To investigate the ambidextrous challenges and tensions of small and medium enterprises in the United Kingdom defence & security sector

“To investigate the ambidextrous challenges and tensions of small and medium enterprises in the United Kingdom defence & security sector.”

Thesis submitted in accordance with the requirements of the

University of Chester

for the degree of

Doctor of Professional Studies

by

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May 2021

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Acknowledgements

Out of the many things I have learned during this academic journey, the most significant by far is that it is not a journey that is taken alone, despite the best intentions of the individual who will eventually receive credit. Those who support the trials and tribulations of a doctoral student are many, and it's without whom that the expedition into learning would be a very dark place indeed. Clearly my supervision team, in particular, Professor Tony Wall and Doctor Neil Moore have played a huge part, and I offer an equally huge thank you for their support and tenacity.

I would also like to thank all of the participants in this research study for giving up their valuable time and consideration to this piece of research.

Finally, thank you to my family. The patience and support of my wife, Laura, has never ceased, and the joy that my daughter, Harriet, has given me has been continuous. Both, through no choice of their own, undertook every step of this passage of discovery with me. I can never thank them enough for what they have done over the last few years.

Declaration

The material being presented for examination is my own work and has not been submitted for an award of this or another Higher Education Institution except in minor particulars which are explicitly noted in the body of the thesis. Where research pertaining to the thesis was undertaken collaboratively, the nature and extent of my individual contribution has been made explicit.

Christopher Lewis

Date: May 2021

Abstract

The defence and security industry is an extremely dynamic environment, influenced by policy and world events. Whilst it often needs to respond to rapid change, there is a dichotomy in that capital programs take years to come to fruition. Many small and medium-sized enterprises (SMEs) are involved in both of these short and long-term aspects of acquisition, thus creating strategic challenges. Though there has been much research around ambidexterity and SMEs, there has been very little in the fluid domain of defence and security supply-side SMEs. This study aims to investigate this gap in research. The investigation collected primary qualitative data through the use of semi-structured interviews, with research participants constituting the leadership functions of eighteen businesses that deliver either directly to the defence and security governmental departments, or into the supply chain.

Findings indicate that within a shrinking defence sector, successful SMEs are operating in an ambidextrous fashion, often utilising the industrial partners of the industry trade organisations. Also, outside that of grand strategic change, Government policy has a limited impact on the SMEs in this sector. With scarce resources, the leadership of businesses see the competing needs of resource and finances as a major tension point. These two competing needs can be defined as exploration and exploitation respectively, and can be situated within an ambidextrous construct. Critically, successful businesses operate in a ambidextrous zone where there is constant iterative adjustment between both exploration and exploitation.

This thesis advances the thought leadership in SME strategy, particularly around the key indigenous industry of defence and security, thereby adjusting the understanding of the definition of ambidexterity. This study contributes to the current literature, through the development of an alternative and responsive conceptual dynamic model of a growing business, theorising that ambidexterity functions change as SMEs grow, are constantly evolving, and are adjusted by both internal and external influences. The study concludes with recommendations for practice.

Summary of Doctoral Programme

Having worked within the defence and security industry in one form or another for all of my adult life, I have always been intrigued as to how organisations within the industry develop and grow. Relatively speaking, it is a young industry borne out of the Cold War, and whilst there is an ever-decreasing pot of money from which to furnish the British Armed Forces, there are many SMEs that develop and not only survive, but thrive. It was this that I strived to understand more about, with a view to replicating the success of these businesses in other organisations.

As I developed in my academic confidence, I used the Practitioner Enquiry at Doctoral Level module to advance my understanding of academic literature, focusing on what I thought was worthy of research and could contribute to the wider understanding of a close-knit industry, with a high barrier of entry. I grasped the opportunity to recognise the differences and similarities between industries and endeavoured to capture the best practice of those who have gone before me. It is through this advancement of knowledge that I developed a research proposal, utilising ambidexterity as a lens from which to view SMEs working within the defence and security industry.

There is no doubt that this doctoral programme has been overlaid with challenges, both personal and professional. The latter stages have taken place at a time where there has been a dramatic change in how people work and communicate with each other, as a result of a pandemic, the likes of which have never been seen before in our lifetimes. Despite this, I have grown as a defence and security professional and as an academic, developing my research skills and knowledge through interaction with the academic community.

1. Introduction

In terms of business behaviour within the British public sector and specifically defence, the sector is slow to grasp, embrace and adopt new ideas or methods in their working practice. This is particularly true when it comes to procurement strategy (Amann, Kihlander & Magnusson, 2020; Micheli, Schoeman, Baxter & Goffin, 2012). Despite this, change does occur, but is slow and is normally a reaction to grand strategic events such as the end of the Cold War or changes in Government policy following reviews. Between 1945 and 2021, there were eleven defence reviews and six of these took place following the fall of the Berlin Wall in 1989 (HMG, 2010; Taylor, 2010). The most recent review was published in Spring 2021 and was labelled as an 'Integrated Review of Security, Defence, Development and Foreign Policy (IR)' (Walker & Nigel, 2021).

During the Cold War, public monies were focused on defence and the defence market at this time was controlled by a few giant state-owned companies, who later migrated to private ownership in the 1980's (Hartley, 1998) but were still totally reliant on Her Majesty's Government (HMG) underwriting them (Kaldor, 1994). In terms of the buyer–supplier relationship, control resided with the supplier. They often failed to deliver the desired capability, and were perceived to give poor value (Humphries & Wilding, 2001). Whilst project failure was often driven by the complacency of industry due to a lack of competition, the Government was also considered culpable due to a poor articulation in specifying their needs (Curtis, 2020; Hartley, 1998; Kaldor, 1994).

The end of the Cold War caused widespread change in industry, with rationalisation, redundancies (Braddon, 2004), and a reduction in military expenditure (Dunne & Tian, 2013).

Largely out of necessity, the Government's methodology of procurement was also transformed (Bishop, 1995b). In the decade following the fall of the Berlin Wall, Paul Bishop, either on his own or as part of a team, produced a number of papers describing the change in defence procurement and how it impacted industry (Bishop, 1995a, 1995b, 1997, 2003; Bishop & Gripaios, 1995; Bishop & Williams, 1997; Bishop & Wiseman, 1999). In all of these papers, he (and they) concluded that the agent of change was the Conservative Thatcher-led Government, and was entirely politically motivated. Up until 1983, which was four years into Thatcher's first term as Prime Minister, single source 'Cost Plus' procurement was being used by the Ministry of Defence (MOD), and there was "no incentive to undertake cost reducing activities" (De Fraja, 1996, p. 75). With this methodology of buying, all of the project risk was held by the MOD. Departments using 'Cost Plus' ensured industry would make a profit irrespective of the project's success or failure, leading to clear cases of excessive profit (De Fraja, 1996), coupled with the failure of the MOD to purchase a useful capability at a reasonable price (Hartley, 1998). Due to the economic circumstances of recession, the need to demonstrate value for money through competitive tendering (Hartley, 1998) was likely to be driven out of necessity and the pressures of day-to-day life in Britain, where the expectations of the populace and therefore priorities of society had changed. Now the MOD was finding that its budget was competing directly against the likes of health and education, rather than being borne out of the political ideology of a free market economy. Despite the move away from the status quo of 'Cost Plus' procurement, there were still further modifications to the purchasing system yet to come. In the 1990 policy "Options for Change" (De Fraja, 1996), a number of weapons programmes were abandoned, and many of those systems that survived the cull still required expensive modifications (Curtis, 2020; Kenny &

Stessen, 1996). Indeed, over the last 50 years, a significant number of Cold War projects have in some way failed, such as the SA80 assault rifle (House of Commons, 1999; Page, 2007).

Whilst the Government of the 1980's was well known for its free market economy initiation across all sectors, the continued pressure on the defence budget kept up the momentum of change. Indeed, defence expenditure has reduced dramatically since the end of the Cold War (Chalmers, 2010) regardless of the political party in power. This is especially evident when military expenditure as a percentage of Government spending is considered; in 1989, the year that the Berlin Wall came down, it was 3.6% of GDP, whereas in 2013 it was 2.1% of GDP and today it is circa 1.7% of GDP (Beale, 2015; SIPRI, 2021).

The defence industry continues to be important to the United Kingdom (UK), not only due to strategic and political implications, but also in financial terms and in terms of employment and education. In 2016, the British defence industry had a revenue of £23 billion, (£5.9bn of which was gained through exports), directly employed 142,000 people, supported 1 in 200 jobs through commerce and sustained 4,300 apprenticeships (@UKParliament, 2017). HMG (Her Majesty's Government) recognises this importance and in addition to reviews there have been numerous Government initiatives in support of the UK defence industry, such as the Defence Growth Partnership and the Cyber Growth Partnership. In these instances, large enterprises have become the gatekeepers of innovation with effective control over the MOD supply chain, where 41% of the MOD spend is accessed by only 10 companies (@UKParliament, 2017).

2. The Practice Issue

2.1. SMEs in the Defence and Security Industry

Over the last two decades, the growth of SMEs has been seen as a keystone of economic development and in developing the British economy (Beynon, Jones, Pickernell & Huang, 2019; Harrison & Baldock, 2015; MOD, 2019b). With defence and security expenditure currently circa 2% of GDP (Grant, 2019; Johnson, 2019; MOD, 2019b), having an industry sector that meets the needs of the British Government is of significant importance. SMEs operating in this sector need to manage existing challenges, whilst looking to develop and grow their business. Through the study and application of ambidexterity, these competing tensions can be managed. Whilst the literature surrounding ambidexterity is extensive, little is focused on, or looking from, the perspective of SMEs and even less covers those operating in the defence industry. This work draws on previous studies of ambidexterity in SMEs from the likes of Lubatkin, Simsek, Ling and Veiga (2006), Cegarra-Navarro and Dewhurst (2007), Chang, Hughes and Hotho (2011), De Clercq, Thongpapanl and Dimov (2014), Koryak, Lockett, Hayton, Nicolaou and Mole (2018), Alcalde-Heras, Iturrioz-Landart and Aragon-Amonarriz (2019) and Dolz, Iborra and Safón (2019), to further advance understanding through the elaboration of the concept of growing and developing organisations operating within the defence and security industry. This has been uniquely attempted through the understanding of the impact of the strategic approach to ambidexterity, as well as the major influences of leadership and the environment of the SMEs.

2.2. Research Gap

In order to further develop the thought that all SMEs may have a requirement to acquire a mechanism to deal with competing strategies, it was decided to question the status quo of current theory on ambidexterity and how SMEs manage those competing strategies. As this research is bounded by investigating the relevance of ambidexterity in SMEs within the UK defence and security industry, it is important to develop an understanding of the current issues for SMEs in that same industry. What strategy should be used to mitigate issues in order to ensure continued commercial viability, and what support should HMG and wider stakeholders give to this valuable element of the defence and security environment? Initially, this was analysed through a literature review pertaining to ambidexterity and SMEs, with a further interpretation from the position of the defence industry. Then opinions of key stakeholders from across the defence and security community were gathered through the use of semi-structured interviews. The purpose was to develop a degree of understanding with a view to exploring if and how similar approaches are developed in the defence industry, with the potential of transferring best practice both within the industry and externally.

2.3. Outline Methodology

The research aim was to investigate the ambidextrous challenges and tensions of SMEs in the UK defence and security sector. This environment is the focus of the investigation because it is an extremely dynamic ecosystem, influenced by policy (reviewed at least once every 5 years, although the latest suffered a delay) and world events. Whilst industry needs to respond to rapid change, there is a dichotomy in that many larger and more strategic procurements may be delivered over several years or even decades. SMEs are often involved in both the short and long-term aspects of acquisition, thus raising the research questions of:

- *How do the challenges and tensions of SMEs operating in the defence and security sector manifest?*

- *How do the same challenges and tensions affect the strategy of the business leadership?*

Which in turn led to a research structure of:

I. Analysis of the problem through a literature review, the purpose being to gain further understanding of what is known about ambidexterity, specifically regarding SMEs. Explore the debate as to whether it is possible for SMEs to achieve ambidexterity; how does ambidexterity manifest itself in the application of SME strategy and what are the influences of this approach?
II. Collection and analysis of primary qualitative data. Data was collected using face-to-face semi-structured interviews across the sample to allow for a strong element of flexibility whilst conversely giving the interview structure and direction.
III. Development of an improved understanding and further contribution to theory and practice.

2.4. Proposed Contribution to Theory and Practice

This thesis contributes to the thought leadership in SME strategy, particularly around the key British industry of defence and security, adjusting the understanding of the definition of ambidexterity in that it does not necessarily mean that explore must equal exploit, with the tensions being that of money and resource, but that the balance should be treated as a ratio within an acceptable zone, rather than a definitive point to be achieved.

3. Literature Review

This chapter provides a background of the area of focus for the research, that of the defence and security industry, as well a synopsis of the current thinking of business strategy, specifically regarding ambidexterity. Whilst the literature surrounding ambidexterity is extensive, little is focused on, or looking from, the perspective of defence and security and is even more negligible in terms of a focus on SMEs within the defence and security sector. This thesis has drawn on previous research in order to develop and further advance understanding through the elaboration of the concept of ambidexterity for growing and developing organisations. This has been uniquely attempted through developing an understanding of the impact of the strategic approach to ambidexterity, with a focus on the major influences of leadership and the environment of SMEs in the defence and security industry. Additionally, the findings of the review are then discussed from the position of the defence and security industry.

3.1. UK Defence and Security Industry

The current structure of the defence and security industry construct within the UK is relatively well described by Riihikoski and Chuecas (2020), as are the positions of the SMEs within that industrial construct. SMEs are usually defined as a business employing fewer than 250 people (Ward & Rhodes, 2014). In very simplistic terms, the MOD supply chain is built around the Tier system, which is illustrated in Figure 1. Tier 1 consists of prime contractors (primes), which includes companies such as BAE Systems, Airbus and General Dynamics. Tier 2 is made up of large equipment suppliers, while Tier 3 contains SME equipment suppliers (Jackson, 2004). In addition to this, there are also Tier 0 suppliers who sit alongside the customer providing independent advice to the MOD (Kapletia, 2010). It is worth noting that this is a very simplistic model and in reality businesses sat in Tier 2 may find themselves in the prime position with sub-contracting companies who would normally be described as being in Tier 1 (Dowdall, 2004).

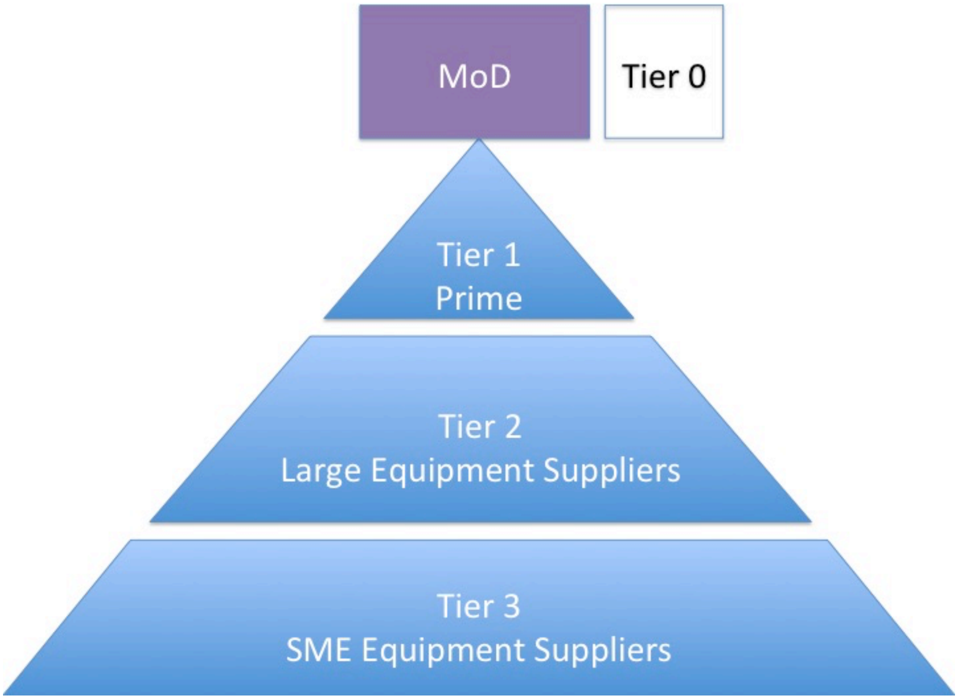

Figure 1 MOD supply chain (Kapletia, 2010) (Jackson, 2004)

Over the last 15 years or so, there has been significant strain on the British economy following the global economic crisis, and more recently due to the coronavirus (Covid-19) pandemic. As part of the Government's strategy in dealing with the recession, there has been an identified requirement for cost-saving measures in areas such as procurement, where it spends circa £230bn annually (HMG, 2013). The advancement of the private sector is another key part of the strategy to reduce the strain on the British economy. The 2012 National Security Through Technology paper set out the agenda of how HMG would work with and support its suppliers in both foreign and domestic markets. It described the objectives of the maintenance and growth of the defence industry (including in relation to SMEs) through private sector investment, an increase of jobs and growth of revenue for all elements of the industry (HMG, 2012). Subsequently, there have been a number of different HMG initiatives enacted to support the UK defence industry, focused on revenue from the MOD. Whilst all of the initiatives have the same aim, few align together in their approach, despite having the same stakeholders. A high profile initiative that has been capturing the imagination of many of the politico at ministerial level in HMG is the Defence Growth Partnership (DGP). In their foundation document, their stated aim was to be "a partnership between Government and the Defence Industry" (DGP, 2013, p. 4). The DGP is of the opinion that a unified approach is the correct approach to take: "The DGP works to involve and engage with key stakeholders across Government, academia, R&D, trade associations and all levels of the industrial value chain including SMEs, to all work together to deliver enhanced growth and prosperity for the UK. Engagement from a broad base of participants is crucial to achieving the DGP's strategic vision. Given the cross-cutting issues that sectors in the UK face, we continue to engage with others, particularly the Defence Suppliers Forum, the Catapults and other Growth Partnerships in Aerospace, Space, Cyber and Security & Resilience" (DGP, 2020).

Unlike other initiatives such as Options for Change (Taylor, 2010) or statements such as the Defence Industrial Strategy (Kirkpatrick, 2008), the DGP is not a Government-driven initiative, but rather a policy driven through a partnership with industry, led by a collection of traditional Tier 1 enterprises. The steering committee consists of three HMG departments, a trade association and seventeen companies. All of the companies are large multinational enterprises and most are wholly owned subsidiaries of US or European organisations. The theme of the DGP is that the growth of large enterprises will stimulate the supply chain and therefore boost UK-based SMEs. The DGP has "engaged with over 500 companies, universities and trade associations" (DGP, 2014, p. 39) to inform their planning of how they are to support the future of the defence industry. However, there are more than 7,000 SMEs in the defence industry, not including many of those already in the defence supply chain (MOD, 2014), and therefore the DGP have engaged with a maximum of 7.14% of SMEs to inform their thinking in this critical exercise. To put this into context, “it is estimated that over 700 SMEs throughout the UK supported the build of the latest aircraft carrier, HMS Queen Elizabeth” (Online, 2017). A subset of the DGP is the UK Defence Solutions Centre (UK DSC). This organisation purports to be impartial, whether dealing with SMEs, larger businesses or academia, and supports the industry UK-wide in order to shape capabilities and the skill sets associated with them ("About Us - UK DSC", 2021).

The intent to provide business growth is certainly continually revisited by the MOD and the opportunities for SMEs within the supply chain are significant, with the UK spending nearly £21 billion on defence in the financial year 2019/2020 ("The Ministry of Defence Supply Base," 2021). However, Dowdall (2004) identified that the way in which defence prime contractors are working with SMEs in their supply chain is changing. With the primes already coalescing and reducing, the number of UK-based SMEs interacting with them may be reducing too. As there is no requirement to use any British SMEs in the supply chain, a prime contractor may choose to position all or part of their supply chain overseas (Heidenkamp, Louth & Taylor, 2013). As Matthews (2014) contends: “the process of globalising defence acquisition has spawned a rapid growth in offset requirements, encouraging, in the process, a search for lower-cost and higher-quality acquisition solutions beyond national boundaries” (Matthews, 2014, p. 6). This is echoed by the following statement by Dowdall (2004) who predicts that “in the shake-out of the defence industry supply system, many small and medium-sized enterprises, which formerly enjoyed a close business relationship with the prime contractors will exit and those which survive must either diversify and/or merge to form larger groups or will have to confront the challenges of greater dependency on both the prime contractors and the defence industry itself in the future" (Dowdall, 2004, p. 536).

The MOD has itself acknowledged that there is a problem and recognises the challenges that UK-based SMEs face when trying to win defence work (MOD, 2014). One issue that the MOD has itself created and continues to reinforce, is the procurement approach. Where a piece of work is awarded to a prime contractor, part of this work at least should then be passed to UK SMEs to work on (MOD, 2014). However, the HMG definition of an SME does not include the requirement to be autonomous (NAO, 2017). As many of the larger primes have Small Business Units which operate and classify themselves as SMEs, despite being owned by a larger enterprise, it is unclear if the intended business growth is passing through the supply chain to the genuinely autonomous SMEs. In Figure 2, the percentage of the MOD budget spent on work with SMEs is illustrated (HMG, 2015, 2017, 2020). The graph indicates that how much money is being spent with genuine SMEs is, at best, unclear. However, the MOD does have an intention to grow the SMEs operating within the defence and security sector. Indeed, they have launched an MOD SME Action Plan "to help deliver our vision of making defence a place where smaller suppliers want to work, the Ministry of Defence has set an ambitious target that 25% of our procurement spend will go to SMEs by 2022" (MOD, 2019b, p. 9). This action plan is nothing new however, as it was stated in 2014 that "the Government's aspiration, in support of its wider economic growth agenda, is that 25% of public procurement expenditure with third parties should be placed with SMEs by 2015" (MOD, 2014, p. 1). These target figures are also reflected in Figure 2.

