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**The Creation of Social Capital and Its Benefits:
A Case-based Qualitative Study of
Internationalising SMEs**

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ABSTRACT

This research examines how the founding entrepreneurs of four UK small and medium-sized enterprises (SMEs) in the MedTech sector create and benefit from social capital (SC) for internationalisation. Existing theories of SC and internationalisation elucidate evidence that SC boosts internationalisation through forming network of relationships. While previous studies on this topic are abundant, the nuances of how SC is created during context-specific processes of internationalisation in a complex industry, are under researched. This study draws on relevant theory to fill this research gap, by examining process¹ of SC creation, and how this relates and contributes to internationalisation.

Commencing with a priori concepts drawn from the literature, this study follows an abductive and largely interpretivist approach to build on theory from four in-depth case studies of UK MedTech firms that are early and newly internationalised medical devices firms. Data collected through in-depth semi-structured interviews that emphasise key network relationships and internationalisation events. Secondary materials include documents and web-info. Within-case analysis and cross-case analysis explore similarities and differences across cases. An iterative analysis between data and literature illuminates SC creation by building on existing theories.

This study introduces a nuanced perspective of SC to facilitate internationalisation and proposes an approach of SC creation through networking which is enhanced by learning and developing trust. This includes three phases, i.e., source, availability, and realisation. This study contributes to SC theory by analysing its creation through networking, and it identifies certain conditions of SC as it becomes available, and the efforts made to utilise benefits. Moreover, the study extends internationalisation knowledge by revealing networking practices within four institutionalised contexts that are vital to MedTech SMEs. This study also has implications for International Entrepreneurship by focusing on SMEs determining by their relationships, namely “inter-related SMEs²” and “non-related SMEs³”. The implications for the policymakers and SMEs managers/entrepreneurs, and the research limitations and future suggestions are discussed.

¹ The term ‘process’ used here has a plain English definition: “a series of actions that you take in order to achieve a result” (Cambridge English Dictionary), I don’t use process in the manner of a rigorous process methodological approach e.g. as explained by Langley (1999). Section 3.2 has a full explanation of the process of creating SC

² Firms that are legally independent but share common directors or investors.

³ Firms are independent from each other with no common directors or investors exist.

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DECLARATION

I, the author, confirm that the Thesis is my own work. I am aware of the University's Guidance on the Use of Unfair Means (www.sheffield.ac.uk/ssid/unfair-means). This work has not been previously presented for an award at this, or any other, university.

1. INTRODUCTION

Chapter Aim:

This section provides the study's background information. Research aims and questions are presented, followed by methodology and thesis structure.

1.1 Background

This research is concerned with the process⁴ of creating social capital and its benefiting to enable MedTech Small and Medium Enterprises (SMEs) internationalisation. This topic interests the researcher (myself) because currently we are living in the world experiencing the fourth industrial revolution, which requires high technologies such as big data, cloud computing and the internet of things to improve manufacturing (Marr, 2016). For example, according to Great.GOV.UK (2019), technology businesses are the core of the UK economy which has one of the world's largest technology ecosystems with thousands of tech start-ups and strong entrepreneurial culture. Venture capital investment in UK tech start-ups reached £6.3 billion in 2018, almost twice that of Germany. This information tells the importance of high-tech start-ups in the UK and it is widely accepted that SMEs are considered as significant element of a country's development, as this sector's growth may contribute to a country's economic development (Forsman, 2008, Tarek, Adel and Sami, 2016, Dominguez and Mayrhofer, 2017). From the researcher's home country, SMEs are a driving force behind China's economic growth and currently make up 97% of all Chinese enterprises (Hoffmann, 2017), more notably, SMEs account for 99.9% of the business population in the UK (GOV.UK, 2019). This information further indicates that those SMEs in the high-tech sector operate within a highly dynamic business environment usually populated with small entrepreneurial firms. Another interesting finding from searching and reading materials of high-tech SMEs is that most of the firms attempt to expand their business outside the domestic market to the foreign markets, not just for sales, but also including

⁴ Process mentioned in this study refers to a plain meaning in English, instead of a rigorous process methodological approach. Same through the whole work.

international learning, R&D, collaboration and so on, which are crucial for high-tech SMEs who lack sufficient resources to grow. For example, MedTech Innovation (2019) stated that SMEs play the key role in achieving the success of the life-science sector in Scotland and half of them rely on business from EU and other companies export or collaborate in USA and Asia, and their key objective is to increase international presence in the foreign markets. Furthermore, as identified from the various materials of tech SMEs, they tend to work with universities to develop a research-based collaboration, or with government that supports with learning and making contacts, or with business banking that not only supports funding but also offers a relationship-based assistance so that SMEs will have more direct contacts with other business owners. It can be noticed that having more contacts become a critical support and approach to SMEs' business. Therefore, these interesting findings drove the researcher to limit its research to the small internationalised entrepreneurial firms and benefits from their network relationships. This leads to an in-depth literature search that forms the theoretical background of this research.

1.2 Theoretical background - Social capital and SME internationalisation

Recent studies have suggested the importance of networks and social capital they created in SME internationalisation, because SMEs face a fierce market within which they survive and grow, especially for high-tech firms experiencing uncertain and rapidly changing environments (Brierley, 2001, Hogan and Hutson, 2005, Coleman and Robb, 2012). Hence, international expansion becomes important for SME survival and growth to pursue critical resources and bear risks of development together (Li, Zhang and Zheng, 2016, Narooz and Child, 2017). However, firms cannot possess all resources required to survive and growth (Yoo, Sawyerr and Tan, 2016), especially SMEs have been experienced with greater constraints than larger firms (Carr, Haggard, Hmieleski and Zahra, 2010) and associated with several characteristics that restrain their internationalisation, such as limited market knowledge, lack of position and ties (Chetty and Campbell-Hunt, 2003, Johanson and Vahlne, 2009, Schweizer, 2013, Battisti, Scott-Kennel and Deakins, 2021). There is increasing evidence indicated that social capital created by networks contributes to SMEs' internationalisation, which

allows firms to get access to critical resources, e.g. market knowledge (e.g. Coviello and Munro, 1997, Jones, Coviello and Tang, 2011, Udomkit and Schreier, 2017) and more diverse opportunities for internationalisation (Coviello, 2006, Prashantham and Young, 2011, Park and Rhee, 2012, Tian et al. 2017)

The extant theories of internationalisation and international entrepreneurship (IE) offered theoretical underpinnings of recent increasing focus on networks in the process of SME internationalisation, especially the rapidly and early internationalising firms. As the traditional internationalisation model was formed when the world is less global, and early internationalisation prevails in the present world given that international players of SMEs exist even in local networks, the internationalisation process may occur at a subliminal level of entrepreneurs' mind or may not be a key target initially, it still may happen (Jones, 1998, 1999). IE appears and the core is Oviatt and McDougall (1994) stated the importance of network relationship for SMEs to access valuable resources to facilitate their development by referring to "governance mechanisms" such as strategic alliances in their International New Venture (INV) Model, which is discussed in the literature review. Furthermore, recent internationalisation studies have mainly focused on SME, and those rapid and earlier internationalised firms, whose internationalisation process has been identified as International New Venture INV approach (e.g. Sasi and Arenius, 2008; Prashantham and Dhanaraj, 2010, Mikhailova and Olsen, 2016, Nowiński and Rialp, 2016, Prashantham, Kumar, Bhagavatula and Sarasvathy, 2019) that take the role of entrepreneurs' played in the process of internationalisation.

Its existence challenges the traditional internationalisation theories, such as the original Uppsala model (Johanson and Vahlne, 1977). INV model is critical to analyse the recent early and rapidly internationalising firms from the perspective of entrepreneurs, but it ignores the role of firms and networks from the firm level, and a number of researchers have questioned the IE field, as it does not employ a strong theoretical framework, thus, one approach to internationalisation may not completely capture firm behaviour. The Uppsala model is about organisation learning, it combines organisational learning and psychic distance, so it explored issues of how organisations learn and how they

overcome the liability of foreignness to reduce the psychic distance, and what they are suggesting is building social capital is the process of organisational learning, which enables them to understand the foreign cultural difference better, overcome the liability of foreignness, and perceive psychic distance. Johanson and Vahlne (2009) and Vahlne and Johanson (2013, 2017) further indicated that firms could conduct internationalisation if they become a network insider in foreign country, which highlights the liability of outsidership in their revisited Uppsala model (details in literature review).

Based on the above discussions of research background, two internationalisation models, the Uppsala model (Johanson and Vahlne, 1977, 1990, 2009) that stresses the firm level network in internationalisation, and INV model (Oviatt and McDougall, 1994) that emphasize the role of entrepreneurs played in internationalisation, are emphasised in studying network relationships and social capital. These two relevant models are therefore suitable to guide this research and are introduced in detail in the section 2.1. As Uppsala model and INV model depict the process of internationalisation, Welch and Paavilainen-Mäntymäki (2014) suggested research on micro-processes of internationalisation from a relationship-based point, in order to have a more finely grained processes, which is suitable to this research since this study is not studied the company as a whole, but rather a single facet of the company-social capital.

Since network relationships and social capital created have been emphasised in the internationalisation field, many scholars have explored social capital theory, and it has been suggested that actors who engage in various network relationships gain access to critical resources (Leenders and Gabbay, 2013). According to social capital definition, *“the sum of actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. Social capital thus comprises both the network and the assets that may be mobilised through the network”* (Nahapiet and Ghoshal, 1998, p.243), there are three terms have been stressed in social capital, 1) individual or social unit, 2) network relationships and, 3) resources. Therefore, some studies examined network structure (e.g. Semrau and Werner, 2014) and weak ties and strong ties (e.g. Partanen, Chetty and Rajala, 2014).

