lived experience.

Additionally, the pilot study stage influenced positively in enhancing the researcher's data collection plans and procedures (Yin, 2009). It helped the researcher to develop confidence to

speak about the research topic and move between questions more easily without missing the coverage of all intended points. Before this interview, the research questions and the interview guide was not completely clear in my mind. Reading literature was not enough for me to identify the key questions that need further investigation, nor to know what reaction the interviewee could make to the format and the wording of my questions. For instance, some yes/no questions were removed and replaced by more open questions. I also found that starting my questions with "tell me about" is highly useful to extract stories and information from the participants. In addition, I changed some broad questions that lead to unnecessary discussions. For example, I had to change the first question from "tell me about yourself and you research experience" into the format mentioned in table 3 with the probes.

3.6.4. Other important procedures

As I mentioned earlier, I sent emails, (A copy of the email is included in the appendix A), to participants beforehand explaining the aim of the research and the required data that interviewees need to prepare before the actual interview. Basic data was collected about the participants such as research history, career history, areas of research, department, age, and gender since they are important factors for understanding the context under which the ambidextrous research is conducted. I would say I re-emailed the participants who did not reply to the first email.

The interviews were carried out in a quiet place so that the recording can be heard without any distractions and both the interviewer and interviewee are not be interrupted (Creswell, 2007). In most cases, interviews were held in the participants' office where academics felt comfortable. All interviews went smoothly with few interruptions that did not affect the quality of recording and the interview. The interviewees were asked to sign the consent form before the beginning of the interview and he/she was given the chance to ask questions before the interview (See the consent form in Appendix B). Interviews lasted between 23 minutes to 54 minutes.

To ensure the coverage of all points during the interview and keep a record for each interview (Bernard, 2000), I designed an interview guide for each interviewee that is divided into three main areas. First area is about the general information about the interviewee and interview (such as the place, the time, and the code); second area includes all interview questions and probes; third area includes a table for general comments that allow the researcher to reflect any important aspects worth mentioning after each interview (See Appendix C). The guide

for each interview was printed and then all copies of this guide were collected in one folder that is used as an archive for the researcher so that he can return to any notes or comments made during the interview. In particular, this guide was also a highly useful record for the none-transcribed interviews because it allowed the researcher to go back to the detailed notes and answers when stuck in the data analysis.

The main reason of this is that IPA is based on the philosophical assumption that individuals experience the same phenomenon differently and therefore they have multiple versions of reality. IPA emphasises on capturing these multiple realities by using multiple quotations of the actual words of participants and by presenting the differences and as well as the similarities of experience both within and across individuals (Smith et al. 2009). To enable capturing the exact words and phrases, the interviews in this research were recorded using a digital voice recorder. Two recording devices were taken to each interview to avoid any potential problems in recording. 12 participants agreed to record their interviews while 2 of them did not allow the researcher to record their interview. In order to ensure the accuracy of the data taken from non-recoded interviews, I asked the interviewees to give me enough time to make intensive notes to ensure that I don't miss crucial information and do my best to write direct quotes when possible. Besides, after the interview I recorded my voice to explain some points that were mentioned in the interviews but did not get enough time to explain them during the interview). Finally, I transcribed them directly after the interview.

3.6.5. Adding more participants

After the discussion of the data analysis of the 11 interviewees with the supervisors and the examiners, I decided to add three more participants to the research data. The decision is taken because the researcher believes that broadening the perspective of the lived experience of academics encountering the challenge to perform commercialisation activities alongside the traditional academic ones requires including those who confront the corporation ideology (commercialisation) but never involved in activities tied to this ideology. Especially, my review of the literature showed that there is an ongoing debate whether academics have transformed towards integration of commercialisation role into their academic profession or they still resist such transformation and develop attitudes against it (Lam, 2010). Therefore, considering the views of academics who have not involved in commercialisation enrich the data by adding more various responses and the sensemaking processes that academics show

about the experience of working in commercialisation besides academic duties. It shows the extent to which they are different from the other academics (who involved in commercialisation) in the way they negotiate their academic identity and the extent which they are ready to move beyond their core academic roles.

For interviewing these three participants, I modified the interview questions so that they can show their responses to commercialisation, reflect how they shape the boundaries between academia and commercialisation, investigate their perception of tensions resulting from performing hybrid role indemnities, and examine why they have not involved in commercialisation (see interview guide 2 in the appendix D).

3.7. Data analysis process:

Generally speaking, data analysis was guided by an attitude of openness and a willingness to dwell in the data, consistent with the approach taken towards data collection. The researcher's main focus during data analysis remained on how participants make sense of their experience of dealing with dual duties and how their experience comes into being (Smith et al. 2009). To ensure that, the researcher followed the guidelines created by Smith et al (2009). The researcher went through different layers of analysis case-by-case and then ensured moving back and forth between different levels of the analysis of each case, and across cases in the later stages, building familiarity with the text to ensure that the findings are grounded in the data.

The initial contact with the data was after the interviews through data transcription process. Transcribing interviews is defined as *'the transformation of the oral interview conversation to a written text in the form of transcripts amenable to analysis"* (Kvale & Brinkmann, 2009: 177). Although the process of transcribing the interviews is time-consuming and exhausting, I relied on myself to do the transcribing since this enables me to immerse in the life of the participants and sit closer to the each participant's account. The importance of conducting the transcribing is that *transcription is an interpretive process, where the differences between oral speech and written texts give rise to a series of practical and principal issues (*Kvale (2007: 92). The other advantage that researchers can gain through doing it is having the chance to secure the details relevant to the research's specific analysis (Kvale and Brinkmann, 2009). Moreover, doing it offers the chance for the researcher to maintain consistency in the language and it helps him to avoid missing any data during the transition process (Kvale and Brinkmann, 2009).

At this stage I listened to the interviews several times to gain familiarity with the several elements of their discourse. I wrote down my comments on the interesting aspects of each interview. A word document is created for each participant and given a number to make it anonymised. As I transcribed the interviews, and engaged more deeply with participants' accounts, several significant reflective aspects emerged. I discussed these aspects with my supervisors to obtain some guidance. Following transcription, changes were made to the transcripts where necessary to correct the mistakes that occurred in the transcription of technical words that only became clear through repeated listening. Also, I anonymised all identifiable information such as the name of universities, businesses, government partners, or some identifiable numbers, and names. Then, each participant is given a number.

In the next stage, in order to avoid being overwhelmed by the data size, I started the data the analysis by analysing the interviews that appears to be most successful. After listening and transcribing the interviews and making my notes on the interesting ideas emerged from them, I made the decision to start with four interviews (002; 005; 010; 011). These interviews were selected because they provided deeper meanings and insightful answers and the interviewees were more talkative and provided meaningful answers to all parts of the interview guide. I began the process by analysing each interview and extracting the most important themes arising from it. The two main tensions (exploration-exploitation tensions, identity tension) guided the extraction of the main themes. All subthemes were extracted based on the sensemaking and the responses of academics produced from the experiences tied to the main two themes. Then the process is followed by writing codes for each theme and extracting most important quotations for them and leaving my own interpretation and description[4] using the software (MS word). The research used MS word's features to highlight the main themes and subthemes in each transcript. For instance the review feature allows the researcher to add comments that explain each highlighted area. Then all themes and comments were transferred into tables using Macro function. This was made by adding a new Micro (*Public Sub ExtractCommentsToNewDoc ()*) to each transcript. Each interview is represented as one case study that was thoroughly analysed and read many times to gain understanding of the individual theme and the connections between the emerging themes with in each case (Bacon, 2014). An example of this process is clarified in the next table.

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[4] These own interpretation and description is checked and discussed with the supervisors (who work in the same context of interviewees) to ensure I made an appropriate sensemaking of the data.

Table 4: An example of analysing an interview (011).

Main theme	Over arching subtheme	Code	Important quotes	Comment	Page no
Theme 1 : Exploration-exploitation tension	Subtheme 1 : Making sense of ambidexterity by referring back to their previous path "	1.1.A: exploitation of the previous skills learned in industry	<u>I have worked in industry and my work is not dissimilar to be in technical lead for something like that [start up company]. …. so I think I was ok in terms of the skills I needed to work.</u> <u>There is an element about working in a different style in industry rather than in academia but I was exposed to that in my previous roles (011)</u>	For him, the current experience of working in a start-up company is based on skills learned from previous experience in industry without which he would have seen troubles to work in this form of commercialisation.	Page 2
Theme 1 : Exploration-exploitation tension	Subtheme 1 : Making sense of ambidexterity by referring back to their previous path "	1.1.A: exploitation of the previous skills learned in industry	<u>In terms of running this project, I had some management training when I was in industry so that is why I picked up my skills</u> so that is why I picked up my skills. So I was not so experienced to go and join the company a CEO (011),	The industry work made him privileged over pure science academics as it enabled him to gain skills related to managing projects, which led him to perceive his current work as exploitation of the skills learned in industry.	Page 3
Theme 2: IDNEITIY TENSION	Subtheme B: accommodation of commercial role into academic one	2.B.1: making connections by showing the benefit of commercial projects for academic role	<u>I think it becomes increasingly interesting because of the IMPACT that is used in the REF, assessment. That is why there is more people are doing this kind of stuff.</u> I think it is really rewarding if you are committed to do this kind of stuff. There are more people notionally started to work on commercialization (011).	It shows how the commercial projects feed the current academic role (not the opposite).	Page 7

After doing in-depth analysis of the first four interviews, I started analysing the remaining interviews and cross cutting themes that show similarities and differences between transcribed interviews. The process started to become gradually easier as I immersed myself in the analysis which, in turn, was getting more and more thorough. After finishing this process and development of general understanding of the themes, I have started the next level of analysis, which is reading across individual interviews to look for similarities and contrasts

between themes. This process illustrates the necessity for the researcher to move from the "part to the whole" or the "particular to the holistic" (Smith et al. 2009, p.104). As the process of comparison between themes and making sense of the data across, repetitions and un-linkable subthemes were left aside. This process was repeated until the themes were grouped and reduced to a manageable number (Smith, 2011).

To ensure the depth and the richness in data analysis and understand the themes and the connection between them and reach the ability to represent them into sense making narratives, the researcher attempted to go back and forth and involve in zooming in and out in interpreting the data. It is a cycle of interpretation. Within IPA, the interpretative cycle involves a series of interpretative attempts, a 'dynamic relationship between the part and the whole at a series of levels.' (Smith et al 2009, p.29). Therefore, analysing interviews is about going beyond the first level of descriptive analysis and conducting multiple levels and layers of analysis to reach meanings embedded between lines. According to Smith and Osborn, (2003) IPA focuses on reaching a rich account of a person's experience which goes beyond first level description and attempts to do justice to the person in their entirety. IPA is not about a production of an objective account and it is about being able to directly access a person's experience, but it only enables the researcher to access an account of the experience as the participant makes sense of it during the interview (Smith et al. 2009; Smith & Osborn, 2008).

Within this cycle, I was always concerned if the analysis is good and deep enough. Then I learned that there are no formal means of measuring or identifying when an analysis is good enough or complete (Smith et al. 2009). I went through in the data analysis several times and stopped when I felt that I can construct a coherent story that can explain all data together. My supervisor made constructive comments on the things requiring more revisiting and deeper analysis. This helps me produce one story that links most interesting aspects emerged during the interviews and at the same time give the sense to the reader and to the people working in academia.

The last stage of the analysis is pulling out all themes and structuring them in a way that creates meaning and offers a clear answer for the research questions. According to Reid et al. (2005), the themes found amongst participants should form some sort of structure that can be presented in a clear structure. The researcher must extract the themes supported by excerpts from participants' interviews and offer their own interpretation of what the themes mean

(Smith & Osborn, 2007). In choosing the excerpts of the participants, I noticed that some scholars such as Gill (2015) chose very short quotations to interpret the data. This offers less clarity of individuals' account and allows the research to make vague claims of his interpretation of the data. Distinct from Gill's way, I relied on choosing longer quotes in my data analysis in order to clearly show the context of the statements and offer the reader more contact to make sense of the extracted data. This is highly important for this research as my aim is to show enough details of the meanings and sensemaking attributed to the main actors regarding their experience and their cognitive responses to the conflicting demands. Short quotations would not help to exhibit the voices of these individuals and might not offer enough explanation of the changes of their role identities and of the meaning of such experience within the studied context.

A map of themes and their connection is created to give the reader a whole picture of the whole model (see Appendix E). The map shows the main subthemes emerged under each main theme (exploration-exploitation tension, identity tension). It is the final model that explains all themes, subthemes and codes of the whole interview data. Reading this map enables the reader make sense of the different layers emerged from my data analysis.

3.8. Ethical considerations:

The research project was subject to guidelines established by University of Essex. An ethical approval was obtained before the data collection began. Researchers should consider many ethical issues when they are taking any decision regarding their research.

> In the end researchers have to take decisions about how to carry out research
> that make the process as ethical as possible within the   frameworks of the
> project. (Busher 2002:86)

Confidentiality, anonymity, Intrusiveness, data security, data interpretation, and participant consent are the main ethical issues related to qualitative research (Lichtman, 2012; Richards & Schwartz, 2002). Ensuring confidentiality and anonymity was important for this study because it increased the trust between the researcher and the participants. As a consequence, I felt that participants were not hesitated to share their information and knowledge about their experiences and talking about some companies they worked for and the colleagues who assisted or worked with them in certain projects.

However, it is worthy to mention that the ethical consideration affected, to some extent, the quality of two interviews since the interviewees did not permit the researcher to record their interviews. Despite explaining the confidentiality and anonymity of the information taken from the interviewees, these two participants asked the researcher to put the whole conversation off the record the without explaining the reasons of their rejection. It was difficult to take notes for all details of participants' experiences and capture their exact quotes and it was difficult to fully concentrate on all parts of the questions and to probe while taking notes. However, the researcher made some important steps to overcome this challenge (as mentioned earlier in section **6.4.).**

Therefore, special care is taken to maintain the confidentiality and anonymity of participants in the storage, transmission and sharing the data collected. The names or other disclosive information about individuals or organizations were not included in the final published outputs unless special permissions are obtained. For maintaining anonymity, we substituted the names with pseudonyms. I ensured that any indications of participants' names, other names mentioned in the interview (especially about their networks) and private information which the participants do not want to share are replaced by special codes. Also, all transcriptions were carefully double checked for disclosive information.

In terms of Intrusiveness of participants' time (especially they are researchers and have limited time during the teaching terms), the researcher sent an email explaining precisely the time that will be taken from the interviewees and make sure that the time is suitable for them. In terms of the space, the researcher made sure that interviews are conducted in the place where the participants feel comfortable to speak about their experiences and do not feel their privacy threatened.

In terms of data protection, the data collected in this research are used for this research purposes only. Interviews were recorded by a digital recorder used only for this research. Recordings were stored on password-protected PC. This is accessible by the researcher only. The transcribed data were held securely on password-protected PC. The data are also held on USB, which is protected by password. The researcher allowed his supervisors to view part of his actual data during the data analysis process. However, none of this data is kept in their PCs. Personal information included in the contest forms and any other documents that take hard copies form is held in a locked cabinet. The researcher explained the process of securing the data to the participants. They were informed how the data will be used after the research

ends. The researcher works within the boundaries of the data protection (1998), the freedom of information (2000) and the ESRC's ethical guidelines (2010).

In terms of participants' consent, participants have the right to be informed of the aim of the research before they accept or refuse to take part (Lichtman, 2012). Therefore, purpose of the study and its contributions were emailed to the participants and also initial consent was obtained before interviewing them. Subsequently, a consent form was sent to participant in order to fill and sign it before the start of the interview.

In terms of data misinterpretation, the interpretive nature of qualitative means the resulted data is one version of reality and the validity of the findings must be judged based on the extent of the care taken when the data analysed. Participants in qualitative research are more likely to feel that their views have been misinterpreted (Richards & Schwartz, 2002). This feeling might be increased in this study since participants are academics who know how to read the data better than ordinary people. In order to lower this risk, the researcher sent a copy of the final draft of each interview interpretation to the participants who were given the opportunity to make some changes in a case they feel the data misinterpreted.

3.9. Conclusion

This chapter established a clear strategy for data collection and data analysis. The chapter starts by offering justification of choosing the interpretivism paradigm that accommodates the main ontology and epistemology of this research project. This research aims at producing knowledge in ambidexterity research on the basis of academics' lived experience and actions of dealing with this phenomenon. This is consistent with interpretivism's main assumption that the social world is produced and reinforced by human actions and interactions. Also, it suggests that the view of reality is mediated through the individual lived experience of this reality and also through our specific social, cultural and historical context. After that, the chapter argued that a qualitative stance is the best way to answer the research questions for different reasons such as offering the tolerance of ambiguity that allows the researcher to hold different interpretations of one event or phenomenon in mind during the data collection, assisting the researcher to achieve `reflexivity' and writing a detailed view of an experience and bringing his own narratives of the stories experienced by the participants, and providing an in-depth and interpreted understanding of the social world of participants by learning about their experience, perspectives and histories.

Although methodologies such as Grounded Theory, Ethnography, Biography, Phenomenology, Case Study and Discourse Analysis (DA) all share a concern on the quality and texture of the experience, the chapter argues that IPA is considered to be the most suitable approach in the most suitable approach in analysing and interpreting the data. Then it moved to justify the selection of in-depth, semi structured interviews as a main method of data collection.