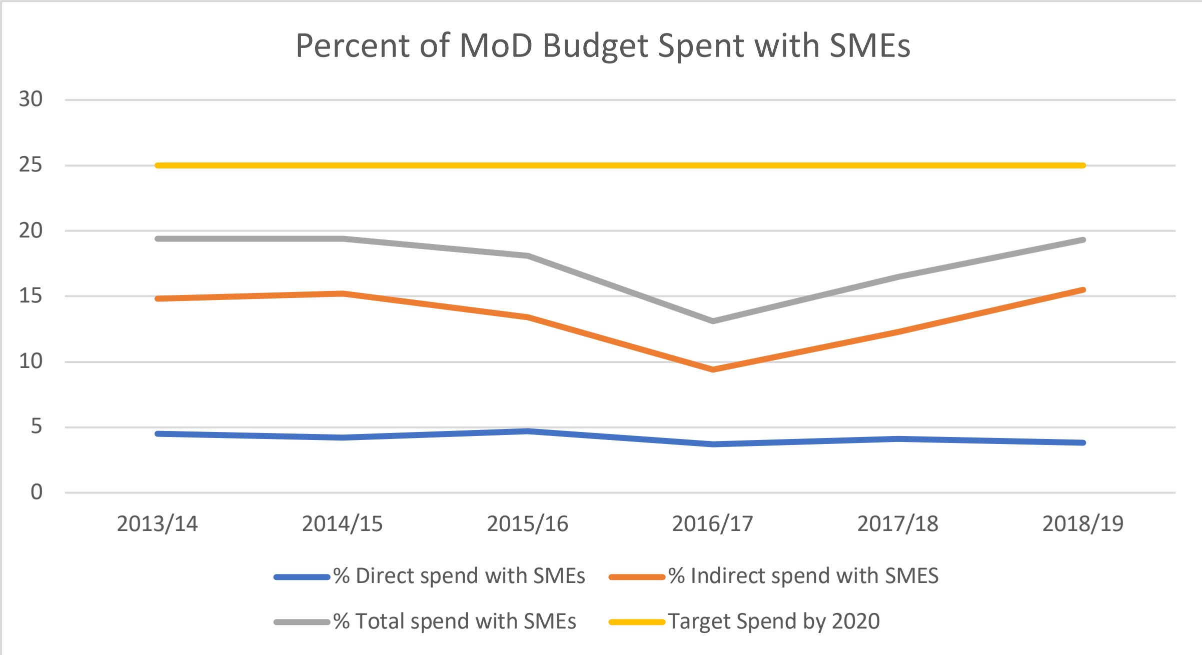

Figure 2 MOD spend with SMEs

The National Security Through Technology paper (HMG, 2012) and the MOD recognise the importance of SMEs in the UK defence industry (MOD, 2014, 2019b). They go on to detail that the SME cohort should work with large enterprises operating as Tier 1 suppliers, when there is a requirement to manage risk on behalf of the MOD. This is wholly appropriate when the Government is looking to procure a large system of systems capability, such as an aircraft carrier or advanced fast jet aircraft. However, these enormous programmes are not an everyday occurrence and there are areas where direct MOD relationships with SMEs may be at least as appropriate as with the Tier 1 suppliers. If it is assumed that it is necessary for SMEs to work through prime contractors in all instances; the National Security Through Technology paper does not attempt to understand the methodology of SME engagement or what the impact would be on the revenues of SMEs (and therefore the Treasury) through its implied approach of "everything through primes", to the point of stating that the "MOD will not intervene in supply chain relationships" (Government, 2012, p. 60). This procurement methodology makes the integration of British SMEs into the supply chain for defence an unclear, poorly-defined and therefore tenuous approach from the point of view of the SMEs themselves. It also appears that in terms of revenue, the SMEs may be becoming entirely reliant on their relationships with the prime contractor. It is of note that there is a very obvious disparity in the approach of HMG supporting the SMEs in the defence and security sector compared with wider government departments. It is true that the defence sector has a tendency to buy large platforms and therefore this requires a prime contractor to act as the programme lead and mitigate some of the risk, but this is not always the case. The willingness of HMG to buy defence capability from abroad, coupled with the reducing defence expenditure, may lead to a reduction in UK supplier capability and thus undermine “the strategic advantage of having a well-developed and technologically sophisticated industry” (Butler, 2005, p. 23). If it is recognised that SMEs continue to be an asset to all aspects of the British defence and security industry and that the industry is undergoing a period of change, then there is value in investigating the strategy of SMEs in a dynamic defence and security ecosystem.

The recently published strategic defence review, the Integrated Review (IR) (MOD, 2021b), highlights the need to focus on information connectivity (Wallace, 2021), which is a far cry from the traditional view of the military providing armed capability in the form of tanks, ships and aeroplanes. The most senior officer in the military is quoted as saying, “we must chart a direction of travel from an industrial age of platforms to an information age of systems” ("Chief of the Defence Staff, General Sir Nick Carter launches the Integrated Operating Concept", 2021). Whilst speaking at the RUSI Airpower conference in the summer of 2020, General Patrick Sanders said “our networks must form the resilient ‘train tracks’ – the bearer for data flowing from sensors to effectors. We must then exploit the data that we collect, and not treat it as effluent like we currently do. This requires a single cloud environment with computing power to handle bulk data and common standards” ("Commander Strategic Command, General Sir Patrick Sanders’ Speech at the Air and Space Power Conference", 2021).

As stated above, defence and security is changing, and war is no longer simply a peer-on-peer conflict. This has been driven largely by the emergence of hybrid warfare, where there has been a blurring of conflict between peace and war, or the emergence on non-state actors securing weapons of mass destruction (Demyanchuk, 2019; Qureshi, 2019; Razma, 2019; Soni, 2020; Zhang & Zhu, 2019). Financial challenges resulting from both the coronavirus pandemic and the UK leaving the European Union are likely to put further strain on Government fiscal policy. It would not be unreasonable to assume that economic growth and innovation are likely to be key themes beyond the IR and the reviews to come in the future. So with SMEs being seen as a source of innovation to the MOD and other users (Belin & Guille, 2019; Codner, Willett & Heywood, 2006; Holder, 2015; Scully, 2016), the need for these businesses to innovate and thrive within a changing environment will inevitably become even more important going forward to both the industry and the nation as a whole.

In support of the necessary innovation drive, there is a clear requirement for SMEs trading in the defence and security industry to be in a position where they are able to manage the competing aspects of maintaining their current business profiles, whilst also looking over the horizon to establish what to do next. This is particularly true in terms of technology, process and customer interaction, with an aim of establishing and sustaining long-term growth. If it is recognised that SMEs continue to be an asset to all aspects of British industry and in particular that of the defence and security industry, which itself is undergoing a rapid period of change, then there is value in understanding how best practice is being implemented in areas where there has been significant progress in thought leadership. There is therefore a requirement to understand the existing research centred upon the strategy of SMEs in a dynamic environment and more specifically, how SMEs can ensure continued commercial viability through an approach to maintain existing engagement and development strategies, or alternatively how can an SME deal with two competing strategies at the same time? Through the study and application of ambidexterity, these competing tensions can be managed.

3.2. Ambidexterity Definitions and Concepts

Ambidexterity is the ability to do two things at the same time. The concept of attempting to follow two different and competing strategies at once, in a business sense, has been researched with interest for some considerable time. It is however worth reiterating what the original definition is. As with systematic literature reviews being developed from a medical situation (Tranfield, Denyer & Smart, 2003), the term ambidexterity has followed the same pathway to describe a business condition. A 1900 edition of the British Medical Journal commented on ambidexterity as follows: “perhaps there is no occupation in which it is not an advantage to have the full use of the hands, none in which it is not an advantage to use either hand with a power equal to that of its fellow” (Sawyer, 1900). If in the medical text the word “hands” is substituted with “exploitation and exploration activities”, the text would now not be out of place in a business journal. The seminal papers in the arena of ambidexterity built and developed on this context. It was Duncan (1976) who first used the term “Organizational Ambidexterity” to describe an approach to managing conflicting requirements through a structural response. Two decades later, the challenges posed when addressing the balance of the differing requirements of exploration and exploitation was again considered. In the production of their seminal paper, March (1991) investigated Organizational Learning to describe the balance and trade-off between exploitation and exploration. Similar ideas were reinforced and further developed and the concept was introduced that if an organisation exclusively devoted itself to either element of ambidexterity, exploration or exploitation, then it would likely result in the failure of the company (Levinthal & March, 1993). Tushman and O'Reilly III (1996) offer a different view of the same issue, detailing that it was change through innovation over a period of time that posed the constituent parts and therefore the challenges of ambidexterity. Indeed, they also provided a definition of ambidexterity as “the ability to simultaneously pursue both incremental and discontinuous innovation and change from hosting multiple contradictory structures, processes, and cultures within the same firm” (Tushman & O'Reilly III, 1996, p. 24). The tensions and paradoxical relationship between exploration and exploitation are explained by March (1991, p. 71), where he refers to the exploration of “new possibilities and the exploitation of old certainties”. The challenge of ambidexterity in a business context is how to approach the two elements of exploit and explore, whilst both compete with each other for scarce company resource. This is especially thought-provoking when it is noted that both explore and exploit are fundamentally conjoined and influence each other, neither being able to successfully exist individually in a commercial organisation without the other (He & Wong, 2004; Hiebl, 2015).

3.3. Approach to Ambidexterity

Addressing ambidexterity through developing exploration and exploitation simultaneously is a strategy in dealing with fluidity and change of the market, ultimately allowing businesses to survive and thrive (Duncan, 1976; Koryak et al., 2018; March, 1991; Rojo Gallego Burin, Perez-

Arostegui & Llorens-Montes, 2020). He and Wong (2004) further enhanced academic thinking and clarified how exploration and exploitation differ from each other when they stated that:

> "*exploration and exploitation require substantially different structures, processes, strategies, capabilities, and cultures to pursue and may have different impacts on firm adaptation and performance. In general, exploration is associated with organic structures, loosely coupled systems, path breaking, improvisation, autonomy and chaos, and emerging markets and technologies. Exploitation is associated with mechanistic structures, tightly coupled systems, path dependence, routinization, control and bureaucracy, and stable markets and technologies"* (He & Wong, 2004, p. 481).

With an understanding of exploration and exploitation, in order to further develop knowledge of ambidexterity in a business context it is now necessary to consider the approaches to its implementation. Thus far, three variations have been prominent in business research: contextual, structural and sequential ambidexterity (Stokes et al., 2015).

The theory of contextual ambidexterity was developed in the influential paper by Gibson and Birkinshaw (2004), where their conjecture drew out the concept that alignment and adaptability can exist at the same time, and critically, there is no one route to ambidexterity. They also stressed that the leadership function is important in developing the contextual approach. The research of Gibson and Birkinshaw (2004) was built upon by Jansen, Van Den Bosch and Volberda (2006) through their investigation into the formal and informal mechanisms by which contextual ambidexterity is controlled. Their results suggested there was an increased level of social interaction of a team's functional leaders in developing a unit's contextual ambidexterity.

Structural ambidexterity creates different organisational units either at an individual or organisational level, whereas contextual ambidexterity ensures that there are suitable conditions and a leadership that enables an ambidextrous approach (Chang & Hughes, 2012). Looking at the problem from a different perspective, Cao, Gedajlovic and Zhang (2009) investigated organisational ambidexterity, and deduced that there are two integral parts to organisational ambidexterity, that of the Balance Dimension (BD) and of the Combined Dimension (CD). Companies that are resource constrained, namely small firms, benefit from BD the most, whereas CD is detrimental to their performance. CD benefits the larger organisations with more resource. To summarise, a company's ability to profit from BD or CD is dependent on the resources available to it.

The sequential methodology to ambidexterity should be considered as a logical extension to the structural methodology. In this instance, the approach to exploration and exploitation is done successively, as opposed to concurrently, with a focus of either one or the other but not both. This theory was proposed by Gupta, Smith and Shalley (2006) and reinforced by Volery, Mueller & von Siemens (2015). Boumgarden, Nickerson and Zenger (2012) continued in a similar thought process, effectively stating that businesses are rarely able to compartmentalise into distinct areas of exploration and exploitation. When attempted, it will cause a degree of vacillation and ultimately will not be sustainable over time. Evers and Andersson (2021) noted that this strategy is a clear and decisive and is made by the leadership function in response to the environment that the business was operating in, as well as the stage of growth that the organisation finds itself in. This assertion recognises that an ambidextrous approach does not remain static as a business changes in size or as the environment that the business finds itself in changes. Indeed, a smaller organisation will exploit more and as it increases in size, it will gain more benefit from exploration (McDermott & Prajogo, 2012).

The methodological approaches to developing ambidexterity are not necessarily independent of each other. Birkinshaw and Gibson (2004) argued that there are two methodologies to ambidexterity; structural and contextual methodologies. Critically, either can stand alone or alternatively operate in conjunction with, and in turn complement, the other. They reiterated that there is no single pathway to ambidexterity or a single leadership method, but the articulation and application of clear and simple priorities is required. Nonetheless, for SMEs, contextual ambidexterity may be more achievable than organisational ambidexterity due to the amount of resources available (Volery et al., 2015).

3.4. Ambidexterity in Business Growth

Ambidexterity is a more specified iteration of dynamic capabilities and has its roots and heritage in structured business research (Teece, 2014). Much of the research around ambidexterity concludes that business success, sales growth or sustainability is the result of an ambidextrous strategy (Han & Celly, 2008; Jansen, Simsek & Cao, 2012; O'Reilly III & Tushman, 2013; Wang & Rafiq, 2014) . With the research spanning many sectors, Junni, Sarala, Taras & Tarba (2013) theorised that some industries realised greater success than others. Whilst there are a growing number of papers concerned with the ecosystem of defence users (Baškarada, Watson & Cromarty, 2016; Heeren-Bogers, 2021; Hollenbeck, David & Jensen, 2018), there has been little research investigating ambidexterity on the supply side.

When considering the two elements of ambidexterity; exploration and exploitation, on their own neither improve business performance, but when combined, as in when ambidexterity is achieved, then there is significant benefit. Indeed, He and Wong (2004) concur that when there is a balanced approach to exploration and exploitation, there will be a positive impact on sales, whereas a detrimental effect will be seen when there is an imbalance between the two ambidexterity functions. The view that McDermott and Prajogo (2012) hold is that an equilibrium of ambidexterity is not a static function, and that it changes with size. Smaller organisations will lean towards exploitation, whilst larger firms will have the ability to accept or absorb more risk and have a degree of toleration for, and gain more benefit from, exploration. Once a business has reached maturity, if an organisation solely uses only one side of ambidexterity, either exploration or exploitation, then there is little or no benefit presented. After all, "exploration and exploitation processes are neither independent nor autonomous, but they are continually interacting" (Cegarra-Navarro & Dewhurst, 2007, p. 1722). Despite this, not all researchers are entirely in agreement with the academic zeitgeist. The results and conclusions of Balboni, Bortoluzzi, Pugliese and Tracogna (2019)'s study indicated that in the early stages of the life of a business, ambidexterity inhibited growth, however it was of significant benefit when the organisation had established itself. The above findings show that how an ambidextrous strategy is realised will change over the life of the business.

3.5. Ambidexterity in SMEs

Lubatkin et al. (2006) believe that ambidexterity is a challenge to SMEs and that they will tend to focus on exploitation or exploration, but not both. However, the "problem can be resolved — despite the firm's lack of resources or their inability to take advantage of structural mechanisms that promote ambidexterity — and the best-in-class SMEs that do so are rewarded for their efforts" (Lubatkin et al., 2006, p. 668). The authors go on to contend that "organizational ambidexterity may not be as difficult or elusive for firms to achieve as some in the literature believe" (Lubatkin et al., 2006, p. 668), suggesting that larger firms who are aiming to realise ambidexterity might achieve more if they were to create business units that operate in a similar way to SMEs. SMEs that are more constrained in terms of available resources need to prioritise in order to achieve a balance between exploration and exploitation, but it is proposed that they can achieve ambidexterity through appropriate organisational structures (Chang et al., 2011; Dolz et al., 2019).

Martini, Neirotti and Aloini (2015) considered the challenges of this structural approach in their study. Although the research samples were mainly medium-sized companies, they theorised that small enterprises may not have found separating into the different ambidextrous contingent parts quite as straight forward due to resource constraints. Therefore, contextual ambidexterity could be seen as an intermediate step to organisational ambidexterity as the business develops. There appears to be clear advantages in developing into two separate and distinct units in order to achieve ambidexterity, however there still is a place for the contextual approach, and there is a way of transitioning to an organisational approach.

As a business process develops through time and age, the approach to ambidexterity also changes. Voss (2013) distinguishes between ambidexterity in market and product domains by investigating both small and large SMEs. The paper describes the market ambidexterity paradox, that only larger firms have the resources to benefit from the strategy, but are less likely than SMEs to attempt it. However, it is recognised that it is extremely difficult for a group or an individual to achieve contextual ambidexterity, and so may require different skill sets compared to the norm.

Should an SME wish to approach ambidexterity from a contextual position, then the selection and subsequent training of staff is important. The Prieto-Pastor and Martin-Perez (2015) study looked at how Human Resource Management (HRM) helps to develop ambidexterity within a company. This research found that HRM helped the leadership functions of a business to progress individuals to perform their work in an ambidextrous manner, thus fostering this behaviour across the organisation. Prieto-Pastor and Martin-Perez (2015) go on to advocate that it would be possible to cultivate a selection procedure, to ensure that those employed by the organisation are individuals who have the ability to behave in an integrated or contextual way. For those who are already employed, the paper suggests a training and development program which can be used to create an employment base consisting of such individuals. This is supported by motivational HRM practices as described by Mom, Chang, Cholakova and Jansen (2018). It is important that HRM ensures that individuals are able to achieve the required level of ambidexterity through selection and training. Prieto-Pastor and Martin-Perez (2015) contend that “this is especially relevant in small and medium sized firms where ambidexterity is difficult to achieve by dividing firms into separate units" (Prieto-Pastor & Martin-Perez, 2015, p. 609). Caniëls and Veld (2019) further reinforced the benefit of ambidexterity by demonstrating a link between the balance of exploration and exploitation with innovative work behaviour.

Although difficult to achieve, there are clear benefits and advantages to structural ambidexterity. However, when different teams are being set up and developed, consideration should be given to the location of these teams, as proximity of the subsets of structural ambidexterity has an influence on success (Huyghe, Knockaert, Wright & Piva, 2014). Once businesses are separated into smaller business units, there are then advantages in terms of creating relationships across boundaries, as an informal organisational structure can enhance ambidexterity (Gulati & Puranam, 2009). Although formal structures are put in place to provide an advantage to an organisation, there is often value in the friendship or companionship that reaches far out of the formalised structure, thus supporting ambidexterity through connections made. Ambidexterity in SMEs is clearly possible, but difficult to achieve without some thought and planning when using an organisational approach. Indeed, Patel, Messersmith and Lepak (2013) disagree with Chang and Hughes (2012), by theorising that small businesses are unlikely to be able to have structurally diverse teams (differentiation) to be able to achieve ambidexterity, so alternatively they focus on integration. This is where individuals or small teams can be taught or developed so that they can become multifaceted or have the ability to both explore and exploit, thus achieving ambidexterity.

3.6. Leadership in Ambidexterity

With no single methodology to be utilised for a company to achieve ambidexterity, leadership becomes integral in bringing together a blended aspect of the different approaches, to enhance and develop the organisation as a whole as well as developing the traits of an individual. Raisch, Birkinshaw, Probst and Tushman (2009) proposed that the dynamic balance in tensions inherent in the equilibrium of exploration and exploitation, needs to be managed. Tushman and Euchner (2015) supported this approach, as did Zimmermann, Hill, Birkinshaw and Jaeckel (2019). He and Wong (2004) reinforced the need for the leadership to be aware and measure how their resources are used, and to recognise what the priorities are in order to allocate them for exploration or exploitation. There is a clear indication that this balance needs to be managed simultaneously and on a continuous basis. Specifically, the tension between the two constituent parts of ambidexterity needs to be considered and the question raised of what effect their decisions will have on the business. So, when leaders in smaller businesses have an appetite for risk, and are adaptable, the conditions for ambidexterity can be set, despite having fewer resources than those of a larger organisation. As such, SMEs have a different approach compared to larger organisations in achieving a balance between exploration and exploitation (Chang & Hughes, 2012).