Researchers have posited that social capital plays a key role in firms by impacting the development of core competencies (Kogut and Zander, 1996), intellectual capital (Nahapiet and Ghoshal, 1998), access to critical resources (Stuart, 1998; Uzzi, 1999), and identification and capitalisation of business opportunities (Burt, 1997). Social capital is also being emphasised in the context of SME internationalisation (e.g. Coviello, 2006, Johanson and Vahlne, 2009, Vahlne and Johanson, 2017), and based on international entrepreneurship (IE) definition (Oviatt and McDougall, 2005), social capital is significant for SMEs that internationalise early and rapidly (Ebbbers, 2014, Lamine, Jack, Fayolle and Chabaud 2015, Engel, Kaandorp and Elfring, 2017), which stresses the role of entrepreneurs' played in the process of internationalisation.

Many previous studies are static in their temporal perspective, from a variance-based perspective, e.g. network structure, entrepreneur and resources, but did not capture how social capital is created that enables internationalisation. Therefore, there are theoretical problems remaining regarding the process of creating social capital. However, Nahapiet and Ghoshal's (1998) conceptualisation does not describe the origins and usage of social capital, nor the abilities and capabilities of other networks actors, which are key in understanding social capital creation (Theingi, Purchase, and Phungphol, 2008). Therefore, Adler and Kwon (2002) acts as a complementary social capital model in which separates network types and analyses its sources, summarises its benefits and values. However, this model is also seen as static without explaining how to create social capital.

As social capital is created from network relationships, network relationships cannot be neglected when studying social capital. This study is different from previous static studies in that this research focuses on the process of creating social capital, accordingly, its focus on *how* network relationships are developed is worthy of examination. In networking/network literature, according to Jack (2010) and Agostini and Nosella (2019) who argued that how to develop a network has been seldom studied, few studies have explored how firms network in a foreign country and then create social capital to enable their internationalisation (e.g. Puthusserry, Child, Khan, 2020). In internationalisation literature, Hilmersson and Jansson (2012) and Schweizer (2013)

argued that there is a lack of knowledge about how SMEs create or enter networks that contribute to internationalisation. Engel et al. (2017) also suggested the importance of developing networks to create social capital to achieve entrepreneurial process, and useful networks could contribute to resources mobilisation, venture growth, and so on. However, research shows that high-tech SMEs have difficulty in creating or entering local networks in their attempts to internationalise especially outside their industry given to the complex technology.

Therefore, in order to study social capital creation, it is important to examine networking process, as this study adopts Nahapiet and Ghoshal (1998)'s definition, which implies 'Actor-Resource-Activity' of Hakansson and Snehota (1995), a networking model, in their theoretical framework to discuss social capital. ARA networking model is utilized, but not adopted as a theoretical lens, to assist the researcher to analyse the static asset-social capital that exists in previous conceptualisation and model, e.g. Nahapiet and Ghoshal (1998) and Adler and Kwon (2002), to unfold its creation approach. The detailed discussion can be found in section 2.2.

Jones et al. (2011) suggested that SMEs from developed countries are associated with greater international experience and argued that entrepreneurs from such countries rely more on formal contracts than relationships. Similarly, Coviello and McAuley (1999) suggested that internationalisation is situation specific and related findings are influenced by cultural context. Entrepreneurs may find it is difficult to do business relying on formal relationships in different contexts where differences exist, for example, networking contacts located in various institutional contexts (North, 1990, Hodgson, 2006), in which differences may require specific networking approaches. Previous studies also proved that personal connection plays the most prominent role in Thailand SMEs' internationalisation (Udomkit and Schreier, 2017) and in China (Zhang et al., 2012). This indicates that creating informal connections and social networks to internationalise are also important contributions to internationalisation. However, less is known about the reasons for networking with business relationships and/or social relationships. Besides, Engel et al. (2017) note that entrepreneurs

influence network development and the outcomes of social capital. Therefore, their success will depend on their ability to interact to meet the needs of foreign market's preferences. This difference not only influences the process of networking and creation of social capital in overseas markets, but also influences its benefits accruing to firms to contribute to its internationalisation in foreign markets.

After the above research gaps that identified in the extant literature, I came up with the main research problem:

“Existing theories barely reveal the process of how SMEs create social capital and its benefits that enables their internationalisation.”

1.3 Contextual background-MedTech industry

The importance of selecting a specific industry for this research is highlighted given that firms in various industries put emphasis on different network actors based on their own interests. For example, Child et al (2017) suggested that firms who are low technology tend to maintain close relationships with suppliers, retail customers, and outsource makers. While Salavisa, Sousa and Fontes (2012) stated that high-tech SMEs are trying to have good relationships with highly skilled people or the networks which could present their high-tech nature. For example, life science firms have been emphasized in the context of creating relationships due to Powell (1998) who states that entrepreneurs in these firms need to have collaboration with others to seek and create knowledge to facilitate technology development. Similarly, firms in the biotech context are associated with networks, and research shows the importance of entering new networks to access resources and knowledge (Leppäaho, Chetty and Dimitratos, 2018). Hence, it can be stated that SMEs located in different industries and focused on the different networks exert different international business models (Child et al., 2017). Networking approaches may vary amongst different industries and approaches fitted for one industry might not suit for another (Inkpen and Tsang, 2005, Srivastava and Tyll, 2021).

To control the diversity of contextualised factors which might weaken the generalisability of the potential findings, this study is confined to the high-tech industry, because Adler and Kwon (2002) argued social capital is broad and complex concept best examined within a specific research field in order to add value to that research field. Besides, currently the world is experiencing the fourth industrial revolution, which requires high technologies such as big data, cloud computing and the internet of things to improve manufacturing (Marr, 2016). However, there is not a general definition of high-tech, and its scope is rarely defined. According to Bakhshi et al. (2015, p.9), in the UK public policy literature, it has been variously considered as “*a set of technologies, a group of firms that invest in high levels of R&D activity, a key employment destination for Science Technology Engineering and Mathematics (STEM), and a distinct group of industries*”. To be specific, high technology has been classified into biotechnology and pharmaceuticals, materials and nanotechnology, digital and networks, and energy and low carbon technologies four categories. Secondly, high-tech companies are also being defined on the basis of their level of R&D activities, such as its R&D investment. Thirdly, high-tech industries employ a great number of the workforce with high-level STEM skills. Finally, high-tech industries also follow SIC codes about their contributions, such as software publishing, data processing, and manufacture of electrical equipment, and so on.

Specifically, this study further selects medical technology sector (MedTech) -medical device firms. Medical devices are “products, services or solutions that prevent, diagnose, monitor, treat and care for human beings, and a medical device can be an instrument, apparatus, appliance, software, implant, reagent, material or other articles” (MedTech Europe, 2019). MedTech is part of the life-sciences industry which generates a wide range of products including drugs, medical technology, diagnostics and digital tools (Bell, 2017). The life-science industry’s highly globalised nature work jointly and build the initial researcher’s interest (Powell, White, Koput and Owen-Smith, 2005, Jones, Wheeler and Dimitratos, 2011). Specifically, the reasoning behind this MedTech selection lies in several perspectives below.

Firstly, given to its sector characteristics, which is highly entrepreneurial and the majority of its component SMEs, and its short life cycle and high product development and needs for innovations, products and technology required early and rapidly internationalisation process (Laurell, Andersson and Achtenhagen, 2013), this is in line with the research context of the current study. Therefore, these med-tech based firms operate within a highly dynamic business environment usually populated with small entrepreneurial firms. Interestingly, though, compared to traditional firms' internationalisation process, these technology-based firms exert differences, such as decision making on internationalisation, and the speed of internationalisation, as they internationalise earlier and faster, as well as the usage of information and networks (Jones and Coviello, 2005, Keupp and Gassmann, 2009, Jones et al., 2011, Child and Hsieh, 2014, Neubert, 2018).

Secondly, previous studies have explored that these technology-based firms are pushed to internationalise because of the small domestic market and fierce market conditions (e.g. Reuber and Fischer, 1997, Kudina, Yip and Barkema, 2008). Even though there are fruitful past literature has focused on the high-tech industry (e.g. Stuart, 1998, Crick and Jones, 2000, Jones, 2001, Hoang and Rothaermel, 2005, Wonglimpiyarat, 2015, Neubert, 2016, Vonortas and Zirulia, 2016, Serrasqueiro et al., 2016, Neubert, 2018), most of them focused on the speed and entry modes of internationalisation. This study provides a new view from which means social capital is created in the early stage of MedTech SMEs internationalisation to illuminate how internationalisation is triggered and facilitated, and this work can provide results for comparison.

Thirdly, in addition to its theoretical significance above, the research importance of the UK MedTech industry also lies in its industrial significance in the UK. According to Deloitte (2016), the MedTech industry made crucial contributions to economic growth in the UK. There are 76,000 employees in over 3000 companies, and the majority of it is SMEs. This sector values £17 billion and has increased more than 6% in recent years. Additionally, worldwide MedTech is expected to increase at an annual compound growth rate of 5.1% in sales, and achieve US\$ 521.9 billion by 2020, and MedTech companies are required to create new technology, new business models, and transform

from product developers to solution providers (Deloitte, 2018A). Besides, the life science industry is intensively involved with global activities, which is in line with Jones et al (2011b). For example, large firms are tending to expand their business in life science through M&A in East Southern Asia (Deloitte, 2018B).