After that, a section is dedicated to illustrate the main process of data collection. It starts from pilot interviewing and the benefits gained from the pilot interview made and then describe how participants were emailed and the selection of the interview site. Finally, it shows the importance of both designing an interview guide for each interview and using a recorder to capture interviewees' words.

Before ending the chapter, one section is designed to explain the data analysis process- that allows the research to reach the detailed and in-depth understanding of academics' accounts and experiences- starting from the transcription of and listening to interviews, moving to extracting the emerging themes from each interview and then across interviews, and ending with categorising the final themes and constructing narratives that create the sense of individuals' lived experience.

The next chapter will discuss the main findings that resulted from the analysis of interview data. It will discuss the most important aspects of each participant's response to the research questions.

Chapter 4: Data analysis

4.1. Introduction

This chapter presents the results of the data analysis yielded from the interviews. The main goal driving the data collection and the subsequent data analysis processes is to advance our understanding of how academics bring ambidexterity into being and to explore the lived experience of academics who involved in commercialisation alongside their traditional academic duties.

This research discusses two dimensions of academic ambidexterity. The first dimension of individual academic ambidexterity is their ability to manage the tensions of exploration and exploitation. In this regard, it answers whether academics' current experience of dealing with commercialisation besides academic activities brings tensions of exploration and exploitation. The second dimension is how academics respond to an identity tension resulting from dealing with two distinct role identities; commercial identity and pure academic identity.

Interviews have shown three main findings that interpret the lived experience of academics (for better understanding, See figure 1 in the end of this chapter). Firstly, the interview was an incident for academics to recall their previous experiences and show its impact on their current experience of managing the two roles. Data revealed that academics' current experience of commercialised activities is path dependent since academics, regardless the variety of experiences, their length of experience and their level of involvement in commercialisation, tend to rely on a previous pattern of behaviour when they deal with commercial activities. Secondly, the analysis of interviews revealed that role identity modification is used widely by participants to make sense of their experience of ambidexterity. Data show several ways to express the changes occurring to their current academic identity and show the role of commercialising agenda in reconstructing their academic role identity. Thus, the second section of this chapter highlights different facets of identity modifications that academics show while transiting into commercial agenda. Thirdly, the discussion of role identity leads to another important feature of academics' lived experience, which is how academics manage the two conflicting roles. Therefore, the third section shows that academics bring ambidexterity into being by applying different solutions to manage the hybrid role identity and ensure the primacy of the modified academic role. By providing these findings, this research reaches its aims which are based on providing thorough understanding of the ambidexterity in academia and how this phenomenon is achieved at the individual level.

4.2. Exploration vs. exploitation tension –Path-depending approach

It was previously mentioned that this study adopts the view that defines exploitation activities as activities creating reliability in experience (Bontis et al., 2002; Holmqvist, 2004; Levinthal & March, 1993) which is associated with deepening an individual's existing knowledge base (Levinthal & March, 1993). Such exploitation activities of individuals include using and refining their existing knowledge (Levinthal & March, 1993). At the other end, exploration activities are activities creating variety in experience and resulting in learning by exploring new possibilities (Holmqvist, 2000). In this sense, academics involved in commercialisation besides academic activities might be exposed to the tension between exploitation-relying on the existing knowledge, abilities and skills tied to their traditional academic duties, and exploration- depart away from the science track and norms and explore a new set of skills and abilities required to perform the other competing activity-commercialisation (Levinthal & March, 1993). In the data analysis, I deployed this logic to look at the lived experience of individuals of the tension resulting from exploration and exploitation.

According to literature, individuals' own experience implies that academics can employ one of two possible strategies when making decisions: exploitation or exploration. In the first case, individuals may choose actions that replicate or are closely related to the ones they have already taken, thereby exploiting their pre-existing knowledge. In the second case, individuals can choose new actions that are distinct from the ones that they have already taken (Minniti & Bygrave, 2001). This research's findings complement with prior research's findings that suggest that the main actor's interpretations of the tensions shape the way they deal with them (Papachroni, 2013). This section explains how academics interpret their current experience and shape the meaning towards an exploitation end; describing it as exploitation of their knowledge and skills repertoire.

The analysis of interview data shows that academics make sense of their experience through calling back existing patterns of behaviour. Data analysis reveals that academics' experience of managing the two types of activities is located towards an exploitation side on the exploration-exploitation continuum. The current experience of pursuing commercially oriented activities alongside academic activities is a product of the previous path which academics have followed throughout their career journey. In other words, the previous experience that academics have built in academia and/or industry means they developed skills and capabilities that enable them to work in such projects.

One of the academics, one of the academics whom I interviewed has a 12-year experience in academia. She was involved in a consultancy project which matched her research interests and skills when she conducted the literature review for the project. The following quote shows that academics' real experience of commercialisation is portrayed as exploitative in nature since it is based on a simple extension of what they have been doing in their academic research and teaching.

> *It is just me looking some things up in books for them. But basically what I did was scoped out a project from the beginning. We did a literature review on best practice in [X subject] in social enterprises. Now there is no literature on this, so we had to look in the business ethics literature... I know this literature because I teach it and I am aware of it because it is in the journals that I read and so on....(005).*

Also, she elaborates more on this point in another part of the interview:

> *An email came out and it said if anyone was interested in performance management and I thought well I teach [this subject] I guess that makes me an expert……..that it was not so completely unfamiliar area really. I knew how to search and what to do with it when I found it (005).*

For her, the experience of the hybrid role is based on managing several activities (similar in nature) within specific time. It is about adding another activity to the normal routine of reading literature and doing research. There are no difficulties and uncertainties attached to this experience in that it does not require a long term planning and remarkable shifts in behaviour for adaptation. Also, academics with heavy experience in the academic arena and no experience in industry are able to find a root to extend their skills and knowledge beyond academia through working in consultation projects. The decision whether to involve in commercial projects is derived from the perception of the connections between the two fields and hence the perception that such experience is simple exploitation of their current skills and knowledge.

One participant with a long history path in academia clearly narrates that her first decision of involving in commercialisation has been made because she is able to extend her knowledge

from teaching and her search skills towards consultancy project. Another academic stressed that his experience of working in consultancy is about extension of academic skills, writing a publication.

> *There was a lot of overlap I would say with some aspects of this particular piece of work [writing reports to clients] and some aspects of the work when writing a publication because basically I produced a sort of a publication for a popular audience (003)*

Similarly, his current experience of consultancy does not require a significant mental shift to expend energy exploring new skills and knowledge or change his routine of work. Rather, it is producing a publication to another type of readers. He chose the experience that matches with an existing pattern of behaviour, publication.

For another academic, consultation has common areas with teaching. He is able to make connections and find a common area between two different roles which enables him to juggle between them.

> *I accept it because it connects to my ability to teach. When you teach you need to have ability to understand what students need. ....the quality to be good in consultancy means that you need to be a good teacher I think theorists call this "theory of mind". It is ability of someone to understand what the other guys are thinking............ So, theory of mind is important for both consultancy and teaching (002).*

Previous experience in commercialisation also played a role in determining academics' interpretation of their current experience of dealing with commercially oriented activities alongside academic activities. Data analysis shows that for some, academics involvement in commercial work is an attempt to repeat a previous success in a form of commercialisation which they used to perform in their previous path. A participant with experience of working several times in consultancy stated that his current experience is dependent on his long history working as a consultant. In other words, consultancy-for him- is continuation of what he has been doing for years.

> *I think I was made into doing consultancy for the games industry... I usually do 3 or 4 of those [projects] a year and this was something easy for me and I can fit them with my academic work very easily. (010)*

In addition, academics with more diverse experiences (both in academia and industry) tend to have the same perception of their current experience by thinking back what they have been doing in their previous career. They follow the forms that match their abilities and knowledge in different institutions within Higher Education sector and industry. Their current experience is portrayed as exploitation of specific skills and knowledge gained in academia such as teaching and besides other skills gained through working in industry. Unlike academics with no industry experience, these academics confirm that their current consultation work is based on employing skills learned not only in academia but also in industry. Hence, they refer that the previous experience within Higher Education and within the industry allowed them to gain such skills, and thus, exploit them in the current commercial projects. As a response on the question about the difference between academia and consultation and how he is able to perform well in his current commercial projects, one of the participants responded:

> *To be good in consultancy means that you need to be a good teacher and also means you need to be good at understanding clients' needs, you have to be able to produce practical results that they can understand....I was able to develop that during my work with [X] university and my work with [Z] company (002).*

Furthermore, working on more complicated and demanding commercial roles, such as start-ups and spin off, requires significant investment in learning and gaining skills and knowledge at some point of career journey. Similar, to those involved in less demanding commercial forms, academics involved in a spin off company work interpreted their current experience as exploitative of previous behavioural patterns. The following quote demonstrates clearly that academics' current involvement in commercialisation is merely based on exploitation of the previous skills which they have gained and developed from occupying different roles throughout career journey. It is about exploiting a combination of technical leading skills and communication skills learned in industry. He was able to combine this combination of skills in different projects, which facilities his current work in spin off. The following remarks this:

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> *I have worked in industry and my work is not dissimilar to be in technical lead for something like that* [start up company]. *....... so I think I was ok in terms of the skills I needed to work. There is an element about working in a different style in industry rather than in academia but I was exposed to that in my previous roles (011).*

The quote again shows that at a certain stage in one's career, involvement in commercially oriented activities requires development/exploration of skills outside academia without which academics might not find it possible to manage the competing demands of both academic activities and commercialisation ones. Without gaining various experiences, the possibility of experiencing tension between academia and commercial work increases, especially when dealing with a more different form of commercialisation- that is, the form that is located closer to entrepreneurial work than academia.   Therefore, the current ability of conducting commercial work has been linked to what he has built throughout his career path where the work in industry injected the knowledge repertoire with technical skills that are not usually provided through working in the Higher education system. In his response to the question regarding his ability to run such business despite not having management background:

> *In terms of running this project.....I had some management training when I was in industry so that is why I picked up my skills (011).*

This means that industry experience had contributed to his current experience by providing him with new skills, management skills, needed to run the current start-up project.

Another participant clearly stressed the difference between the two roles and explained how his previous experience in multiple companies has witnessed stages of exploration of skills and knowledge and then resulted in the perception of current experience to be towards more exploitation of such skills. He elaborates on this experience:

> *I think you need to be able to talk to people at different levels. .... You know, there's a lot of politics about the work at different levels.................. Well, I've got that... One of the research skills that came from my PhD and my master's, well as I was a research fellow as well at X before I went to University Y, one of the skills I've developed is how you negotiate high level access to classified*

information. And I've done that in the [public organisation A]. I've done that in advanced manufacturing. I've done that in [public organisation B]. And I've done it in [public organisation C], where you are talking to people about things that they might not want to go public on (004).

That is, the chances for experiencing an exploration –exploitation tension decreases when academics are exposed to more roles in their career path. Hence, the ability of producing various commercialisation outcomes increases amongst those who have developed various routs of experience through working for several companies and several universities. One interviewee who worked for two universities and on several projects over his 16-year journey stated that:

> There are three forms of dealing with companies: first, joint projects between university and industry, second, KTPs [Knowledge Transfer Partnerships], third, contract research. I have experience in all of these forms and currently I am working in all these forms *(001).*

On the other hand, academics, who are in the early stage of their academic career and have no commercial experience, have shown different response. Being in an early career stage reflects their inability to make connections between the two worlds and inability to see how they can extend what they already have in their knowledge repertoire beyond their academic role. In addition, the fact that they have not been involved in commercialisation led them to interpret commercialisation as a competing role with their academic one. Hence, they perceive a potential commitment of commercialisation as an action surrounded with uncertainty as it is demanding an extra effort of search and exploration and it represents a deviant behaviour in the department. In answering a question regarding the reason of refusing to involve in commercially-oriented activities, one of the three interviewees who have are not involved in commercialisation, reflects the previous notions:

> *I would say right now I am playing safe. I am working on previous ideas rather than developing new projects... I need to make sure that I can publish soon the next piece. For that I prefer to work on things I have done ….*

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…. I don't see how it can happen and work. …... if it has to happen,
how it can be indeed… No one in the department has done it.(014).

Dissimilar to the previous respondents who have more advanced in their career, this academic is in an early career stage and has not developed such experience that enables him to extend his skills beyond academia. The fact of not being involved in commercialisation is interpreted with his view that blocks any explorative activity which requires him to deviate from his existing academic pattern of work.

In summary, the analysis of the interviews shows that building intensive skills and experience around a single role identity (the academic role) does not cease academics from getting involved in commercialisation projects. Despite having been in traditional academically-focused career track, academics are able to find applications for their academic skills in the commercial world. On the one hand, academics with academia-related experience usually stick to the form of project that is closer to academia than entrepreneurship. As their experience becomes more diverse, they seek to involve in more entrepreneurial forms of commercialisation. In all cases, academics tend to rely on an existing pattern of behaviour, which lessens the tension they might experience between exploration and exploitation. Whether academics stayed in the traditionally-academic track or they worked in industry in certain stages in their career, they tend to work on the forms that are perceived to be attached strongly with the repertoire of skills and knowledge they have previously developed. This leads academics to perceive their current involvement in commercialisation as more exploitative; hence, would be more able to act ambidextrously. On the other hand, academics with no commercialisation experience in their early stage of their academic career perceive any involvement in commercial work as contradictory to academic work and less connected to their existing pattern of work, and hence, they develop responses against it. In other words, they interpret commercial work at one end and their academic work at another and they should be at only one end. As such, embracing this view restricts them to become ambidextrous.

4.3. Negotiation of role identities:

Interview data have produced another important theme, the reconstruction of role identity which was an essential part of the individual lived experience of academics who juggle between traditional academic activities and commercially-oriented activities. According to Gabriel (1999), narratives are "[a] highly effective way of analysing how identities are continuously constructed" (p196). In fact, shifting university's orientation towards the third mission/role plays a crucial role in modifying academic identity role and leads academics to reconstruct and refine what they are and how they are. Additionally, the exposure to the business and industry world, places the academics in a circle of defining and redefining their academic role. This interaction with business and being exposed to the commercial world outside the university left residues on academics' identity. Prior research suggests that academics' decision to get involved in commercialisation involves a role transition and inner sense-making process, akin to managing multiple role identities (George et al., 2005; Pratt & Foreman, 2000). The interviews show how academics establish various responses towards commercialisation, how they use varied strategies of boundary work to manage the changing relationship between the two worlds, and how they used the interviews to reconstruct and negotiate their professional identities. The interviews show two distinct responses to the commercial ideology; first, rejection and avoidance and second, acceptance and modification. The following explains these responses widely.

4.3.1. Refuting commercialisation- the dominance of single role identity

Analysis of the interviews with academics who are not involved in commercialisation, (whom the researcher here calls "traditional academics",) produced a distinct response to the boundaries between academia and commercial world. They believe that the two identities are distinct and show primacy of the academic identity and a belief that involvement in commercialisation might harm their academic role identity.

The way with which they identify themselves clarifies their current identity that distinguishes them from the other academics who have an interest in commercialisation and are able to modify their identity role towards commercial agenda. An academic clarifies this point by identifying his view of his main role identity.

> *I see myself as an educator ... this is very important ... and I know that it is not the way the system is organized right now because the priority is on research. First mission is an educator. My second*

mission is to be a researcher. Now I do believe strongly that research informs education because through my research I develop my teaching. I think there is a strong link there. But in terms of the priority, my priority is the young people whom I teach. In order to do that, I need to do a high quality research. So, I can do my best to train and form and open the mind of these young people (O14).

This quotation indicates that his identity is contextualised within the traditional academic role and is not extended towards the new role because, firstly, the commercialisation impact is absent in his definition of their role identity and secondly, he is able to link between teaching and research rather than research and commercialisation. In other words, his view of the role of academics is still restricted to performing teaching and conducting research, but it has not shifted toward the "academic revolution", in the as direction as some more entrepreneurial universities, in which the commercial outputs become the norm rather than an optional, side activity (Etzkowitz et al., 2000; Owen-Smith, 2003). It is worthy to mention that he does not see a link between commercialisation and teaching. This contrasts with some academics who mentioned earlier how commercialisation activities inform their teaching. In some ways the link between commercial and teaching is more obvious than between research and commercial.

In addition, their response to commercialisation is reflected in the way in which they demonstrate the distinct nature of both roles. One academic mentioned that:

At the same time you need to think about the organisation ... external organisations they have different needs. You cannot just transplant what is in the academic environment into the organization environment (O13).

For her, they are two different distinct worlds since academia and commercialised organisation seek to achieve different needs. Her role as an academic cannot combine the two and find a common or shared ground. These needs are not only different but might be a source of conflict:

I think it could conflict in the sense academic work is less instrumental whereas in business you have to have a specific goal and agenda (O13)

For them, the two worlds are separate because of the traditional view of the university adopted in the industry:

> *Yes there is conflict... People in commercial world tend to think of universities as Ivory towers and do not necessarily have much interest in them (012).*

This reflects that this academic presumes that industries still hold outdated view of the role of university and he not only ignores the convergence between the two worlds but also the rejects the new mission of the university and its growing and expanding role in the community and economy.