Recognising that a business may change its focus from exploration to exploitation from time to time, in response to internal or external environmental change, is important. There is a need for those in leadership positions to decide when, and how, to implement change (Alexander & Van Knippenberg, 2014). Out of all of the leadership functions, it would be expected that the role with the most influence would be that of the CEO. Kammerlander, Burger, Fust and Fueglistaller (2015) investigated the impact of the CEO's personality on the business, specifically what their motivation and goals are and how to achieve them (regulatory focus). They detailed that the regulatory focus comprises of two subsets: promotion and prevention, where essentially promotion desires maximum results and prevention achieves the aim and avoids failure. So in other words, there is a difference between the two subsets in terms of accepting risk. In their discussion, Kammerlander, Burger, Fust and Fueglistaller (2015) highlight that new ventures tend to take a route of exploration and more established firms tend to favour exploitation and thus inertia. The findings of the paper indicated that promotion-focused CEOs are less-suited in providing a stable, long-term platform, however they are highly-suited in periods where the competition is intense, and as such the paper suggests that the owners of SMEs should pay particular attention when selecting their CEO. It is clear that the leaders in an organisation, whether it is the CEO or the Top Management Team (TMT), have a great deal of influence on the planning and execution of a company's strategy. Cao, Simsek and Zhang (2010) indicated that if a CEO has a strong network then it gives them [the CEO] a holistic view of the explorative and exploitative capabilities of the company. The CEO is also able to add a degree of balance to the TMT's tendency to favour either exploration or exploitation, as described by Lubatkin et al. (2006).

When a CEO has an effective network and there is ambidexterity within the organisation, there tends to be good communication between the CEO and the TMT, which in turn encourages creative strategies (Heavey & Simsek, 2017). Yitzhack Halevi, Carmeli and Brueller (2015) maintain that the behavioural integration of the TMT is especially important in dynamic environments, in terms of maintaining ambidexterity. Heavey, Simsek and Fox (2015) agree that the TMT is important and influential, but also evaluated the interaction of the leadership team and theorised three important points: Strong and extensive networks of managers within the company have a positive effect on ambidexterity, which is enhanced when the individual manager concerned is proactive and willing to engage with the external competitive environment, and are thirdly are willing to embrace innovations. These three characteristics work together to deliver a balance between exploration and exploitation. When one of the three is missing, then the ambidextrous approach to business is lost and opportunities are missed. Aligning with the above concepts is the disaggregated control of decisions. Delegation of authority supports the efficiency of the network to provide more effective ambidexterity, but when the control is held centrally, it negatively affects the ambidextrous ambitions. Therefore, if the CEO retains their power, their network extensiveness will increase, but unless there is a degree of delegation, then this will have a negative impact on ambidexterity (Cao et al., 2010).

Networking and developing business links are anecdotally perceived to be important when running a business. Certainly, connections to the external environment of an SME are beneficial and should be used, however there is a need to ensure that those ties are robust and useful (Li, C.-R., Lin, C.-J. & Huang, H.-C., 2014). Therefore, if the leadership team concentrates on those already strong ties, they will enable those connections to be maintained in an organisation where time and resource is precious, without diluting the interactions that are less beneficial to the business. Firms with senior leadership functions that have business and political networks can capitalise on such connections, to support their approach in working towards the balance of exploration and exploitation (Heavey et al., 2015; Li, C.-R., Lin, C.-J. & Huang, H.-C., 2014). These relationships are important for the development of the company across the different functions, including in terms of performance, innovation and business intelligence. There is also an added benefit which is that this approach supports innovation and organisational development through the observation of other businesses that are wrestling with similar changes or developing ideas (Li, C.-R., Lin, C.-J. & Huang, H.-C., 2014). Furthermore, there is benefit to be gained through the business opportunities that can be developed from external connections and internal ideas, as discussed by Mascareño, Rietzschel and Wisse (2021).

It is imperative for management to foster internal as well as external relationships, to aid the development of ambidexterity in SMEs (Li, C.-R., Lin, C.-J. & Huang, H.-C., 2014). This should enable the managers to scan and respond to environmental change that may affect the organisation both internally and externally. The various leadership functions should also act as a conduit for information flow, ensuring that there is a common understanding of what success looks like and how to get to a position where success is achieved (Venugopal, Krishnan, Kumar & Upadhyayula, 2017). Critically, in order to capitalise on the information and knowledge gleaned from the external interaction, there needs to be a system in place to assimilate it. This knowledge transfer will enable competitive advantage and in turn support an ambidextrous approach (Duodu & Rowlinson, 2019). Closely aligned to communication skills are that of teamwork. Ajayi, O.M., Odusanya, K. and Morton, S. (2017) acknowledge this as part of their research paper when considering ambidexterity. When coupled with trust and incentivisation, teamwork is a powerful mechanism for developing success (Batt-Rawden, Lien & Slåtten, 2019; Liu, Lin, Joe & Chen, 2019).

Maintaining the continued motivation of those running a business, building networks and developing ideas is a recognised challenge. In the paper by Gedajlovic, Cao and Zhang (2011), it was suggested that part ownership or equity in an organisation motivates and incentivises leadership functions, this point was also reinforced by Bruining, Verwaal and Wright (2013). Those in management who are incentivised to do well are likely to be motivated for the company to do well, demonstrable through effort, consideration of the needs of the organisation (in both the short and long term) and in the decision-making process, all of which promotes an ambidextrous orientation. Ultimately, it is clear from the research above that incentivisation, teamwork, responsibility and trust, at senior levels within a business, are all important and likely to support the drive towards success (Kerr, 2013).

It is commonplace for those who have served in the military to make the transition into the defence industry, and such people are able to bring a style of leadership that fosters a degree of innovation in an organisation (Collazo, 2015). Winkler (2009) suggested that in the closely-aligned industry of aerospace, former military personnel were an advantage to the commercial organisation in terms of the other mechanisms within the leadership's influence over ambidexterity; communication and proactivity. A report in the Institute of Director's magazine, 'Director' by Korn Ferry International (described in Midgley (2011), came to the conclusion that chief executives with a military background achieved comparatively better results than their civilian counterparts. This was largely driven by the skills developed whilst serving the colours, such as communication, teamwork, motivating others and agility. Although these traits do not necessarily reside exclusively in those who are ex-military, it may be that the experiences and training developed within the Armed Forces, and so often into the defence industry, support the defined influences of ambidexterity. Gianzina-Kassotaki (2017) confirmed these findings and also showed that the leadership trait most valued by employees is that of good communication skills.

3.7. Environmental Influences on Ambidexterity in Business

The ambidexterity of a business is influenced by the internal and external environment, and this can be articulated through a Strengths, Weakness, Opportunities and Threats (SWOT) analysis (Yadong & Huaichuan, 2009). This analysis articulates that a challenging regulatory environment, an uncertain external environment, constrained financial resource and a narrow, individual friendship network all have a limiting effect on the explorative nature of ambidexterity (Minh, 2015). A weakness that manifests in the same analysis is that of rivalry. De Clercq et al.'s (2014) findings indicate that internal rivalry is detrimental to SMEs, due to it hampering the implementation of complex strategy, whilst low levels of external rivalry also hamper the performance of the enterprise. Indeed, ambidexterity is a key success factor in hypercompetitive markets, which are characterised by "turbulence, volatility and competition" (Kriz, Voola & Yuksel, 2014, p. 288), and can be used to gain a competitive advantage.

Tan (2014) theorised that the way in which a company collects and uses information about where it is operating, who with and what they are doing, can be defined as Market Orientation (MO). Responsive MO is associated with exploitation and proactive MO is associated with exploration. Therefore an ambidextrous approach to market orientation (AMO) is the balance between a proactive and reactive MO. Internal organisational factors can also affect ambidexterity. A balanced AMO will improve business performance and managers should recognise the need to adopt a mechanism to achieve ambidexterity in order to receive the benefit of this. The research of Tan (2014) supports the work previously carried out by Hughes, Martin, Morgan and Robson (2010) in which they developed the concept that innovative marketing approaches can support ambidexterity when aligned with competitive strategy, competitive advantage and long term engagement. Indeed, market differentiation strategy can create ambidexterity, and innovation ambidexterity can reinvigorate the company’s products or services, supporting the competitive advantage and long term engagement through market development.

When dealing and interacting with customers, it is through ambidexterity that an organisation is able to perform better and respond to the customer’s changing needs and requirements. An ambidextrous company has the ability to be more agile (Sarkees, Hulland & Prescott, 2010). According to Cegarra-Navarro and Dewhurst (2007, p. 1731), "to successfully implement market plans, as well as to solve customer's problems, managers need to foster an ambidexterity context". Tushman and O'Reilly III (1996) look at ambidexterity from the aspect of agility and change. They suggest that as companies get older and grow, the complexity of managing increases - they develop inertia. Structural inertia is size-dependent and cultural inertia is age-dependent. Both affect responsiveness to change, causing it to become slower and costlier. So, to remain agile and responsive to market change, business centres are created and operate in the same way as SMEs, where the employees are empowered and are willing to look at risk from an entrepreneurial point of view. However, as these business units are still part of a larger corporation, there are advantages to be had in areas such as marketing and manufacturing. Although there is decentralisation of leadership, there becomes a reliance on a corporate culture to draw the business together. Ultimately, through organisational variation of these autonomous ambidextrous units, change is dealt with dynamically, whether it is incremental or discontinuous. Van Assen (2020) contributes to this theory by suggesting that not only does empowering the leadership functions support contextual ambidexterity, but it also develops a link to the continuous improvement and growth of the organisation.

Birkinshaw, Zimmermann and Raisch (2016) investigate discontinuous change and ambidexterity. Specifically, how three large organisations adapt to such a change. The ambidextrous approaches are split into three categories: structural separation, behavioural integration and sequential alternation. Two of the three organisations in the case studies look at breaking down the structure into teams that operate autonomously as small businesses, where a culture of independence and entrepreneurship exists. The research reiterates that there is not one solution to producing an effective ambidextrous organisation, but rather that such success is dependent upon choice at the appropriate level. The relevance here is that large organisations recognise that there are benefits to operating as if they were a small business. To achieve this, they often break down their business into smaller, more agile units and allow them to control the dynamic capabilities of sensing and seizing, both of which align with exploration and exploitation elements when looking at the market environment and product development. Randhawa, Wilden and Gudergan (2020) discuss how a similar response is achieved within an SME with limited resources. In this instance, the iterative process of Business Model Innovation (BMI) evolves with the changing dynamics of the business and the environment in which it is operating. When a business is faced with change due to financial pressure or an economic downturn, the ambidextrous tensions and choices made by the leadership at that time are critical for the survival of the business (Osiyevskyy, Shirokova & Ritala, 2020).

3.8. Ambidexterity in Defence and Security

A challenge that the defence procurement process continuously wrestles with is that it must take into account current operations that are as diverse as to include war fighting, humanitarian missions, non-combatant evacuation, peacekeeping and military aid to the civil authorities, as well as future operations that may take place in the life of the capability being secured ("Chief of the Defence Staff, General Sir Nick Carter launches the Integrated Operating Concept," 2021). There is therefore a dichotomy in delivering both short term procurement requirements (step) and the long term requirement (stride). With many SMEs being involved in both of these step and stride aspects of acquisition, either directly as suppliers or in the supply chain, it raises strategic challenges. In relation to ambidexterity, there is a question as to whether the organisations are able to sense a change in the politico-defence zeitgeist, and then respond to this change, whilst maintaining their existing business.

Those larger companies operating as Tier 1 suppliers or prime contractors offer business opportunities to smaller organisations further down the supply chain. However, there is a requirement for partnership and agility if they wish to maintain a commercial relationship (Braddon, 2004). Although there is significant benefit to the SMEs forming a cohort, it is often perceived that whilst they (SMEs) may have the ability to provide innovation, they may lack the stability for long term partnerships (Gates *, 2004). These relationships with primes, or the ability to form partnerships, are vital to the very existence of the SMEs in this industry, and without relationships, companies will either need to diversify or risk ceasing to exist (Dowdall, 2004; Gates *, 2004).

From time to time, market industries as a whole undergo financial stress, whether it is from a global financial crisis as described by Davidsson and Gordon (2016), a more general turbulent market as discussed by Osiyevskyy et al. (2020), or even from the most recent global challenge in the form of Covid-19 as researched by Atiku and Randa (2021). There is a general agreement that these crises cause the business environment to become unsettled, less predictable and susceptible to rapid change, and such businesses will need to be agile in their response to these fiscal pressures (Doern, Williams & Vorley, 2018; Battisti, Beynon, Pickernell & Deakins, 2019; Archibugi, Filippetti & Frenz, 2013; Osiyevskyy et al., 2020).

When one looks at the defence spend in the UK over the last 70 years, which would span from the height of the Korean War to the present day, a steady decline is clear. Notable points where the deterioration of spend is briefly arrested are: in the early 1990's at the time of the Balkan Wars; in the early 2000's during the invasion of Iraq and in the early 2010's during an increase in the intensity of the military deployment to Afghanistan. Over the same time period, there was an observed increase in Government spending for other Ministerial departments, as illustrated by Figure 3,Figure 3 UK GDP Spend from "UK GDP Spend for United Kingdom 1951-2021 - Central Government Local Authorities" (2021).

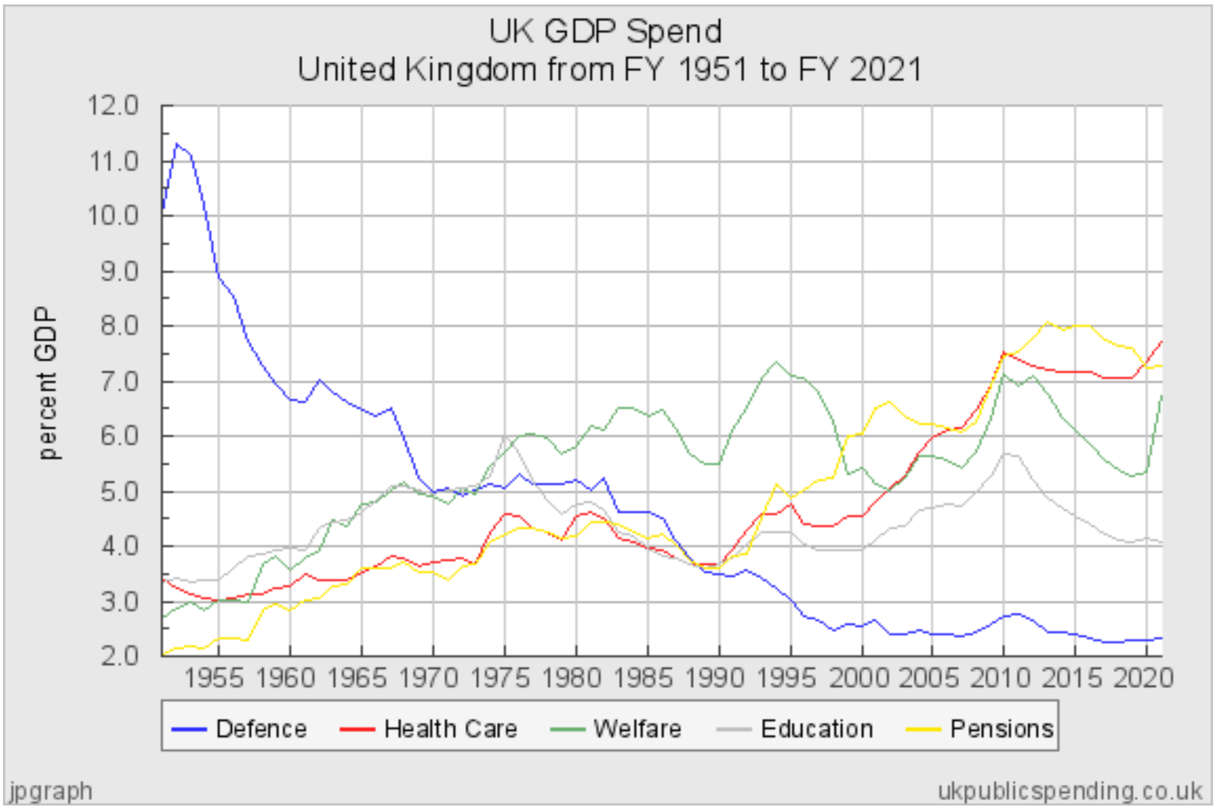

Figure 3 UK GDP Spend

The defence and security industry is an extremely dynamic environment, influenced by policy and reviewed at least once every 5 years. Whilst industry needs to respond to rapid change, there is a dichotomy in that many capital programs take years to come to fruition and indeed may be cancelled following reviews. For those that do survive cuts and the streamlining process, they are still at the mercy of highly complex influences, such as geo and socio-political interactions, unique and changing product design configurations as well as the ongoing financial pressures forced by continued justification (Caldwell & Howard, 2014; Uttley & Wilkinson, 2016). “In a world where defence budgets face renewed downward pressure; where threat is no longer measured in terms of an easily monitored global super-power arms race but much more in terms of the ill-defined, hidden and fragmented scourge of global terrorism (where concepts of ‘enemy’ and ‘target’ are far from distinct); and where leading-edge information technology and network centric warfare hold the key to military success, defence supply companies have no choice but to adjust rapidly and effectively if they wish to remain active and successful in this still profitable market” (Braddon, 2004, p. 502). Here, the inference is that those businesses operating within this industry are continually adjusting, but still effectively working within a declining market that is under constant fiscal challenges.

3.9. Literature Review Summary

The review highlighted that there are many different descriptions of what ambidexterity is, how it is approached and what it’s influences are. Importantly, there is no single or correct approach, as the strategy is largely dependent on leadership and environment (Zimmermann et al., 2019). Although age and size may be a factor, time will continue to pass and the firm size is a function of the company and is within the company’s own control, therefore is not an influence. Whichever approach is taken, there is a challenge internally to the organisation to try to describe what success looks like for them in their business. In larger organisations, ambidexterity can be achieved through differentiation, where one team may be focused on exploitation whilst the other focuses on exploration. There is a need for this to be resourced and as such, whilst possible, it is challenging for many SMEs to achieve ambidexterity using this method, and even potentially harmful to their business.

As discussed, it is clear that ambidexterity is highly influenced by the leaders within an organisation. There are three mechanisms for someone in a leadership function to influence the business strategy taken. These are innovation, communication and pro-activity. CEOs have different personality traits, there are CEOs that will stop at nothing to win, and those who would rather avoid the risk of failure. These categorisations could also be described in terms of there being those who are entrepreneurs, developing and growing new ideas and willing to take risk, and those who are better suited to the maintenance of an organisation. The characteristics are well known and both types of personality can be readily identified in different companies at different stages of their life-cycle. Also of benefit is for the CEO to have a strong network, both internally and externally. The ability to communicate well with the TMT as well as having the skill and confidence to delegate their authority is also beneficial. Motivation, management through inclusiveness and the incentivisation of management teams pays dividends, through the promotion of an ambidextrous approach.

The review indicated that ambidexterity in SMEs is eminently achievable. However, it is proposed that ambidexterity is quite specific for an individual business; it needs to be an almost bespoke strategy, that is strongly influenced by the environment and the leadership. So a company will need an iterative approach to their strategy which is constantly adjusted to some extent, transitioning through all of the elements of the three approaches of contextual, sequential and organisational ambidexterity, thus creating a blended strategy. The review emphasised that there is a need for a balance between the two activities of exploration and exploitation, as found in Chang and Hughes (2012), but it is unclear what is meant in terms of 'a balance'. Is it the quantity of activities or the time spent on activities? It is therefore misleading to refer to it as a balance between exploration and exploitation, that each must equal the other. It would be more appropriate to describe ambidexterity as a proportion or ratio between exploration and exploitation, as indicated by Cao et al. (2009), but this is also applicable to the sector and the environment in which the business is operating. This theory could potentially be extended to include the age, size, product or service lifecycle at that time. Reinforcing the above thought process, every organisation may transition through the various definitions of ambidexterity as discussed by Berghman (2012), regardless of the organisation's size, whether large or an SME. These transitions would therefore account for the influencing factors, such as a change in the environment or leadership style. Although Kammerlander et al. (2015) highlight that new ventures tend to favour exploration and more established firms tend to favour exploitation, it should also be acknowledged that businesses do change their focus from exploration to exploitation despite having a tendency towards one or the other (Alexander & Van Knippenberg, 2014). It is assumed that an ambidextrous company has the ability to be more agile (Sarkees et al., 2010), with agility meaning the ability to respond to changes effectively.

Turner (2011) developed a theory of second order contextual ambidexterity in his thesis. He considered ambidexterity as a tool to aid project management, specifically changing the balance between explore and exploit in order to meet the project requirements. Figure 4 illustrates this theory.