Fourthly, its globalised nature also can be reflected through the increasingly complex global regulatory landscape, and firms need to comply with specific regulations in each geographic area to do business (Deloitte, 2017). Therefore, given its importance in UK economic growth and its highly internationalised nature, medical devices firms are selected for this research.

Therefore, from the above discussions, this industry (UK MedTech SMEs) offers a rich theoretical research context and a thick industrial context to conduct the current research regarding social capital in SMEs internationalisation.

1.4 Research aim and questions

Based on gaps identified in the extant literature and the discussion of the research context above, this study's research aim and questions are listed below. The overall aim of this study is as follows:

“To unfold the process of social capital creation and its benefits for MedTech SMEs internationalisation.”

Generally, the research question in this study is how social capital is created and benefits SMEs internationalisation? The specific research questions are listed below.

This research attempts to contribute to social capital and SME internationalisation research areas. Social capital allows firms to access variable resources, hence it is important for firms to possess social capital for their business. Adler and Kwon (2002) also offer a social capital model and suggest social relations and market relations that social capital exists in. To unfold the process of creating social capital, it is important

to analyse how to develop networks. While social capital is a static asset created from network relationships, and Nahapiet and Ghoshal (1998) stated that developing social networks leads to social capital creation, its definition implies that focal actors conduct networking activities with others to gain valuable resources. Similarly, Bizzi and Langley (2012) have suggested a future research direction towards verbs action of network- “networking”. Therefore, in order to examine the creation of social capital creation, how to network is critical. Hence, the research question is

RQ a). What are the networking activities that UK MedTech SMEs conduct when they attempt to internationalise in foreign market?

Leenders and Gabbay (2013) argued not all of the ties contain benefits, and thus social capital cannot be generated randomly when ties exist, but in the networks providing resources thus, only under certain conditions. As Adler and Kwon (2002) suggested, there are three prerequisites to generate social capital, which are opportunity, motivation, and ability. The opportunity of creating social capital has been addressed in RQ a through networking activities to understand ‘how’ they network to create SC, therefore, it is important to examine the motivation behind the networking and their abilities embedded in the networking contacts to understand ‘why’ they network that condition social capital becoming available to SMEs. In addition, as discussed in the contextual background, MedTech SMEs face an uncertain and highly dynamic environment and scarcity of valuable growth resources; this situation is generally not appropriate for building social capital reliant on the stability and continuity of social structures (Arenius, 2002). The research question is shown as below:

RQ b). Under what conditions is social capital available for UK MedTech SMEs to internationalise in foreign market?

According to Cohen and Prusak (2001), social capital is not always created intentionally, and it could be invisible to actors who may not realise the existence of social capital. This may lead to ill-usage of social capital for firms even if it exists. Hence, it is necessary for firms to realise the benefits they derive from their networks, and then to

fully utilise them for firms. Coviello and Munro (1995) argued that technology-based firms that attempt to conduct internationalisation can gain valuable resources and information from their networks. This finding aligns with the definition of social capital (Nahapiet and Ghoshal, 1998). Although social capital benefits have been identified from the literature (Adler and Kwon, 2002), it is not clear how social capital benefits internationalisation during the process of networking. Therefore, to fully understand how MedTech SMEs create social capital that enables internationalisation, this study tends to form the following question:

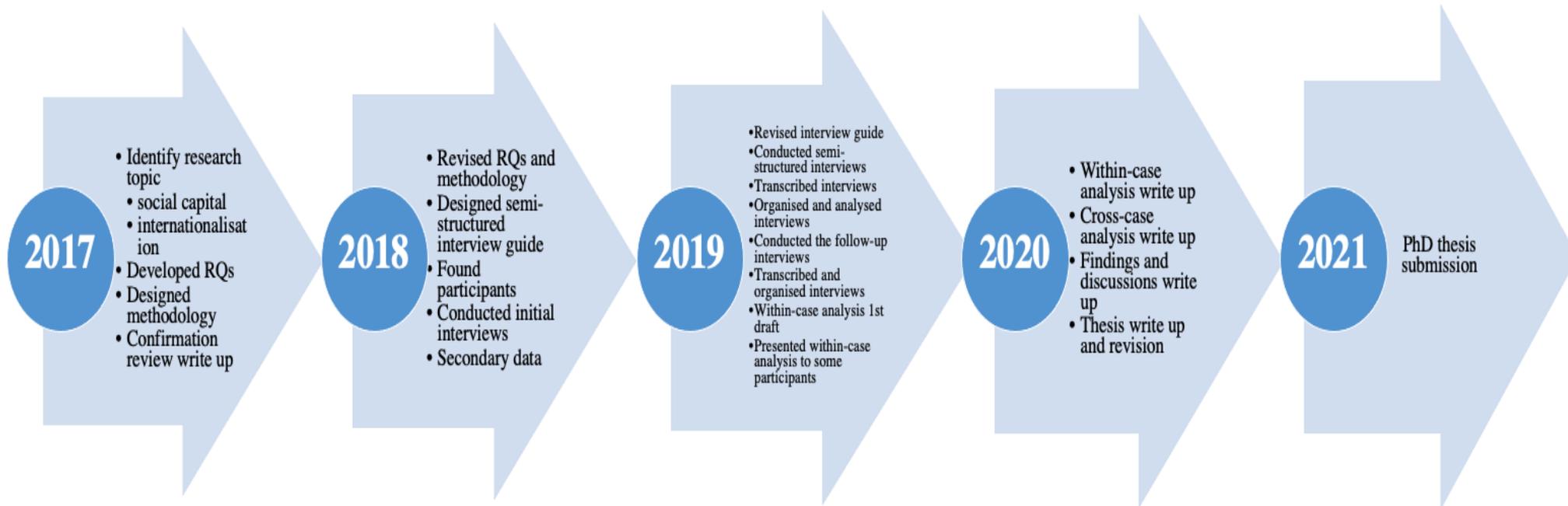
RQ c). In what stage in the process of interaction, between UK MedTech SMEs and foreign firms, does social capital become available and its benefits realised?

1.5 Research design

This study follows an abductive approach to build theory, because this study adopts the theoretical framework (e.g. Adler and Kwon, 2002, Johanson and Vahlne, 2009) to guide the research design to collect and analyse the data and build on the existing theories of social capital with new insights. Later it iterates between alternative and complementary theories, and data to arrive at plausible explanations. In addition, this study follows what Eisenhardt (1989) suggested to adopt multiple case studies and Gioia, Corley and Hamilton (2013) suggested data analysis approach in order to build theory. To select appropriate cases, this study initially selects 6 case companies in the UK MedTech industry based on the partially similar sampling (see section 3.2.3) under five criteria in order to select companies with common characteristics and differentiate companies for cross-case comparisons. After the initial data collection from the selected firms, I narrow the six case companies into four case companies based on theoretical sampling to further narrow cases that are more suitable for this study and support theory development to make in-depth theoretical contributions and selects cases that are able to replicate. A qualitative approach is adopted in this study to facilitate a more comprehensive, specific, and clear view of the context (Ghauri and Grønhaug, 2005, Sinkovics, Penz and Ghauri, 2008). Qualitative data collected from both open-ended interviews and semi-structured interviews with the founders/managers of selected firms,

because this study seeks to understand phenomena through the meanings participants assigned to them (Burrell and Morgan, 2009). In contrast, no available quantitative research can provide satisfactory explanations between the observed sample and context, and this approach also fails to emphasise participants (Creswell, 2009). Besides, secondary data such as websites and annual reports were used to provide supported information. Through these data collection methods, the selected companies allow the researcher to explore how these firms are networking in the foreign market when they try to do business, as well as understand how social capital is created and then contributes to their internationalisation. Cross-case analysis was used to demonstrate similarities and differences across cases. Figure 1 below illustrates the journey of the current research.