This distinction also appears from their view on why universities engage in commercialisation activities. More specifically, their view does not connect the two worlds in a hybrid identity that stresses on the connection between the university and industry and the potential benefits of commercialisation for academic achievements. Rather, it shows that universities engage in such activities for reputation and monetary interest, ignoring the role of commercialisation in achieving the third mission. In this regard, one academic states:

> *One of the reasons why it is important for universities, it is an income stream. It is about reputation for them to do it as well (012).*

Additionally, academic identity appears to be strongest amongst these academics and that is why for them focusing on their academic role is enough to stay in their career. They do not see connections between academic activities and commercialisation ones. In his response to the importance of commercialisation to his academic career, another academic states that

> *I do not think it is important for my current role... Currently, I am focusing on my research and teaching …. I do not need to add more pressure for nothing (012).*

These academics view that the two activities contradict each other in terms of the values. Each one of them has its own values and commercialisation might affect their autonomy and freedom. An academic expressed this view as follow:

> *I think it sometimes can be quite dangerous. In other fields where it becomes much more obvious where you have …say in war studies, academics were commissioned to do research that benefits political*

agendas, that is dangerous, is not it!!... academic scholarship becomes
part of military industrial conflict. There are ways that there could be
negative effects of commercialisation the research. In [my field], it is not
so obvious ...I mean there is no way the XX studies [Studies in her field]
can be co-opted to those ends (013)

In her opinion, commercialisation agenda can erode the freedom of research and pushes the research to achieve the sponsoring organisations' agenda. This contradicts the main values of academic research. In this way, she sets up sharp boundaries between academia and commercial world based on freedom and ethical grounds; that is, she forms two distinct identities whereby engagement in commercialisation contradicts her view of academic world whose aims are not commercialised.

Conflict in values appears in another interview with another academic where he asserts that both identities are different and cannot be integrated. For him, commercialisation means extra money and does not represent a contribution to a research agenda, to teaching, or more broadly to the community.

> *To be honest, if I wanted to carry on working as a consultant, I would*
> *have stayed in the commercial world if I wanted to do that. I would have*
> *been paid more than I am now. My decision to become an academic is to*
> *step away from the commercial world (012).*

Therefore, accommodating commercialisation role into academic role in the daily work is not possible. The priority for this type of academics is performing their duties and commitments which are related to their academic role identity. Any engagement in commercialisation represents a threat for their academic identity. They show disinterest in engaging in commercialisation as a way to protect their sole academic identity.

For example, one academic clearly sees that the priority should be given to academic role and any shift towards commercialisation would influence his academic progress. The word 'strategically' appears in his quote is interesting. It suggests that new (commercial) projects are not perceived to add value to his career in the long term:

> *Right now I am not interested as I need to make sure that I can publish*
> *soon the next piece... For me to start a new project right now,*
> *strategically it is a bad decision (014)*

A closer look at his profile demonstrates that he is an early career person who just started his academic job in this university 3 years ago. Therefore, he has more pressure to prove himself in academic role and produce more academic outcomes than other academics.

In short, not only do they view academia and commercialisation as two distinct identities but also they do not approve of crossing the boarders towards the commercial world as they think it harms their academic progress. Commercialisation has been portrayed negatively as it conflicts with the core academic values, erodes academic autonomy and is based on profit-making and money interest.

3.2. Bridging academia with commercialisation-towards a hybrid role identity

The previous data suggest that participation in a broad set of commercialization activity – including collaborative research, consulting or the formation of a start-up – typically involves active contemplation by academics that reflect potential modification of their role identity. Unlike traditional academics who rejected the commercialisation and called for divergence between academia and commercial world, academics who involved in commercialisation responded differently and perceived convergence between the two roles. The latter type of academics shifted away from traditional academic identity towards more acceptance of commercialisation that holds corporate values and agenda, and showed a belief in a hybrid role identity that can combine both worlds. This section explains how academics made sense of their role identity shift through showing various facets of academics' responses to commercialisation.

4.3.2.1. Changing the meaning of the academic role to accommodate the commercial agenda:

In the process of reconstruction of the role identity, academics engage in redefinition of their extant academic role and feed it with new meanings to cope with the changes occurring in the whole institution. The participants of this study redefined who they are as academics. They talked about the change that occurred to their extant professional academic identity and how it differs from the traditional academic identity.

The identity modification is providing a new meaning of the academic identity and how it is reconstructed to adapt with the new role taken by academics to respond to the changing mission of the university and the higher education. The new meaning is built around opening a window to view the real world and producing impact in society.

One academic who was involved in commercialisation indicated that the role of academics is finding application for their research to benefit the society and help it develop. Put differently, academics involved in commercialisation identified themselves as more influential and more useful to the society and they are no longer convinced by the traditional role that distances them from the real world. One of the interviewed academic highlights this fact as follow:

> *Our role has changed, we no longer need to keep ourselves in the ivory*
> *tower.... we need to think beyond producing publications and lecturing...*
> *we have to produce impact on society, business and the whole economy.*
> *We are more useful, more powerful and more impactful. (009)*

This quote suggests that these academics reconstruct their work identity to align with the group of the work community, academics. Using "we" reflects this fact.

In the collected data, there is clear evidence on the modification made on how academics redefine themselves and their role as a result of their involvement in commercially-oriented activities. Majority of these academics considered that their academic identity is not limited to the impact they can make within the academic community. Rather, it is about being impactful beyond the academic community where they get in touch with the real world businesses and produce impact on society, business and the economy at large. An example of that is mentioned by an interviewee:

> *Well, it's of particular significance to the business school, because we are*
> *the part of the university that is supposed to be engaged in local economic*
> *development and in linking business to society (004).*

For him, the modification of his role identity is drawn from the change of the university identity that makes it closer to industry and business.

Similarly, other interviewees stated:

> *There is nothing wrong [with involvement in commercialisation] since our*
> *role in the university is to go and find applications of your work in the real*
> *world (0011).*

For them, the new shifted academic role is about understanding business problems and empowerment of academics to produce a clear impact on external institutions. As an interviewee put it:

> *Being a good scholarly thinker means to involve people from outside businesses with what their problems are (005)*

In a similar vein, another interviewee mentioned that:

> *As an academic, I think you need to understand businesses, their problems and how they respond to these problems (009).*

In a nutshell, academics involved in commercial activities have perceived a change in the traditional academic role and they view that these activities are moving both university and academics into reality and step down from the ivory tower. By getting closer to the real world and understanding the real business practices and problems, and contributing to solving business problems and devising application for their research, academics layers commercial involvement into the original academic identity.

4.3.2.2. Surfacing the motivations to express the shift from traditional identity towards a hybrid one:

Another way to look at how commercialisation identity is manifested in academics' work identity is by looking at how academics surface the rationales behind their involvement in commercialisation activities (Jain et al, 2009). Academics' responses reflected a tendency to make a compromise between academic core values and norms and commercialisation values. Unlike traditional academics who limited the value of commercialisation to the economic incentive at both the organisation level and the individual level, these academics tended to link commercialisation with various motivations to take a step towards commercialisation without affecting academic values and norms.

Some academics involved in commercialisation showed their interest in making money out of their commercialisation endeavours. This represents a shift in values towards evaluating the experience of commercialisation from a profit-making perspective. One interviewee demonstrates this fact:

> *Suppose it is £10000 contract and the university takes £8000 you are going to work for two months and the team will get 2000 pounds. Well if you are desperate, £2000 it is a lot of money but If you are*

> *professional and well-established, £2000 for two or three-month work,*
> *I would rather spend my time doing something else (002).*

Similarly, another academic confirms this notion:

> *The project came up and I made the decision to do it because it looked*
> *as if it was going to pay well and I said to [the REO officer] I want to*
> *get more involved (005).*

However, the interest in monetary incentives can also be interpreted as a way of protecting academic identity. Putting a high price for their involvement in commercialisation activities means that they attempt to compensate for their loss of academic identity, especially when the form of commercialisation does not feed in their academic profile. The following quote of a participant who engaged in a consultancy project confirms this notion:

> *If I am going to do something else [consultancy]- that means- I will*
> *have less time to do my research. So, I have to put a price for that and*
> *that price is not small (002).*

In addition to economic incentive, academics demonstrated on various motives accordant with the expectation of their academic role identity. One of the academics states that money is not only the motivation for him to work in commercialisation. Although he sometimes works in projects that he is not highly interested in, he becomes highly motivated to work in projects that allow him to know the answer of some questions in his mind. This is linked to the core value of academic research, which is autonomy and freedom.

> *Well if I'm not interested they'll have to try me, I used to give it to*
> *somebody else when I'm bored with it, you know. But not at all money,*
> *I just want to know the answer... I want to enjoy the freedom to do*
> *research that answers my questions (007).*

Interestingly, one of the participants showed the transformation of the role identity by suggesting that his motivation is accordant with the new modified role of the university academics, which is producing impact on community. He pointed out that he is motivated to see the benefits of their research in the real world. This highlights the shift of academic identity from the ivory tower to the real world. The following remarks this:

I always like to see the things I do as useful in people's real life. So the impact is a big aspect of my work. I go and facilitate where people can use it in practice. So this is one of the biggest motivations for me (O11).

In short, the wide variety of reasons invoked for involvement indicates that their existing role identity plays a key role in grounding rationales for their participation in commercial activities. In other words, these individuals mainly seek out justifications that are congruent with their extant role identity.

4.3.2.3. Establishing connections between academia and commercialisation:

Dissimilar to traditional academics, Pro-commercialisation academics believed the boundary between academia and commercialisation is permeable and provides an open space within which knowledge production and application can be effectively combined. They found a shared area between the two worlds and emphasised an interactive relationship between academic work and commercialisation one, and appeared to be comfortable and confident in crossing the science-business boundary without sacrificing their focal academic identity. In other words, they share the new school belief in the importance and benefits of science-business collaboration, while maintaining the old-school commitment to the core scientific values.

For these academics, involvement in commercialisation does not contradict with their academic identity. Rather, it strengthens their ability to perform the academic work. They provide different examples on how their involvement in commercialisation pays off towards academic profile and academic role. To prove the fact that these two roles are not competing and lessening the dissonance engendered from taking a new role-which is perceived as inconsistent with their current role, the data show that academics attempt to build connections between science and industry. They attempt to create justifications that are consistent with their extant academic identity.

With respect to research, one of these benefits is generating new ideas for research. One of our interviewees described this as follows:

To be honest, the two things went well because substantial part of my research comes from consultancy. So, where I face problems in my

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> *consultancy if I think about it creatively if it is difficult problems or it is a new problem, I can actually write a research paper. So, consultancy is a way of getting new ideas for research (002).*

Also, consultancy supports academics with a new way of thinking to do their research. One interviewee states that:

> *I found it really interesting because it helped me get a different dimension of doing research and that way becomes really useful (006).*

Another benefit is sourcing teaching with examples. As two of the scientists who were involved in consultancy described below:

> *And also consultancy is a way to get excellent examples for teaching. So when I am teaching something I can always say to my students this method I am teaching about today I have used in practice to solve this problem or that problem and student like that because they feel that I teach them something that they can make money out of it (002).*

> *Yeah, because I am able to say when I did consultancy for XXX the students go oh that's good. So, it is good for teaching (005).*

Another academic who worked in other forms of commercial projects stated that:

> *Doing a lot of work in the industry [consultancy and start-ups]means I see a lot of games that are in development and what trends are happening so that when I'm teaching I can tell people, here are my predictions (010).*

> *What I'm trying to do is I'm trying to link this work [collaborative research] to academic output, publish output. And I'm trying to articulate a relationship between an academic like me within [this department] and the local healthcare economy (004)*

For majority of our interviewees, achieving such shift towards commercialisation is highly important for their extant academic role. In other words, the interviewees admitted that academics holding a hybrid role identity are more useful for academia than those who stick

with the old logic/identity that suggests academics should stay in the ivory tower and they should keep themselves away from the commercial world. It is an attempt to show that taking the new role is a good practice that needs to be introduced more into academics' life.

Additionally, academics justified their involvement in commercialisation activities to support the existing identity through showing how these activities pay off towards their academic progress. Interviewees showed that it is an important criterion to measure academics' progress within their department. The University's policy to produce more impact, as mentioned earlier, affected academics' view of the importance of their involvement in projects that produce impact.

> *I think it becomes increasingly interesting because of the IMPACT that is used in the REF, assessment. That is why there is more people are doing this kind of stuff. I think it is really rewarding if you are committed to do this kind of stuff. There are more people notionally started to work on commercialisation (011).*

This shift does not only come from the university or the department policy that values projects containing impact, but also from their understanding of the importance of having *impact* for their career and academic profession. Academics view that achieving this shift in identity is an outcome of the expected change of the academic profession that requires them to produce impact and keeps them marketable and distinctive in an academia market that is witnessing a high competition. The benefits go beyond teaching and research to include their ability to stay in the market as academics. Academics view it as an expected requirement in the Higher Education.

> *For the future, it is going to be important that you can bring the two together, so it still won't be a case of if it is pure consultancy or contract research. That is not going to be enough. But what you are going to need to show is that you can engage with non-academic users and involved them in your research, involving them on funding applications or making sure that something changed for them as a result of your research. So I think in the future we are going to need to do a lot more of this (005)*

Therefore, academics participating in commercialisation involve in a role identity reconstruction. They craft a hybrid role identity in which they overlay elements of the commercialisation identity onto the academic identity. The wide variety of reasons invoked for involvement suggests that their existing role identity plays a key role in framing rationales for such participation. These academics show that both identities do not melt together. Rather, academic values and norms should be protected. Previous data show that academics emphasise on how commercialisation activities contribute to their academic identity; not the opposite. Put differently, these individuals typically seek out justifications that are congruent with their extant role identity and give propriety for their extant role identity.

4.3.3. **Preserving the distinction between the two identities**

To protect the core academic identity, academics involved in commercialisation recognise the need to maintain the boundaries between commercialisation and academia. This concern is expressed through stressing the importance of keeping the distinction between the two. The following remarks this:

> *Of course it [commercial role] should not be the main role of university.*
> *Of course, the primary role of university is education and scholarship*
> *(011).*

The importance of keeping the distinction between the two role identities is also conveyed through highlighting the possible risk of crossing the boarders towards commercialisation and giving the chance of commercialisation values to prevail over the academic ones. For example, an academic participating in a start-up project alongside his academic work showing the possible risk of being involved in commercialisation and, as such, the tension resulted from such involvement:

> *There is a level of cost in terms of academic profile that comes from*
> *being tied up in start-ups because you cannot go and publish as much*
> *...The use of academic publication is the main means for dissemination,*
> *which means on the surface an academic looks after nothing in these*
> *specific areas for long years. So there is an element where I am*
> *perceived as an academic as somebody who has shifted areas because*
> *the two areas which I am working on are not well published areas for me*
> *in the last few years. So this is the challenge. Universities want to hire*
> *big profile. Of course you have the big profile but you don't have the*
> *means to show this profile... However, [while working in the start-up*

> *project] I am now trying to push myself to get back to publications and*
> *remove this impression to preserve my focus on academia (011).*

This shows that academics showed some signs of fears and show the possible risk of being involved in commercialisation. He clearly shows that involvement in commercialisation affects his academic identity because he is perceived in the academic community as someone losing his academic focus towards a start-up project. Hence, he admitted the tension between keeping the focus on commercialisation and preserving academic identity. At some point of time, the balance between two identities should be under academics' control. For him, it is still acceptable to experiment with the commercial world without undermining the established scientific norms and their dominant academic role identity.

Having seen the responses of academics performing commercialisation and their emphasise on the necessary control on the balance between the two role identities, the research digs more in depth to examine how this balance is achieved in practice and what mechanisms are used to keep such balance. The following section attempts to answer these two questions.

4.4. Managing a hybrid role identity:

Managing tensions resulted from dealing with two distinct role identities. Academics narrating their experience in manging the hybrid role identities have exhibited the mechanisms used to overcome the tension and ensure the primacy of the core academic identity while engaging in commercialisation.

4.4.1. Cognitive process:

The cognitive process of negotiating the two role identities represents a key factor that assists individuals in managing two contradictory logics; the old science logic and the new commercial logic. As proved earlier in the previous sections, producing a new meaning of academics' extant role identity, surfacing motivations to fit both identities and finding links between the two worlds play a key role in minimising the tension related to managing both commercial and academic roles. This process appears to assist academics to reduce the experience of cognitive dissonance or role identity tension when they embark on commercial ventures since they are cognitively able to view complementarity-rather than contradiction-between the two role identities. By this process, academics were able firstly to ensure they cross the boundaries towards commercial world, and secondly to protect their core academic

identity when commercialisation involvement is perceived as a risk menacing the norms and the values tied to that identity. Their responses confirm that the two identities should be distinct. However, linking between them and hence adopting a hybrid role identity is appreciated and perceived to be important as it contributes towards the modified academic role.

4.4.2. Behavioural role- Prioritisation and Delegation

Besides the role of cognitive process, the action/behaviour of the key actors played an important role to make this balance achievable. As it will be explained in this section, the findings suggest that academics involved in commercialisation projects establish priorities in order to manage the hybrid role. On the one hand, academics tend to give priority to the identity that is perceived as most rewarding and important within the Higher Education institution. Data show that although academics perceive commercialisation to be important and accept to involve in these projects, they give them less priority in action. Unless they produce academic outcomes which are perceived to be important to their academic progress, commercial projects are given less priority in the academics' mind. It is an attempt from academics to decrease the dissonance that might be created by taking two inconsistent role identities.

On the one hand, where commercialisation does not contribute directly to their extant academic role, academics ensured the primacy of academic role by considering commercialisation as an extra work that should not interfere with the time dedicated for academic work. For instance, one of interviewees elaborated how she managed to complete the project alongside the academic duties. She gave priority to her academic role which is conducting research during the study leave and then taking time off her rest time to complete the consultancy project. Because this consultancy project does not produce academic outcomes as she explained in her interview, she tended to perceive working in such project as a sacrifice of her rest time and also she was expecting an extra reward from the university for cutting off into her private time.