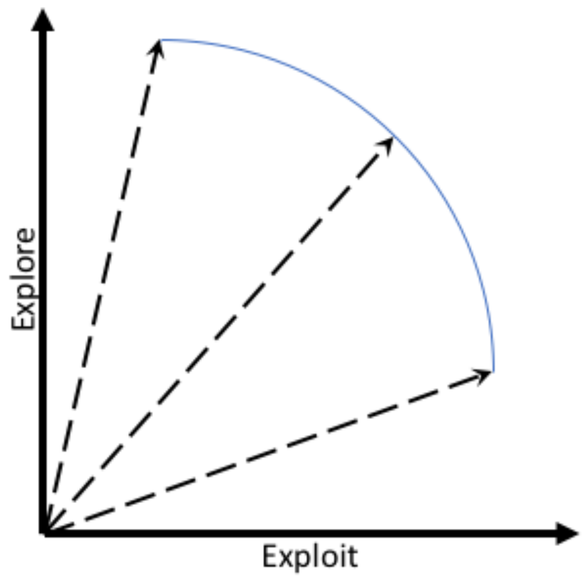

Figure 4 Balance between explore and exploit (Turner, 2011)

So, if this theory is extrapolated to consider an organisation's response to a change to a certain business environment, then leadership functions within the business would modify the balance between exploit and explore in order to meet changing needs. Caniëls and Veld (2019, p. 579) reinforced the y=mx relationship between the two ambidextrous functions by contending "that there is a significant linear relationship along the line of perfect balance between exploration and exploitation". This however, is a snapshot in time and does not allow for a holistic view over an epoch of time. Building on the theory proposed by Cao et al. (2009) through the acknowledgement of the balance dimension and combined dimension approach, Cegarra-Navarro and Dewhurst (2007) acknowledged that exploration and exploitation are continually interacting, and there is not one specific route or approach to ambidexterity. Gibson and Birkinshaw (2004) stated that there is not a finite, predefined ratio that is fixed in both time and effort levels for an SME to achieve ambidexterity, but rather a zone where the organisation is constantly adjusting its approach. The longer term the strategy, as described by Allison, McKenny and Short (2014), then the greater the time between adjustments and the greater the shift. This is also seen with sequential alternation as described by Birkinshaw et al. (2016), where a company may tend towards exploitation or exploration for a period of time.

4. Methodology & Methods

This chapter focuses on how the proposal of ambidexterity in SMEs is further investigated, utilising the three approaches of ambidexterity and transitioning from the exploit to the explore aspects. This research used a qualitative approach to study the bounded industry of defence and security, particularly SMEs operating within this environment.

One of the challenges of collecting primary data is knowing how to engage with the organisations and individuals involved in the research. Indeed, gaining access and entry to any industry is often a challenge, but the environment in which this research is set is fraught with security and commercial checks. Whilst the end users and the procurement authorities see the need to embrace those outside of the traditional ecosystem of defence (MOD, 2019b), cultural differences and security sensitivity certainly remain a barrier to entry (DefenceIq, 2017; James & Hall, 2008; Martí Sempere, 2019). Fortunately, the researcher's personal and professional background lends itself to accessing this unique environment with its risk-adverse approach and unique terms of phrase (@TelegraphNews, 2021; Ledwidge, 2017). With the researcher well established within the defence and security industry, it should be considered that they are in a privileged position and able to obtain a degree of access and acceptance from both those within the business leadership functions and the users of the capability provided. The access, knowledge and the acceptance from being within the ecosystem enabled an openness of conversation to facilitate the collection of a rich set of information, as described by Quinney, Dwyer and Chapman (2016) as well as Smyth and Holian (2008). However, recognising that there is potential bias that comes from being 'an insider' to a relatively closed industry, it was noted that the researcher does not work in an SME within the defence and security industry but one of the world's largest organisations that operates in the same industry. Acknowledging that there still could be a degree of risk for potential bias, it was decided to utilise the recognised strategy of reflexivity that qualitative researchers often turn to in similar situations (Finefter-Rosenbluh, 2017; Quinney et al., 2016; Watt, 2007).

4.1. Philosophical Stance

Research in the business ecosystem is influenced by different factors, some of which are in the control of the researcher whilst others are not. Bryman and Bell (2011) consider this dynamic in the framework illustrated below:

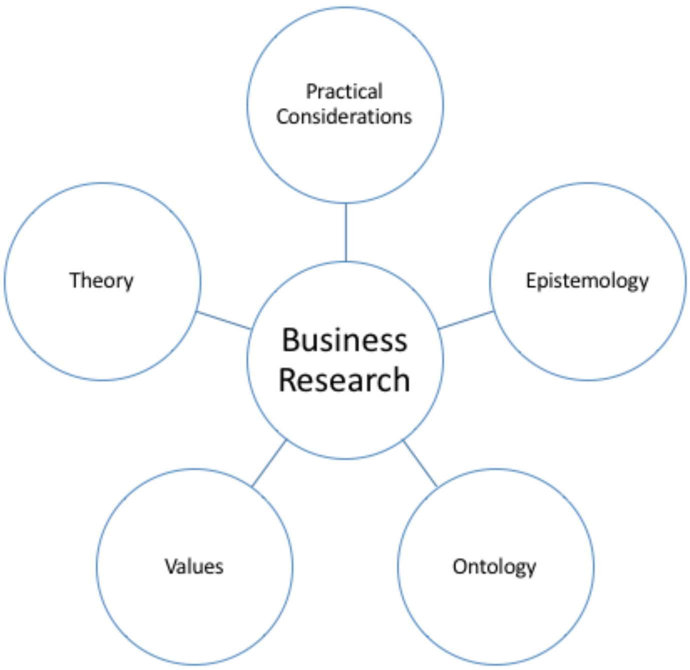

Figure 5 Business research influences, adapted from Bryman and Bell (2011, p. 29)

Addressing this framework, epistemology is defined as "the study of the nature of knowledge and justification" (Schwandt, 2014, p. 89). There are a range of philosophical stances as to how knowledge acquisition is justified, such as positivism, realism, pragmatism and interpretivism (Saunders, Lewis & Thornhill, 2012). The two that are of particular interest for this research due to both being at the opposite ends of the philosophical stance, are positivism and interpretivism. Positivism follows a methodical approach, steeped in objectivity, causality and based on observable phenomena to produce credible data and hence, inferences. Whilst it is inclined towards scientific or engineering research processes, it is not exclusively so. What positivism does do, is follow a set of rules; linking the observation to explanations in a transparent and repeatable manner (Bryman & Bell, 2011; Reed, 2010; Saunders et al., 2012; Stokes & Wall, 2014). At the other end of the epistemological continuum is interpretivism, where the acquirement of knowledge is through people as opposed to objects and what the position those individuals play as social actors is (Saunders et al., 2012), where understanding has a value of its own (Goldkuhl, 2017, p. 142).

Ontology describes the nature of reality and the perspectives of it. The two standpoints or perceptions of ontology are objectivism and subjectivism. Objectivism is seen from the position of the realist, where an individual perceives reality as fixed, external and independent of themselves operating as the social actor. Whereas subjectivism is seen from the position of the relativist, where an individual has a degree of influence over the environment being operated in through a complex range of interactions, and as such is under constant revision (Saunders et al., 2012; Stokes & Wall, 2014).

Values are the thoughts and perceptions of the researcher. How the individual has developed, through their education, thoughts and experiences, will have an influence on the way the investigation is approached. Indeed, personal values can possibly intrude into almost any aspect of the research, from the topic chosen through to the inferences made. It should be recognised that genuine objectivity is a challenge when the researcher is close to or operating within their chosen area of research, as the ecosystem that they are operating in may have had an influence on how they perceive the world around them, such as in figured worlds, where they "are simplified, often unconscious and taken-for-granted theories or stories about how the world works that we use to get on efficiently with our daily lives" (Gee, 2014, p. 95).

The theory aspect of the Bryman and Bell framework considers what is already known and asks what is the purpose of the research, what is the aim? A succinct way of putting this is elegantly described by Kipling (2018): "I keep six honest serving men (they taught me all I knew); Their names are What and Why and When And How And Where and Who".

Practical considerations need to be contemplated when putting all of the above into action. This particular research is for submission towards a Professional Doctorate (DProf) from the University of Chester, which is "designed to enable high-performing professionals to stimulate organisational development and contribute to wider debates in their field" and "to develop strategic practice and contribute to wider debates associated with the contemporary issues impacting in their field" (University of Chester, 2017). So from a values perspective, the students of all DProfs are already embedded in their own industry or field and will have preconceived ideas and thoughts developed throughout their career. In the researcher's particular situation, due to education and a significant amount of experience, they have developed a tendency towards a positivist approach. However, upon moving into the sphere of business, experience and indeed education has changed the way that the researcher perceives the sphere that they operate in. There are less rigid methodologies, so as such the research philosophical stance has developed into one aligned with interpretivism, where the social actors in the defence industry have inherent value in their knowledge and individual experiences. This research has been approached with the polarisation that the perspective of reality is through that of subjectivism, in that the defence ecosystem is highly influenced by individuals.

Defence and security offers an area where there has been limited research, especially from the point of view of the SME industry. This is possibly because it has a high entrance criteria due to the security clearance required (Martí Sempere, 2019). It is also recognised that researching the subject of defence and security has a number of challenges associated with it. The first of these is the understanding of terminology. There is a vernacular developed from within the military that is quite unique to that environment (Chaloupský, 2006). As the military is the defence industry's main customer and many of those working in it are formerly of military origin, it is a fair assumption that the parlance has bled into it. Therefore, it is acknowledged that there may have been difficulty for a researcher in understanding the terminology used when conducting a semi-structured interview (Deschaux-Beaume, 2012). This has been overcome through the appropriate security clearance, shared background, ethos and capability knowledge developed over thirty years. With regards to ambidexterity in SMEs, it is acknowledged that the current theory is not clearly defined nor accepted across all sizes of organisation or across all industries, let alone defence. There are a plethora of different views regarding the need for an ambidexterity strategy, depending on individual positions and experiences within the organisational structure. It was therefore expected that there would be a degree of rhetoric from individuals that were engaged with during this research.

The ontological approach for this research can be considered to be one of relativism, which in turn leads to an epistemology philosophy of interpretivism, where the avatar of the enquiry will have a certain interpretation of their position in a scenario or theory (Saunders et al., 2012). In order to interact with the subject base, a qualitative approach in the main has been identified as the principal method of primary data collection.

It was decided to take a universalist ethical approach to this research as far as possible (Yin, 2013). The only exception to this was if a legal or national security issue arose, in which instance the proper authorities would have been notified and anonymity breached. Any information of a commercially sensitive nature was and will not be used for personal or financial gain either by the researcher or by the organisation that they represent. Aligning with the majority of qualitative research (Yin, 2013) and so as to encourage participation and overcome the concerns of the research participants, all of the data collected was anonymised and secured as far as possible (Saunders et al., 2012). This is further considered in the Ethical Considerations section of this thesis. As the population of the industry is relatively small, and naming the businesses represented by the participants would identify individuals, no specific job title, department or organisation is provided in this research (Yin, 2013). Instead, pre-allocated identifiers (I01-I18) were used to distinguish between participants.

4.2. Research Question

The research aim was to investigate the ambidextrous challenges and tensions of SMEs in the UK defence and security sector. This focus was chosen because it is an extremely dynamic environment, influenced by policy and world events. Whilst industry needs to respond to rapid change, there is a dichotomy in that some capabilities and programmes take much longer to deliver. Many SMEs are involved in both of these short and long-term aspects of acquisition, thus raising strategic challenges.

In support of the aim and when viewed from within the defence and security industry, the research questions selected in order to develop a contribution to the understanding of that position are the following:

- *How do the challenges and tensions of SMEs operating in the defence and security sector manifest?*
- *How is the strategy of the business leadership affected by the identified challenges and tensions?*

The methodology for this research has been to:

I. Further analyse the problem through the literature review. The purpose being to gain a deeper understanding of what is known about ambidexterity, specifically regarding SMEs. To explore the debate as to whether it is possible for SMEs to achieve; how ambidexterity manifests in the application of SME strategy; and what are the influences of this approach?
II. Primary qualitative data was collected using face-to-face semi-structured interviews across the sample to allow for a strong element of flexibility, whilst giving the interview structure and direction.

4.3. Sample Identification

The defence and security industry is vast with respect to what is delivered to the end users, from toilet paper to highly sophisticated combat aircraft. Everything that a society needs for its life support is also required by those serving in the defence and security construct. In addition, there is also the need for specialist equipment and capability to perform the primary tasks, that could include everything from firefighting and medical distribution to peer-on-peer high intensity warfare (Martí Sempere, 2019). The population of this research was considered to be SMEs across the defence and security sector and it was therefore assumed that this only includes industry representatives who are involved in directing strategy, specifically the senior executives of the business. However, “there is no accepted definition of the precise boundaries of the defence sector. Firms with defence interest are often located across a variety of industries including aerospace, electronics and shipbuilding” (Bishop, 2003, p. 1966). So as to avoid any confusion, this paper defines the UK Defence and Security sector as those companies that are located in the UK and: 1. Supply defence or security capability (including cyber capabilities) directly to the UK government or other foreign powers, as sanctioned by the UK Government through the F680 and End User Undertaking (EUU) export process, or; 2. Are part of the supply chain that supports point 1, or; 3. Have membership of ADS Group Limited (ADS) or techUK (the trade organisations representing the aerospace, defence, and security industries in the United Kingdom) and one of the defence working sub-groups, or; 4. Are List X or in other words companies who have the ability to hold Secret (and above) Government Information (Gov.UK, 2021). This definition is a development of Dowdall’s (2004) definition, with the addition of export controls (F680 and End User Undertaking) to demonstrate that the export is sanctioned by the UK HMG. The precise number of SMEs operating in the defence and security sector is unclear, although there may be more than seven thousand (MOD, 2014), providing a huge variety of products and services. However, and critically, HMG does not stipulate the independence of ownership criteria when describing what the definition of an SME is. Therefore there may be far fewer genuine SMEs operating in the industry than the Government realise there is.

Due to the restricted nature of the industry and the high entry points required in order to carry out research, a sample population of around twenty was considered to be reasonable and worthwhile to produce a level of responses that could be analysed. This figure was chosen when considering what could be realistically achieved within the scope of this study, and when compared against two aligned published studies. These programmes were Kassotaki, Paroutis and Morrell (2019) who investigated ambidexterity in a defence procurement organisation and utilised thirty semi-structured interviews over a year to capture their data, as well as Riihikoski and Chuecas (2020) whoinvestigated SMEs' relationships in the Western European defence sectors and used a total of five interviews.

With a target of twenty interviews in mind, a convenience method of identifying those to take part was initially used through existing professional connections. However, it quickly became apparent that in order to include a wider group of participants, other methods to engage the individuals would be needed. The researcher subsequently sought support of the two major industry associations of techUK and ADS Group, both of which have specialist interest groups for SMEs operating in Security and Defence ecosystems. It was through engagement with these two industry bodies, who provided a selection of potently willing volunteers, that a wider group of SMEs were approached to take part in the research.

The researcher has been involved in this community for circa thirty years. Despite this experience, the challenge of gathering information from the leadership functions of the SMEs working in this sector was underestimated. Whilst a great number of those potential participants approached were happy to have a conversation with the author as an individual, fewer (eighteen) consented to be interviewed when it was by an avatar of business research.

The reasons for this disparity were varied, but included a nervousness of open and unrestricted access (despite being anonymised), security considerations, and not wanting to be on record and therefore held to account. The organisations that were initially engaged fell into three groups: those who were happy to be interviewed, those unhappy to be interviewed and those who were happy to be interviewed but with a reticence to be recorded. This therefore resulted in eighteen interviews being conducted with appropriate individuals from applicable companies, representing Tier 0-3 of the defence industry and varying degrees of size from within the EU SMEs definition, in order to deduce information through investigation of a sample of the population (Khan, 2014). Interestingly, the majority of those willing to be interviewed and recorded were also active and participant members of one of the two main industry bodies, ADS and techuk. This was demonstrated by their membership of one of the working groups, such as the SMEs or Security Exports Group(s).

4.4. About the Participants

In order to focus the definition and bound the sample as referred to previously in this thesis, participation was limited to those organisations that are part of the List X scheme and deliver directly or indirectly to the UK Government, whilst also being members of a professional body or organisation associated with the industry. As previously stated, this is a development of Dowdall (2004). However, as the collection of data is through the engagement of the leaders of different organisations, it became evident that the companies are further segmented in terms of what is supplied to the customer. Acknowledging these additional classifications, the participants were collated into three groupings: Hardware, Software and Services. Whilst not necessarily a strict segmentation, these three divisions have been defined as follows:

- Hardware: a company that delivers a product in a physical form, a product that enhances defence or security capability. This, for instance, could be a physical cryptographic product or a bridging system.
- Software: organisations that deliver software and normally have some sort of productised programme or solution that will sit on or operate a computer so as to achieve an effect such as security.
- Services: businesses that deliver a service. These businesses are not necessarily using a service model in the most traditional sense. In the instance of this research, the SMEs provide consultancy which may include such things as Information Assurance (IA), Procurement Support or, Manpower Substitution. Some are far more specialist, selling specialist support in System Engineering, Training, Integrated Logistical Support (ILS) or Weapons, Ordinance, Explosives, Munitions (WOME).

The SMEs within the sample consisted of only genuine small and medium enterprises who saw their major focus as defence and security. Care was taken not to include microenterprises, as a large part of my questioning would prove to be irrelevant. With regards to years trading, it was ensured that the leadership functions had some historical experience to reflect on, however there was an assumption made that the individual had been with the organisation for a sufficient period of time to enable them to access and reflect on this information.

Throughout the collection of the data, the issue of previous military or government service arose when participants were questioned regarding leadership principals or establishing ethos. “Veterans are defined as anyone who has served for at least one day in Her Majesty’s Armed Forces (Regular or Reserve) or Merchant Mariners who have seen duty on legally defined military operations" (MOD, 2017b, p. 2). Within the United Kingdom, veterans account for 5% of the population. Almost half of veterans (47% of veterans) are 75 or older, while in terms of ethnicity the vast majority are white (99% of veterans) and 87% of veterans are male (MOD, 2019a). With half of the sample interviewed being veterans, by happenstance as opposed to design, this alone may indicate a prevalence of veterans in leadership functions within SMEs who are operating in the defence and security industry. This may have had an effect and go some way to account for the predominance of white males being interviewed and the board mix. However, as time passes, the demographics of veterans are changing. With the overall numbers of veterans reducing and an increase in the proportion of female veterans, it is assumed that in the future, the proportion of male business leaders will also change.

From the nine participants who are veterans, it may be of note that all bar one were commissioned officers, six of whom were commissioned as Direct Entry (DE) officers through the standard process of Royal Military Academy Sandhurst, whilst two were Late Entry (LE) officers (or in other words served as a Warrant Officer before being offered a commission). All would have had formalised leadership training in some form.

During the data-gathering phase with the research participants and through analysis of the open source material available from Companies House regarding the board make-up, it was uncovered that eleven of the organisations had all-male boards, whilst six boards were made up of a mix of males and females and one company engaged with had an all-female board. Due to the sample being relatively small, this appears to have an undue influence on the comparative data, but does warrant further investigation. The deliverables of eighteen businesses that the participants represented were spread across hardware, software and services, although there was a deliberate attempt to have a variance of both size and end-user capability, the equal split was a coincidence. A summary of the data collected is represented as follows:

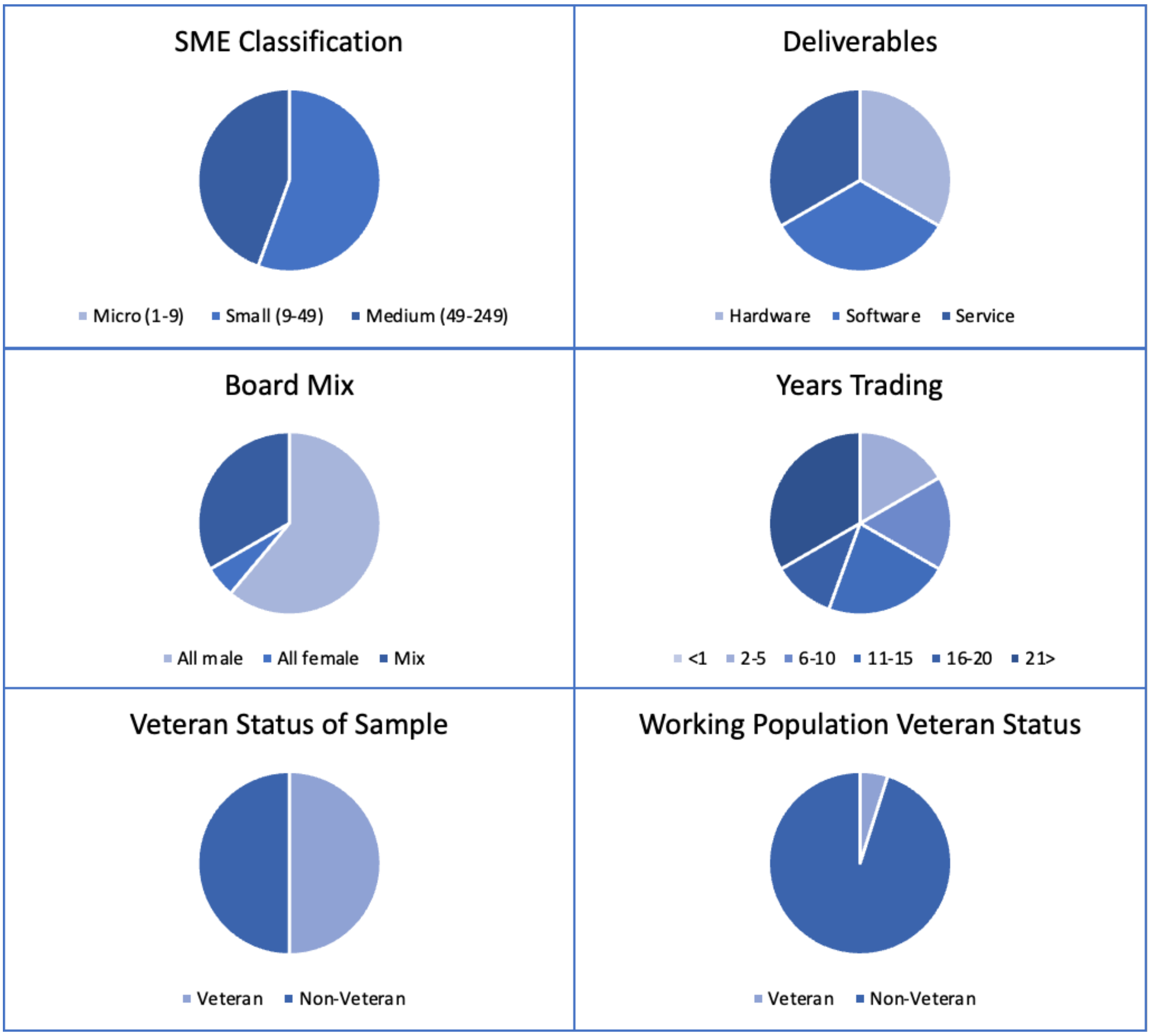

Figure 6 Participant dashboard

4.5. Data Collection

With the stated research aim to investigate the ambidextrous challenges and tensions of SMEs in the UK defence and security sector (as previously defined in this thesis), information was gathered using face-to-face interaction, either directly or through the video conference applications Skype and Facetime. Semi-structured interviews across the sample allowed for a strong element of flexibility, whilst giving the interview structure and direction (Yin, 2012). It is recognised that the interviews can be long and time-consuming, therefore a focus group approach was considered due to the scope of this study and the availability of participants. However, this was not chosen as the primary method of data collection due to the additional complexity of transcribing the focus group (Bryman & Bell, 2011) and the relatively secretive nature of the individuals in the sample. Fundamentally, it is contended that the research participants were more likely to offer genuine and possibly contentious opinions if they were in a one-to-one situation and also secure in their knowledge of anonymity.