Figure 1 Research Journey

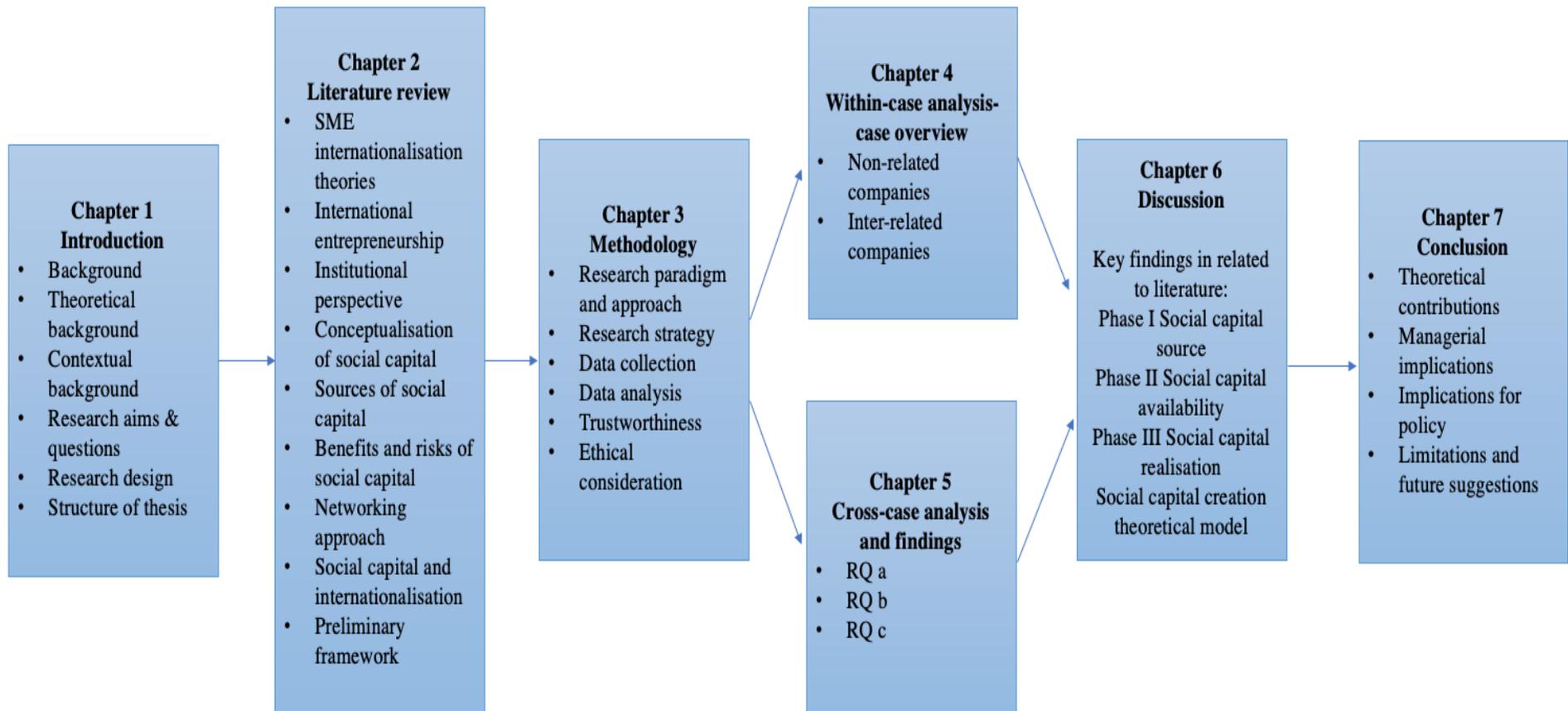


Source: the author

1.6 Structure of thesis

Figure 2 illustrates the structure of this thesis. It contains seven main parts. Chapter 1 starts with the introduction of the study with research background and research overviews to tell the readers of the details. Chapter 2 reviews the relevant literature and theories that underpin this study, e.g. social capital and internationalisation of SMEs and this chapter is the fundamental stage to find the research gaps that form the rationale and theoretical background and a preliminary framework of this research. Accordingly, Chapter 3 introduces the research methodology adopted by this research to address the research questions, and then Chapter 4 and 5 presents the key empirical findings on how MedTech SMEs create social capital through networking and its benefits to internationalisation by within-case analysis and cross-case analysis. Finally, Chapter 6 and 7 discuss the key research findings in relation to literature and its theoretical contributions, implication of research to practices, policy and research suggestions for the future studies.

Figure 2 PhD thesis structure



Source: the author

2. THEORETICAL UNDERPINNINGS REVIEW

Chapter Aim:

In this chapter, previous literature researching internationalisation, international entrepreneurship and social capital is reviewed to guide the present research. First, internationalisation is reviewed, from traditional theories to recent international entrepreneurship. This review assists this study in establishing a basic understanding of internationalisation and identifying the importance of social capital. Accordingly, social capital theory is also reviewed in detail from various perspectives. This study follows the Adler and Kwon (2002) social capital framework to guide social capital creation exploration. Finally, after reviewing all relevant theories in extant literature, research gaps are identified.

2.1 SME internationalisation models

International expansion has become a significant process for SMEs survival and growth (Chetty and Campbell-Hunt, 2003, Li et al., 2016). The internationalisation of SMEs is the approach for sustaining innovation, employment, and economic and social renewal (Greene and Mole, 2006, Oparaocha, 2015), while given the limited resources and market power, SMEs suffer from many challenges in the internationalisation process, compared to the multinational enterprises (MNEs) (Shaw and Darroch, 2004, Hessels and Terjesen, 2010; Musteen, Francis and Datta, 2010). There are plenty of theoretical perspectives and approaches of SMEs internationalisation that have been adopted by scholars, which give different definitions of internationalisation (Johanson and Vahlne, 1990; Calof and Beamish, 1995; Lehtinen and Penttinen, 1999). As Wach (2014) and Morais and Ferreira (2020) noted, a range of theoretical perspectives exist to analyse internationalisation, which can be grouped into three main approaches to SME internationalisation: the incremental/gradual approach, the network approach and the international entrepreneurship approach.

For example, a gradual perspective of internationalisation is explained in the Uppsala Model, of which there are several iterations advanced since the 1970s. The Uppsala Model perceives internationalisation as a gradual process, in which relationships are continuously established, developed, maintained and dissolved in order to achieve the firm's objectives (Johanson and Wiedersheim-Paul, 1975; Johanson and Vahlne, 1997 and 1990; Andersson, 2004). Besides, there is another perspective of SME internationalisation as occurring within a network. For example, Johanson and Mattson (1988, 1993) define internationalisation as the process of adapting firms' operations in terms of their strategy, structure and resources availability to entry into foreign markets. This model is positioned in resource-dependency theory which indicates that firms depend on resources from other firms. Therefore, it stresses to establish inter-organisational relationships with other firms, e.g. suppliers to access their resources. Furthermore, Welch and Luostarinen (1993, p.156) argued internationalisation from a network perspective, and defined it as "*a process of increasing involvement in international operations*", which is usually regarded as an incremental and gradual process. Accordingly, the increasing importance of networks led Johanson and Vahlne to revisit their traditional stage model and bring network into stage model in 2009, namely revisited Uppsala model, and Vahlne and Johanson further stress the importance of becoming an insider in relevant networks for internationalisation in 2013 and 2017.

The usage of networks is one of the factors leading to these differences. Compared to larger MNEs, SMEs typically tend to rely on network relationships to pursue international opportunities (Coviello, 2006, Zahra, 2005). Not surprisingly, the role of networks in SME internationalisation has been emphasised on recent research. For example, one of the seminal works by Coviello (2006) confirmed that the network and social capital it created assists an SME to obtain resources and support the firm to be involved in international business. This highlights the importance of networks and social capital for SME internationalisation. In this section, different streams of literature or theories used to inform this study are presented. They are primarily internationalisation models, such as the revisited Uppsala model and INV model.

As this study focuses on the process of social capital that enables internationalisation, it is not on a static view to analyse how internationalisation is facilitated, but on a process of creating social capital that contributes to internationalisation, thus a process model of internationalisation is more appropriate to this study, even though this study is not examined the whole internationalisation process but a process of social capital creation of firms who are new to internationalisation during their early internationalisation. The Uppsala model is largely applied to MNEs and SMEs internationalisation and stresses the gradual process of internationalisation, more importantly its revisited Uppsala model puts emphasis on firm's networks in facilitating firm's internationalisation.

INV model are important to this study because recent internationalisation studies focused on SME are mainly those rapid and earlier internationalised firms, whose internationalisation process has been identified as the INV approach (e.g. Sasi and Arenius, 2008; Prashantham and Dhanaraj, 2010, Mikhailova and Olsen, 2016, Nowiński and Rialp, 2016, Prashantham et al., 2019). Besides, this study focuses on MedTech SMEs who are commonly rapidly and early internationalised firms aligning with INV approach, even though they might not strictly follow the INV definition that INV's internationalisation usually happen within 6 years of establishment (Oviatt and McDougall, 1997), as the number of years varies from different industry, and high-tech industry e.g. MedTech requires more time to internationalise in the foreign markets after their creation or after a critical incident e.g. product patent, investment and so on, which is essential to internationalisation (Gabrielsson, Gabrielsson and Dimitratos, 2014, Coviello, 2015, Neubert, 2015). Therefore, in order to analyse social capital creation in MedTech SMEs' internationalisation, the INV model is critical to review how and why the firms internationalise rapidly and early through entrepreneur's network.

Therefore, the revisited Uppsala model and INV model are essential to examine resources from networks (social capital) that enables MedTech SMEs internationalisation. The following sections reviewed the relevant literature.