> *I literally did it in the middle of the night....... So yeah I would basically literally start work on it at 10:00 at night and work on it through the night a couple of times and did 3-4 long days right up to the deadline while I was away (005).*

Another academic clearly described how he manages the time when commercial projects come into work. Holiday time is given towards some commercial projects to manage the hybrid role identity.

> *What I tend to do is when somebody wants some work done; I'll try and schedule it for the holidays. So over the Easter, over the summer holidays, and on Christmas I'll do things (010).*

Additionally, the amount of time dedicated to commercially oriented activities reflects how academics prioritise competing role identities.

Academics involved in commercial activities that do not produce research outcomes tend to dedicate less time for these activities so that they do not conflict with the main academic duties. Academics in different interviews confirm that:

> *They are only one or two weeks. They are very short...they do not affect my current academic responsibilities (006)*

> *Usually I do very little. .. two hours per week perhaps ...so my contract with this company is up to 20 hours per month. But I have never done 20 hours per month. If there are crises I do 10 hours a week but that is very rare. There some weeks I don't do any hour of consultancy (002).*

Therefore, in action when commercialisation activities do not contribute to academic professional role and are not recognised by the department as an essential part of that role, they are treated as any extra job that should not interfere with the extant academic identity. However, when such projects are expected to produce recognised academic outcomes, they become an essential part of academics' daily routine activities that are usually fulfilled alongside the other academic activities and hence the strategies to manage the time between the duties tend to change. An interviewee put it as following:

> *I'm very pleased that they've offered this 30 hours on the work allocation model to an impact case study not because it is going to make a huge difference substantially to my life but it is a symbolic acknowledgement, a symbolic realization. That is an important thing.*

Also when I present the draft impact case study on the 17th of June, it's going to be the head of the business school, the pro-vice chancellor for research is going to be there. It's pretty serious. It tells me that the institution is taking this seriously (004)

This confirms that fact that academics give up more time for commercial activities when they ensure that it integrates with their academic role identity and that it will be taken seriously within the academic institution.

In addition to prioritisation, academics deployed delegation to keep the primacy of the academic identity while undertaking commercialisation activities. The delegation occurs through establishing networks inside the university and/or outside the university with people whom the academics consider as experts of commercialisation skills. An interviewee stated that he managed the hybrid role by accessing the help of REO:

To do this [commercial project] I had to contact REO [Research Enterprise Office] to manage different things such as doing the contract, assessing the cost of this project, readjusting the reports to make it more understandable for the business… I think they have the experts who can do it… at the end I am a scientist (003).

Another participant explained how he manged to deal with the difficulty of doing part of commercial project by delegating some tasks of the commercial projects to one expert in another university that was taking part in this project.

So I did not have so much gap in there. I mean the important thing for me is to get somebody experienced in commercialization into the area and I was so lucky there was a consultant in XX university who has experience and later become CEO of this company and had business development experience and management experience…
…. At the end I am not supposed to know everything about start-ups because I am an academic not a manager (011).

Therefore, academics tend to delegate the tasks that are less important for them and less linked to how they view themselves. The findings indicate that academics' perceptions of the

efficacy of inside and outside contacts contributed significantly to their ability to reduce the time needed for commercial involvement and hence ensure that the identity which they consider more important is kept in the front.

Additionally, academics involved in academically-fruitful commercial projects managed the hybrid role through dropping off less important personas such as teaching and administration. They viewed themselves as more importantly linked to academia that focused on research and capitalisation of it than to teaching and administration. This shift in the role identity reflects the changes of the rewarding scheme at the higher education institution that rewards research and gives less attention to teaching and admin roles.

As mentioned earlier, academics' view of their academic identity has changed to focus decreasingly on activities that are less recognised in their institution system. Therefore, it is unsurprising to see them dropping off or delegating these tasks to perform more rewarding personas. In response to my question of how he managed his start-up alongside with academic duties, one academic replied:

> *I did not do teaching. Because I had big research grants, universities allowed me to go and buy some of present teaching from research funding (011).*

Furthermore, he used his position power to delegate some of his administration duties to secure time for the commercial role:

> *I am a research director; I have got an admin team that knows certain thing like looking after travel funds and something like that. There is lots of stuff that can be pre-processed and I have got a team in finance office to do that (011).*

This is also confirmed by another academic:

> *I do the things that I think are important. I'm particularly concerned to do things that I believe are my duty, and I delegate everything else...... I delegate admin stuff (007)*

Overall, the core of the new academic identity role is centred on their identity as researchers who are able to publish research papers and produce impact beyond the academic institution.

Therefore, all the management techniques are applied to protect this modified role identity. Priority and delegation strategies are established as an escape from less rewarding personas (teaching, admin, and academically fruitless commercial projects). In other words, involvement in commercialisation brings the tension related to the management of teaching vs. research and commercialisation to the front.

4.4.3. Re-definition of one' own abilities and skills

The successful management of both types of activities was attributed to academics' view of their own skills and abilities. An essential part of the sense making which academics constructed when sharing their experience of managing the dual activities is their view of their own abilities, characteristics and skills as the main attributes of the success.

Academics' self-esteem of their own abilities, knowledge and skills plays an important role in their ability to reconcile the tensions resulting from managing the hybrid role identity. An academic clearly stressed this point:

> *I mean we do know more than the client does and we have access that they don't and you also have a set of meta-research skills that they don't necessarily have. So ... we are qualified to do it (005)*

That is, academics distinguished themselves from non-academic (industry) people by referring to their skills and knowledge that enable them to perform well in these projects and create less barriers in shifting towards the third role that might be in the minds of people in industry.

Another participant shows that he can understand what is needed in the industry and he is aware of his own capacities and knowledge.

> *I think I can do this because I know I am able to understand clients' mentality and I know how to make my results speak to industry (009).*

Data show that academics in their narratives attempt to convey a message to practitioners or people in industry and defend a point that their skills and abilities are not limited to academia and they can be transferred into the practical world. Commercial work is not made only for professionals in business and industry. Their identity role is changing to fit the demand of

some of aspects of industrial work. They tried to show that they are aware of the skills needed for commercial work and they have acquired such skills.

> *These kinds of projects used to be done only by industry people and academics used to keep themselves in their ivory tower and produce their theories and suppositions about businesses...but now it is changing, ... I mean we are more in touch with business and industries... I worked with them, I met them, so I am able understand them and their needs (009)*

Not only do they possess the required skills, but also some of them claim that they are distinguished since their abilities and skills are broader and richer than the practitioners. Commercially-oriented academics are special because they have the ability to juggle between the two worlds, which is not possible for people who are locked into either field, university or industry.

These academics attributed their ability to manage both roles successfully to their special credentials gained throughout their career that distinguish them not only from other academics but also from the professionals in the industry. For them, their rich experience in industry and academia made them special. An academic described himself and his special abilities using I to distinguish himself from his colleagues in academia and also from professionals in the industry:

> *How I am able to do this? I'm a genius..... For me, I'm someone who started as an academic, and because I developed a game that was starting a new industry, I then went off into industry as it was boosting up. And then, I went back into academia afterwards, so, I'm different because I've got a lot of the academic regular mindset, and I have a PhD, but I know the industry. Now most of the people that come from the industry, they haven't got the academic mindset, they have to get their own PhD, and the PhDs they're getting are frankly not research PhDs, you know, they're not always from the greatest universities. And when they do teach they're very low, I say low level, I mean, they're not asking any big questions... When I go to the industry I can apply my theoretical part to the industry. Whereas most of the people who study in games only go to a theory to apply because their theories are specific to how people control troubleshooters (010)*

This quote demonstrates his belief in his special ambidextrous ability that enables him to implement what he has learned in academia into the world of industry and vice versa (to apply what he has learned and developed in industry in his research and teaching). It also shows that gaining rich experience in both types of sectors enriches academics' self-esteem of their own characteristics and increase the confidence of one's abilities in performing distinctively commercial roles. By comparing himself with others in industry and academia, he claims that he is exceptional and an elite and not everyone can manage both roles as effectively as he does. This is consistent with the findings of prior research that star scientist are more capable of commercialising their research. For example, Di Gregorio and Shane (2003) argue that higher quality researchers have more possibility to commercialize in order to exploit their inventions than less accomplished ones. Similarly, Zucker et al. (2002) suggest that university-firm technology transfer concerning breakthrough biotechnology innovation typically involves 'star scientists'. West (2008)'s findings suggest that star scientists are best suited to commercialise their own knowledge.

In addition, another academic makes sense of the special characteristics needed to achieve ambidexterity at the individual level. In his narrative, he refers to the difficulty to achieve such balance between roles sending messages to his academic counterparts and also referring to the change occurring in the traditional academic role.

> *Traditionally the knowledge exchange field has been inhabited by people who are practitioners. Not always on a purely academic. But the kind of stuff [Knowledge Exchange project] I'm talking about now, you need to be a seasoned empirical researcher. And you know if you got a full teaching load. I've got demanding academic and administrative work. I have got to see students that might be problematic in one way or another. ……… I am like a tight rope walker; I try on one hand to provide a mass production system, but I am trying on the hand to retain some of the nobler one-to-one…… It's mass customization (004).*

The bottom line of this view is that the change of the traditional academic role and the inclusion of the new role are inhabited in the-self amongst academics with commercialisation involvement. In contrast, having looked at how academics with no commercialisation experience view themselves and their capabilities, the researcher infers that such inhabitation

does not exist. On the one hand, they do not believe in themselves and their abilities to perform a commercial role as one of the participants put it:

> *The possibility is zero because ... we [academics in general] maybe don't have the skills to do them or maybe we don't know how to use the skills to do commercial activities (013).*

On the other hand, their view of themselves is still contextualised within the traditional academic role identity and is not yet extended towards the new one.

> *I see myself as an educator .... I think my skills match more with what I am used to do in academia: teaching and research...My mind has never been in the business side (014).*

They can only see themselves within the university's traditional role and they are able to link between teaching and research rather than research and commercialisation.

Importantly, academics performing commercial roles distinguished themselves from their universities because they have displayed special abilities in making commercialisation project happen. They view themselves as more effective than the university in establishing the contacts and finding appropriate projects that allow academics to extend their academic research beyond academia. Two interviewees have clearly claimed the superiority of their knowledge in bringing commercial project to their agenda. The following quotes express this fact:

> *The university doesn't seem to know that people would want games consultancy. So the university doesn't do anything at all in that area (010).*

> *Both universities were not very experienced in commercialization ... So I did not use university's contacts to work in this project (008).*

To conclude, by activating a role identity perspective, this section shows how ambidexterity is achieved in action amongst academics who encounter pressure to accommodate commercialisation into their academic identity. It shows that an individual faculty applies a cognitive solution to converge the boundaries between academia and the commercialisation

world. Academics involved in commercial activities tend to; firstly, modify the meaning of the current academic role to accommodate the changes of university identity and the changes of their academic profession regarding the third role; secondly, build connections between the two worlds; and thirdly, surface a wider range of motivations that justify their commercial involvement. Moreover, academics take measures to protect their professional academic identity from a possible risk tied to commercialisation. They implement delegation and prioritisation as main mechanisms to secure the primacy of the academic identity. They view that their skills and abilities are exceptional and that they are special people. Therefore, in their opinion their own abilities and skills enable them to think differently and behave ambidextrously.

4.5. Conclusion:

In order to answer the main research questions (how academics make sense of their experience in managing commercially oriented activities alongside academic activities, and how ambidexterity is achieved by its key actors in the context of university witnessing transformation into the third role), the researcher interviewed 14 academics in a UK university and applies IPA approach to analyse the data. The analysis of the interviews revealed an interesting set of findings that contribute to enriching our understanding of ambidexterity at the individual level and the experience of the multiple tensions related to it, which are scarcely discussed in the previous literature. The figure 1 below summarises all the findings of analysing the interviews data and shows the interviewees' responses to two main types of tension related to managing commercially-oriented activities alongside academic activities.

The following chapter discusses the main findings in relation to the previous research and the existing knowledge and in relation to the research questions. It highlights how this research reflects, differs from and extends current knowledge of ambidexterity at the individual level and ambidexterity in the Higher Education context. Also, it provides justification of the research findings using literature on ambidexterity, role identity, work identity, sense-making and a path-dependence theory. Finally, the chapter shows the main contributions of this research theoretically and practically.

Figure 1: Summary of interview data findings.
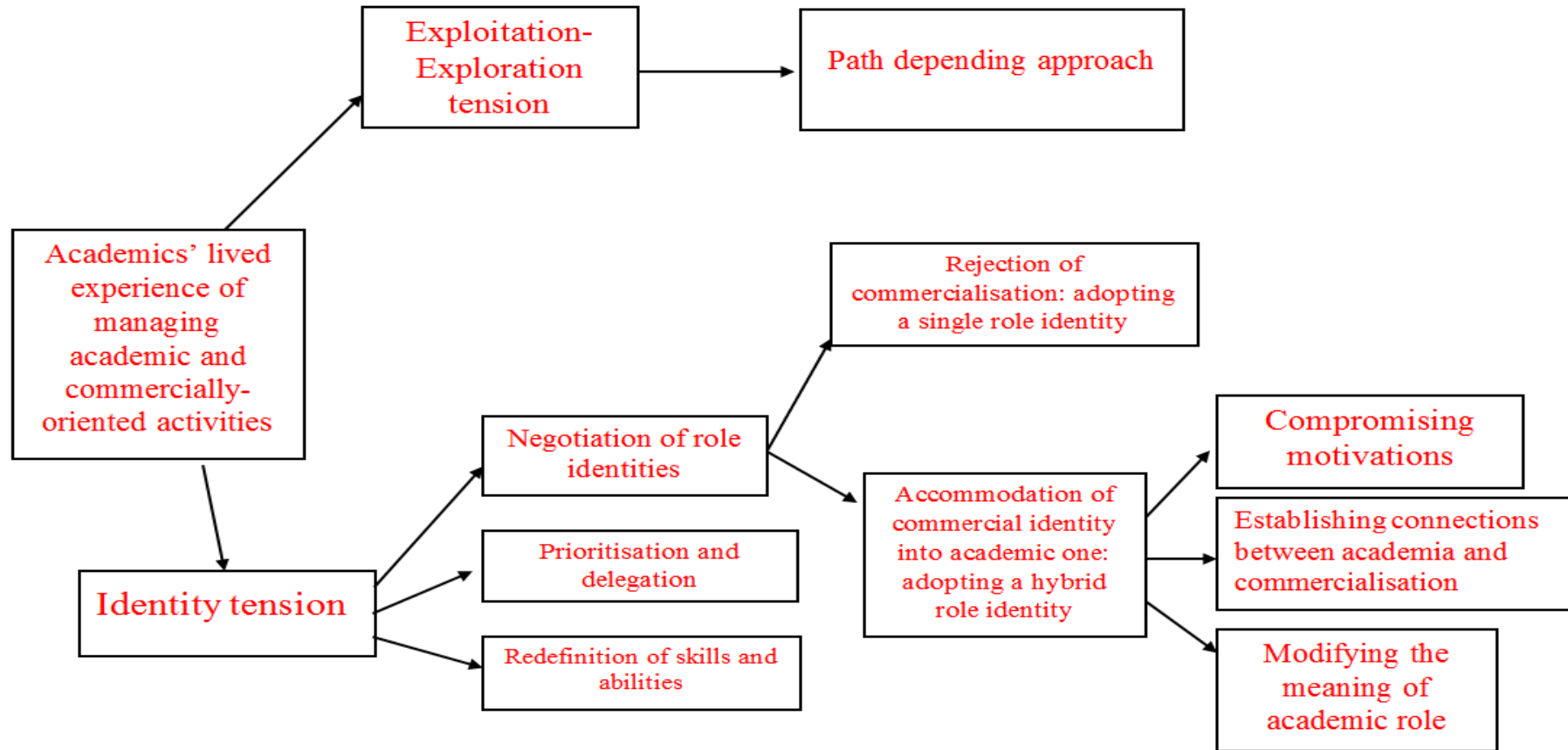
Chapter 5: Discussion and Conclusion

5.1. Introduction

Literature on organisation ambidexterity acknowledged that achieving ambidexterity requires not only understanding of the changes in the whole organisation or the whole unit but also scrutinizing the changes in the individual behaviour since individuals have a key role in their organisation towards ambidexterity. Despite this fact, ambidexterity at the level of individuals did not receive enough attention. Although recent research on contextual ambidexterity argues for the ability of individuals to pursue conflicting demands, it does not provide enough understanding on how they are able to do so in practice. The result of searching for a proper context to investigate and provide rich understanding of ambidexterity at the individual level shows that ambidexterity theory has found its way into the Higher Education context where there are increasing calls for university and its members to develop the capabilities to wear two hats (academic scientific work and commercialisation) at the same time. The growing shift of universities towards the third role, capitalisation of knowledge has generated debates about the extent to which academics are integrated for the new strand of work (commercialisation), and about the changes it would make on the core norms and practices of academic scientific work (Lam, 2008; Owen-Smith & Powell, 2001; Churchman, 2006). While pro-commercialisation research indicates that adopting the new role has become dominant amongst academics and believes that older tensions between the new demands of knowledge capitalisation and the collegial norms favoured by academics has begun to vanish (Butler, 1963;), opponents of this orientation have heavily criticised it claiming that commercialisation would erode the core academic values and norms. With high acknowledgment of the role of key actors- the individual academics- in achieving the shift towards universities' transfer towards the third role, research has hitherto scarcely examined the voice, sensemaking and the lived experience of academics who encounter pressure to pursue commercially-oriented activities besides their academic activities.