A pilot was carried out with one interviewee to test both the methodology as well as the key questions on which to base the other engagements. On reflection, these initial questions were further developed to allow more information to be gleaned through the use of open questions and to enable better alignment with the literature review. The participant from the pilot was spoken to again and the discussion was utilised as Interview 1. The semi-structured questions used for the basis of all interviews are detailed below:

Business planning and resources

- *How do you run a business today whilst preparing for a business tomorrow?*
- *What are the competing needs in business?*
- *What are the difficulties in balancing what needs to be done with a limited workforce?*
- *How do you balance competing needs for limited resources managed within the business?*
- *How has strategy changed whilst the individual has been in a leadership function?*
- *How do SMEs ensure their short and long-term commercial viability?*

Change and the business environment.

- *Do you plan for change? How?*
- *Is agility important? Why?*
- *Does this help you respond to change?*
- *How do you sense a change in the environment, both external and internal? Customer?*
- *Thinking about such things as Government policy, or indeed other companies, how and does your strategy change in response to this, the business or defence and security ecosystem?*

Leadership, innovation, proactivity and communication.

- *What sort of external influences are there that effect your strategic thinking, strategy and leadership?*
- *Does this affect how you personally manage your day-to-day tasks?*
- *How do you ensure the company innovates?*
- *Is it important to install an ethos of proactivity? How do you do this?*

Conclusion

- *We have spoken about running the business now and preparing for the future, perhaps this could be expressed as routine and non-routine activities, how do these things interact, or are they completely separate activities?*
- *Do they interact, how and why?*

Whilst performing the primary data collection, it was considered wise to take the opportunity to collate additional information that resides in the public domain with regards to the business and the interviewee, but still with the consideration of anonymity. By utilising Companies House, information was captured with regards to the company directors and individuals with influence over the company, their sex and age. In addition to this, how long the organisation has been trading for and where there was a detailed directors report; the size, challenges and ambitions of the business was also recorded. Cross-referencing with the social media platform of LinkedIn, further information regarding the participants was established, namely the approximate size of the work force, the approximate age of the interviewee and their status as a veteran, as defined by the British Government where one day of service in any of the three branches of the Armed Forces results in the awarding of veteran status (MOD, 2017a). This was then checked with the participants during the engagement.

The analysis of the information broadly followed the six phases as defined by Braun and Clark (2006), where the process of thematic analysis is described. In the context of this research, the approach was thus:

1) Familiarisation with the data. Once the audio data was gathered from the individual interactions, key points were then transcribed. Initially, each of the audio files from the interviews were listened to in order to analyse the key points and transcribe them. However, this was quite challenging in terms of capturing the subtle nuances and fully conveying the context as described by Bailey (2008). Therefore the transcription was broadened out after the first attempt of capturing the first interview, to become a literal transcription of the recorded interviews which was then considered alongside the digital audio recording. This enabled the development and appreciation of the issues and challenges that each particular business leader faces that may otherwise have been overlooked (Bailey, 2008).

2) Coding. It was appropriate to have two major phases of coding; the initial coding and focused coding (Saunders et al., 2012). Key Word In Context, or KWIC, was used in support of the coding. This is a method that ascertains a word to identify the theme of the captured text without defining the boundaries, and is a useful method to use in order to develop a thematic codebook, thus allowing a first pass analysis and an early development of a concept. Care was taken not to rely on single words, as often emergent themes cannot be identified by a single word (Guest, Namey & MacQueen, 2012). The codes were named using an in vivo technique, where they were based on terms used in the interviews and developed to look for patterns of supporting information, initially in order to progress concepts and themes (Saunders et al., 2012). The focused coding came through the development of a codebook, as above, where the data was sorted through an iterative process so as to enable the emergence of categories, types and relationships.

3) Searching for themes. Mindmapping was considered to be a suitable method to use in order to understand and illustrate the relationships between the emerging concepts (Stokes & Wall, 2014). Additionally, computer assisted tools and software supported this process (NVivo12). It was recognised that with a pre-defined sample, a saturation of concepts was not reached, but it is considered that there were enough interviews to reinforce emerging concepts (Bryman & Bell, 2011). Put simplistically, this is essentially the technique of "working your data from the 'ground up'" as described by Yin (2013, p. 136), where one is looking for patterns in order to develop a concept.

4) Reviewing themes. The researcher reflected on the themes to ensure that an understanding was developed and in order to communicate the findings succinctly. Noting that the researcher does not work within the SME community of the industry, it was still

thought appropriate to implement a reflexivity strategy to reflect on the quality of the data collected, as well as the themes that had emerged. This provided an opportunity to critically assess whether the researcher's own experiences had clouded judgements and subsequent outcomes (Watt, 2007). It was concluded that being an insider in the industry had not had an influence on the themes, due to the individual having different experiences through employment in one of the world's largest organisations.

5) Defining and naming themes. The researcher utilised the codes and indeed the emergent themes to develop a naming procedure. These themes developed into those which were internal in the business and those external to it, both are described later in the analysis section of this thesis.

6) Producing the report. This phase involved the construction of this thesis and identifying how the findings relate to the existing literature, thus aligning the research topic.

4.6. Ethical Considerations

Due to the nature of the sample, all of those taking part in this research had obtained security clearance from at least one of the Governmental departments who have the capability to provide such clearance (normally the MOD, FCO, HO and GCHQ). Many were also professionally known to me. The result of this, and due to the nature of the semi-structured interviews used, was that the conversation had a real possibility to stray into areas that would require additional security measures to be taken, and thus was not desirable in this instance. Therefore, it was imperative that all research participants fully understood and acknowledged that all information is unrestricted and will be in the public domain. The communication was disseminated via a study information sheet, initially by email when the interview was arranged and then a hard or electronic copy was again provided at the first instance of engagement, at the face-to-face interview. In order to gather acceptance from those taking part, a signed undertaking of understanding and agreement was collected at each interview, prior to commencement. Where this was not possible, in the instances where a video conference service was being used as an alternative to a face-to-face interview, an explanation of the research was given, permission sought verbally and recorded. These forms and recorded verbal acceptances have been retained and will be held securely for one calendar year following submission of this thesis.

Another consideration was the potential sensitivity of the subjects being discussed. There has been some debate as to what constitutes a sensitive research topic. Regardless of this, best practice has been to initially mitigate risk through the use of ethical guidelines (Melville & Hincks, 2016). Those used were of the University of Chester and also the researcher's employer. Throughout the data collection process, appropriate interview conditions were ensured in order to facilitate a qualitative approach to the engagement (Elmir, Schmied, Jackson & Wilkes, 2011). Prior to the interview, the participant was reminded that the dialogue is not covered by a Non-Disclosure Agreement (NDA) or the Official Secrets Act. Should the interview have strayed towards commercial sensitivity or a Government-restricted conversation, then the interview was directed away from that topic of conversation and the details would be redacted. To further ensure that sensitivity and security was catered for, each interviewee was allocated an identifier code and was only referred to by this identifier throughout the interview. The raw data was captured using a digital recording method and stored securely using 256-AES encryption. The list referencing the identifying codes assigned to individuals will remain in encrypted soft copy only and has not and will not be divulged to anyone unless directed by the University of Chester or Governmental authorities, and permission was sought and provided by the individuals concerned. It is believed that there were no significant restrictions or security risks regarding any of the data that was collected and analysed. However, it remains appropriate to store all raw data securely for one calendar year from the submission of this thesis, so as to be available to answer any queries and questions, after which all of the data will be destroyed. All data was anonymised prior to inclusion in this or any other report. Storage and use of the information collected is strictly in accordance with the Data Protection Act 1988.

4.7. Chapter Summary

This chapter has explored the philosophical stance, the method and rationale of the research. It has also discussed the nuances of investigating the defence and security industry. It was acknowledged that due to the experiences of the author, they had privileged access to enable the research to be carried out and clearly this had ethical considerations both from a business and academic point of view. As such, the ethical aspects were considered from both of these standpoints. How the data was collected and analysed using a thematic approach was discussed. Lastly, further clarification was offered with regards to the participants and the companies that they represented.

5. Analysis

As discussed in the previous chapter, analysis was carried out on the data collected in order to establish the emerging themes. This chapter develops the understanding of those themes and they are viewed in the context of the ambidexterity of SMEs in the defence and security industry. Although dealt with independently, it soon became clear that the interviews needed to be considered as a holistic matrix, with each element interacting with others as it does for the interviewee. This is illustrated in Figure 7 and discussed in the following text.

Figure 7 Ambidextrous challenges and tensions themes

5.1. The Themes

5.1.1. Winning Business

Winning business in the defence and security industry can effectively happen in four ways: directly from the government (UK or otherwise), from an individual user, from another organisation operating in a similar environment (a non-Governmental organisation (NGO), or in the supply chain of another organisation (a prime) competing for any of the above. The authority has three streams of procurement: open competition through a tender, single source tender (used for the development of sovereign capabilities such as submarines) and through international collaboration which often involves very large and technically complex programmes that benefit from multinational cooperation, an example being the F-35 Lightning II aircraft (Brooke-Holland, 2019). Utilising the supply chain route is not perceived to be straight forward. Interviewee 5's response reflects this:

> *"Only really one main way [of getting in to the supply chain] and that is to appeal to the larger organisations, who have got bigger purses. So we need to appeal to those larger organisations that are going to be partners, we need to prove to them that we've got a technical capability and a product capability, solution capability so that they can then take it on to their customers."*

By far the most common route for an SME to contract with the Government is through a tender process. The importance of winning business cannot be overstated and is vital for any business's continued operation. Interviewee 1 contended that:

> *"You have got to keep the coal fires burning, you've got to keep feeding it. So you, in terms of the current, you track the tenders that are going on that you know you*

can do and that you stand a chance of winning. But whilst you are responding to a tender, by way of the review process, you are identifying the trends in the market that cause you to think where markets may be going."

Bidding against a tender takes money, time and effort. With limited resources, the leadership function of an SME needs to decide what opportunities of winning business aligns with their strategy and what the chance of them the winning business actually is. Interviewee 1 went on to say:

"You choose the contracts, not necessarily the desires, hopes, dreams or wishes of the individual. You track the tenders that are going on that you know you can do and that you can do and that you stand a chance of winning."

They continued by saying:

"What we don't do is go after loads of things, you know this wonderful idea that people think, yeah that is a great idea, let's take it for a spin, never usually works because it is people's individual good idea based on their personal experience but not based on their commercial awareness."

It appears as though these statements align with the classical understanding of ambidexterity. March (1991, p. 71) refers to the exploration of "new possibilities and the exploitation of old certainties". Although in this instance, there is the additional challenge of identifying which tenders are the "old certainties" and which are the "new possibilities". However, the participant of Interview 1 seems to directly support Lubatkin et al. (2006) in detailing that there is a focus on exploitation or exploration, but not both. In this instance the participant is very focused on exploitation and in winning more of the same type of business.

5.1.2. Understanding the customer

Building customer understanding is critical to a successful tender. Interviewee 4 said:

> *"So the model that we've developed is really about leveraging the relationship that we have built with UK government, and in particularly within NCSC [National Cyber Security Centre]. Right? And that's always been the case. So we've always, as you know, sold well into government both products and services. But we've also always done project work with government. So we've supplied into large programmes and we've been engaged on a smaller project basis. But what we've been able to do over the last couple of years is align with the government. Engaging particularly around the projects, so we've been able to align that [the projects] with our product development roadmap. And the reason why we've been able to do that is because government itself has transformed substantially. Some of it is now much more keen to use commercial off-the-shelf technology. So even in the higher assurance environments within government, that's what their preference is."*

Clearly this supports the findings of Rossum, Kraaijenbrink, Groen and Lowik (2012) and more recently Shiue, Tuncdogan, Wang and Bredican (2021), who contend that both the external relationship and knowledge support the development of ambidexterity. With this particular participant, their response provides an example of where an individual in a leadership function has an effective network, in this instance it is their relationship with a customer organisation, NCSC.

In all interviews, the participants relayed the importance of communication. It was equally acknowledged that the constraint of resource was hampering the desire to explore new opportunities and develop further as an ambidextrous organisation. Interviewee 1 recognised these limitations of size and reputation that being an SME brings. The Managing Director said:

> *"It comes down to footfall, because one the weaknesses of a company our size is the ability to get around the bigger defence primes and come and say hello to people, to remind people you are still there and are still doing stuff and that we are no longer the company that people perceive us to be of 2, 3 and 4, 5, 6 years ago. So there is that communication piece where you have to educate the individuals that you have a capability, that you can do stuff that is not classed as a stretch any more, but classed as a reach."*

In this instance, not only the challenges of customer engagement are referenced, but also that a business evolves over time, with changing and often advancing capabilities, and that it is imperative to communicate these advancements that meet the customer's needs and requirements (Amat, Renart, & García, 2013; Greiner, 1998). Interviewee 7 thought it was important to communicate the ethos of the company to the customer as a priority:

> *"Whenever we do our business to business briefings, our first slide is very much 'our way' as opposed to 'our what', and I do that in every business brief I do."*

Interviewee 13 made it very clear how imperative they believed communication and speaking to the customer was:

> *"We try to stay very, very close to our customers. We develop very close relationships with the police, the military and government organisations. We talk to them a lot."*

5.1.3. Communication

The CEO of the organisation in Interview 13 did not just want contact and communication for the sake of it, they believed that genuine understanding would arise as a result, benefiting both parties but ultimately giving the organisation a competitive advantage:

> *"We make sure that we see our customers who are using our software at least a couple of times a year, even if they're in Australia, and we watch them using our software and we say "Why did you then turn to that other computer and start typing into a word document? Why isn't that inside our software? What are your problems?"*

They also said:

> *"By watching the customer and staying very, very close to the customer, we hope that we understand what their problems are. Because we understand the technology maybe we are slightly ahead of them in some areas in which we can lead them."*

It is not just communication and networking with the customer that is important in an ambidextrous organisation. In the following quote, the participants align to areas of study around ambidexterity where the significance of networking, communication and information are developed to gain competitive advantage (Duodu & Rowlinson, 2019; Heavey et al., 2015; Y. Li, Chen, Liu & Peng, 2014). Reinforcing the theme of the importance of the external network was Interviewee 5:

> *"So you go along to, you know, meetings [and] you solicit information, you solicit views from other partners, other people, you know, potential customers, people*

who would never be customers, you know, and you just collate a level of information. And I guess you create a bit of a network. Yeah, and after a while people come back and say "oh I heard this the other day, I don't know if this is going to affect you but X". Well sometimes it actually doesn't affect us, but thanks a lot, we appreciate it. And another time you can I never knew that and that gives you the opportunity to go and dive down and find out a little bit more. But I think constantly that this is you know, that this is no different even if you're in a large business. I think other than perhaps access to certain organisations is perhaps a little easier yes."

In the relatively small ecosystem of the defence and security industry, one major way of understanding the customer's need and requirements, both in the short and longer term, is through direct engagement with the government customer. In particular, the defence and security governmental customers are more than happy to share their procurement roadmap with the capability providers. Typically, this will initially be done through an industry day where the MOD will share this roadmap, although there are restrictions due to the security clearance of the programme, which could well be a hindrance to some businesses. Interviewee 5's view was that entry was privileged and largely down to reputation, and that the best way 'in' is working through a prime contractor:

"They'll often do briefings for a group of people. Well, how do you get in that group if nobody knows who the hell you are? If you're an L3Harris or you know LM, then are you going to get in there anyway, standard, because they know you. But what about all the little guys? They don't know you. And so that's also part of that, is

that early stage of the process, getting out to those organisations that you think are important and who might be influencers."

Of course, the networking does not necessarily have to be in a formal environment. Interviewee 13 shared their experience:

"Well we are constantly thinking about it [the market]. And of course, talking about it with friends who I respect, but also those who work not necessarily for defence and security companies, although I've got quite a lot of friends, as you can imagine over the years from my military contacts who then moved into other markets, I talk with them. What do they think the market's doing. Where are interesting opportunities?"

5.1.4. Understanding the market

The expression of Market Orientation (MO) arose during the literature review. A key component of MO, ambidextrous or otherwise, is market intelligence, giving rise to offer strategic focus and enable a business to focus on the customer's needs (Jaworski & Kohli, 1993). Further benefits of market intelligence are that it can give a competitive advantage and also the ability to make sound business decisions (Ayub, Razzaq, Aslam & Iftekhar, 2013; Lackman, 2000). This importance is not lost on the participants, as Interviewee 2 contended:

"You have to understand the market and the opportunities. The market doesn't move that quickly, so you have time to respond and have time to think ahead."

The access to usable and actionable information which can be used to establish market intelligence is multifaceted. The information gathered could well come from a number of different sources. Interviewee 1 expressed this:

"So ideas start to form based on the reading, based on the antennas, based on what others are thinking and based on what you see on requests coming out of the market. That gives you an idea of where they are moving."

How this information manifests itself is equally diverse (Babin & Zikmund, 2015). Companies whose MO is aligned with the needs of those requiring a service or product seem to receive the greatest benefit. Interviewee 2 supported this point, with regards to understanding the future needs of a customer (in this instance, the international community of NGOs):

"We wrote a concept of employment to put together [REDACTED], obviously it didn't come to pass immediately, but I knew it would come, it was a matter of time. So when they [REDACTED] put out a bid for somewhere else we were able to respond and we won."

Whose role it is to collect and analyse information is varied, and there is no clear consensus across the interviews. There are those who see it as a collective responsibility including Interviewee 13 who said:

"There isn't anybody whose job it is to horizon scan and there's nobody with horizon scan in their job title, we all have to do lots of different things. We're not a young company in terms of the age but we're inquisitive. We were reading about new things and just for example, augmented reality."

Interviewee 13 also said:

"Okay so everybody is always scanning the press. Staying involved in what's going on. We're talking to our customers to find out what's going on."

Interviewee 15 also saw a collective responsibility in monitoring the market place:

“We're keeping our eyes on the developments and things we're hearing and seeing around the base by attending the right technical conferences and trade shows.”

These examples appear to be a contextual approach to ambidexterity, by happenstance as opposed to deliberate and thought out actionable strategy, akin to that discussed by Gibson and Birkinshaw (2004). Other organisations see it as the leaders’ responsibility and so therefore a progression towards the beginnings of a structural approach nearer to that described by Chang and Hughes (2012). Interviewee 5 stated:

“So, I have what we call the binoculars of the business and will look at the technical landscape you know, in the future as far as possible and anything that might affect us, whether that be competition, whether that might be the just the way people are using technology and the threats that are coming out, all of those sort of things.”

Where a company with limited resources struggles in gaining market knowledge, if money is available then they can always pay someone else to do it for them, thus affecting structural ambidexterity. Regarding this, Interviewee 14 said:

“Now I don't think we've got any market insight at all. We're not doing a great deal of horizon scanning. Do you remember when we were at [REDACTED]. They started looking around to pay for all sorts, a lot of people to do some serious horizon scanning to justify the desire to work in the cyber area because they knew they had a lovely hole in the pipeline. It is arguable whether that's successful or not but we don't do anything like that really.”

Interviewee 8 added:

"The other thing we sometimes do (but again it comes down to cost) is go and commission market reports and that sort of thing. But at the end of the day, it still costs, you have got to get the money and you have still got to invest in putting the resource in place too. And of course get on the various frameworks or contracts with clients to win that business."