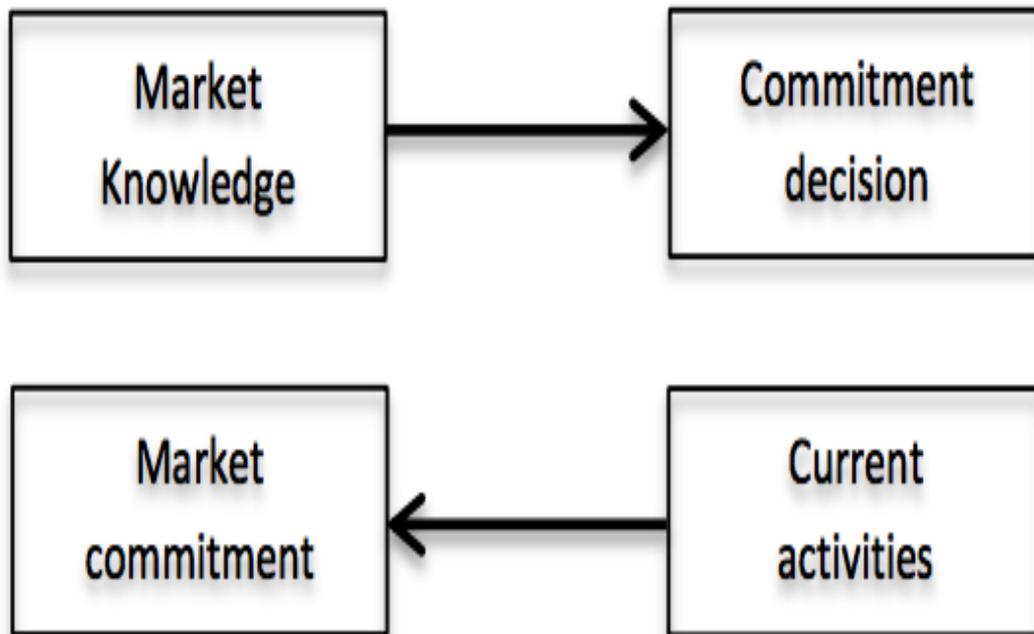
2.1.1 Traditional SME internationalisation process model evolution

2.1.1.1 Uppsala Model

One of the most influential internationalisation models is the Uppsala model, which was developed under Johanson and Wiedershiem-Paul (1975)'s Stage model and Johanson and Vahlne (1977, 1990, 2006, 2009). Its theoretical roots are embedded in the behavioural theory of firms in terms of a dynamic point of view (Cyert and March, 1963; Ahokangas, 1998) and Penrose's theory of growth of the firm regarding experiential knowledge and change in organisation (Penrose, 1959). One main assumption in the Uppsala model is that firms are considered as loosely coupled systems that symbolise the specific opinions and interests of each individual in terms of internationalisation, and managers in the firm are risk-averse and have limited information of foreign markets (Johanson and Vahlne, 1990). Hence, firm internationalisation is perceived as a process of incrementally and gradually increasing international involvement as result of increases in experiential learning. This view contrasts with the eclectic paradigm (OLI paradigm), in which managers have good access to market information and tend to be rational actors who make rational decisions, and Dunning's theory puts emphasis on the boundaries of the firm, and its governance and structure within which transactions may be internalised (Dunning, 2000).

The original Uppsala model aims to explain internationalisation process, instead of internationalisation, thus it is an interaction between commitment and experiential learning – the more learning and markets of the focal firms, the more commitments were made (Vahlne, 2020). This is demonstrated in Figure 3, and internationalisation is a “causal cycle” (Johanson and Vahlne, 1977, p.26). Market knowledge and market commitment influence resource commitment decisions (entry mode) and how activities are executed. In turn, commitment decisions and current activities affect market commitment and market knowledge. In general, market knowledge and market commitment represent the current situation of the firm, a situation that can identify and modify a firm's commitment decision in foreign markets (Johanson and Vahlne, 1977).

Figure 3 Causal cycle



Source: Johanson and Vahlne (1977, p.26)

The Uppsala model also assumes that the market presents differences in terms of business norms, language, culture, political systems and economic development, which affect market knowledge and commitment. These differences are referred to as “psychic distance” (Johanson and Wiedersheim-Paul, 1975). Johanson and Wiedersheim-Paul (1975) argued that firms tend to enter markets that exert the least psychic difference and then incrementally enter markets with greater psychic distance as incremental learning increases. The importance of such distance in international business research has been highlighted by numerous studies (e.g. Dow, 2014, Baack et al., 2015, Dow, Cuypers and Ertug, 2016). Psychic distances typically exist between geographically distant markets affected by market selection. Accordingly, higher psychic distance between markets increases difficulties in collecting and interpreting market information, in turn leading to greater uncertainty (Arenius, 2002). Therefore, firms’ involvement in foreign markets can be explained by the establishment chain (Johanson and Vahlne, 1977; Johanson and Wiedersheim-Paul, 1975, Baack et al., 2015, Dow et al., 2016, Costa, Soares, and Sousa 2017). This successive approach describes firms that begin

internationalisation in a foreign market with a low level of psychic distance and an entry mode requiring limited resource commitment. Later they move on to higher level psychic distance markets with entry modes that require greater resource commitments due to increases in experiential knowledge. For example, SMEs may start as purely domestic operations but then lower-commitment entry modes such as export or licensing when psychic distance is high, in order to reduce risks of failure, later establish sales subsidiaries and eventually establishment foreign manufacturing facilities (Nakos and Brouthers, 2002, Laufs and Schwens, 2014).

Accordingly, learning can increase knowledge and the commitment process can increase the level of commitment (Vahlne, 2020). It can be claimed that experiential knowledge from learning pertaining to foreign markets is incrementally developed from firm engagement in foreign markets and is useful in constraining psychic distance (Johanson and Vahlne, 1977). Experiential knowledge helps the firm establish foreign business relationships, e.g. gaining knowledge through learning from existing relationships can facilitate new relationships development in international markets (Chetty and Eriksson, 2002). Similarly, Crick and Jones (2000) found that managers who gain international experience become less risk averse and increase commitment level, leading to a firm's adherence to incremental stages in internationalisation. Thus, as Cohen and Levinthal (1990) claim, the ability to learn from past experience that generates experiential knowledge determines a firm's ability to learn from a specific relationship. As Luostarinen (1970, 1979) argued, internationalisation knowledge that stems from gaining experience of networking in foreign business relationships is more important than market knowledge in the Uppsala model. Therefore, learning and experiential knowledge have been emphasised when developing business relationships in the internationalisation process. Prior studies confirm learning can facilitate network development in internationalisation, e.g. network development is associated with learning in which generates experiential knowledge to facilitate internationalisation (Welch and Welch, 1996), learning from network relationships in diverse markets helps firms to form routines of network development (Blomstermo, Eriksson, Lindstrand and Sharma, 2004).

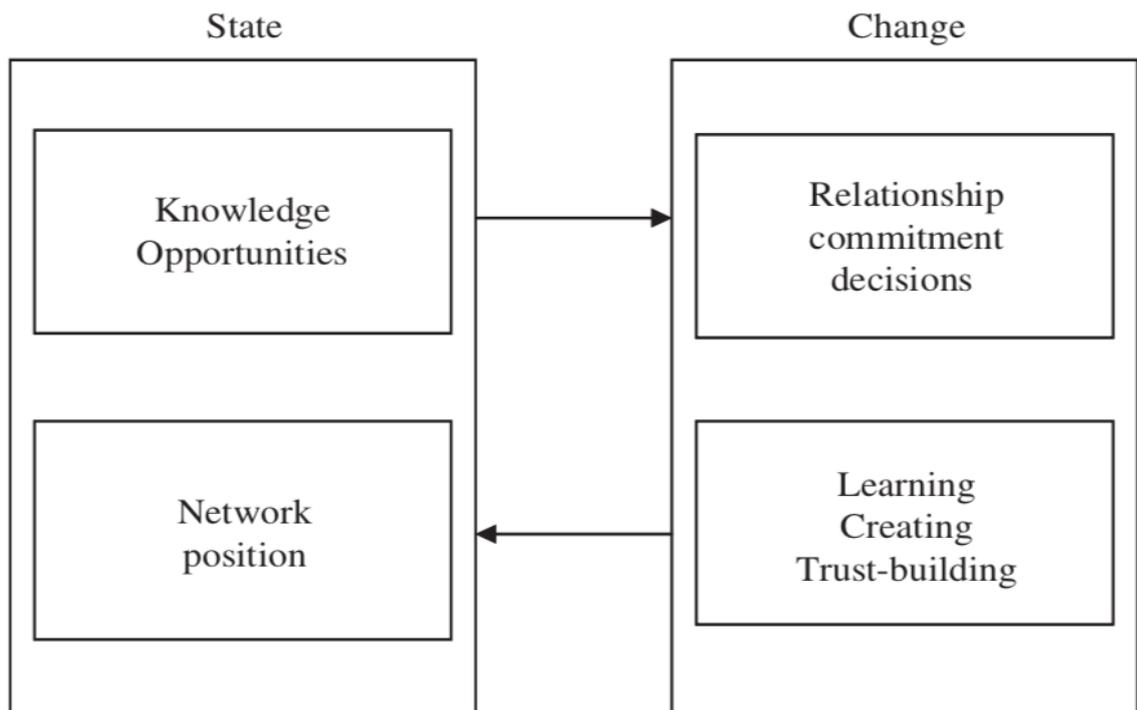
Nevertheless, several studies have criticised the Uppsala model's relevance to new established and rapidly internationalised firms. For example, On the other hand, Bell (1995) studied software firms from Finland, Norway and Ireland and argued that these firms were not affected by the psychic distance illustrated in the Uppsala model. Similarly, Jones (1999) found limited evidence for the traditional stages demonstrated in the model. Besides, since Welch and Luostarinen (1988) argued firms must build business networks to overcome inherent liabilities stemming from limited resources, many studies have highlighted the importance of networks in firm internationalisation (e.g. Coviello and Munro, 1997), the original Uppsala model fails to emphasise networks and the social capital they create. This leads Johanson and Vahlne to revisit their model in 2009, and it is introduced below.