This research addressed this gap in the literature. The voices and lived experiences of 14 academics have been explored through this interpretative phenomenological analysis. In examining academics' lived experience of pursuing commercialisation alongside academic activities, the study is interested in answering the research question:

The major question is *how do academics make sense of their lived experience of the multiple tensions resulting from performing commercialization endeavours alongside their academic activities*? , from this question, I created three sub-questions to answer in my research:

- How do they respond to exploration-exploitation tension resulting from their involvement in commercialisation?
- How academics with different commercialisation involvement (academics with commercial involvement vs. academics with no commercial involvement) differ making sense of the blurred boundaries between academia and commercialisation?
- How do they manage conflicting demands of commercialisation and academia in action?
  - ✓ How do they cognitively process the conflicting demands of commercialisation and academia? (How do they manage two competing role identities?)
  - ✓ How do they manage their work priorities within this shifting environment?

By answering these questions, this research makes valuable contributions to ambidexterity literature through; first showing how academics produce meaning of their experience of exploration-exploitation tension using path-dependent approach; second, providing empirical evidence on how ambidexterity is achieved at the individual level. More precisely, the study shows how academics use a cognitive process to converge between academia and commercialisation and then adopt the salience approach to ensure the primacy of academia over commercialisation. In addition, it shows how academics respond to commercialisation by negotiating the boundaries between academia and the commercial world, and modifying their academic identities.

This chapter is organised around three main themes that can explain all the results that emerged in the data analysis chapter and answer my research questions and show its main contributions. The first section discusses the research findings on the exploration and exploitation tension in relation to relevant literature and theories. The second section discusses the distinct boundary work and role identity change that both kinds of academics (those who have involved in commercial work and those who have not) engage in and then the section relates it to the relevant literature. The third section discusses how those involved in commercialisation achieved ambidexterity in action. The section shows how the connection of these findings to theories of salience, role identity and self-efficacy. The fourth section discusses how this research's findings contribute the existing literature in ambidexterity and commercialisation research.

How academics make sense of their experience of managing commercially oriented activities besides academic activities:

5.2. Path-dependent approach to interpret the exploration-exploitation tension

It appears from the results of my research that academics made sense of their experience of dealing with commercially-oriented activities alongside their academic ones by retrieving back their previous experiences and past. Weick (1995) argued that 'The basic idea of sensemaking is that reality is an ongoing accomplishment that emerges from efforts to create order and make retrospective sense of what occurs' (1993: 635).

Findings of the study furthers the evidence on the notion that academics are products of their past in the sense that they cultivate certain skills and values and abandon others as they climb career ladders in a particular environment (Adkins, 1995; Floyd & Wooldridge, 1999). Studies have shown that researchers accumulate human capital over time which affects the formation of scientific careers (Bozeman & Corley, 2004). According to entrepreneurship literature, each prospective entrepreneur goes through the start-up process with a 'stock of experience', consisting of the background or history of the individual that has accrued up to that point (Rueber & Fischer, 1999). In a similar sense, this study suggests that academics' current experience of performing commercialisation follows a past pattern of behaviour and it is an outcome of their cumulative skills and knowledge. Academics- whether they have worked in industry or in academia- tend to work in familiar forms of commercialisation that match their stock of experience. This was attributed to their ability to integrate between academic activities and commercial ones-as I will discuss later (in the next page).

The justification of these findings is that academics have achieved a good academic progress and gained experiences that decrease their intention to explore a new path.

Contrary to prior research that claims that academics who have come through traditional academically-focused career tracks may lack the skills and abilities that are needed for pursuing commercial outputs (Lockett et al., 2003; Shane, 2002), this research suggests that academics who have been through academically-focused career track are able to recognise opportunities to invest their skills and knowledge in commercialisation projects and also able to apply them successfully in the commercial world. They are able to find the form of commercialisation that matches their repertoire of science-based knowledge and skills. This contradicts Ambos and colleagues' results (2008) that suggest the majority of academics find it very difficult to reconcile the dual tensions as they are bound by existing path-dependent

patterns of behaviour that make them resistant to change. Established academics who have mastered the traditional elements of teaching and research are able to use the cognitive space identified by Billett (2004) to engage with new activities and develop their own, and consequently the university's, capacity to respond to commercialisation agenda (Read, 2009). Second, academics with previous industry experience accumulate a wide range of skills and experiences that enable them to apply them in various commercialisation projects (spin off, consultancy, contract research). It has been shown that the variety of interactions with industry positively contributes to the creation and development of academic researchers' 'integration' skills (i.e. the individual 'capabilities' necessary to integrate the worlds of scientific research and the worlds of manufacturing and product application), in the sense that it gives academics the opportunity to learn about the research and development worlds, and the most effective ways to facilitate interaction between the two (D'Este & Patel, 2007). Importantly, It was concluded that the greater the engagement of a particular academic in a wider variety of commercialisation activities, and hence the greater engagement in a variety of inter-organisational activities, the more likely it is that an individual builds the skills necessary to integrate between academia and industry. This means that this type of academics not only obtains the ability to conduct both basic research and applied research but also they are able to manage the tension of conflicting interests resulting from the distinctive motivation system between academia and business facing projects (D'Este & Patel, 2007). The main reasons for that is that working in industry provides academics with the chance to gain exposure of a wider range of technical problems identified in the industry and hence enable them to codify this knowledge and link it to the academic world. At the same time, greater engagement in various commercially-oriented projects leads to enrich an academic's understanding of the application context. This is because interaction with industry enriches one's knowledge about needs of the users as a consequence of proximity to them (Siegel et al., 2003). This is consistent with the narratives found in my research where the academics working in industry showed that they are more able to understand the clients' needs and understand the mentality of people in industry. Also, it supports the narratives of the junior academic who was not able to make connections between academia and industry due to the zero interaction with industry.

In addition, the path depending behaviour of academics is justified by the fact that academics with successful commercialisation experience tend to repeat this existing pattern of behaviour and work in a similar form of commercialising. Previous experience with commercialisation, patenting or venture creation increases the likelihood of academics' participation in

collaborative activities (Bekkers & Bodas Freitas, 2008). Successful experiences from prior business activities can create a perceived "path" for successful business facing activities where individuals have moved from their specific observations to make broader generalizations and theories on how to achieve success in subsequent new ventures (Politis, 2005). In a similar vein, Lavie and Rosenkopf (2006) found that prior exploration experience reinforces an individual's tendency to explore in the particular domain in which such experience has been accumulated. Academics with previous successful experience in a specific form of commercialisation tend to take the same path and work in the same form instead of exploring a new form of commercialisation. This line of reasoning consequently suggests that past success primarily stimulates individuals to concentrate on an activity that matches with what has been working well in the past, implying the use of an exploitative mode of transforming an experience into knowledge (Sitkin, 1992). This further suggests that successful experiences are likely to have long-lasting impact on strategies in subsequent commercial involvement due to tendencies toward path dependence and lock-in. In this context, path dependence refers to an individual tendency to select commercial forms that revive his previous successful behaviour. This implies that previous success leads to exploitation-based experience instead of exploration (See Levinthal & March, 1993). In other words, successful path (combination of theories, teaching, practice, ambidextrous knowledge, personality development, research knowledge, commercial experience) shapes the current view of academics on their experience and leads them to choose actions that replicate what they already know. With the advancement of their career and increase of the variety of their experiences, the likelihood of working in unfamiliar form decreases.

Regarding those who have not involved in commercialisation, this study found that academics tend to compare themselves with their colleagues before making the decision to commercialise their work. One of the interviewees (interviewee 014) clearly mentioned that no one in his department has done it before. This can be interpreted by Louis et al. (1989)'s work who found that individual characteristics are strongly moderated by the effect of group-level norms. These findings are backed by more recent research on UK and German scientists (Haeussler & Colyvas, 2011). If their colleagues value patents and awards, academics are more likely to consult for private companies, while the opposite is true if their peers value traditional academic values. In other words, as Dasgupta and David (1994) recognized, communities of scientific peers might involve in shaping the definition of what constitutes a valuable avenue for research, which makes it risky for any academic in their circle to deviate

from the social norm of conducting academically rigorous research in order to seek commercial accomplishments (Bercovitz and Feldman, 2003).

In a nutshell, it can be noted that the current experience of academics follows the logic of path-dependency in the sense that individuals seek to apply an existing pattern of behaviour. The findings show evidence against the view that splits between academic career and commercial career. This is consistent with recent research that suggests that the boundaries between science and industry are melting and overlapped (Owen-Smith, 2003). Individuals' current experience of ambidexterity cannot be isolated from their previous behaviour and experience. Individuals refer back to their previous experiences when making sense of their current experience of managing what the observer views as ambidexterity. Stating differently, individuals chose courses of actions that replicate to those already taken. This leads them to interpret their current experience of undertaking commercially-oriented activities towards the exploitation end. According to literature, individuals' own experience implies that academics can employ one of two possible strategies when making decisions on whether to take exploitation or exploration. In the first case, individuals may choose actions that replicate or are closely related to the ones which they have already taken, thereby exploiting their pre-existing knowledge. In the second case, individuals can choose new actions that are distinct from the ones that they have already taken (Minniti & Bygrave, 2001).

In the next section, the researcher explains how academics (both with commercialisation experience and with no commercialisation experience) respond to commercialisation agenda and how they shape the shifting boundary between academia and commercialisation to negotiate their role identities.

5.3. Boundary work and identity tension: convergence versus divergence between academic and commercialisation

It was mentioned earlier in the data analysis chapter that academics differ in their response to identity tension and thus the way they negotiate their role identities. While academics who never involved in commercialisation show rejection of commercialisation and hence adopt a single role identity, academics who involved in commercialisation work show more acceptances to commercialisation and accommodate the commercialisation identity into academic one. In this section, the research shows why academics differ in their responses and explain these findings through boundary work (convergence vs divergence) logic.

To begin with, sensemaking of academics' lived experience is also conveyed through discussion of changes and negotiation of their role identity. Literature on sensemaking in organisation studies has confirmed this notion. Through an in-depth ethnographic study of a seemingly unremarkable meeting, individuals who appear to be discussing their work are shown in fact to be also constructing or making sense of their (dynamic and flexible) multiple social, group, professional and organizational identities: '…organizing can be seen as constructing and maintaining identities to facilitate collective action' (Karreman & Alvesson, 2001, p. 80). In a similar vein, Weber and Glynn (2006) indicate that constellations of identities (in the form of typified actors) are a key form of institutions that are manifested in sensemaking processes and 'may in fact "steer" individuals' actions.

My interviewees' sensemaking produced diverge responses to the identity tension which resulted from the commercialisation orientation of their university. The interviewees made sense of their responses through showing "boundary work" to defend and negotiate their role identities. It was confirmed in previous research that work boundaries and role identities are interweaved, and challenges to external work boundaries may threaten stable role identities (Ashforth et al., 2000; Kreiner et al., 2006). The study of Beck and Young (2005) indicate that the contemporary transformation in the relationship between academia and the marketplace pose a key challenge not only to the external conditions of academic work, but more importantly, to the core elements of academic professional identities. The professional role identity of academics has historically been deeply rooted in a distinctive scientific community marked by strong external boundaries and a special relationship to knowledge production (Henkel, 2005; Kogan, 2000). The increased penetration of the marketplace into academia and commercialisation/capitalisation of knowledge presents a challenge to this professional ideal. Prior research indicates that an academic's decision to follow the commercialisation path potentially involves a role transformation and inner sense-making process akin to managing multiple role identities (George et al., 2005; Pratt & Foreman, 2000).

The analysis of interview data suggests that the penetration of commercial agenda into academia has generated various responses between the academics involved in commercial work and those who are not. One the one hand, academics with commercial involvement have shown more convergence between academia and commercial world by making compromises of their values and motivation and thus exhibiting a hybrid role identity. Their responses stress the growing prominence of the new school, that is, the entrepreneurial orientation of the university.

On the other hand, academics with no commercial work have shown divergence between the two worlds by showing contradictions between science logic and commercial logic and thus exhibiting a single role identity. Their responses paint the dark side of commercialisation and heavily criticise the capitalisation of knowledge and the corporation agenda as they believe it erodes the norms and the values of academic science and threatens their academic identity. These responses highlight the extent to which the new role identity is manifested in academics' practices and mindset and thus provides a wider understanding of the repertoire of role identities that academics assume (Jain et al., 2009). In other words, it provides understanding of where the role identities are located in the continuum ranging from the old school (traditional scientists that suggest the dominance of pure science and focuses on) to the new school (entrepreneurial scientists that suggest the dominance of commercial mindset and focuses on heavy involvement in Technology transfer activities) (Owen-Smith & Powell, 2001).

This inconsistency of academics' responses is based on evidence in the previous literature. These findings are consistent with the results of several other studies (Owen-Smith & Powell, 2001; Vallas & Lee Kleinman, 2008; Welsh et al., 2008) which show that the influence of the changes on the norms and practices of academic scientific work suggests a picture that is largely mixed and featured with inconsistencies. My findings go against the literature that builds general assumptions about the impact of the changing context of the universities without a consideration of the voices of individual academics (Duberley et al., 2007). Attention to their voices and special interpretations of the commercialisation provides a more complex picture of the different level of impact of the third role agenda on academics.

The variation of the responses was explained by Oliver (1991) who argues that individuals and organizations do not simply conform to institutional pressures but show various responses to them. In her study, she suggests five different types of response to such pressure ranging from passivity to increasing resistance: acquiescence, compromise, avoidance, defiance, and manipulation. Also, Tolbert and Zucker (1996) suggest that the variation of academics' responses to the change of the whole institution occurs because institutions differ in their power and their influence on behaviour, depending on how widely and deeply they are accepted by members of a specific industrial collective.

Bearing in mind the inconsistent responses amongst academics, the following paragraph shows how literature justified the reaction of each type of academics. In other words, it explains why some academics tend to diverge between the two worlds and others coverage between them. On the one hand, my research shows that traditional academics refuse the

commercial agenda completely because they perceive **divergence** between academia and commercialisation due to contradictions between the two role identities. Firstly, they believe that academic and commercial activities represent fundamentally different and potentially contradictory endeavours (Bercovitz & Feldman, 2003; Owen-Smith, 2003). These academics view the demands of commercialisation as constraints to their work (Henkel, 2000). Therefore, their boundary work seeks to maintain the traditional ideals of basic science and protect their academic role identity. Secondly, they believe that any involvement in commercialisation represents an assault on their professional autonomy (Henkel, 2000). For them, such involvement would embody corporate ideologies and values (such as profit making and serving customers) that contradict academics' own values (valued and professional self) (Ashforth & Humphrey, 1993). Taking the notion that academic identity functions 'as part of the lived complexity of a person's project and their ways of being' (Clegg, 2008:329), these academics attempt to separate their inner professional self from an outer organisational self that favours commercial principles and practices over the established and traditional academic norms and principles (Winter, 2009). For them, academics are expected to generate such response whenever their academic work is reorganised around values that might 'violate traditional academic values' (Harley, 2002, p. 187). Therefore, to avoid such conflict, they tend to adopt a single role identity and produce actions and justifications that protect this identity and match their core academic values and norms.

On the other hand, my research finds that academics involved in commercialisation perceived **convergence** between academia and commercialisation through first, making connections between the two worlds; second, compromising their motivation; and third, compromising the meaning of their extant academic identity. These findings complement that notion that the polarisation of academic identities, in order to be fixed to one role such as teacher or researcher, is no longer appropriate in the current higher education context leading 'to the idea of identity development as a more individual project' (Henkel, 2005:154) where fluidity and change are part of the ongoing picture. Similarly, their view confirms Churchman's view that 'the notion of a single ''academic identity'' may be obsolete in an environment in which the academic role is becoming increasingly diverse' (Churchman, 2006:3). An essential part of the boundary work made by academics is stressing the importance of keeping the boundaries between academia and commercialisation. To reflect on this notion, academics have sought to defend and protect the core academic professional identity. Put differently, they emphasise that converging between the two worlds should also ensure that they do not

lose the core academic values and do not accept the commercial agenda in full, (this will be explained further in the next section).

Importantly, the findings of this research reveal that regardless of whether academics involved in commercial work and regardless of the range of their involvement, academics were united in highlighting the necessity of protecting the core academic professional identity. The increasingly blurred boundary between academia and industry, and the growing pressure on academics to perform commercial projects have brought the ambivalence of academics to the forefront. Therefore, academics in this study are engaging in what Friedson (1994) called "maintenance project". According to this principle, academics search for a coherent professional identity as they increasingly operate within open and contested terrains. At the individual level, they tend to create their own versions of boundary work to defend and establish the values of their academic work, and allow them to save their professional academic career (Lam, 2009). This is consistent with the results of several other studies (Enders, 1999; George et al., 2005; Henkel, 2005) which also show a strong continuity in the professional role identity of academic scientists, despite challenges from the environment.

In short, this study suggests that the assumption of multiple role identities is a viable adjustment mode when deciding to undertake a commercial activity. While some academics view the commercial choice as distinct and discrete from their academic identity, other academics view that commercial identity could co-exist as an overlay on an existing professional role identity. To put differently, this study's findings reveal that encountering commercialisation values involves establishing various attitudes towards commercialisation through reconstructing the academic role identity either to accommodate the changes required for the third mission of the university or to develop justifications to refuse it. The next section focuses on the new school academics and explains how they converge between academia and commercialisation and hence how they are able to adopt a hybrid role identity.