5.1.5. External support

If an organisation is approaching an ambidextrous strategy from the polarisation of the structural context, with limited resource internally, then there is a way in which additional pseudo-resource can be activated. That is through external teams or individuals that would fundamentally carry out tasks that would otherwise be achieved utilising internal capacity. As noted previously within this thesis, there are two major independent industry associations, techUK and ADS Group, which have a national presence (ADS, 2020a; techuk, 2020). There are other government organisations to promote the growth of UK-based capabilities, and thus of the defence and security companies, but they are not independent of Government and do not represent the industry as a whole. The difference between ADS and techUK is slight, but both of these organisations, as well as the government-funded organisations, have the ability to support businesses in different ways. Like many other industry associations, they can provide external capabilities and resource that may otherwise be within the individual business construct, thus potentially supporting a structural ambidextrous strategy (Costa, Soares & de Sousa, 2017). ADS has a very wide-ranging membership of both technical and non-technical aspects of aerospace, defence and security. Recently, they have further expanded their portfolio in order to capitalise on the increasing development of space programmes and supply chain contracts being won by UK-based companies. Whilst techUK, as the name suggests, focuses on the technical aspects of delivery, it does not limit itself to just those organisations that perceive themselves to be part of the defence and security industry, neither does it limit itself to SMEs, and membership is open for all, from micro to multinational businesses. Both organisations have ‘interest groups’ focused on SMEs.

All of the companies that responded were members of ADS and those where appropriate were members of techUK. The interviewees used these bodies to collect and analyse information. Interviewee 1 said:

> *“We look at things such as ADS to give us a summary of Government policy. We also look to DIT [Department of Trade], IoD [Institute of Directors] and Small Businesses Group to help as I don't have the time to read everything. I am too busy trying to win bids and keep people employed.”*

The DIT implements Government policy for advancing international trade. In addition to their headquarters in London, they also have local representation in most British Embassies around the world. Operating as part of DIT are the Department for International Trade and the Defence and Security Organisation (DSO), which is staffed by specialist civil servants and seconded military personnel, again with locally employed representation, internationally, working in concert with the Defence Attaches out of the Embassies (DSO, 2018). Interviewee 1 was the only person to mention DSO, IOD or the Small Business Group.

Other interviews also utilised third parties to provide a summary of the ecosystem. Interviewee 4, being of a security company, was very focused about working with the National Cyber Security Centre (NCSC), an organisation that supports “the most critical organisations in the UK, the wider public sector, industry, SMEs as well as the general public" (NCSC, 2020). Interviewee 4 said:

> *"So we belong to a number of industry associations that have historically had good relationships with parts of the NCSC and have acted as an industry voice input into NCSC thinking."*

Highly-specialist industry bodies occasionally manifest themselves as working groups, but anecdotally have limited longevity or success in representing industry into the customer base and vice versa. Interviewee 4 had engaged with an organisation that specialised in high assurance cryptography, the High Assurance UK Industry Association (HAUK). Interviewee 4's view of HAUK was that:

> *"it still is going through the process of trying to reinvent itself actually, because it's not the place where NCSC will go to now for discussion about crypto. It has a broader set of interests which include technologies like high and low domain solutions, and it reflects a group of companies that continue to supply into high assurance environments. It's evolving how it engages with NCSC. So we have had to reach out to different stakeholders within NCSC, post to post. And that's still kind of an ongoing process, but we're engaged with certain initiatives like that. Again providing an industry voice to see the current thinking on how do you provide assurance schemes for products and services and particularly how do you tell what good looks like, and do that in a way that makes sense for both government and broader private sector?"*

The same interviewee had a view of involvement in the industry bodies and of their utility:

"I sit on the cybersecurity management committee of techUK as it has been a point of contact for NCSC frequently. So that gives us a number of touch points alongside those individual relationships that we already have and maintain with NCSC individuals. Some of those relationships develop as a result of research engagements that we undertake. So it's a combination of those bilateral relationships with the relevant industry groups that I have to give us a pretty good picture of government thinking."

Those interviewees that invested time and effort into the industry bodies felt that they subsequently had a degree of influence on the direction and strategy of those same organisations, and as such a voice directly into the government as a customer at the strategic and policy level. Another incidence of investing effort into an industry representative body was conveyed by Interviewee 9:

"So I do invest time in sitting on ADS SME committee meetings and things like that to sort of engage in wider defence and I have an opportunity to field opinions back up into the defence industry."

What Interviewee 9 was referring to was one of the many Special Interest Groups at ADS. "All ADS Special Interest Groups (SIGs) are formed of Members and stakeholders with similar professional specialities. These groups are designed to enable members to network, seek out business development opportunities, learn, influence markets and stakeholders and keep up to date with current, related developments" (ADS, 2020b). These are chaired and led by the members, with ADS providing meeting locations, advice and administrative support. Interviewee 17 had spent many years working with ADS and the previous iteration of the Defence Manufacturers Association and stated:

“The relationship I have with the top of ADS is such that I can go “I really need to know this, I need to know that, I need to have an opinion” and they will get it for me. I don't think anybody else does the same as I do. But you know, I came out of the DMA (Defence Manufacturers Association) so I know them really very well. So I've got very good relationships with the do-ers in ADS and yes, I find it very helpful and if we if we need to get something, we can get it. For the amount of money we pay it's really very useful.”

Thus, this approach of the participants effectively aids them in achieving structural ambidexterity, but for a fee.

Other additional leadership support can come in the form of a board with Non-Executive Directors (Berry & Perren 2001). Again, this could reduce the challenges of delivering a structural ambidextrous approach to the SME’s business strategy. The importance of a board was raised by two of the research participants. Interviewee 2 saw having a board with significant experience as a differentiating factor from their competitors, they detailed:

“What really separates us from the competition is the commercial experience and competence, within the company on the board supporting me. These people work for a small company because they like the individuals; they like the team. These are very competent individuals and I balance the board with experience credibility, knowledge of the market, with personal links, a commercial officer and a CFO [Chief Financial Officer]. So we have a good balance at board level which then reflects at management level, working as a complementary team.”

Interviewee 18 saw Non-Executive Directors as a necessity from the moment they started the company:

> *"So even as a start-up, really I wanted to have a non-exec board and learnt from my previous jobs where I hadn't owned the companies, where I'd just been a manager in a medium-sized company."*

Their reasoning was to keep focused on the company's direction and to add a degree of diligence and formality that otherwise might be lacking from an organisation (Barrow, 2001). The real benefit is the experience that the individuals bring and with a shareholding in the company, they will have a vested interest in the success of the organisation. Interviewee 18 went on to say:

> *"Why on earth would you have a board and that means you've got to answer to someone and you're deliberately adding a layer of management and giving yourself restrictions, but they help. All my board members have shares in business. So I don't have to pay but they do have shares which means you are (in) a very interesting position (as) they bring expertise, they bring knowledge. We meet quarterly as a board. The formality of a board meeting for a company our size takes 10 minutes."*

5.1.6. Government Policy

Many interviewees thought UK government policy and the policies of other international governments failed to influence either positively or negatively, however there were some notable exceptions. Interviewee 1 gave the following example:

"For example Brexit. So we haven't bid into Europe for 2 years, working as a consortia across nations, where there was a requirement to form consortia across 5 or 6 countries as a minimum [to respond to the tender]. But as the UK has fallen out of favour, we have been asked less and we have stopped bothering to respond. It has stopped us putting any effort in something that will be a slow return."

Interviewee 4 thought that the biggest issue is the way that the UK procures bespoke equipment instead of buying capability that has been delivered in full, or to a large degree, from other friendly nations. They said:

"Defence in the UK is a failing industry in the way we're approaching it. If we don't move away from a bespoke model [of buying capability], then we're in real trouble."

Interviewee 11 thought that in some instances, government policy was developed to be risk adverse and therefore there was a tendency for the procurement process to choose large enterprises, despite being more expensive and less agile than the SMEs:

"The troughs and the peaks of the public stuff and also being more sensitive to the legislation and regulation, (so the public stuff tends to go for the big names), that is a comfort blanket in House of Commons select committee. When something goes wrong on a public programme, they will always go to the big names because that has more confidence and more understanding in that confidence across a wider base. So there's very much a comfort blanket. But it isn't about the money for them. The smaller companies can be more agile and cost-effective."

5.1.7. Teamwork and communication

The importance of teamwork and communication within a business in supporting the ambidextrous construct has been previously established in literature by the likes of Pertusa-Ortega, Tarí, Pereira-Moliner, Molina-Azorín and López-Gamero (2021) and also Alcaide-Muñoz and Gutierrez-Gutierrez (2017). In this research, fifteen out of eighteen participants recognised and stressed the importance of working as a team. All fifteen of these participants detailed that they operated a flat management structure, emphasising the significance of cultural fit over an individual's capability, in order to build a successful team. Four of the participants cited the New Zealand Rugby Union Team as an exemplar of this, where an individual with cultural fit and who is suitably qualified to 80% of the requirement, but with the potential to improve and develop the last 20%, is preferable to one who is 100% qualified but with no cultural fit. This is described by a CEO (Interviewee 2) as follows:

> *"I have a mantra, anyone who comes into the company has got to be competent, capable and credible. They have got to be competent from a qualified and experience perspective to do the job, they've got to be capable to be able to deliver what we are asking them to do, but they have also got to be credible. What I mean by that, we know people who are good at delivering a program but they are a complete con, people don't like them. The NZ rugby team have a no fools rule. We emulate that here. We recruit and retain the right people, set the right culture and that comes from the top."*

The fifteen interviewees who recognised the importance of teamwork were very conscious that whilst they were operating as an SME, just one individual who did not culturally operate in a manner becoming of the company, could harm the reputation of the leader and their organisation (Costa, Roe, & Taillieu, 2001). Whilst all of the participants recognised the usefulness that veterans bring to understanding the customer, they also acknowledged that those in the leadership functions and indeed throughout the company need to be cognisant of the fundamental business requirement of making a profit. Interviewee 2 expressed this:

> *"You have to be commercially driven, it is all very well being ex-military and being the best at what you do, but unless you can convert it to money, it is a waste of time. You have to be commercially-focused."*

Once there is a team in place, having confidence and trust in them is essential (Adams, & Webb, 2002). Interviewee 1 succinctly stated that there are different ways of achieving the same end goal and it may not be the approach that the directors would use, but it still achieves the aim:

> *"You can skin a cat many different ways, but the cat is still skinned."*

Whilst it is emotionally difficult to let go, they see it as important to do so, depending on whether they, as individuals, have built a strong team that they personally have confidence in, and are able to offer a degree of autonomy to. Interviewee 1 went on to say that:

> *"We are developing at the moment and that comes down to the recruitment of good people. We [as Directors] are taking a step back. I like to be aware, but I won't get involved unless I am asked to. This is difficult to do. From a company perspective we have had ups and downs and it is hard to let go. I do this by taking myself out of the office, forcing others to take responsibility. We will give direction and guidance and ensure we are not part of every process."*

Competent leadership and the development of a highly capable, trusted team is a recurring theme throughout the interviews. Interviewee 7 said that:

> *"trusting people to do their job is very important but we've also learned as an organisation that you need to trust people to do their job and you've got to be prepared to do that."*

They go on to say:

> *"How do I cope with the competing demands? I don't worry about it because I have such a strong team in place."*

Internal communications were also perceived to be vital in support of teamwork and cultural development and as mentioned above, this supports an ambidextrous business construct. Interviewee 2 divulged on their own experiences as follows:

> *"We communicate the strategic level, the things that are going on in the company, the opportunities, the good points, the bad points. I get some others to stand up and say what their branch is doing. Once every three months minimum we all go out for a curry. We create a bond and culture, work hard, play hard. It is a nice place to work and you are surrounded by some pretty impressive people. That has an effect on rubbing off on people and inspiring them to do well. Put that together with the interaction and mixing socially, it has a big effect on how the company performs and how people work."*

Interviewee 7 sees the importance of communicating the ethos of the company as a priority.

> *"We talk about what matters to us as a company, our values and therefore we give the message top down from the outset."*

Some of the participants' organisations have a business plan where they work closely, on site, with Government functions. This raises some issues when communicating with their staff. Consultants will typically work remotely, embedded with a customer. Depending on the sensitivity of the particular site or project, there may be restrictions on the use of information technology, including, but not limited to, such things as laptops, smart phones and smart watches. These restrictions are often extended out to those organisations and businesses in the supply chain where a Security Aspect Letter (SAL), raised by the authority or prime contractor, applies, so the leadership functions of Interviewee 8 and Interviewee 18's organisations have their workers operating remotely. With limited information channels, communication becomes extraordinarily difficult. As does the development of a company ethos and therefore will make ambidexterity even more of a challenge to develop. Interviewee 18 highlighted the challenges of remote, on customer site working for the internal communications of the company. However, with the organisation effectively being embedded with the authority, it brought other benefits to the business. They suggested that it may strengthen elements of the supplier/customer relationship and thus improve aspects of that side of external communications. Despite these hurdles, teamwork does develop at a localised level and there is a reliance of the project team managers to provide the communication to and from the company hierarchy, effectively producing a pyramidal management structure.

With Interviewee 8, the importance of getting together is also recognised, to overcome the obstacles presented through remote working. Whilst the agendas of the meetings vary, they include a company briefing and an opportunity for staff to build relationships:

> *"Every six months we have a company get together which we call effectively 'the quality day'. It is really a company briefing. We sometimes do that overnight so that gets everyone together. But it is our managers [who] are responsible for ensuring that you know everybody is doing what they should be doing."*

And they added:

> *"We normally try and have various social functions, and in fact we're going to go and do a dog walk actually, where the employees will get together and then have a chat basically. We have tried to sort of formalise the process of meeting, making sure we engage with employees every week or every two weeks."*

As with previous examples, there is a recognition of the importance of, but also the challenges of communication throughout the company. Interviewee 9's view was:

> *"So internally it's really hard. I think that you have to be honest with yourself. And we get away every three or six months and we get away offsite for the day. We go back to basics, right? So we agree this is still where we want to get to."*

Another participant, Interviewee 14, saw less value in a company ethos, but still accepted and promoted the importance of communication through social interaction. In this particular example, they sourced external support where there may not have been the internal competency available at that particular time. They said:

"We don't have a company ethos that we've articulated but we've got pretty open culture, we pull the consults together every three months. Everyone in the room and everyone can come. We had one yesterday, and interestingly the theme was leadership. So we thought an external speaker would be useful to talk about how he approaches it."

5.1.8. People

Recognising that people are considered a resource within an SME is fundamental in developing an understanding of some of the tensions that exist within the decision-making process of the leadership function. This is particularly evident with those organisations investigated within this thesis that provide services to various Government departments. The organisation represented by the participant annotated as Interviewee 8, provides intellectual expertise of Integrated Logistic Support (ILS) either directly into the Ministry of Defence utilising a framework arrangement, or as a subcontractor to a prime on a delivery programme. Operating with a similar approach to several other consultancy organisations working in the defence and security industry; they have a core staff of 40 individuals on permanent contracts, with 30 of these being revenue earners. One of the greatest concerns that Interviewee 8 had was having permanently contracted, revenue earning staff "on the bench", who are costing money as opposed to the primary purpose of making money. In support of the revenue earners, the company has a database of 800 registered associates to call upon for project-specific opportunities. However, there is no assurance that the associates are available or willing to work at any given time, as a new contract is formed on a case-by-case basis through the individual's own limited company or a third party umbrella company. Whilst this type of arrangement allows for a surge capability and a greatly reduced financial risk profile, it does raise its own issues and challenges. So when it comes to deploying the consultants at Interviewee 8's organisation, to fulfil a specific requirement, there are three fundamental scenarios. The first one being that the permanent staff are utilised to fulfil the contract. This is the preference as it maximises profit for the company and builds the experience of both the individual used and of the knowledge base residing within the company. The second scenario is having a mix of core staff and associates, with the third being a delivery team made up entirely of associates. Each of these scenarios has an impact on the resources of the company, the revenue, the profitability and the risk exposure, through the investment of money into those resources.

Interviewee 18 had a variation of the above business plan and project team structure of Interviewee 8 to fulfil contractual obligations. Their resource plan was to use a large group of associates on a time-limited contract to win and initially deliver the work, then either offer a permanent contract to them as an individual or backfill with others who had been hired in the meantime. This would have effects in terms of reducing the overheads of the company and thus business risk; and in terms of increasing the profit margin once the transition to permanent staff had taken place. Clearly this scenario is an ambidextrous tension that the leadership wrestles with when developing their delivery plan. In their experience it resulted in challenges to the individual consultants, the customer and the SME leadership during transition. However, this did allow work on what they saw as a mid to long term core function of developing graduates to come in to the company, then evolving and enhancing their individual skill set over time. In addition this aided the development of core Intellectual Property Rights (IPR) for and owned by the company, thus providing a degree of longevity and saleable assets.

5.1.9. Money

When considered through the polarisation of ambidextrous tensions within the business, the importance of money was a common theme throughout the interviews. Interviewees 12 and 7 provided strong examples of this:

> *"Cash is the single most important thing for any business. It is the blood in the veins of your business. You can bleed out for a while but sooner or later you end up unconscious, then dead."*

For Interviewee 7:

> *"If you don't have money you can't do anything."*

Interviewee 2 reinforced the importance of money and the revenue stream, both to the SME and to the larger business, where financial risk may be easier to accept and manage:

> *"We are money-oriented, but because of the services which we provide we are quality driven as well, that has been a big differentiator between us and the likes of [REDACTED]. Take them for example, they haven't a clue about IED and search, they know they haven't got a chance of beating us technically or on the ground, so they revert to type and win the contract on money. One of the contracts last year, they undercut us by half on an $18 million dollar contract. We know for a fact that they have completely failed to deliver and know for a fact that UNMAS have had to step in to deliver and make sure the project is successful because UNMAS don't want to be embarrassed and lose their revenue stream. So we have always supported a quality line, but everything comes down to money."*

Interviewee 5 is very focused on money and difficulty in the cash flow is an unwelcome distraction, as it can affect other parts of the business:

“The one underlying thing that happens from day one, and we still do it now, is cash and it's monitoring the cash, and I can tell you I have a cash flow forecast that not only do I update daily but I look at it multiple times a day like just going through a ‘what if’ type analysis you know, what if this person doesn't pay, when they say they're going to pay, and when they should pay.”

Predictable revenue to support the Annual Operation Plan (AOP) reduces the business risk to a degree. Interviewee 4 responding with their experience of this:

“So what's always been the heart of our minds and thoughts is connecting visibility of all of income. So whether that's through building up a maintenance stream or off the back of our like product license sales, or whether it's getting contracted services in place, or more recently for us, building up a subscription licensing and software as a service sales.”

Without a predictable revenue it can be challenging, as contended by Interviewee 5:

“If we've got three or four months money in the bank we think we're rich. You know that's a comfortable position. There are times when at the start of a month and we don't have that much money in the bank. We're expecting it to come, and I think that's very different. That's a small business thing rather than a larger business thing.”

When trying to understand the competing needs and ambidextrous tensions, the majority of the interviewees believed that the most important resource was money, at least initially, whilst aligning with the previous point of remaining in control. In terms of important resources, Interviewee 2 said:

> *"It is mainly financial. If you take our strategic approach, we don't want investment and banks are not lending and they are absolutely useless for SMEs."*

Interviewee 4's contention followed on from that of Interviewee 2:

> *"The pinch points have always been financial. We are always constrained or we are currently constrained because we are operating from just organic growth. Just reinvesting revenue that is generated from our current run rate. And we just see opportunities from both the product and the service perspective. But we don't have the capacity to fulfil that."*

Deciding how to use the money is important, but when considered from an ambidextrous position, the question is whether to provide funding to operate and improve the current business now, or to invest in order to grow the capability to sell for revenue tomorrow. Interviewee 16 stated:

> *"I mean if we get a cash injection from either contracts or an investor or whatever then that gives us some more headroom to look further out."*

Interviewee 7 added:

> *"You've got sufficient funding within a business to resource growth and that growth includes the sustainability piece. So I think that's my headline, would be*

the sufficient funding to be able to carry out today's activities and future activities."

Interviewee 11 had similar views of balancing what is needed in the business to what lies ahead:

"We are daily considering the various issues which is a balance between a short term, with a long term strategic plan of where we want to be."

Interviewee 13 also talked of competing needs for limited resource, in this instance, money:

"Do we go for a short term cash flow gain now or do we do something which is not going to yield results for several years but is actually going to take us to the right place and at all times. You're balancing those two things and I don't have a formal methodology for it. I just feel this is a really good opportunity. I think that we will make some money out of it in the long term. Therefore I will continue to bang my head against this particular brick wall because I think that it will yield results in the long term. In the short term, you've got to make sure that cash is coming in and as a small business the days when I wake up and have gone 'Oh my God I have got to pay five or six or now twelve people's mortgages', at least I've got to find enough money each month to pay each of people's mortgages. It's quite frightening."

5.1.10. Control

One of the common themes of the interviews was a reticence to give up complete control of the company in return for investment into the business. Interviewee 1 commented:

"So even though I have had great ideas for a long time, I haven't always had the money to support it and I didn't want to go out to the market and crowdfund to support it [the idea] or anything like that. So the financials allow you to consider the technicals to move forward. That is the position we are in now. We are relatively well off now."