2.1.1.2 Revisited Uppsala Model

In response to the emerging research interests of networks in internationalisation, some studies have attempted to combine the stage model (e.g. Uppsala model) and network approach (e.g. Ellis, 2000; Chetty and Holm, 2000). As Vahlne (2020) states, due to the macro context of firms changing and the new theoretical findings emerging - network findings (e.g. Coviello and Munro, 1997), these attempts helped Johanson and Vahlne to refine their original model to better encapsulate the importance of networks. Johanson and Vahlne (2009) then built a more general business network model based on a network approach of e.g. Johanson and Mattson (1998) and focused on business network structures within which internationalising firms are embedded and within the market they are entering. Social interaction was also used to analyse business relationships that emphasised the exchange between suppliers and customers (Hakansson and Snehota, 1995). Similar with the original model in 1977, the revisited Uppsala model also has two change variables and two state variables that interplay to facilitate internationalisation. Due to the key elements changing from psychic distance between markets to network relationships, the major differences of variables between 1977 and 2009 are that it is: 1) relationship specific knowledge and opportunity development (a critical part of knowledge), instead of market knowledge; 2) stressing network position which implies a high level of knowledge, trust and commitment, than

market commitment; 3) the current activities become more explicit and include learning (more than experiential learning), creating, and trust-building, a high level of learning, creating, and trust-building lead to an efficient opportunity creation process; 4) finally the commitment decisions are more specific to relationship commitment decisions. The 2009 version is illustrated as below.

Figure 4 The business network internationalisation process mode



Source: Johanson and Vahlne (2009, p. 1424)

From the revisited business network internationalisation process model, the basic elements of experiential learning and commitment are still the key in internationalisation process, there are more concepts have been added in terms of new theoretical findings and macro business context (Vahlne, 2020). For example, Johanson and Vahlne (2009) realise that there are different types of knowledge (e.g. institutional knowledge, market knowledge, business knowledge, and relationship-specific knowledge) have different features and thus require different learning methods (Eriksson, Johanson, Majkgård, and Sharma, 1997). It was found that trust-building is a critical prerequisite for learning, relationship building and new knowledge

development (Morgan and Hunt, 1994, Nahapiet and Ghoshal, 1998). Therefore, building trust to partner in the focal networks is critical for firms' internationalisation.

Thus, trust is the key concept that has been emphasised in business networks that facilitate internationalisation, particularly the importance of developing trust and close relationships between partners to gain relationship-specific knowledge (Johanson and Vahlne, 2009). Johanson and Vahlne (2009), building on the work of Nahapiet and Ghoshal (1998) regarding the concept of social capital (see section 2.2.1.2 regarding the discussion of trust in social capital), consider trust as a critical facilitator in learning and developing knowledge, which leads to relationships development and then opportunities creation. In short, developing relationships is associated with the trust building process (Johanson and Vahlne, 2006, 2009). Johanson and Vahlne (2009) view trust as an ability to predict other actions in terms of Morgan and Hunt (1994)'s definition. In international business studies, many studies (e.g. Fiedler, Fath, and Whittaker, 2017, Couper, Reuber and Prashantham, 2020) adopted Mayer, Davis and Schoorman's definition of trust:

“the willingness of a party to be vulnerable to the action of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control the other party.” (Mayer, Davis and Schoorman, 1995, p.712)

The Mayer et al (1995)'s definition reflects a confidence in continuing mutually satisfied relationships and in the other actors' understanding of what this entails in terms of performance as network members, and trust is therefore not based on the control or monitor, rather, it is based on reputation and past performance (Thorelli, 1986). Therefore, trust can arise from an objective assessment based on other parties' reliability and competence, which indicates a calculative process according to accumulated experiential knowledge (Ng and Chua, 2006). On the other hand, as Thorelli (1986) states trust can be also developed by social bonds and personal relationships, which is demonstrated by mutual feelings of interdependence and belongingness, trust can also be viewed from emotional feelings of connections based

on benevolence and relational experience to show goodwill rather than objective assessments (Sako, 1992, Greenberg, Greenberg and Antonucci, 2007, Chua, Ingram and Morris, 2008). Therefore, trust can be discussed in different types and dimensions based on its nature in international business studies, e.g., cognitive trust (which is out of objective judgements) and affective trust (which is out of emotional feelings) (e.g. Johanson and Vahlne, 2009, 2013, Fiedler, Fath and Whittaker, 2017), interpersonal trust and inter-organisational trust (e.g. Zaheer, McEvily and Perrone, 1998, Couper, Reuber and Prashantham, 2020).

Thus, above discussions of trust confirm its priority in building relationships and becoming network insiders to facilitate internationalisation, as it affects the willingness to commit resources exchange to the market. There are plentiful international business studies have emphasised trust between partners (e.g. Madhok, 1995, 2006; Dyer and Chu, 2000, 2011; Zaheer and Zaheer, 2006, Johanson and Vahlne, 2009, Couper, Reuber and Prashantham, 2020) to achieve internationalisation. Particularly, trust is imperative to achieve internationalization for SMEs who are commonly considered as vulnerable when internationalise, e.g. accessing market knowledge (Gaur et al., 2011, Geneste and Galvin, 2015), facilitating information sharing (Dyer and Chu, 2003), and overcoming the liability of outsidership (Fiedler, Fath, and Whittaker, 2017).

More importantly, the key element of the business network moves the revisited model from the liability of foreignness to the liability of outsidership, which means obstacles of internationalisation can be overcome by networks—market knowledge can be obtained through interacting with network partners and making potential business opportunities available. Meanwhile, firms operating outside a network cannot access these benefits—the liability of outsidership (Johanson and Vahlne, 2009). Johanson and Vahlne (2009) suggest that firms enter markets via various networks connecting them with others, making them inside the networks which are important to their successful internationalisation. Insidership helps firms access a market more easily. Moreover, Vahlne and Johanson further stress the importance of becoming an insider in relevant networks for internationalisation in 2013 and 2017, and argued that interaction with actors in a market is accomplished within relationships, and they considered that if

firms build relationship having access to resources in foreign countries, internationalisation happens (Vahlne and Johanson, 2013, 2017).

The concept of outsidership has been examined in internationalisation studies. For example, becoming a network insider has been highlighted by Engel et al (2017), who stated that social networks play an important role in entrepreneurial process with regard to exploring and creating opportunities, resources mobilisation and venture growth, and they found that studies start to focus on how, when, and why entrepreneurs involve in networking (e.g. Stuart and Sorenson, 2007, Tasseli, Kilduff and Menges, 2015). Similarly, Ferrucci, Gigliotti and Runfola (2018) also emphasise networking difficulties in maintaining extant relationships and initiating new relationships when discussing the liability of outsidership. Network relationships also provide firms with experiential learning and contribute to the formation of trust and commitment between actors, all requisites to a firm's internationalisation (Johanson and Vahlne, 1977, 2009). Fiedler, Fath and Whittaker (2017) then prioritised the trusted relationships in discussing outsidership. From relationship interactions, a firm learns about networks, builds trust and commitment, and even develops knowledge necessary to capture potential business opportunities that emerge in relationships and help to reduce uncertainty (Johanson and Vahlne, 2009; Schweizer, 2013). Accordingly, Holtbrügge and Berning (2018) discussed outsidership from accessing knowledge that is available to the network insiders.

Though the articles of the Uppsala model are discussed around MNEs, the critical element – network relationships also attract scholars in SMEs area, and they cited the 2009 work for its networks and knowledge (e.g. Kontinen and Ojala, 2011, De Clercq, Sapienza, Yavuz, and Zhou, 2012). Besides, the Uppsala model is commonly considered as gradual model that suits incremental internationalisation process, but the revisited Uppsala model (Johanson and Vahlne, 2009) acknowledged internationalisation can be rapid and supported the Oviatt and McDougall's (1994) model about entry modes, stating that:

“we have observed that companies gradually enter into what could be seen as more risky, but also potentially more beneficial and controllable, modes of operation. Increased knowledge and commitment make such risk taking desirable and possible. On the other hand, entrepreneurs behind international new ventures are expected to optimise mode choice depending on constraints on resources and outside opportunities. We believe that this may be true...” (Johanson and Vahlne, 2009, p.1422).

Accordingly, the Uppsala model (Johanson and Vahlne, 1977, 2009) is the key effort in the international business area. However, it does not mean it is perfect without flaws. Scholars have criticised the Uppsala model. The Uppsala model does not, for example, consider the importance of individual capability in strategic choices (Reid, 1981, Andersson, 2000), and ignore the importance of entrepreneurs and its networks that has been highlighted in contributing to SMEs internationalisation (Ruzzier, Hisrich and Antoncic, 2006). Some have argued that firms could exert power and influence over network partners as their benefits may rely on these partners, allowing firms to alter their operational environment (Child and Rodrigues, 2011). Recently, Li and Fleury (2020) found that Johanson and Vahlne did not give sufficient considerations to power dynamic and the mutual dependence when develop and maintain relationships, or social network in terms of the position, density, and structural holes, though their work indeed prioritised network and the trust and close relationships building between partners to boost learning. In addition, the emergence of INVs has challenged the Uppsala model, as these new firms tend to internationalise immediately or soon after establishment instead of via slow, incremental stages that pursue critical resources in foreign countries (McDougall, Shane and Oviatt, 1994). It is worth noting that even though there are criticisms have been made against the process model e.g., Uppsala model, this does indicate it is an ineffective model and cannot be used in different situations (Oviatt and McDougall, 1994).

This revisited Uppsala model is even more appropriate for today’s business environment where exerts higher volatility, uncertainty, complexity, and ambiguity (VUCA conditions) in the social, political, economic, and institutional contexts that

firms operate in, all of which make networking and relationships-based internationalisation more important (van Tulder, Jankowska, and Verbeke, 2019). Accordingly, the significance of the Uppsala model's explanation of internationalisation cannot be neglected, and the revisited Uppsala model discusses the importance of networks and social capital they create that fits this research. This model partially informs this research from the business relationship-based perspective - building relationships to create SC that overcomes barriers (outsidership) to SME internationalisation.