5.4. How ambidexterity is achieved amongst academics

Data analysis shows that academics with commercial involvement were able to manage the identity tension through accommodating commercialisation in academic identity. In addition, it shows that ambidextrous academics apply mechanisms (prioritisation and delegation) to ensure the primacy of the academic identity and they tend to reassess their skills and abilities to justify their ability to manage a hybrid role identity. In this section, I combine all these

findings to one theme (How ambidexterity is achieved amongst academics) and explain how these findings are related to the existing body of research. These findings are explained using theories of management of multiple role identities, boundary work, salience approach, and self-efficacy.

5.4.1. Converging contradictory logics of commercialisation and academia
5.4.1.1. Making compromises:

Managing the identity-based tension starts from the cognitive work that academics involved in commercial work exhibited when they converged between the two worlds. In order to manage such tension, they had to integrate between the two identities and show more acceptance to commercial agenda. This contrasts with what is suggested by previous research where academics often show resistance of these commercial imperatives (Sharrock, 2000; Winter & Sarros, 2002). To activate such convergence, academics engaged in compromise to accommodate commercialisation into academia identity. Moreover, the findings of this study are consistent with what is suggested by literature (e.g. Mahony, 1995) that academics' understanding of, and commitment to, the multiple facets of academic work becomes a must. The definition of academic role as related only to traditional activities such as research and teaching no longer represents institutions of higher learning and, hence, produces a context in which multiple interpretations, privileging of information and compromise with regards to workplace practices and choices can occur (Mahony, 1995, p. 102).

Academics performing commercialisation activities engage in changing the meaning of their existing academic role identity. The academics interviewed in this study show a movement away from the traditional academics role identity towards a new modified meaning. In other words, they replaced the old logic- that suggests academics sticks to the traditional academic role that usually to pure scientific projects and refuses the commercial role - with a new logic that suggests that academic role is about stepping down from the ivory tower and having a real impact in business and organisation work. This notion of changing role identity is similar to what is suggested by (Rao et al., 2003). According to them, individuals produce negative feedback cues about the identity and the old logic to transform into a new role.

In fact, previous research admits the effective role of the compromise in reducing the tension of responding to a new demand. More specifically, prior studies such as Delmestri, (2006) and Smith-Doerr, (2005) highlighted that by mixing elements of the intersecting institutions, individuals are able to adopt a new hybrid domain or change their direction into a new domain. In a similar vein, Oliver (1991) argues that manipulation is the most active response to

institutional pressures since individuals actively seek to influence, change or co-opt institutional expectations and evaluations. In order to reduce the tension or the cognitive dissonance that resulted from the new requirements of the new role, academics involve in evaluation and making sense of these new possibilities (Piderit, 2000). The process of evaluation is outlined by Howard (2000) who suggests that the process starts by focusing on what identities they distance themselves from, and what identities they embrace, and then they show how collective identities are linked to the behavioural choices of individuals.

Additionally, Churchman (2006, p7) found that "academics experiencing the corporatization of their profession and institutions assign meanings to academic tasks and their altered environment which correspond with their understandings of the academic role. Through these meanings, they construct and protect their individual academic identity, which is not necessarily forged on the same terms or with the same definitions as those of the ''corporate'' university environment, nor in terms shared with their colleagues". This is similar to the findings of this study where academics performing a commercial role tried to modify the meaning of their academic role as an attempt to protect their extant academic identity and show their response to the changes occurring in the whole institutions. Academics provided a new meaning to the academic role where they see it as a movement away from sitting in the ivory tower and towards the third mission.

This can also be linked to the literature on identity and work role. According to Ibarra (1999), over time, individuals adapt aspects of their identity to accommodate role demands and modify role definitions to preserve and enact valued aspects of their identity, attaining a negotiated adaptation to the new situation. Identity and role change, therefore, "evolve interactively such that a new synthesis is achieved that is more than simply a compromise of static role demands and static self-demands" (Ashforth & Saks, 1995: 173).

The changes made by tertiary institutions to meet the needs of multiple, disparate stakeholders (in this case, commercial agendas of Business and industry) would not be achieved without compromise made by some of the individuals who work in them (Churchman, 2006). In other words, they need to accommodate the new changes in their existing academic role. Therefore, as an attempt from them to accommodate these changes without feeling that they were totally dragged into a completely new role and that they have changed their identity, the academics tried to adopt a hybrid role that keeps the primacy to their extant academic role and secure how they define themselves as academics more than commercial or business people.

In addition to changing the meaning of the extant academic identity, the new school academics made another type of compromise by modifying their motivation of engaging in commercial endeavours. They tend to make justifications to build congruence with their academic role. In particular, they believe that charging a high price for their commercial endeavours is required as they need considerable compensation for leaving their academic original identity (Jain et al., 2009). They also attempted to show justifications congruent with their academic role such as contribution to teaching and research, academic freedom, and making impact. It was suggested that the maintenance of such congruence confirms that role identity modification involves overlaying facets of a new role identity over the extant one (Jain et al, 2009). This role identity change is more similar to layering onto an existing position rather than a complete switch from one position to another. This means that academics are not switching completely to the commercialisation world but they attempt to incorporate commercialisation into their academic role.

According to research on motivation, it has been suggested that academics involved in commercialisation usually tend to combine the financial motivation that is related to commercial projects with academia-related motivations and personal motivation. For example, Stephan and Levin (1992) have categorised the motivation of commercialisation endeavour into three motivations ['gold' (financial rewards), 'ribbon' (reputation and career rewards) and 'puzzle' (intrinsic satisfaction)] and claimed that the three motivational drivers can co-exist and academics may be extrinsically or intrinsically motivated to different degrees in their pursuit of commercialization. Also, research shows that majority of academics usually float their academia-related motivation (Ribbon) over other motivation. For instance, Perkmann et al, (2013) conclude that the great majority of academics are motivated by the traditional rewards of the ribbon in their commercial pursuits and the gold is not considered the most important compared to the other forms of motivations (Ribbon & Puzzle).

5.4.1.2. Building synergies between science and commercialisation

Besides using compromises for showing convergence, academics implemented another cognitive convergence, which is building synergies between science and commercialisation role. According to role identity theory, individuals who are managing multiple, competing identities may seek high synergy between them. They attempt to assess the degree of the connection between the two identities and how much benefit this can connection bring.

Academics in this study employed an identity synergy concept in the sense that they were able to show how building relationships between them is beneficial for their future career as well as university' movement towards the third role. Management of the tension of conflicting demands can be achieved through establishing connections between two conflicting identities. According to Scott et al (1998), competing demands from multiple identities can be diminished/mitigated when identities are related or aligned one to another. Individuals are able to manage multiple identities by managing the relationships. Unrelated identities may cause conflict and increase the possibility of achieving their demands. Therefore, according to this perspective, academics have to find logic to build connections between the two conflicting demands of academic role and commercial role. In fact, the results of this study confirms that academics with the ability to manage commercially-oriented role identity besides the academic role identity can connect between the two roles and perceive a high synergy and overlap between them. This is consistent with the results of Birkinshaw and Gibson's research (2004) that suggests that ambidextrous behaviour is associated with the ability to hold multiple roles and the ability to identify potential synergies. In their attempt to build synergy, the academics in this study showed interconnection between teaching, research and commercial work. They tried to show the benefits that commercialisation can generate for their teaching and research role (publication and impact), attempting to justify their response in a way consistent to organisation stories/recognised achievements. The academics participating in this study did not claim that commercialisation works completely against their academic performance. The wide variety of reasons invoked for involvement suggests that their existing role identity plays a key role in framing rationales for such participation. This is consistent with prior research that confirms the co-existence of both activities that may actually reinforce one another (Looy et al, 2006). Also, Owen-Smith (2003) highlighted the changed relationships between commercial and academic systems. Whereas these used to be separate systems, Owen-Smith's findings suggest that commercial and academic standards for success have by now become integrated in what is called a hybrid regime, where achievement in one realm is dependent upon success in the other. This observation has been confirmed by previous research in which the relationship between scientific performance and engagement in commercialisation is co-dependent. The findings of Van Looy et al. (2004) revealed that contract research and scientific activities do not hamper each other. Similarly, in this study academics attempted to highlight that achieving success in performing the commercial role contributes well to their success of performing academic activities.

My findings are consistent with the stream of literature on the relationship between academic activities and commercial ones that argues for the complementarity of both roles: Teaching, research and consulting (Mitchell & Rebne, 1995); Entrepreneurial and academic activities (Owen-Smith, 2003; Van Looy et al., 2006). Patenting and publications (Azoulay et al., 2007; Czarnitzki et al., 2007, Stephan et al., 2007). In short, this research has shown that the overlap between the two roles exists and the relationship between them is complementary- rather than contradictory- in nature.

In fact, recognizing the benefits that can be gained from commercial involvement is based on the assessment which they apply in order to perform such switch. In other words, academics engage in an appraisal process that compare between the benefits obtained from their involvement in this new role with those obtained from the extant role. Using the same notion, academics in this study have involved in assessing their experience in commercialisation by implicitly praising it vis-à-vis the traditional academic role. Prior research noted that academics involved in commercialisation projects engage in an evaluative process of comparing the role identity that one associates with such activity to that of an exiting role (Green & Cohen, 1995).

5.4.2. Hierarchy/ Salience approach:

As mentioned earlier (in the end of section 5.3.), although academics attempt to build convergence between the two worlds, they maintain the distinction between them and ensure that they protect the core academic identity.

This research shows that when integration and interconnection between conflicting demands is perceived amongst the actors, ambidexterity experience turns to be viewed as management of multiple role identities where academics apply the concept of salience to ensure that they perform the most important roles first. This is consistent with identity management literature. Pratt and Foreman's (2000) suggest that individuals usually choose between four forms of responses to manage multiple identities. First, **compartmentalization**, in which the different identities are maintained but no synergy or connection is built between them; second, **deletion**, in which individuals actually rid themselves of one or more of their identities; third, **integration**, where individuals fuse identities into a distinct new whole; and **aggregation**, where individuals attempts are made to retain all their identities while forging links between them. My research interviews suggest that academics follow mainly aggregation response to manage their hybrid role identity. The aggregation of the two identities took forms of creating

hierarchy and creation of new beliefs (Pratt & Foreman, 2000). Floating the academic identity on the top of the commercial one can be interpreted under the salience concept. Individuals hold multiple identities, and these are not all alike. One key way in which identities differ is in their level of importance to the individual. In this situation, academics engage in salience in order to maintain the hybrid role identity (Stryker & Serpe, 1982). Salience is defined as the probability that a given role identity will be invoked across a variety of situations. Salience is measured by the amount of commitment an individual has to an identity (Stryker & Serpe, 1994). It describes how central an identity is to an individual's goals and core sense of self (Ashforth, 2001) and how likely it is to be invoked in a given situation (Stets & Burke, 2000).

Prior research suggests that identities are organized in a "salience hierarchy", i.e., there are variations in the commitment that the individuals have to the different facets of their hybrid identity (Callero, 1985). This perspective assumes that some role identities are more central to one's self than others. While it is possible for individuals to hold multiple identities salient to various roles and contexts (Kreiner et al., 2006), some aspects of individuals' identity are 'central' and often remain salient and can be held strongly even in the face of external challenges (Markus & Kunda, 1986). For this research's interview data, their role identity is deeply rooted in a strong scientific ethos that cherishes autonomy and dedication to knowledge. In this study, the salience appears from the mechanisms which they used to ensure the primacy of their academic identity over the commercial one. In this study, academics applied two main mechanisms: delegation and prioritising- which are discussed in the next section. This research's findings showed that although academics consider commercialisation to be important and accept to involve in these projects, they give these projects less priority in action. Unless they produce academic outcomes and perceived to be important to their academic progress, commercial projects are given less priority in the academics' mind. It is an attempt from academics to decrease the dissonance that might be created by taking two inconsistent roles.

This research indicated that managing their hybrid role identity involved establishing priorities and different commitments across their different personas (teaching, research, administration). Salience of the new modified meaning of academic role appears in lessening the importance of teaching and admin roles. This is justified in research on academic identity below. In Churchman's work (2006), it is claimed that taking less teaching and admin roles is part of identity resolution process where some identities are marginalised and others are normalised and valued. He suggests that some academics relinquish some of the academic

work which they value in order to keep something more valuable for them- ie retaining their job. According to Deem and Lucas, (2007), a majority of academics value scientific capital more highly than teaching capital because they believe that it enables them to play the "UK-wide research assessment game". Teaching has been taken less seriously by researchers as it is not highly valued and recognised as important as research in research-based universities. This confirms what have been found in literature. "Academic promotion solely relies on one's international research reputation. Time spent on teaching and teaching-related activities … is applauded but it is weighed close to zero by promotion panels." (King, 2004, p3). Another point to add to this debate is that in this study's context, research-intensive universities, it is fair to spot this orientation towards teaching amongst academics. In line with previous studies, academics in teaching-intensive universities may value teaching more highly than their counterparts who work in research-intensive universities (Fulton, 1996).

In short, it is important to stress that academics' involvement in commercialisation elicits the tension between research and teaching amongst academics and re-question the value of their different role identities.

5.4.2.1. Delegation and Prioritisation as main mechanisms to activate the salience approach:

Both mechanisms represent key strategies which academics deploy in order to ensure salience of their academic role identity. Delegation was highly attributed to academics' networking ability. Academics were able to establish contact with the right people inside and outside the university to accomplish what they recognise as less important personas. This shows how social capital can assist individuals to act ambidextrously. Prior research on ambidexterity has shown that networks are important levers for individuals' ability to behave ambidextrously (Rogan & Mors, 2012) but it did not show how it helps them to reach such ability. Furthermore, research on commercialisation in academia has mainly focused on the role of the academic's network and social capital in finding opportunities to work in commercialisation projects, but it overlooked the role of social capital in enabling one's to manage both activities (Haeussler & Colyvas, 2011).

Additionally, delegating and prioritising represent proactive "brakes" that academics employ to prevent the acceptance of commercialisation world at the expense of losing the core academic identity. Instead, they tend to make sure that their involvement in commercialisation do not influence their academic performance and as such ensure the primacy of the most important persona, academic persona. According to Jain et al (2009),

engaging in these mechanisms enables actors to precisely calibrate their activities, outputs and even their value systems. In exposing these mechanisms, this study adds further evidence to previous research that suggests that each individual shows reluctance in giving up his/her key role identity (Deaux, 1993). Delegating and prioritising, then, represent two distinct types of identity work that academics engage in (Jain et al, 2009). Their emphasis on preserving the past makes these two mechanisms a useful technique to actors experimenting with provisional selves (Ibarra, 1999). The two mechanisms prove the fluid, negotiated nature of a hybrid role identity, which requires continuous efforts from the key actors to manage the contradictions accompanying the two types of activities.

Also, these mechanisms prove that individuals pursuing conflicting demands not only apply a cognitive process but also take action and apply mechanisms to ensure that they can continuously balance between these demands. Research on ambidexterity has failed, to date, to provide explanation of the forms of actions which the individuals require to ensure their constant ability to show ambidextrous behaviour. Literature referred to the actions made to reinforce either exploration or exploitation, but not both at the same time. For instance, a dense network of interactions (connectedness) may increase both the accessibility to new knowledge; thus, foster exploration (Mom, et al., 2009; Subramaniam & Youndt, 2005), and the sharing of experiences on how to implement improvements; thus, promote exploitation (Jansen et al., 2006). Alternatively, this literature merely focused on the actions made by the organisation to foster the simultaneous pursuit of exploration and exploitation. In particular, Un (2007) highlighted that the innovative system of human resource management practices, consisting of team-based incentive system, team-based job design, and job rotation, enables the firm and its members to undertake exploration and exploitation simultaneously.

5.4.3. The view of one's abilities and skills

Another essential part of sense making of academics' lived experience of managing a hybrid role identity is the redefinition of their skills and abilities in a way that distinguish them from university colleagues and industry practitioners. Ambidexterity literature acknowledged the distinctive characteristics of dual minded individuals in comparison to the single-minded ones. For example Top (2010) found that ambidextrous managers have a higher analytical cognitive style than non-ambidextrous managers. Also, Smith and Tushman (2005) state that managing exploitation and exploration requires people with an ability to engage in paradoxical thinking. Cohen and Levinthal (1990) argue that ambidexterity is more likely to

be achieved when an individual has a breadth of prior knowledge categories, as well as various linkages across them. Research in the higher education context showed a similar belief. For instance, Di Gregorio and Shane (2003) stated that higher quality researchers have more possibility to commercialize in order to exploit their inventions than less accomplished ones. Similarly, Zucker et al. (2002) argued that university-firm technology transfer concerning breakthrough biotechnology innovation typically involves 'star scientists'. West's (2008) findings suggest that star scientists are best suited to commercialise their own knowledge. However, these studies did examine how ambidextrous individuals view themselves and how they interpret their own characteristics and skills to justify their ability to manage two conflicting demands.

The findings of this study suggest that academics involved in commercialisation engage in redefinition of themselves to prove that they have gained special skills and abilities required to deal with tensions of managing the two types of activities. Role identity literature has documented that involvement in commercial work involvement typically requires these individuals to modify their role identity (Burke & Tully, 1977). This modification may require a fundamental reassessment of one's abilities (Jain et al, 2009). Also, Read, (2009) argues that individuals with a clear grasp of their own special competence and skills tend to succeed in managing between the traditional academic work and the new commercial activities.