Reinforcing their point, the participant wants to own the risk in order to get all of the reward:

"To do stuff, you have got to pay for things, to set up design and organisation, you have got to pay for things. This is all the stuff we are doing now, because we have the monies to fund a manageable risk to have a stretch for the company, based on good sound business case funding and a good understanding of the marketplace you are going into"

Interviewee 2 had similar thoughts:

"So by maintaining and adopting a strategy of complete ownership and complete control, combining that with our risk appetite and the management of cash flow, it has allowed us to grow the company, buy other companies, win contracts, give what the customer wants, employ contractors, pay contractors and go on and do bigger and better things."

Interviewee 13 aligned with the previous interviews when it came to the decision of taking on risk, and commenting that the leadership and owners are directly investing their own money as there are no shareholders to report to, or to be accountable for the revenue. However, they return to the challenge of resource:

"My thought was a balancing act. I would actually say that small businesses have the ability to do it far better than big businesses, but that's because we don't have to worry about this quarter, this year's results and so on. We can take a much longer view...so it definitely, I think, pays off to have a long term view of things and quite often you take short term hits for long term gains. Okay, having said that there's always the problem of resources."

5.2. The ambidextrous tension between money and people

Having the financial ability to develop the workforce or invest in new technologies could prove to be a costly and potentially risk-ridden exercise. However, there is a dichotomy, as discussed by Interviewee 13:

"Cash is king. Yes. But I'm not sure that's entirely the case because let's suppose I needed half a million quid now, to keep the business going, I could go back and say right we'll re-mortgage my house. Whereas if all my people left there wouldn't be a business here."

The importance of these decisions is not underestimated by the interviewees, as shown by a quote from Interviewee 3:

"We check everything that we do. Sometimes it gets left like that because like we just want to move on, but we're conscious that if we get something wrong, or if we go down a rabbit hole, it's over for us. You know it is messed up, it would be catastrophic."

Additionally, getting the right people is vitally important, as Interviewee 17 acknowledged:

"Money is important but people, if we haven't got the right people, well you can't win work and you can't deliver it."

In a competitive arena where multiple organisations are searching for similar resources, it could prove to be expensive for the company to get the right people in. Interviewee 5 provides their experience of this:

"So that's probably the underlying thing [money] but I wouldn't say it's just any one thing at any one time. It does vary as I said recently it's been getting the right people. I guess affording the right people also comes into it. We're based in London so we're competing with the likes of Google and Facebook and with the finance market. All of which will be challenging on their own, having all them together makes it a little harder."

Whilst there are limited resources in an SME, working as a service company offers an ability to employ a temporary work force, or temporary associates to give a surge capability without adding risk to the company. In leaner times, the business is able to quickly downsize. Interviewee 1 described their approach:

"You always have limited resources if you want to run as a lean SME. The reason for that, companies who have resources sat on the bench in a depressed market, such as defence, soon let those people go because you can't carry (if you are a service company) low utilisation. You have salaries to pay and you very quickly hit hundreds of thousands of pounds of debt whilst keeping people employed because you think the money is going to turn up downstream. You just can't do that."

As the analysis of the data developed, it was clear that the major ambidextrous tension experienced by the leadership function was between money and people. Unexpectedly, the issues of bidding, contracts or competitors did not feature. Figure 8 below illustrates which aspect, either money or people, was the leadership's primary concern, and is mapped to the deliverables of the business. Where money was the most important factor, people stood as the competing need, and vice versa.

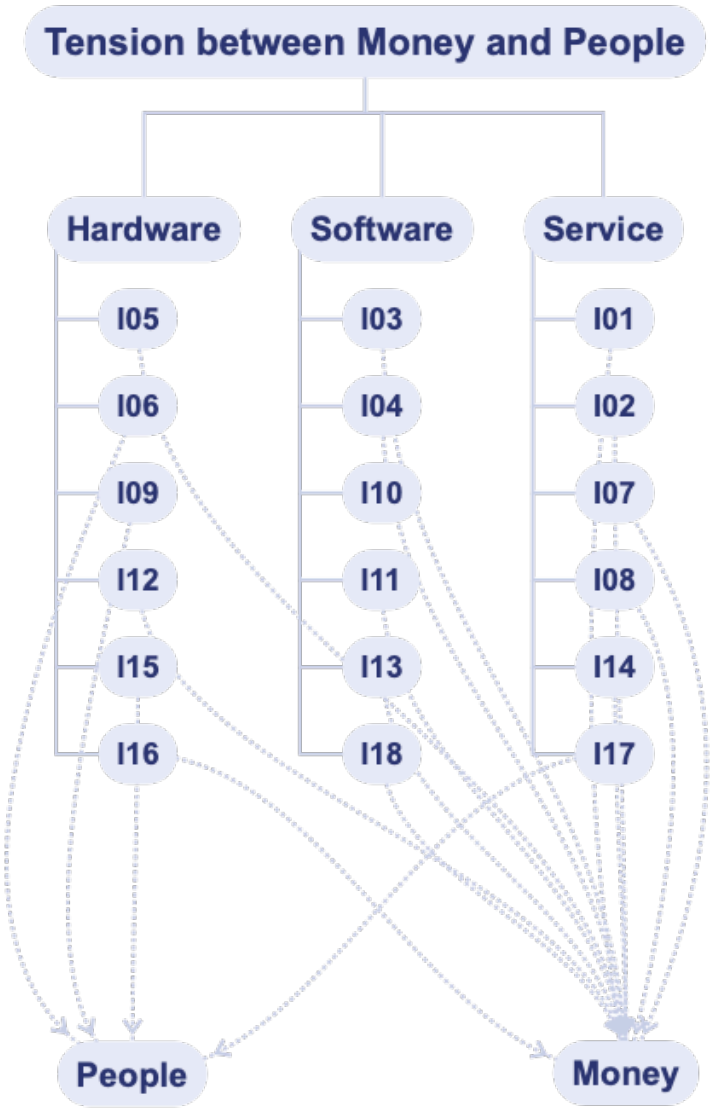

Figure 8 Tension between money and people

5.3. Chapter Summary

The themes that came out of the analysis of this research are detailed below.

- Winning business is vital to the continuation of the company.
- Communication with the customer, and the ecosystem in which the SME is operating, are both important. These points support the existing literature focusing on ambidexterity.
- Understanding the customer is an extension of communication and aids the leadership functions of the business to make conscious decisions around exploring or exploiting in an ambidextrous construct and so develops the:
- Market knowledge and understanding of the environment in which the SME is operating.
- In order to develop and realise the above points, there is considerable strain on a resource limited business. So through the use of external support, a structural approach to ambidexterity can be achieved.
- Government policy has a limited effect outside of those events of a grand strategic level such as the UK leaving the European Union (Brexit). However, it is considered a difficult and shrinking market to operate in.
- Getting the correct people into the company is important.
- After which teamwork can begin to develop and flourish.
- As with the previous points, communication is important to success and supports the previous literature in the area of ambidextrous study.
- Considering people as a resource and an asset seems to align with theoretical contributions made by the existing literature.

- Finally, considering money or people as a resource and therefore as an ambidextrous tension also aligns with the existing literature.

Many of the themes emergent from this chapter are at the very least important to any business, especially an SME. However, clear ambidextrous findings have also arisen as a result of the analysis of his research. Specifically the tension between money and people, also how structural ambidexterity is achieved with the use of external resource. All of these findings will be discussed in the next chapter, along with how they are relevant to ambidexterity, concluding with what can be gleaned from these outcomes.

6. Discussion

This section of the thesis will review and discuss the key points from the data collection aspect of the previous chapter. Ambidexterity theory is far-reaching across many elements within a company. The concept of attempting to follow two different and competing strategies at once in a business sense has been researched with interest for some considerable time, and those organisations who achieve it have more success in terms of growth and sustainability (Han & Celly, 2008). However, if an organisation solely uses only one side of ambidexterity, either exploration or exploitation, then there is little to no benefit. After all, "exploration and exploitation processes are neither independent nor autonomous, but they are continually interacting" (Cegarra-Navarro & Dewhurst, 2007, p. 1722). Further developing the thought that all SMEs may have a requirement to acquire a mechanism to deal with competing strategies, it was decided to question the status quo of current theory on ambidexterity and to investigate how SMEs manage those competing strategies.

As this research is bounded by investigating the relevance of ambidexterity in SMEs within the UK defence and security industry; it was considered important to develop an understanding of the current issues that SMEs face in that industry, what the strategy of the SMEs should be to mitigate those issues in order to ensure continued commercial viability, and what support HM Government and wider stakeholders could give to support this valuable element of the defence and security environment.

The research aim was to investigate the ambidextrous challenges and tensions of SMEs in the UK defence and security sector, with the research objectives of understanding:

- *How do the challenges and tensions of SMEs operating in the defence and security sector manifest?*
- *How is the strategy of the business leadership affected by the identified challenges and tensions?*

The eighteen research participants delivered hardware, software or a service, either directly to the defence and security government departments or into the supply chain, where the end users were the same government departments. In order to gain rich information for this research, it was decided to only speak to those individuals who were in a leadership function within the SMEs. It was found that all of the leaders were entrepreneurial in nature, but there was no commonality in terms of the inclusion of non-executive directors on the boards of their respective SMEs to offer strategic guidance and governance.

This thesis supports previous ambidexterity research findings which theorised that SMEs tend to be more entrepreneurial and less burdened by procedures than larger companies (Cenamor, Parida & Wincent, 2019; Simsek, Jansen, Minichilli & Escriba-Esteve, 2015), which thus enables them to be more dynamic and responsive than their larger counterparts. The concentration of veterans appears to be higher in this industry compared to society as a whole. Indeed, in the instance of this thesis, fifty percent of the participants had served in the British military in some shape or form. There have been a number of studies looking at former military personnel in positions of senior leadership in business, many of which discuss and highlight the beneficial or conversely less advantageous nature of their previous experience (Benmelech & Frydman, 2015; Koch & Wernicke, 2013; Lin, Ma, Officer & Zou, 2011). However, none that have been identified have investigated SMEs in the defence and security industry of the UK, in addition there has been little focus on motivation or commercial understanding. Although it could be contended that being a veteran is not enough to succeed in business; it is important to have a commercial understanding when leading an SME.

Looking at winning business, it was acknowledged that there were competing strategies to ensure success. Even with limited resource there is still a need to bring in revenue for the now, and to ensure that someone is looking further ahead in time to ensure that revenue is sustained in the future. This manifested particularly when procurement was through a tender process and particular opportunities that were winnable were selected, additionally this offered an opportunity to gain knowledge of the market at the same time. On the other hand though, due to the limited resources of the SMEs, this results in a negative impact on supply chain engagement, as in communicating with the prime contractors in order to build relationships with them. This aligns and supports previous literature which also recognises the need to have an ambidextrous approach to business (Duncan, 1976; Koryak et al., 2018; March, 1991; Rojo Gallego Burin, Perez-Arostegui & Llorens-Montes, 2020; Rojo Gallego Burin, Perez-Arostegui & Llorens-Montes, 2020).

When dealing and interacting with customers, it is through ambidexterity that an organisation performs better, and can respond to a customer's changing needs and requirements. An ambidextrous company has the ability to be more agile (Sarkees et al., 2010), and in order "to successfully implement market plans, as well as to solve customer's problems, managers need to foster an ambidexterity context" (Cegarra-Navarro & Dewhurst, 2007, p. 1731); this certainly seems to be the case for those businesses whose leadership was interviewed. In particular, getting close to the customer, not only to understand their requirements and needs, but also to showcase the business capability for future tasks and requirements is essential. A way to develop this understanding is through Market Orientation (MO), and the data collected indicated that all of the businesses were using multiple routes in order to gain MO. The defence and security industry are well positioned to gain MO via a formalised support network, whether it is the likes of techUK or ADS, or indeed the various government departments who either provide assistance in the development of the business in the UK or help with the export of products and services. Whether it is through membership of industry bodies, from the customer informally or formally, or via personal relationships, it is clear that all of the businesses were utilising both proactive and reactive approaches to MO. The balance between proactive and reactive MO is similar to explore and exploit and thus an ambidextrous approach to MO (AMO) is a balance. An AMO will improve business performance (Tan, 2014). In addition, there is an opportunity for the leadership function of the SMEs within this industry to develop an organisational approach to ambidexterity by utilising the third party resources available to them (that manifest themselves as the industry bodies), the communication network, or even the customer themselves, to act as an agency in order to develop MO.

With teamwork being a core competency of any military force, it was not surprising that it featured highly in the thoughts of the various senior leaders of the SMEs who were veterans. However, it was considered important by fifteen of the eighteen, which was significantly higher than the proportion of those who served in the military. In addition, all of the participants who mentioned teamwork also thought that cultural fit was important. This supports previous business research thinking and is likely to represent the intuitive actions of the entrepreneur (Barnett, 2011; Delarue, Van Hootegem, Procter & Burridge, 2008; Ribeiro Soriano & Manuel Comeche Martínez, 2007; Stok, Markic, Bertoncelj & Mesko, 2010).

In the military, communication and cohesion within a social construct is highly prized and is developed from the commonality of training (King, 2006, 2020; Midgley, 2011). When this is associated with the professionalism that is expected of an individual, it is something unlikely to be forgotten once those in the military leave the forces. From the literature review it has already been shown that there are benefits for the business leader in having a strong network, internally and externally, and the ability to communicate well with the TMT as well as possessing the skill and confidence to delegate their authority (Cao et al., 2010; Carmeli & Markman, 2011; Heavey et al., 2015; Lubatkin et al., 2006; Yitzhack Halevi et al., 2015). A key point to take from the extant literature is that this previous research did not focus on those who have served in the Armed Forces, yet there is an alignment with the traits expected of those who serve, as detailed in this study. The skills picked up by those serving in the Armed Forces are likely to be considered important to any industry, but especially within SMEs, as has been shown by the information collected in this thesis.

It is clear that motivation, management through inclusiveness and incentivising by the leadership teams pays dividends through the promotion of an ambidextrous approach. These traits can again be seen in the military, where people can be motivated through the use of charisma as opposed to “do as you’re told” commands, and this is considered vital in high pressure situations (Mom et al., 2018; Ulmer Jr, 2005). Again, this doesn’t seem too surprising in an industry where there is likely to be a high concentration of veterans. However, long-term and sustained motivation is achieved when an individual has a stake in the success of the business, most notably achieved through equity (Bruining et al., 2013; Gedajlovic et al., 2011). The approach taken by the leadership of SMEs to develop an understanding of the strategic intent and of individual empowerment, gives the opportunity for teams and individuals to utilise an appropriate approach to ambidexterity. Indeed, this supports Cao et al.'s (2010) assertion that delegation of authority reinforces the network effectiveness to provide more effective ambidexterity; but when the control is kept centrally, it negatively affects ambidexterity. Therefore, if the MD or CEO retains their power, then their network extensiveness will increase, although unless there is a degree of delegation, then this will have a negative impact on ambidexterity. This supports the findings of Gibson and Birkinshaw (2004) who developed the theory of contextual ambidexterity, where alignment and adaptability can exist at the same time, and who contended that there is no singular route to ambidexterity.

The industry of focus for this research was the defence and security industry because it is perceived to be an extremely dynamic environment, influenced by policy and world events. Whilst industry needs to respond to rapid change through urgent user requirements, the dichotomy is that for many of the capital programs it can take years to come to fruition. For the SMEs that are involved in both of these short and long-term aspects of acquisition, it raises strategic challenges in terms of questions about where to focus their limited resource. In this aspect of the research, the SMEs investigated seem to be more than capable of forming and executing an ambidextrous strategy. They were responding to and winning business for both the short term and the longer term programmes. However, this rather simplistic interpretation does not reflect the true nature of the challenges facing the SMEs within the industry of focus. This thesis contributes to existing research by demonstrating that rather than there being a clear approach to ambidexterity, it seems to emerge in multiple aspects of the business and in multiple forms, and the leadership functions of SMEs are constantly managing competing ambidextrous tensions and requirements every single day.

With regards to the influence of Government policy, it became clear very quickly that little of what the British Government do genuinely effects the business strategy of the SME. The day-to-day policy changes have little or no effect on how the leadership teams run the businesses. The exceptions are few and tend to be in relation to grand strategic changes, such as when the UK goes to war or is responding to a terrorist incident and identifies urgent capability gaps which must be filled. Even Brexit was perceived to have a limited effect on the SME trading within its own borders. Only those supporting international work feel they were impacted. Despite UK defence spending generally shrinking since the end of World War II, (UKpublicspending.co.uk, 2021), Government reviews seem to have little consequence to the interviewees. Indeed, constant financial pressure hovering over them was perceived to very much be the norm. This is as described by Davidsson and Gordon (2016), where SMEs continued to operate throughout the financial crisis. The defence reviews are perceived to only affect capital programmes, with those operating deep in the supply chain still supplying their products and services, regardless of which programme they were identified for. Despite there being little policy change that would impact the SME strategy, there was a general consensus that it was a difficult market to be in when dealing exclusively with the Government, and most were looking to diversify in some shape or form to attract aligned or parallel markets. This may be indicative of a changing threat and a changing market of defence and security, transitioning from a relatively low technical base of operating in Iraq and Afghanistan to one where cyber terrorism, hybrid warfare and peer-on-peer conflict predominates (Russell & Abdelzaher, 2018). As a result, SMEs might not have a choice and will need to pivot in their business strategy to meet the technological challenges of the MOD, so by increasing their emphasis on the explorative aspect of ambidexterity (Schreuders & Legesse, 2012; Taylor & Helfat, 2009).

From the primary research, the clearest competing needs, in the context of ambidexterity, were between money and individual personnel. When asked what the most important resource was within the company, the response was either money or people for every interviewee and they always offered the other as a secondary concern without prompting; with no other factors raised. Which factor (money or people) was primary and which was secondary split according to the deliverables of the business. Money was the most important resource for businesses providing a service or software, whereas for the businesses providing hardware it was people. This may be linked to how finances are generated from each of the deliverables. For example, if a consultant is not “on task”, that is not generating revenue, then they are a very expensive asset to have. By “buying in” individual resource when required, there is a reduction in risk through not paying them a salary when not “on task”. However, there will need to be an acceptance to pay a premium for this, a surge capability. In software, the significant expenditure is in the initial writing of the software, effectively becoming a pre-paid product that can be resold multiple times without the need for further additional development expenditure. In terms of hardware, there is a requirement for people to build the product in a production facility and workers are less likely to travel and are unlikely to be able to work from home (at least in the defence and security industry, where it is much more difficult to outsource to an unrestricted site). The impact of pairing money against personnel resource in an ambidextrous context is of interest, because it was clear from the participants that the priority of the business was fluid. It had changed in the past and was likely to change again in the future, as the need arises. Due to the fluid nature of the business, there was a need to have either one or the other as a primary focus. It is my inference and contribution to the academic ambidextrous zeitgeist that the functions of money and individuals as a resource are fundamentally the base elements of ambidexterity, for SMEs operating predominantly within the defence and security industry.

Building on the extant literature, this research contributes to the discussion on how money and individuals interact and may be conceptualised, if it is assumed that an SME will grow over time. In this instance, the money/human resource approach to ambidexterity will be constantly adjusted depending not only on the environment, but also the inherent business desire of the entrepreneur and the level of risk that they are willing to accept. It has already been well documented throughout this thesis that there are two elements of ambidexterity: exploration and exploitation. So, if this aspect is considered and the ambidextrous elements of money and people were in tension against each other (as displayed by those interviewed), then money could be an example of exploitation and the investment in additional human resource an example of exploration. To exploit is to gather money for the cash flow for the day-to-day functioning of the business. Whereas, to explore, additional human resource will be required to bring and grow additional capability. On their own, exploration (people) or exploitation (money) do not improve business performance, but when combined, as in when ambidexterity is achieved, then there is significant benefit as described in the extant literature (Han & Celly, 2008; Jansen, Simsek & Cao, 2012; O'Reilly III & Tushman, 2013; Wang & Rafiq, 2014). The reasoning behind the separation of money from resource aligns this research with the seminal paper of March (1991, p. 71) who contended that “exploration includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation. Exploitation includes such things as refinement, choice, production, efficiency, selection, implementation, execution”. Returning to two examples of this as described by the participants, Interviewee 1:

"You always have limited resources if you want to run as a lean SME. The reason for that, companies who have resources sat on the bench in a depressed market, such as defence, soon let those people go because you can't carry (if you are a service company) low utilisation."

Interviewee 13 reiterates the tension between the money and human resource.

"Do we go for a short term cash flow gain now or do we do something which is not going to yield results for several years. Cash is king. Yes. But I'm not sure that's entirely the case because let's suppose I needed half a million quid now, to keep the business going, I could go back and say right we'll re-mortgage my house. Whereas if all my people left there wouldn't be a business here."

Although this research plots money against resource, it should be noted that the two are inextricably linked. Like any definition of the impact of an ambidextrous strategy, it is ultimately a choice between priorities and without both the money and the resource, then the business would fail (Levinthal & March, 1993; He & Wong, 2004; Hiebl, 2015).

The balance of ambidexterity changes with size; smaller organisations will tend towards exploitation, when basic operating costs are needed as a minimum requirement, whilst larger firms will have the ability to accept or absorb more monetary risk and have a degree of toleration for, and gain more benefit from, exploration (McDermott & Prajogo, 2012). This theory can then be conceptually modelled, utilising the terms explore (human resource) and exploit (money). When plotted against each other it should not produce a linear graph that is so often described in ambidexterity literature, but a curve that is continuously being modified due to the influencing factors of leadership and environment, centring on an ambidextrous balance line of y=x, Figure 9. This conception advances and extends the current understanding of ambidexterity in SMEs across a broad spectrum of markets, not just those operating within the defence and security industry.