2.1.2 New emerging field-International entrepreneurship

Scholars criticized on traditional internationalisation models, for example, the stage model is based on the economic perspective, especially transaction cost theory, which could facilitate develop production facilities (Vahlne and Nordstrom, 1993), while the stage model of internationalisation does not consider the process perspective typical of the internationalisation process (Vahlne and Nordstrom, 1993; Ruzzier et al., 2006). Similarly, a process model that above mentioned has emerged to explain firm behaviours of internationalisation while also neglecting the importance of decision-makers responsible for strategic choices, such as founders and top managers (Reid, 1981; Andersson, 2000).

According to Hitt et al. (2001), entrepreneurs must strategically and entrepreneurially consider a firm's internationalisation to balance the firms' strengths and weaknesses and external opportunities and threats. An alternative theoretical approach to the traditional models, the international entrepreneurship perspective integrates entrepreneurship and international business, including e.g. the BG model (Cavusgil and Knight, 2015) and INVs model (Oviatt & McDougall, 1994) appears.

Internationalisation entrepreneurship (IE) has emerged to explain different approaches to firm internationalisation that combine both international business and entrepreneurship (McDougall and Oviatt, 2000; Antoncic and Hisrich, 2000, Jones, Coviello and Tang, 2011). McDougall and Oviatt (2000, p.903) illustrated the

entrepreneurial orientation in the international context to consider international entrepreneurship as:

“a combination of innovative, proactive and risk-seeking behaviour that crosses national borders and is intended to create value in organisation”.

Furthermore, Oviatt and McDougall identified the importance of opportunity identification in facilitating international entrepreneurship, then international entrepreneurship has been defined as:

“the discovery, enactment, evaluation and exploitation of opportunities - across national borders – to create future goods and services” (Oviatt and McDougall, 2005, p.540).

Even though scholars attempt to inclusively define international entrepreneurship, it is still a vague theory that needs to be developed (Antoncic and Hisrich, 2000, Ruzzier et al., 2006), as this theory could represent new ventures rather than well-established SMEs, while practically, entrepreneurships can refer to MNEs and SMEs both, to contribute to organisational and economic development of firms. For example, entrepreneurship can be considered as a unique resource to identify business opportunities (Ruzzier et al., 2006). Additionally, entrepreneurs who have key relationships, sufficient experience and capabilities are able to conduct entrepreneurial activities and exploit business opportunities in the foreign markets (Andersson, 2000; Ruzzier et al., 2006).

Therefore, based on IE definition, this approach mainly focuses on rapidity and innovativeness with which some firms discover international opportunities, and its entrepreneurial behaviours and characteristics could contribute to early and rapid internationalisation. International entrepreneurship is considered to be the process of identifying opportunities and capitalising on those opportunities to create value (Ruzzier et al., 2006; Alvarez and Busenitz, 2001). This theory highlights the importance of entrepreneurs; they are entrepreneurial and innovative and are capable

of exploiting market opportunities through cooperative relationships (Andersson, 2000; Ruzzier et al., 2006). In addition, individuals and individual knowledge, behaviour and network/networking play a significant role in international entrepreneurship (Jones et al., 2011). Accordingly, the main object (early internationalising firms) and the new internationalising model (INV model) in international entrepreneurship are reviewed below.

2.1.2.1 Early internationalising firms

After reviewing IE field, firms that are newly established, early and rapidly internationalised prevail in international entrepreneurial activities. Along with IE field evolution, scholars have termed these early internationalising firms differently in their studies, e.g. born global firm (Cavusgil and Knight, 2015, Coviello, 2015), international new venture (Oviatt and McDougall, 1994), global start-ups (McDougall et al., 2014). There are many terms to describe these firms, typically, they are early internationalising firms (Rialp, Rialp and Knight, 2005).

A common example of early internationalising firms is called born global. Cavusgil and Knight (2015) and Coviello (2015) defined a born global (BG) firm as a young firm, who internationalise new foreign markets early and rapidly through export. Varma (2010) who reviewed born global inclusively and identified two fundamental facets, *born* i.e. the speed of internationalisation is rapid, and *global* i.e. the geographic scope of internationalisation is wide. Tanev (2012) confirmed the speed identification and considered BG as a venture who internationalise from the inception of their establishment. Similarly, Gabrielsson, Gabrielsson and Dimitratos (2014) also supported geographic scope identification and argued that BG develops foreign markets without heavy consideration of cultural and geographical barriers, and BG takes the entire world as their target (Luostarinen and Gabrielsson, 2006). More recently, Cavusgil and Knight (2015) added another facet to describe BG, young firms that are newly established. Coviello (2015) considered 6 years is a widely accepted cut-off.

While Neubert (2015) argued that the age threshold varies from different countries, high-tech firms in e.g. MedTech with a long development cycle starting from product development, verifying, FDA clearance, patent registration needs a longer time than traditional ones. Accordingly, young high-tech firms cannot be simply considered as new firms established within 6 years, more importantly, as Gabrielsson et al. (2014) and Neubert (2015) advocated, young high-tech firms have major foreign sales revenues within 5 years after establishment or after a critical event, e.g. patent registration, critical company collaboration, VC investment and so on, which is ready for internationalising their business. Contrarily, Jones (1999) and Jones and Coviello (2005) show and argue that some firms, especially in science-based sectors may have international connections and business activities before the firm itself has been formally established. That is, internationalisation commences before the firm is born.

Another typical example, international new venture (INV) offers a wider definition than BG (Oviatt and McDougall, 2005), as INV integrates various international activities in the value chain, e.g. R&D, production or administration. INV has been defined as “*a business organisation that from inception, seeks to derive significant competitive advantage from the use of resources and the sale outputs in multiple countries*” (Oviatt and McDougall, 1994, p.49). According to its definition, INV is identified with several facets: various value chain activities, number of countries internationalised (Oviatt and McDougall, 1994) to separate its types of firms, shown as Figure 5.

Figure 5 Types of new ventures

Value chain activities	Few	Export/import start-ups	Multinational traders
	Many	Geographically focussed start-ups	Global start-ups
		Few	Many
		Number of countries internationalised	

Source: Oviatt and McDougall (1994)

Accordingly, INVs include export/import start-ups (few value chain activities and few foreign markets), multinational traders (few activities while wider countries), geographically focussed start-ups (many activities while limited countries), finally, global start-ups (many activities and wider countries). Furthermore, Trudgen and Freeman (2014) added that BG can be a special version of INVs. Thus, despite many terms of firms, INVs can be considered as a wider version that includes various rapidly and early internationalising firms, since Oviatt and McDougall (1994)'s INV theory has been a seminal and fundamental study in international entrepreneurship to underpin early internationalising firms.

After above discussions, early internationalising firms⁵ are commonly considered as newly established, rapidly, and early internationalised firms, which may include diverse firms mentioned above that follow INV approach. However, it has been argued that early internationalising firms e.g., BG and INVs can follow the revisited Uppsala model (Johanson and Vahlne, 2009) as a response to the increasing importance of networks

⁵ The case selection criteria can be found in Chapter 3.2.3 Theoretical sampling.

and networking in internationalisation. As Neubert (2015) suggested, early and rapid internationalisation can be gradual, and thus the revisited Uppsala model can be applied to those firms who start internationalisation soon after establishment (Johanson and Vahlne, 2009, Verbeke et al., 2014). I have discussed the revisited Uppsala model in Chapter 2.1.1, and the new model of INV is introduced below in detail.

2.1.2.2 International-New-Venture Model (INV)

Oviatt and McDougall (1994) identified some companies who experienced a different internationalisation process: they rapidly internationalise soon after establishment and are called international new ventures (INVs). Oviatt and McDougall developed a theoretical model to describe the NV internationalisation approach, which has been defined as:

“a business organisation that from inception, seeks to derive significant competitive advantage from the use of resources and the sale outputs in multiple countries”
(Oviatt and McDougall, 1994, p.49).

As outlined by this definition, the importance of NV internationalisation lies in age rather than size and usually happens within 6 years of establishment (Oviatt and McDougall, 1997). This view is against the traditional MNE theory, which stresses the importance of size in conducting internationalisation and maintaining competitive advantages. The INV model represents the entrepreneurial orientation of internationalisation.

The INV model combines international business, entrepreneurship theory and strategic management to explain the internationalisation process of new ventures. Oviatt and McDougall (1994) suggested four elements in constructing and developing international new ventures. First, internalising transactions to lower transaction costs helps INVs cope with their liability of smallness, which refers to limited resources and capabilities (Rugman and Verbeke, 2007; Chetty and Agndal, 2007; Coviello and Munro, 1997), and the liability of newness originally from Stinchcombe (1965), which

refers to firms limited international experience (Aldrich and Auster, 1986; Han, 2006). It distinguishes transactions that happen within an organisation from those governed by markets and internalised transactions are more cost-effective than conducting cross-border transactions (Fletcher, 2007). Secondly, alternative governance structures, such as strategic alliances and networks to obtain essential resources, provide SMEs with important resources and knowledge crucial to their internationalisation (Coviello and Munro, 1997; Bell et al., 2003; Jones et al., 2011). This illustrates the importance of network and social capital, which help SMEs access resources, capture potential business opportunities, and internationalise in foreign markets (Arenius, 2002; Coviello, 2006). Furthermore, firms must also possess the ability to utilise foreign location advantages and integrate resources from foreign nations. foreign location advantages highlight the importance of foreign market operations, which provide firms with transferable resources and market advantages to create cost advantages for firms (Dunning, 2000). However, barriers such as language, cultural differences and political regulations may also hinder a firm's operation in local markets (Oviatt and McDougall, 1994). Hence, the last one, unique resources and advantages that help NVs overcome such barriers, such as critical knowledge, has emphasised INVs' ability to conduct international business in foreign markets, especially for knowledge-based firms that rely on valuable knowledge (Batas, 2015).