In addition, my findings suggest that academics view themselves highly capable of performing the new activities, commercialisation activities. In other words, the data show that academics with experience in commercialisation change their views of their abilities and gain more self-confidence since they acquire commercial skills and learn about the other world, industry. Conversely, academics with no involvement in commercialisation perceive themselves as people with abilities and skills that are locked to science and they hold no confidence in their abilities to conduct commercialisation. This lends support to the self-efficacy theory that suggests that one's beliefs regarding "how well one can execute courses of action required to deal with prospective situations" (Bandura, 1982: 122) is shaped primarily by one's prior experience with similar situations. Studies have well documented that experiences in which success required learning and exploration increase self-efficacy and make it more robust; thereby, allow individuals to maintain their self-efficacy in the face of future hurdles (Bandura, 2000). Also, this is supported by entrepreneurship research which stressed the importance of self-efficacy as a mechanism for overcoming perceptions of the

higher financial, technological, and legal uncertainties that are often associated with the commercialization of research knowledge via entrepreneurship (Markman, et al, 2002; Obschonka et al., 2010).

5.5. Contribution to literature:

The section explains the main contributions of this research's findings on ambidexterity literature and research commercialisation studies. Regarding the key contributions made to ambidexterity, this section starts off by discussing the link of this research's findings to management of exploration-exploitation. Then, it moves on to discuss how this study contributes to the knowledge on "how ambidexterity at the individual level" is achived and what its implication on understanding the contextual form of ambidexterity are. Finally, this sections shows the main contribution which this study has made to the existing literature on commercialisation of the university research.

5.5.1. Contribution to literature on ambidexterity
5.5.1.1. Exploration-Exploitation tension:

Research on ambidexterity to date has well documented the inconsistencies and tensions resulting from multiple, conflicting demands (Ingram et al., 2008; Andriopoulos & Lewis, 2009; Raisch et al., 2009; Schreyögg & Sydow, 2010). However, tensions of exploration and exploitation are mainly examined at the organizational or business unit level without considering how individuals might interpret and balance these tensions (Raisch et al., 2009; Simsek, 2009; Nosella et al., 2012). The individuals' views and responses to ambidexterity have been sacredly researched.

In this research, academics deployed the logic of path-depending to locate their current involvement in commercialisation on the exploration-exploitation continuum. At the individual level, this research provides evidence that despite the difficulty of managing conflicting demands, there are academics who show comfort of dealing with the dual demands of academia and commercialisation. However, this does not mean that all academics are able to do so. This study also shows that academics- with the ability to manage academia and commercialisation - view themselves as stars and distinctive, which is consistent with some previous research that suggests high correlation between scientific excellence (doing high quality academic research) and the ability of producing commercial outputs simultaneously (e.g. Gregorio & Shane, 2003; Zucker et al. 2002). Previous research suggests

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that the existing path-dependent patterns of behaviour can cause resistant to change and hence restricts academics' ability to accept to involve in commercial roles (Ambos et al., 2008). For them, individuals would struggle to become ambidextrous: therefore, they would mainly follow either a traditional academic publishing career, or a trajectory that was more open to producing commercial outputs, but not both. However, this research proves the opposite. The view that academics cannot make commitment towards commercial activities because they have to invest widely in a specific style of research, paper-writing and network-building has become obsolete (Stephan & Levin, 1992). Also, the belief that academics lack the skills and abilities required for commercialisation as they are different from the academic skills and abilities requires re-investigation (Clarysse & Moray, 2004; Lockett et al., 2003; Shane, 2002). In contrast, this research shows that academics are able to extend their purely academic skills and abilities to the commercialisation world. It shows that academics show integration skills and show ability to integrate between their previous patterns of behaviour and their current decision to work in a new role, commercialisation. Instead of resisting the change represented by involvement in contradictory logic to academia, academics tend to retrieve their previous learning and experiences and match them with one/multiple forms of commercialisation. They converge between the two worlds in order to implement this balance. By doing so, they are able to overcome the exploration and exploitation tension because they tend to interpret their current involvement in commercialisation as a mere exploitation of their repertoire of the skills gained in the past. In other words, they do not see commercialisation as a new change of their previous pattern of behaviour that might require exploration of new domain of knowledge and skills. Therefore, my findings further the evidence that suggests that the way individuals interpret the exploration-exploitation plays the key role of their ability to manage these tensions (Papachroni et al, 2013).

5.5.1.2. Understanding how ambidexterity is achieved at the individual level

Research on ambidexterity has acknowledged the central role of individuals in organisation ambidexterity (Birkinshaw & Gibson, 2004). However, there is limited empirical research that explores tensions of ambidexterity at the individual level (Mom et al., 2007). Previous researchers fail to explore the mechanisms of how ambidexterity is pursued in practice and how individuals make sense of their experience of manging the tensions stemming from contradictory logics (Nosella et al., 2012; Raisch et al., 2009). Previous research has acknowledged the role of cognitive mechanisms for managing contradictory demands at the

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individual level. For example, Eisenhardt et al. (2010: 1263) found links between organizational actors who pursue contradictory demands and their ability to engage in cognitively sophisticated solutions. Furthermore, Smith and Tushman (2005) state that senior managers are able deal with the contradictions of explorative and exploitative innovation due to their ability to develop of paradoxical cognition. Although they show the role of cognitive mechanisms, they fail to explore the cognitive process that individuals engage in to manage the tensions of conflicting demands. To cover this gap, this study shows the socio-cognitive process made at the individual level to manage the tension of two conflicting demands. While a little is known about the cognitive processes the individuals engage in while pursuing conflicting demands (Audretsch and Erdem, 2004), this research furthers the evidence that certain cognitive changes in a growing number of disciplines and scientific fields open up possibilities to academics to achieve two conflicting goals simultaneously: the pursuit of science and commercialisation (Etzkowitz, 1998). It suggests that academics engage in boundary work and identity modification that make them able to manage the conflicting demands of commercialisation and science. DiMaggio (1997) proposes that "individuals are capable of maintaining inconsistent action frames which can be invoked in particular situational contexts. Hybrids in boundary-spanning positions can bridge contradictory logics and act as powerful agents of change", (p268).

The cognitive process is composed of building compromises, building synergies between academia and commercialisation, and building hierarchy between conflicting role identities. Besides the cognitive process, academics act to ensure the salience of their core academic identity. This action is represented by two main mechanisms (delegation and prioritising). Therefore, role identity and boundary work theories open the window to ambidexterity researcher to explore how individuals achieve ambidexterity in action, and provide a clear empirical evidence of the mechanisms they use to manage the tensions especially in the context where individuals are witnessing strong institutional change and external pressure to change their core role identity.

5.5.1.3. Understanding contextual ambidexterity:

Research in contextual ambidexterity yielded new insights into ambidexterity research since it shifted the possibility of addressing two conflicting demands from the organisation level into the individual level. In other words, it gave more acknowledgment to the role of individuals in achieving organisation ambidexterity. As mentioned in the literature review (in

section 2.2.3.1), contextual ambidexterity is based on a set of processes that encourage individuals to make their own particular judgments about the conflicting demands that they encounter (Tushman & O'Reilly, 1996). It rests on the notion that individuals are able to make such judgments as long as they find a supporting context (e.g. Birkinshaw & Gibson, 2004). The majority of the research focused on examining the type of supporting context required to help individuals act ambidextrously. Literature examined supporting factors such as lack of necessary resources, leadership support, flexible processes, and supporting internal structure (e.g. Smith & Tushman, 2005; Markides & Oyon, 2010); teams, meta-routines and job enrichment schemes (Adler et al., 1999); transformational leadership and the learning culture (Nemanich & Vera, 2007). Despite its acknowledgment of the role of individuals in the process, the research rarely delved into the key response, the voices and sensemaking of the key individuals while managing the two conflicting demands. Hence, answering such questions provides researchers with a more comprehensive idea on how the supporting context should be designed to integrate with the various meanings and responses that individuals develop to confront the commercialisation agenda (e.g. Read, 2009; Lam, 2009). These heterogeneous responses and sensemaking informs more challenges to design supporting context support academics' tendency to act ambidextrously within universities seeking to achieve the third mission. Traditional Academics who tend to hold a single-role identity require culture, leadership, resources ..etc. that encourage them to take steps towards breaking the contradictory perception between commercialisation efforts and academic outcomes. On the contrary, the "new school" academics who hold a hybrid role identity require a different supporting context. They need a context to help them activate the mechanisms so that they ensure the primacy of the academic identity. Therefore, this study covers this gap by offering more knowledge about the internal cognitive processes and voices of the key actors that can help further research on ambidexterity to engage in the lived experience of individuals and examine the features of supporting each group of individuals requires.

5.5.2. Contribution to literature on commercialisation of university:

Research on commercialisation of the university research has well acknowledged the key role of the university scientist in facilitating the university's shift towards the third mission. For instance, Zucker and Darby's (1998) concluded that star academics play an essential role in the commercialisation of bioscience inventions. Furthermore, Lockett et al. (2005) highlight

that academics' involvement in commercialisation plays a significant role in the university's technology transfer and creation of knowledge-intensive fields. However, the literature hitherto paid little attention to the inner cognitive processes that academics engage in while pursuing commercialisation roots and reshaping their career trajectory (Audretsch & Erdem, 2004).

Employing the concept of role identity enables researchers in this field obtain a richer understanding of the key actors, academics, contributing to building ambidextrous universities. Prior research implicitly argues that academics smoothly transmit to a new role identity when they involve in commercial projects. Their approach overlooks the internal diversity in academic scientific work (Tuunainen, 2005), and the complex dynamics of organisational change that permit the co-existence of contradictory institutional logics (Smith-Doerr, 2005; Murray, 2006; Vallas & Kleinman, 2008).

By contrast, this research highlights the subjective experience of academics and shows the careful sense-making and negotiated identity work that accompany academics when they are expose to pressure to pursue commercialisation. The variation pf academics' responses and sensemaking originate from the self-imposed boundaries that academics themselves construct while encountering commercialisation agenda. The consequences of this self-definition of the boundaries are typically different from the framework in which all commercial activities are smoothly acceptable. Therefore, my research reveals that academics hold multiple understandings of what it means to be "commercial". Hence, this contributes to offering deeper understanding to their positions on the academic-entrepreneur continuum.

In addition, this study furthers the understanding of how academics exploit the 'sociological ambivalence' (Merton & Barber, 1963) of their 'boundary work' (Gieryn, 1983; 1999) to negotiation and protect their core academic position while pursuing a new potential career.

The findings of this research demonstrate that academics are active agents seeking to shape the boundary between academia and industry. Academics produce different forms of engagement with the emerging knowledge regimes. While some display 'traditional' orientation, seek to protect the core norms of basic science, and resist commercialisation agenda, others exhibit ''hybrid' orientations and are adept at modifying their identities to converge between science and business.

5.6. Practical implications

This research highlights several practical implications on academic profession, on the Higher Education and its linkage with industry. These implications are as follow:

First, my research interviews indicate that the institutional and legal changes (such as Bayh-Dole Act) in the higher education settings clearly give rise to modifications of academics' role identities towards commercialization. Despite these modifications, academics seek to find both behavioral and cognitive mechanisms to accord priority to their academic persona. Regarding academics' deployment of such mechanisms to ensure the primacy of their academic identity, this should not be only individual initiatives but also university system should support these mechanisms and design policies and structure to ensure the hybrid persona and ensure that academics involved in commercialisation produce enough scientific research outputs. In this situation, the role of REO and academics' networks is highly important to keep the primacy of academic identity through enabling delegation of commercialisation tasks. The university should design a platform to observe and control academics' networks and look for possible ways to activate these ties to foster the hybrid role.

Second, my findings suggest a cautious approach to undifferentiated attempts to promote the commercialisation amongst academics. Since academics might be linking commercialisation with the financial motives with little consideration of the purpose of the second revolution, universities therefore should integrate their monetary incentive schemes for commercialization with general policies enabling and encouraging collaboration with industry to achieve the impact on the economy and society rather than being led by industries agenda. Therefore, university policy makers should be aware that if academics involve in industry projects mainly to gain monetary additions, reliance on academics' commercial activities appears misplaced. Such involvement should be led by the fact that the main intention of policy-makers is not necessarily to maximize universities' income, but rather to make technology available to firms and society at large (D'Este & Perkmann, 2010). Therefore, without this integration, universities and their policies would encounter an ongoing challenge of how to protect the core values of academia from the money interest accompanied with commercialisation projects and how to preserve academics who are successful in producing entrepreneurial forms of commercialization in academia.

Third, academics (both those holding legitimate responses to a more commercially-driven academic world and those holding responses against a commercially-driven academic world) demonstrate that the maintenance of academic values is an individual responsibility. Hence, this shared mindset leads both groups of academics to agree that the faculty should police themselves and their universities to avoid potential damaging conflicts of interest and commitment. These common underpinnings should be the main basis for each academic when they attempt to initiate any potential relationships between universities and industry.

Fourth, the findings also have an implication on the meanings attributed to academic career. This study suggests that the transformation of the higher Education Institutions influence the meanings that academics attribute to their academic career. The criteria for success in this career have changed. The findings suggest that it becomes possible today to conduct basic science work in both academic and industry settings. As a result, traditional academics, on the one hand, encounter a tension in their teaching role. This tension is based on answering the question "how should they prepare their future academic students for careers?'' in a world that is featured with commercialisation interest as a norm without eroding the core academic values?". On the other hand, academics with more accepting attitudes towards commercialisation would encounter a tension in their teaching resulting from preparing future students to succeed in academia and commercialisation while avoiding the conflicts associated with pursuing academic for money only. This would produce a significant impact of the future academics' work identity and their personal work practices.

Fifthly, according to Smith and Tushman (2005), managing such an environment requires complex senior team capabilities and special abilities to lead the organisation to achieve ambidexterity. The findings of this research provide clear empirical evidence on how ambidexterity is achieved at the individual level. This helps senior managers in organisations witnessing a disruptive change in their role to understand cognitive and behavioural mechanisms that an individual deploys to manage the conflicting demands. Thus, such understanding of the key actors enables these managers to design more effective contextual support to foster individual's endeavours to juggle between two different modes of work.

Finally, the findings of this research raise many questions to strategists in academia on how they should set up strategies to break the rigidity of academics who would like to stay in their ivory tower and insist on the mere nature/money interest nature of commercialisation projects, how they should manage the university-industry linkages in a way that protects the

core academic values, and how they should shape this relationship in a way that does not hamper academics' scientific performance. In addition, the findings highlight that academics are less interested in teaching and administration roles. This raises many questions to the university's decision makers about how teaching and administration roles can be integrated more with the core academic indemnity, how universities' polices should adapt to protect teaching roles when threatened by commercialisation agenda, and what the best means are there to motivate academics to preserve the teaching role.

5.7. Future research

In terms of university-industry linkage, my results confirm the ability of academics to extend their science-based skills into industry and they also show that the gap between academia and corporate world is in a decrease, which will have great impact on academic careers as well as business or corporate careers. This encourages future research to investigate the lived experience of corporate employees who perform academic role within the industry and then further compare the difference between academics and industry professionals and how their careers are related and how their identities are reconstructed and what their future identity is.

The variation of the identity negotiation and the boundary introduced by academics in this research invites future researcher to examine the process of identity modifications of academics who stayed in academia for some time and then left it to perform full commercial work in industry or academics who worked in industry for some time and decide to stay for the rest of their career in academia.

Furthermore, future scholar can conduct a longitudinal research and examine the perceptions of academics before and after they involve in commercialization and explore the resulting identity change and the shift of their view of the self. This can further our understanding of the impact of commercialisation on traditional academics and oragnsiations' readiness to change their role and identity into the hybrid system that holds both commercialisation and academia. To give much deeper understanding, researchers can also examine these questions on a wider sample that includes academics dealing with different forms of commercialisation.

All of this research's interviewees belong to one university in the UK, that has an average attempt to adopt the third mission. The findings of this study, hence, are not applicable to other university settings where they are either less active or more active in pursuing

commercialisation. Future research can study how academics' sensemaking in top entrepreneurial universities and compare them with less entrepreneurial ones.

Focusing on the individual level might not lead to a comprehensive understanding of the whole organisation ambidexterity. To offer such understanding, previous literature has called for examining the role of the key actors in different organisation levels (Cantarello et al., 2012; Mom et al., 2009). Therefore, future studies can be conducted on multiple levels of the oragnsiations and examine the boundary work and the sensemaking of top managers and TTO officers and compare–contrast it with that of academics in different departments. This would give more comprehensive understanding on the extent to which the role identities are changing consistently on different levels of oragnsiations, and might explain why inconsistences might exist.

The findings of this study are limited to the university settings. The study reveals how academics follow a cognitive process to achieve ambidexterity at the individual level only within the university context. Therefore, future research can go beyond the university context and investigate the inner-sensemaking and cognitive processes of individuals in other type of oragnsiations that encounter challenges of managing different forms of dualities such as incremental and radical innovation, stability and transformation in organisational adaptation, and efficiency and flexibility in organisational design.