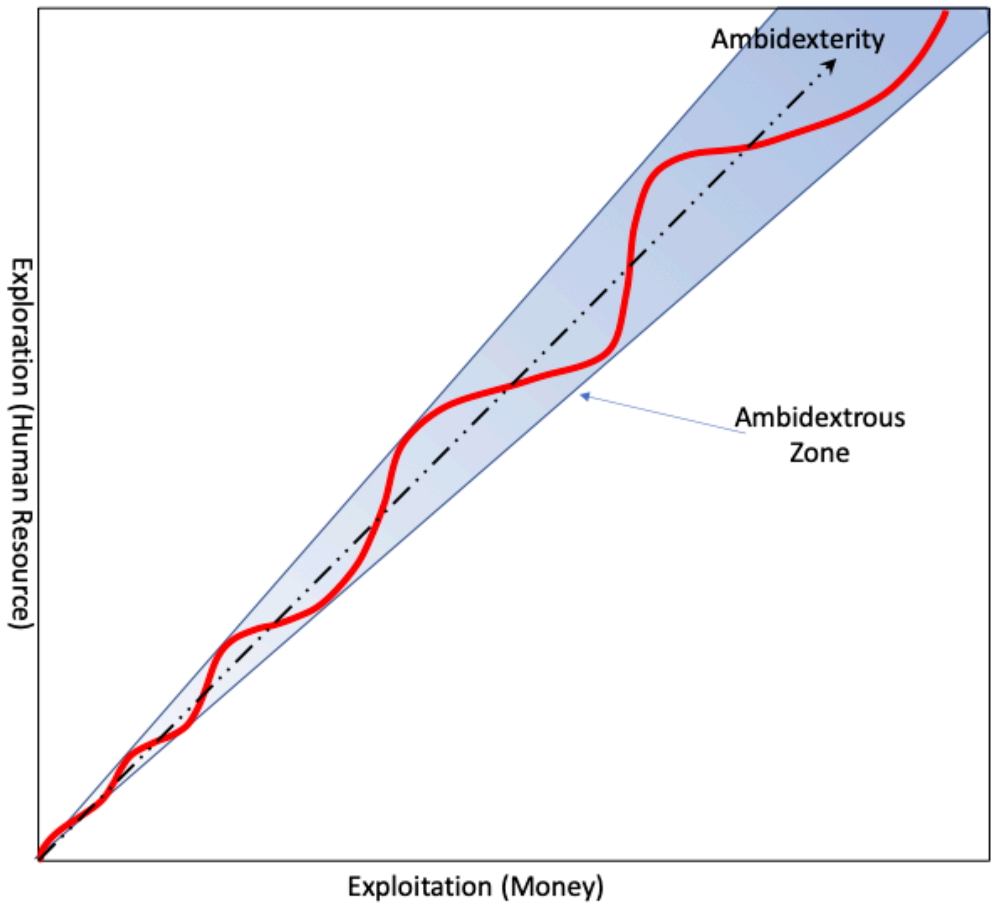

Figure 9 Ambidexterity curve and zone

This curve considers Mueller, Volery and von Siemens' (2012) view that exploration and exploitation can be approached sequentially and not necessarily concurrently, where ambidexterity is achieved by focusing on either exploration or exploitation initially, then the other in turn. In which case a business, if viewed for a short time, may look to have a tendency towards one independent component, when they are actually tackling both elements of ambidexterity. How the balance is realised when attempting to achieve ambidexterity is dependent upon changes to a firm's size over time. Whilst the curve is sometimes off the centre line, the ratio between exploitation and exploration would still be appropriate for that organisation at that particular time. This line also illustrates the tensions between exploration and exploitation. In the instance of this thesis, human resource and money were the requirements needed to be offset, but still fundamentally conjoined and influencing each other, neither being able to successfully exist in a commercial organisation without the other (He & Wong, 2004; Hiebl, 2015). As there is no one route to ambidexterity (Gibson & Birkinshaw, 2004), then a company can take one course of any number of possibilities, adjusting for influences as they progress. This, therefore, gives a zone of ambidexterity, as illustrated in Figure 9. This contribution to the current literature recognises that if an organisation exclusively devoted itself to either element of ambidexterity, exploration or exploitation, then it would likely result in the failure of the company (Levinthal & March, 1993). The model does allow for a change in focus with a given degree of tolerance, without which the extremes and possible failure as described by Levinthal and March would ensue. In the ambidexterity zone, a new small enterprise may have a tendency for exploration (human resource), but as they develop there will be an increase in exploitation (money) as well. The balance will change with one or the other in dominance, transitioning across the centre line of ambidexterity. If the firm remains inside the ambidexterity zone, which is appropriate to their environment and does not involve dealing in extremes, then they will continue to experience advancement and growth. When the SME is at the lower end of the size spectrum, with fewer resources, the zone is narrow and it is difficult to locate the right ratio in order to achieve ambidexterity, as discussed by Allison et al. (2014) and Riihikoski and Chuecas (2020). When starting a business, on day one, it could be argued that without money or people, the venture will remain in the conceptual phase of development. As the small enterprise grows into a medium-sized enterprise, the same tendency continues to repeatedly adjust, but at this point there are generally more resources and therefore there is a greater tolerance within the zone. Transiting towards a larger organisation, the trend endures, but with less frequency and a longer-term view. Extrapolating this concept, as a business moves into being a corporate or multinational entity, this theory would then support dynamic ambidexterity as described by Chen (2017). One of the critical points about the model and indeed factors that contribute to the existing research is that there are no binary or absolute definitions of categories for the size of a company, therefore there is no true definition of the ability of a company to implement a strategic approach based on arbitrary boundaries relating to size. This approach therefore lends itself to internationalism, where the definitions of what an SME is change according to country or region.

6.1. Chapter Summary

In this chapter the thesis has evolved, leading to a number of discussion points. These were centred around the following key themes. It has been shown that within a shrinking defence sector, successful SMEs are operating in an ambidextrous way, often utilising the industrial partners of the industry trade organisations. In addition, outside of grand strategic change, Government policy has a limited impact on the SMEs in this sector. With scarce resources, the leadership of the business see the competing needs of resource and finances as a major tension point. These competing needs can be considered to be exploration and exploitation respectively, within an ambidextrous construct. Critically, successful businesses operate in an ambidextrous zone where there is constant iterative adjustment between exploration and exploitation. How these themes contribute to previous research, and what the recommendations are for practice and future research will be discussed in the following chapters.

7. Contribution, Limitations and Recommendations

This thesis advances the thought leadership in SME strategy, particularly around the key indigenous industry of defence and security, by adjusting the understanding of the definition of ambidexterity. It returns to support, contribute to and advance the seminal work of March (1991, p71), where the author contends that there needs to be "an appropriate balance between exploration and exploitation". A conceptualisation and visual representation of this has been accomplished through the development of an alternative dynamic model of ambidexterity, which theorises that the functions change in a fluid manner as SMEs grow. Indeed, this thesis demonstrates that ambidexterity is not a static ratio but an iterative one, constantly evolving, and being adjusted dependant on both internal and external influences. Thus ambidexterity is not a linear function but a curve that is continuously modified, centring on an ambidextrous balance that March (1991) describes. This research further elaborates to develop the concept of an ambidextrous zone, as displayed in Figure 10, which whilst narrow for an enterprise early in its life cycle, widens out as the business develops and is able to accept more risk, through a temporary affinity towards exploration or exploitation. The contribution has been realised by progressing the understanding of the interactions between the factors of explore and exploit, and how the importance of each can change depending on the environment and leadership. Specifically, for a business to be continually successful, a fluid model of ambidexterity should be embraced by the leadership. Through developing the understanding of how ambidexterity is achieved by SMEs, and by focusing on the environment of defence and security, this research has offered a unique insight that hitherto has not been investigated. It has exposed that what is genuinely important to the SME leadership function are the factors of money and additional human resources, each behaving

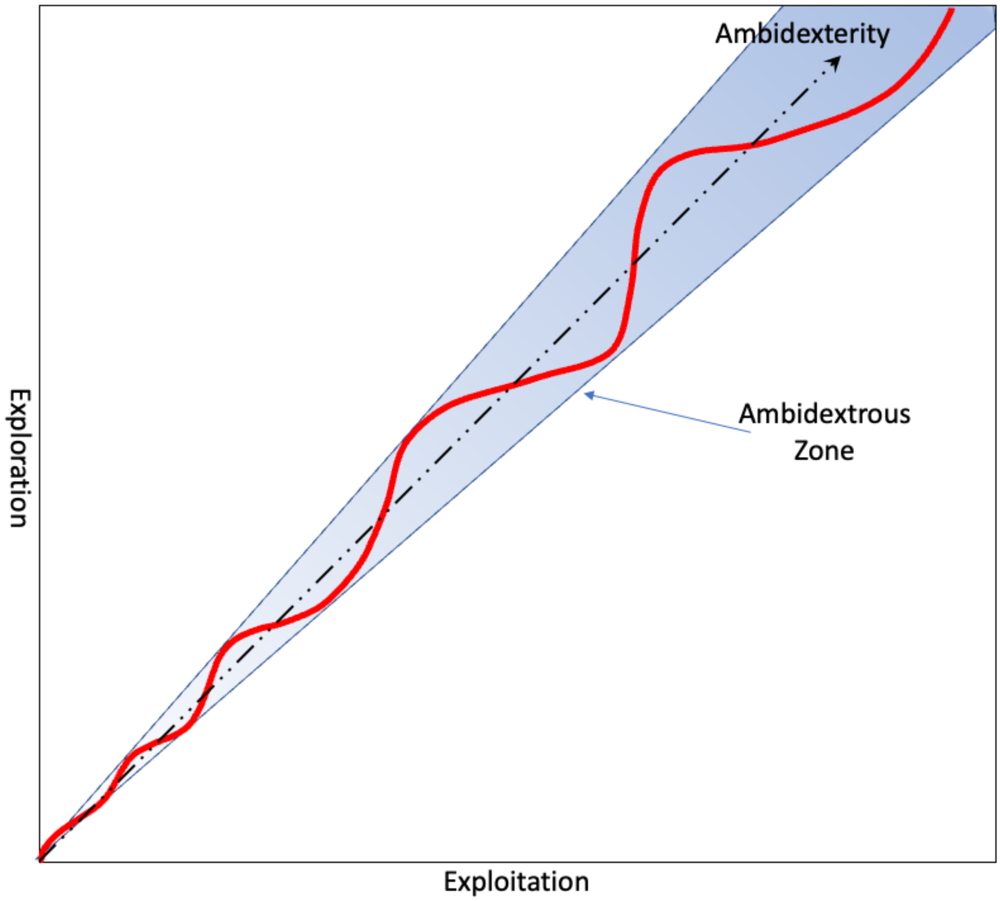

Figure 10 Ambidextrous zone

as exploit and explore respectively, with both operating under an ambidextrous tension. The research goes on to show how the leadership works far more intuitively than previously recorded with regards to their business strategy. Leadership functions are able to call upon third party resource to assist in their approach and achieve structural ambidexterity, so by enabling and supporting the business to change in response to the external environment or the immediate requirements of the customer. This research has exposed the nuances of the defence and security industry. In particular, that the SMEs within this sector are only affected by their immediate ecosystem and grand strategic events, the paramount importance of interactions between the SMEs and the supply chain as well as the end customer, and how important the company team is as well as the ethos surrounding the organisation.

7.1. Limitations of the research

When investigating the ambidextrous challenges and tensions of SMEs in the UK defence and security sector, there was a clear limitation resulting from time constraint pertaining to the structure of the DProf course. Additional limitations were encountered due to the number of potential participants that were willing to take part in a recorded study. This was exacerbated by the security considerations of the sector in which the research was being carried out. Despite the high bar of entry into the industry, the researcher was considered to have privileged access due to being embedded in the sector. However, this therefore does offer a potential challenge to the neutrality of the categorisation, the emergent themes and ultimately the conclusions drawn from them. Every effort was made to ensure that strong ethical standards and research integrity were maintained and neutrality was reinforced due to the separation of the researcher from the SME community (Yin, 2015). Nonetheless, utilisation of a third party as an avatar of research would have strengthened and reinforced the neutrality. The broader challenges of the validity of qualitative research have been discussed at length by the likes of Golafshani (2003), Thomas and Magilvy (2011) and Queirós, Faria and Almeida (2017). Whether it is the quality of the data collected due to a lack of standardisation (Saunders, Lewis & Thornhill, 2012) or even if the conclusions have merit to research (Lincoln & Guba, 1985), all should be considered and captured as limitations to this thesis.

7.2. Recommendations For Practice

The defence and security industry evolved out of a Government function into one of a free market economy, with a high barrier of entry to that supply base. Considering that there is effectively a single customer per country, significant government support is available to business growth to ensure the continuation of sovereign capability. Indeed, there are government-funded organisations whose sole purpose is to ensure the longevity of the industry supplying that uni-customer profile. However, with increased pressure on expenditure, there is a need for UK defence to achieve military advantage and influence with less resources. One of the key enablers for this is secure digital integration across the five domains of Space, Cyber, Land, Maritime and Air, known as Multidomain Integration (MDI). This has motivated the defence leadership and the operational user community to work coherently, collaboratively and in a multi-domain manner (O'Neill, 2021). MDI has been described as a Strategic Transformation Programme (MOD, 2021a), which aside from any potential reallocation of funding, will require a change in mindset and culture across the MOD and its supply base. With the evolving digital challenges that the customer is facing in delivering MDI both now and those as yet described in the future, SMEs can be a source of innovation to both the end customer as well as the prime contractors for the larger contracts (Keizer, Dijkstra & Halman, 2002). When this information is considered alongside the MOD SME Action Plan (MOD, 2019b), it would suggest that there is an opportunity for SME leadership teams to consider pivoting towards what the end-user is ultimately trying to achieve and therefore where the money is most likely to be directed. Thus increasing the necessity of SMEs to align closely with the customer, to understand the challenges and contractual mechanisms, as well as those of the Prime organisations. Clearly this approach takes time, effort and resource. It can also be argued that an ambidextrous strategy is needed. Through the utilisation of third party organisations, such as techUK or ADS, the SME leadership should be in a position to consider how the business is to pivot to meet the customer needs of the future. Operating within this sector, they are uniquely positioned to benefit from the direct support of these groups so as to develop an organisational ambidextrous approach to their strategy, without an excessive strain on their own internal resources. Concurrently to the implementation of their strategy, the SMEs will need to decide how to balance the competing tensions of resources and money. The concept of the ambidextrous zone should assist them in their decision-making process and support them to ensure that the business of today is still trading in the 'tomorrow'.

7.3. Recommendations for Further Research

The recommendations for further research are as follows:

a) The findings of this research need to be validated, both within the defence and security sector but also by SMEs in other industries. There is also opportunity to explore the assumptions of the contributions within larger enterprises. The industry associations could be catalysts and engagement avenues for such future research.

b) The defence and security sector is considered to be one of strategic importance to the nation from the position of protection and also from political and fiscal stand points, and as such warrants further investigation as an industrial base (@UKParliament, 2017; Nourani, Lu & Ting, 2020). Due to the limited 'supply side' research in defence and security, there is a need to develop a better understanding of markets where there is a close interaction between the contractor, the procurer and the user community.

c) There is a developing body of research suggesting a need to change and evolve military and security procurement. This should provide a suitable platform from which to advance both academic and practitioner thought leadership (Merindol & Versailles, 2020; Magill, 2021; Jordan, 2021). Ideally this should be investigated before the next defence review, circa 2026, in order to support the developmental concepts of government procurement.

Associated to this, there remains a question around working in an environment dominated by the ethos of the user, and whether this influences the ethos and business approach of the supplier.

d) With defence procurement frequently assessing the reputation of a business, references are often taken either directly by the authority, or indirectly when part of the supply chain for a larger contract. Reputation becomes important, so it is suggested that additional research is needed around the effect of ambidexterity on reputation as well as in terms of operational and financial risk.

e) Interestingly, white middle-aged men predominated in terms of the characteristics of participants of the research. Also, a significant number of participants were ex-military, and as a full military career spans 22 years, part of this demographic may be a reflection of the make-up of the British Armed Forces 25 plus years ago, when there was an even greater predominance of white males than there is today. It is suggested that this signposts the need for further research into the social make-up of the leadership function of SMEs in the defence and security market. Thus bridging the gap between research that investigates the diversity of defence (Greco & von Hlatky, 2020) and that which considers the diversity in SMEs (Sazdovska & Deljkic, 2021). Aligned to this, further research is required in order to plug the gap with regards to the structure of the controlling boards for businesses operating in the defence and security industry.

8. Conclusion

Through the investigation of the ambidextrous challenges and tensions of SMEs in the UK defence and security sector, it is recognised that at best it is a static market to operate in and at worst, it is in contraction. This is due to a number of forces external to the market, such as a change of priorities in Government spending to support society through challenging times, as seen during the Covid-19 pandemic and various financial crises. In addition, within the industry itself, the end user requirements are shifting in response to the changing context of contemporary warfare and the advancement of technology. “The history of war testifies to its invasiveness and tenacious ingenuity: when a new environment, or ‘niche’ in the evolutionary biological sense, opens up then war enters into it” (Betz, 2015, p. 148).

When looking at the challenges and tensions of SMEs operating in the defence and security sector, how they manifest and how they affect the strategy of the business leadership, it is contended that the SMEs are effectively constantly trading in an economic recession. Therefore those that are successful are continuously operating in an ambidextrous manner, with a number of third party bodies to support them in developing this in an organisational construct. However, the participants saw little effect on the macro considerations that impact the holistic view of the industry. In particular, day-to-day Government policy has a limited influence on the SMEs in this industry. A grand strategic change is required to have a genuine impact, with such examples including Covid 19, going to war, or some other national crisis. Instead, the participants were very much focused on the immediate and minutia of business: the invitation to tender of a planned procurement, the agility to respond to rapidly evolving opportunities and ultimately the sustainment of their existing business. Despite this, there was a consensus among the participants that the defence and security industry was a challenging one to be in. Whilst there is still money to be made, the entire industry is effectively in a continuous downturn.

Communication and cultural fit is important internally in order to build a team and create a company ethos. It was determined that although the concentration of veterans is higher in this industry compared to society as a whole, being a veteran is not enough to succeed in business. When supplemented with commercial understanding, the veteran community are able to bring traits from their former career that are also deemed important in achieving ambidexterity within SMEs. These include skills such as teamwork, communication skills, cultural empathy, and an understanding of the needs of the customer. There is a significant crossover in the proficiencies of those who served and the skills that are expected in a successful business. One trait that is very difficult to teach and cultivate in a business context, is that of cultural awareness and empathy. This is important when dealing with a customer and can support success and when things go wrong with the delivery of a product or service (Anderson & Smith, 2017; Ngo, Nguyen, Tran & Paramita, 2020; Wieseke, Geigenmüller & Kraus, 2012). It has been a practice of many businesses to employ those who were previously their customers (Locander, Locander & Weinberg, 2020; McBane, 1995). However, this thesis does raise the question as to whether empathy is a defence and security sector-wide phenomena, or whether it solely resides in the leadership functions of SMEs.

Alcalde-Heras et al. (2019) recognised that resources become scarcer during a recession. With a high barrier of entry to employment in the industry through the need to hold a security clearance to work on MOD programmes, the resource challenge would be exacerbated. Sualeh Khattak and Zulfiqar Ali Shah (2020) made the link between resources and cash liquidity. They identified that it was a risk to invest in resource, but without employees, a business would not be able to grow or even survive. Ambidexterity was not the focus of Sualeh Khattak and Zulfiqar Ali Shah (2020), but their study goes some way in validating the major finding and contribution of this thesis: that SMEs trading in the defence and security industry are continually operating an ambidextrous balance between resource and liquidity, which equates to a balance between exploration and exploitation. As such, leadership functions are constantly assessing and evaluating the need for profit and returning investment back into the business to support growth. This in turn extends the current thinking by suggesting that ambidexterity is not finite, but is constantly changing within an ambidextrous zone, in response to the decisions being made by the leadership team. As long as there are no extremes in the correlation between exploration and exploitation leading to operations outside of the ambidextrous zone, then a business should still be deemed to be ambidextrous.

Having a complete and detailed understanding of the defence and security industrial matrix was certainly beneficial to this research. The background and industry profile of the researcher undoubtedly allowed privileged access that may not have been as forthcoming to others. Primary data was collected directly from the leadership function of SMEs, due in part to the researcher being known to work in the same industry and thus evoking a degree of credibility. This was beneficial in gaining access to the participants and to the understanding of the vernacular and project descriptions frequently used, that are unique to the military (@TelegraphNews, 2021; Ledwidge, 2017).

It was a privilege to conduct this academic journey of research around the defence and security industry, in which SMEs strive to succeed. Recognising how the leadership functions of the participant companies operate in an ambidextrous manner, and in an effectively shrinking market, shows a determination and resilience. With regards to this paper, it has offered the opportunity to capture what should be considered best practice and has provided an opportunity for this to be transferred to other industries.

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