5.8. Conclusion

In conclusion, academics' lived experience of managing commercialisation activities alongside academic activities elicits discussions about the exploration-exploitation tension. Academics tend to locate their commercialisation endeavours towards exploitation end. The research highlights that academics tend to use previous patterns of behaviour when making decision to undertake commercialisation. This allows them to manage commercialisation and academic activities simultaneously. In addition, this research reveals various identity negotiation and boundary work amongst academics confronting the commercialisation agenda. In particular, it indicates that while academics with commercial involvement seek to coverage between academia and commercial world by making compromises of their values and motivation and thus exhibiting a hybrid role identity, academics with no commercial involvement seek to diverge between the two worlds and tend to stick to a single identity- the core academic identity. In addition, although these academics differ in their responses to the boundaries between academia and commercialisation, they were united in their beliefs that

stress the importance of protecting the core academic values and norms, and hence ensuring the distinction between the academic identity and commercialisation one.

Furthermore, to answer the research question regarding how academics can manage commercialisation activities alongside academics activities, this research reveals –after analysing interviews conducted with academics involved in commercialisation- that these academics engage in a cognitive process that is composed of building compromises, establishing synergies between academia and commercialisation, and constructing hierarchy between conflicting role identities.

These findings add a new flesh to different areas of literature such as ambidexterity literature, ambidextrous university, and contextual ambidexterity. The research generates multiple implications for the people in industry, academics, and university's policy makers. Moreover, this research produces several spotlights for future research.

5.9. Conclusion of the thesis:

Organisational ambidexterity has been considered a reliable solution towards increasing organizations' adaptability to the uncertain, demanding, changing environment. In an effort to answer the challenges of addressing divergent demands simultaneously, the metaphor of ambidexterity has served as an illustrative and comprehensive model of competency in distinct and often conflicting areas. However, whereas the concept of ambidexterity aims at untangling the complex reality of organisational life, theories on how this challenge can be met follow rather static and dichotomous approaches (Raisch et al., 2009). Put differently, the existing body of research on ambidexterity has yet failed to encapsulate precisely the complexity of ambidexterity at the individual level. The traditional approach of keeping dualities structurally apart raises doubts on the key role of individuals in resolving the challenges resulting from addressing divergent demands. More recent approach to ambidexterity underlines the key role of individuals in addressing such demands relating this ability to the availability to the supporting context. However, the underlying process of individuals' behaviours is not explored further (Papachroni, 2016; Ambos, et al., 2008).

A close look at the higher education context has revealed interesting debates on ambidexterity amongst universities. More specifically, universities have been under pressure to move beyond conducting teaching and high quality research towards capitalisation of their knowledge through taking an entrepreneurial role and commercialisation of the research and adopting technology and knowledge transfer projects, as a means to create economic and

innovation value and therefore compete more in the market (e.g. Etzkowitz, 2003, Dzisah, 2010). However, the ability to wear the two hats (research and teaching hat, commercialisation hat) simultaneously is proved to be more challenging at the individual level in comparison to the organisation level (Ambos, et al., 2008).

At the individual level, the changing relationship between academic science and commercial world has raised doubts of academics' ability to go beyond the traditional academic science and explore new skills and abilities to perform commercialisation activities (Ambos, et al., 2008). They believed that academics fall in the path-depending gap in the sense that they usually stick to the academically-oriented activities and avoid following commercialisation activities that requires exploration of new skills and knowledge (Lockett et al., 2003; Shane, 2002). In addition, as a result of the increasingly blurred boundaries between science and business for the norms and practices of academic scientific work (Owen-Smith and Powell, 2001; Vallas and Kleinman, 2008), academics experience an identity tension in the sense that they encounter an inner-conflict between the core values and norms of science and those of commercialisation. Missing from this conversation is the voices of the key actors, academics, and the responses and the sensemaking they produce to overcome the previously mentioned tensions resulting from the conflicting logics of commercialisation and science. Also, a little is known about the inner cognitive process that academics engage in while they pursue the conflicting demands of academic activities and commercialisation ones, and how they manage their work priorities within this changing context. This research seeks to go beyond these limitations by adopting a micro-level perspective to examine academics' personal sensemaking of their lived experience of managing the tensions stemmed from pursuing the two different goals of silence and commercialisation.

To answer these questions and address the gap, the researcher in this study conducted 14 interviews with academics at a UK university. The selected academics work for different departments and they have various experience of performing commercialisation activities; ranging from zero involvement in any form of commercialisation to various involvements in several forms of commercialisation. Following IPA as a key approach to analyse the interview data thoroughly, the findings of this research suggests the followings:

First, the current experience of academics follows the logic of path-dependency in the sense that individuals seek to apply a previous pattern of behaviour. The findings show evidence against the view that splits between academic career and commercial career. This is

consistent with recent research that suggests that the boundaries between science and industry are melting and overlapped (Owen-Smith, 2003). Individuals' current experience of ambidexterity cannot be isolated from their previous behaviour and experience. Individuals refer back to their previous experiences when making sense of their current experience of managing what the observer views as ambidexterity. Stating differently, individuals chose courses of actions that replicate past actions. This leads them to interpret their current experience of undertaking commercially-oriented activities towards the exploitation end (on the exploration-exploitation continuum).

Second, sensemaking of academics' lived experience is also conveyed through the discussion of changes of their role identity and the boundary work; confirming the argument of Beck and Young (2005) that demonstrates that the contemporary transformation in the relationship between academia and the marketplace pose a key challenge not only to the external conditions of academic work, but more importantly, to the core elements of academic professional identities. In particular, this research reveals that the penetration of commercial agenda into academia has generated various responses amongst both the academics involved in commercial work and those who have never been involved. One the one hand, academics with commercial involvement have shown more convergence between academia and commercial world by making compromises of their values and motivation and thus exhibiting a hybrid role identity. On the other hand, academics with no commercial work have shown divergence between the two worlds by showing contradictions between science logic and commercial logic and thus exhibiting a single role identity. Importantly, the research shows that all academics -regardless their level of involvement in commercialisation- are prone to protect the core academic norms and values.

Third, a closer investigation of how academics involved in commercial activities manage tensions resulting from the conflicting demands of science and commercialisation reveals that firstly, they apply a cognitive process by which they make comprises and building synergies between the two worlds. However, these compromises and synergies mechanisms do not cease them from highlighting the importance of protecting the core academic values and norms. This processes is called in Identity literature as "aggregation" where managing multiple identities is achieved through seeking connections between them and at the same time keeping each identity distinct (Pratt & Foreman, 2000). In addition, deploying the salience concept suggested by Stryker and Serpe (1982), academics floats their academic

identity on the top of their commercialisation one. To ensure this salience, they tend to apply behavioural mechanisms (prioritisation and delegation). Furthermore, as part of modifying their role identities (Burke & Tully, 1977) academics involved in commercialisation tend to redefine their own's skills and abilities (Jain et al, 2009) in a way that shows their competence to perform a hybrid role. In short, by applying the cognitive process and the behavioural mechanisms, academics are able to maintain the hybrid role identities and thus manage the conflicting demands of science and commercialisation.

In essence, by showing the inner-cognitive process followed at the individual level to manage the tensions of two conflicting goals, this study contributes to the existing research on how organizational key actors perceive and manage tensions stemming from an organization's pursuit of competing demands. This is considered a significant area in the study of organizational ambidexterity since empirical evidence on how individuals actively manage tensions remains scarce (Papachroni, et al., 2016). Furthermore, the research's findings further the evidence that suggests that the way individuals interpret the exploration-exploitation plays the key role of their ability to manage these tensions (Eisenhardt et al. 2010; Papachroni, 2013) by showing how academics use the path dependence logic to interpret their current involvement in commercialisation as mere exploitation of their existing skills and knowledge.

In addition, this research adds a new flesh to the literature on commercialisation of the university research. Employing the concept of role identity enables scholars in this field to obtain a richer understanding of the key actors, academics, in contributing to building ambidextrous universities. This research highlights the subjective experience of academics and shows the careful sense-making and negotiated identity work that accompanies academics when they encounter pressure to pursue commercialisation. It pays attention to the variation of academics' responses and sensemaking that result from the self-imposed boundaries that academics themselves construct while encountering commercialisation agenda. Therefore, my research suggests that academics hold multiple understandings of what it means to be "commercial". This, therefore, contributes to offering deeper understanding to the way they position themselves on the academic-entrepreneur continuum.

Finally, the research's findings have several implications for the universities' policies towards academic entrepreneurship, university-industry linkages, and the education role of university.

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7. Appendices

Appendices

Dear XX

I am Hussam Krkjie, an MPhil student in Essex Business School. I am working on my research project named (**The EXPEREINCE OF AMBIDEXTROUS RESEARCH: A STUDY OF ACADEMICS AT UNIVERSITY OF ESSEX).** My study aims at exploring the experience of the ambidextrous researchers (who conduct academic research and at the same time perform commercialisation activities of their research such as patenting, licensing, consulting, spin-off companies). Also, it aims at exploring the role of networks that those researchers develop in supporting their ambidexterity. In my research, I intend to interview researchers from different department who are given the freedom to conduct these activities in their work. My interviews will be conducted between March 30th and 30th of JULY.

This research goes beyond the traditional roles that universities do, which are teaching and research and attempts to understand the new role of universities, which is the entrepreneurial role. This research helps in understanding the main challenges that an ambidextrous researcher faces when performing the dual nature activities and the role that university takes in supporting this orientation.

Having read your profile, and known that you are working on an interesting project of xx. You have been identified as someone who may be able to give us some interesting view about how you experienced working in both academic and commercial activities in XX department.

The interviews will last no longer than an hour each and will take place at a suitable location and time that is convenient. The information obtained from the interviews will be treated as confidential and will be anonymised.

I am aware that you have a very busy schedule but I would be really grateful if you could advise us of your availability.

Looking forward to hearing from you.

Kind regards,

Hussam Krkjie

Essex Business School

T: +44 (0)7414021141
E: mhkrkj@essex.ac.uk

Appendix (B) The Consent Form

CONSENT TO PARTICIPATE INTHE MPhil RESEARCH TITLED "The EXPEREINCE OF AMBIDEXTROUS RESEARCH: A STUDY OF ACADEMICS AT UNIVERSITY OF ESSEX"

PARTICIPANT INFORMATION SHEET

What is the purpose of this study?
In this research, I am investigating the experience of ambidextrous research at the individual level at University of Essex. The research explores the experience of researchers, who are conducting academic research activities such as teaching, administration, publishing journals on the one hand and activities that has commercial purposes such as patenting, licensing, and spin-offs, contacts and consultancy on the other hand.

Why have I been chosen?
As part of this research we are looking for participants who have experienced the ambidexterity phenomenon in research, and you have been identified as a crucial participant in the project.

What would taking part in the research involve?
Taking part in the research will involve talking to researchers from different departments who is in charge of doing the above mentioned types of research from University of Essex, for up to an hour, at a time and location that is convenient to you. All interviews will be audio recorded and transcribed into textual form to aid analysis. All information will remain strictly confidential, and all names will be changed in order to ensure anonymity.

Do I have to take part?
It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect the terms and conditions of employment.

What are the possible disadvantages of taking part?
Taking part in interviews may take up to an hour in length.

What are the possible benefits of taking part?
This research aims at understanding the difficulties and challenges that an ambidextrous researcher in the academic world face, which help universities to take further steps to support them. This improves the university orientation toward entrepreneurship. Also, understanding ambidextrous behaviour in research will help universities develop programs to support academic career to go further than teaching and typical academic research.

Will my taking part in this study be kept confidential?

The information that you provide is anonymous. The information will be stored using study numbers on a password-protected computer within the University of Essex. Your name will not be stored with your interview data. No information about any single individual will be made available to any other person. Only group information will be given in any reports of the study with no indication of any participant's identity. When the research is completed and reported, all the transcripts and tapes will be stored securely for a period of 10 years to allow for reports to be made on the results of the research and so that the accuracy of the information can be checked if necessary during that period.

Who is conducting the research?

Mr. Hussam Krkjie is currently carrying out MPhil research at Business school, the University of Essex, under the supervision of Dr. Samantha Warren and Dr. Caleb Kwong.

What happens if something goes wrong?

If you are harmed by taking part in this research project, there are no special compensation arrangements. If you are harmed due to someone's negligence, then you may have grounds for a legal action. Regardless of this, if you wish to complain, or have any concerns about any aspect of the way you have been treated during the course of this study then you should immediately inform the Researcher (details below).

What will happen to the results of this research study?

The results of this research will be published in a form of a dissertation. A Summary of the results will be sent to participants if they are interested.

Participants will not be identifiable in any of the research papers or reports.

How to withdraw from this research?

As noted above, you are free to withdraw from this research at any time without having to give a reason. If you wish to withdraw, please contact Hussam Krkjie (Researcher) in order to ascertain whether you wish to withdraw altogether or retract any information already provided.

What happens next?

A member of the research team will contact you by e-mail or telephone (if they haven't already done so) to arrange a date to take part in an interview.

Please keep this information sheet for your information; should you agree to participate in the research you will also be given a copy of the signed Informed Consent form for your records.

If you have any questions about this research, or require further information, please contact the study researcher:

Researcher:

Mr Hussam Krkjie

Email: mhkrkj@essex.ac.uk

Telephone: +44 (0)7414021141

Consent form:

This study involves participation in audio-recorded interview.

Please tick the appropriate boxes	Yes	No
I have read and understood the research information given above.	☐	☐
I have been given the opportunity to ask questions about the project.	☐	☐
I have received enough information about the study	☐	☐
I have had sufficient time to come to my decision	☐	☐
I agree to take part in the project. Taking part in the project will include being interviewed and audio-recorded.	☐	☐
I agree that my name will not be mentioned in this research project. The name of the participant or any other names will be anonymous and all information collected will be kept securely and will only be accessible by myself and my supervisor.	☐	☐
I understand that my participation is voluntary; and I can withdraw from the study at any time, without having to give an explanation and without penalty.	☐	☐
I freely give my consent to participate in this research study and have been given a copy of this form for my own information.	☐	☐

We would be very grateful for your participation in this study. If you need to contact us in future, please contact me (mhkrkj@essex.ac.uk).

_____ _____ _____
Name of participant [printed]　　　　Signature　　　　　　　　Date

_____ _____ _____
Researcher [printed]　　　　　　　　Signature　　　　　　　　Date

APPENDIX (C) A sample of interview guide taken to the interviews

Code	001	Name	
Place	Office	Position	
Time started		Admin role	
Time ended		Date	
Gender		Department	

Reminder: **Before you start** Mention the contest from and sign it.

1. Would you tell me briefly about your career as an academic since you began until now?

Probes: History in working in Higher Education, number of universities the participants worked for, any experience in industry.

2. Could you tell me about your previous work in commercial activities?

2.1. Tell me about your experience in working commercial projects outside academia

Probes: what form of commercialisation, skills did you develop during this work, how did you find the first experience?

2.2. Tell me about your experience of working in commercial activities alongside the academic duties before joining this university? (If applicable)

3. Could you tell me about your experience of commercialisation activities at this university?

3.1. What form/ forms of commercialisation activities have you involved in? why did you choose this form?

3.2. How the opportunities come to you? What helped you to get it?

3.3. Who do you think help you to get this opportunity?

3.4. Why did you involve in such activities?

4. Could you tell me about your experience of managing commercially-oriented activities alongside your academic duties?

4.1. Tell me about time you had to work in commercial activity alongside your academic activities

4.1.1. What difficulties did you encounter?

Probes: the nature of these difficulties, why do you think you had them.

4.1.2. How did you manage to do it all at the same time?

Probes: How your experience (in industry and in academia) helped you to manage both? How your skills helped? What helped you to address them?

4.2. What do you think the relationship between commercial activities and your academic work?

Probes: relationship with teaching, relationship with research, relationship with career, any conflict between the two.

4.3. Why do you think these commercialisation projects are important? (Important for yourself, your career, for your role, for the university?); how would you increase your involvement in such activities?

5. At the end, would you like to add any interesting thing about your experience of working such projects?

Report about the interview/to fill after the interview:

Describe the atmosphere..feeling, etc.	
Body language of interviewee	
Gestures!!	
Anything worthy to mention:	

1. Would you tell me about your career as a researcher (from the beginning of your career till now)?

Probes: When did you start your research career? When did you start working officially at this university? Academic career? Any experience in industry?

2. Tell me tell me about a typical day in the term time, and summer term.

Probes: How do you spend your time during the term , how do you spend your break time, summer term?

4. **As an academic, how do you see your mission and main role in the university and the community in broader sense?**

5. **Tell me if you have ever had an experience of performing commercialisation activities in your career history?**

Probs: Type of commercial work **(start ups, contract, patents, licensing, consultancy, collaboration, research collaboration etc)**?, how did you organise your time, Is your work in this form was accompanies with academic duties, what do you think the difference between this type of work and your academic work

5. **In case you have never involved in commercial work. Why don't you involve in commercialisation?**

- What does it mean for you to be an academic not involved in commercialisation?
- What skills and knowledge do you think this project needs? How different the work in commercialisation is from the academic work?
- What pressure will it make to your daily routine?
- What would motivate you to work in commercialisation projects?
- What other obstacles you might face if you decide to involve in these activities besides your academic activities?
- What sort of conflict (if there is any?) engagement in commercialisation bring into academic life?

6. How do you see the relationship between commercialisation and academic activities?

Probes: How do you think academia and commercialisation are related?, To what extent do you see this important for academic career?; Why they are important for academia ? why it is important for universities ?; To what extent Commercialisation activities are clashing with the main university mission and your view of yourself as academic?

Anything you would like to add at the end of this conversation!

Thank you so much for your cooperation

Appendix E: The map of the themes and subthemes of all interview data