As stated above, NVs must internationalise in foreign markets to internalise transactions, access valuable resources such as market knowledge through networks, and maintain competitive advantages by exercising unique knowledge transferable to foreign markets. Even though IE is a new research area that emerged in 1994, many empirical studies have explored IE and the importance of networks and social capital in the field (De Carolis, Litzky and Eddleston, 2009, Ebbers, 2014, Lamine et al., 2015, Engel et al, 2017). Many studies have also examined international entrepreneurship from the perspectives of founder characteristics and alternative governance structure where they capture international opportunities (McDougall et al., 1994). Similarly, Zahra and Wright (2011) identified two main research areas in IE that have been focused: how and where entrepreneurs identify new opportunities, this was expounded by Oviatt and McDougall (2005).

The role of entrepreneur also takes a major part in facilitating internationalisation. A founder's previous international experience has also been identified as a contributor to internationalisation (Crick and Jones, 2000, Zucchella, Palamara and Denicolai, 2007, Jones and Casulli, 2014). For example, Jones and Casulli (2014) state that prior knowledge (experience) influences decision making regarding internationalisation. Welch and Welch (2009) consider experiential knowledge is generated from both the firms and entrepreneurs' previous activities e.g. market activities and network and background. It has been supported that founders' and top managers' social relationships were proven to have positive effects on NV success and rapid internationalisation through the provision of market knowledge and critical resources (Harris and Wheller, 2005; Ojala, 2009, Schwens et al., 2018, Prashantham et al, 2019). Neubert (2015) supported that the success and speed of high-tech firms depends on the networking skills and characteristics of the entrepreneur, their experience and network (Oviatt and McDougall, 2005, Andersson and Evangelista, 2006, Zucchella et al., 2007), capabilities (Verbeke, Zargarzadeh and Osiyevskyy, 2014), and social capital (Lindstrand, Melen and Nordman, 2011). Specifically, Reuber and Fischer (1997) found that international experience and knowledge of entrepreneurs and their management team boost early internationalisation. Additionally, education and international experience of managers also found in the study of Javalgi and Todd (2011). Lindstrand et al (2011) also stressed the importance of accumulated social capital in providing essential foreign market knowledge and argued that social capital changes over time. This leads to another mainstream in international entrepreneurship, network perspective in internationalisation.

One of the most influential articles, Coviello and Munro (1997), for example, studied small software firms with traditional IB theories, the Uppsala model (Johanson and Vahlne, 1977) and a network perspective focusing on their influence on entry modes choice, product development and various market activities that firms took. Alternative governance structures have recently been examined. Al-Laham and Souitaris (2008), for example, stressed the importance of alliances in internationalisation, and alliance networks help young firms identify international opportunities. Additionally,

knowledge derived from networks has been proven to enhance firm internationalisation. Supplier and customer networks were examined by Tolstoy (2009), who argued that customer networks could generate more knowledge useful in conducting international activities. Yu, Gilbert and Oviatt (2011) found that marketing alliance networks with a high degree of closeness provide valuable knowledge and impact on foreign market sales. Besides, Loane and Bell (2006) suggest learning how to build new networks is critical for internationalising entrepreneurial firms. Prashantham and McNaughton (2006) suggested knowledge offered by social capital helps reduce barriers between SME-MNE collaboration. Presutti, Boari and Fratocchi (2007) argued that social capital has been examined in terms of the knowledge derived from it, which facilitates firm internationalisation; they particularly focused on networks between high-tech start-ups and their customers.

Furthermore, network ties and firm internationalisation have also been examined: weak/strong ties in internationalisation (Coviello, 2006) and formal and informal ties in internationalisation (Ojala, 2009). Interestingly, Ojala and Tyrvaenen (2006) found that software firms entered their first foreign market and the selection of mode rationally and strategically instead of considering network relationships.

Besides, Jones et al. (2011) suggested the influence of network ties on firm internationalisation has also been studied from the perspective of performance, degree and speed of the internationalisation process (e.g. Manolova, Manev and Gyoshev, 2010; Musteen et al., 2010; Zhou, Barnes and Lu, 2010; Kazlauskaite et al., 2015; Neubert, 2016). To be specific, Manolova et al. (2010) studied the positive influence of personal and business networks on the degree of new ventures' early internationalisation. Their work resembled that of Coviello and McAuley (1999), who argued that business and social networks must be built and developed as they increase the rate of international development. Musteen et al. (2010) found that networks enhance the internationalisation process and may impact speed and performance, indicating firms internationalise faster when they use networks. Zhou et al (2010) found that network dynamics and reconfiguration positively influence the achievement of early internationalisation among Chinese INVs. More recently, Udomkit and Schreier

(2017) found how personal networks play a paramount role in Thailand SMEs' internationalisation. Subsequently, the current research believes that focusing on network relationships and social capital it created is crucial in studying international entrepreneurship.

2.1.3 Institutional perspective of SME internationalisation

As discussed above, the traditional internationalisation model suggests market presents differences in terms of business norms, language, culture, political systems and economic development, which is considered as "psychic distance" (Johanson and Vahlne, 1977), these differences also refer to an institutional perspective between markets and it was suggested to study internationalisation from institutional perspective to have in-depth understanding (Peng, Wang and Jiang, 2008). Institutional changes in the country have been broadly studied in SME internationalisation.

For example, Hitt et al. (2004) found that business partner and alliances selection can be influenced by institutional environments between countries, and resources of their partner influence the decision of the partnership formation, e.g., in China intangible assets influence the selection, while in Russia tangible assets influence the selection. Meyer et al. (2009) analysed the effects of three structures of institutions, regulative (e.g. laws), cognitive (e.g. cultural values), and normative (e.g. norms-socially acceptable business practices) on firms' internationalisation. Furthermore, De Clercq, Danis and Dakhli (2010) argued that social networking facilitates entrepreneurial activities in emerging countries. Additionally, a governmental strategy helps to support emerging countries SMEs international entrepreneurship to have a favourable business environment and access more resources (Stoian et al., 2016). Similarly, Smallbone and Welter (2012) also suggested that institutional development would facilitate international entrepreneurship. Narooz and Child (2017) also reported that networking varies in responding to institutional voids in developed and developing countries, where they have different effects to SME internationalisation.

It can be stated that institutional perspective and networks is widely used in internationalisation study to analyse institutional differences between countries that influence business behaviours and international operations (e.g. Hitt et al., 2004, Meyer et al., 2009, De Clercq et al., 2010, Smallbone and Welter, 2012, Narooz and Child, 2017).

There are various definitions around institutions. For example, Scott (1995, p.33) defines institutions as “*cognitive, normative, and regulative structures and activities that provide stability and meaning to social behaviour*”. Later on, Hodgson (2006, p.2) define institutions as “*systems of established and prevalent social rules that structure social interactions.*”, e.g., language, law, norms, which are considered as institutions, and institutions structure social interactions. A well-accepted definition of institutions refers to the rules and regulations that structure social, political and economic relations, formally and informally (North, 1990). North (1990) defines “*institutions are a set of rules, compliance procedures and moral and ethical behavioural norms designed to constrain the behaviour of individuals in the interests of maximising the wealth or utility of the principals*” (p. 201–202). It is then needed to clarify the institutional perspective referred to in this study.

As North (1990) suggests, institutions shape the groups that are collectives of individuals with mutual purpose, and these institutions can be considered as informal and formal rules and regulations that govern economic activity and affect economic growth, and both informal and formal institutions co-evolve by the operation of organisations (e.g. informal and formal groups - networks, firms, and governments) (Miguel, Gertler and Levine, 2005). Casson, Della Giusta, and Kambhampati (2010) consider informal institutions (e.g. norms), which determine each individual’s position and capabilities relative to others, can shape formal institutions (e.g. groups, firms, and governments) and gradually affect these organisations’ actions and interactions. In Casson, Della Giusta, and Kambhampati (2010)’s paper, they stress social capital as the central because an actor’s available social capital in the system that is ruled and regulated by both formal and informal institutions can measure this person’s power relations, which influence his/her position and ability to access resources. Power

relations can be continuously changed when an actor expands the feasible boundaries. However, some actors' action is limited due to only accessing certain social networks (e.g. primary and non-cross-cutting), but some others have broad access to the cross-cutting social networks and institutional capital. In other words, a higher power relation actor has higher resource access capability as can use cross-cutting social networks thus more available social capital in different organisations, a lower power relation actor has limited resource access capability as they only can use primary and non-cross-cutting social networks which means fewer available social capital in limited organisations.

Therefore, it can be argued that different norms in each organisation influence the actions and interactions of individuals in all sorts of organisations. The power relation of an actor, which is measured by available SC in the limited or diverse social networks, is influenced by informal institutions (norms) and thus determines their capability to access resources. In other words, norms influence an actor's networking activities in different institutions that may create social capital to access their resources.

Similarly, not only economic development in countries, but industry can also be characterised by different institutions, for example, Adler (2001) combines the three dimensions: market/price, hierarchy/authority, and community/trust, in different proportions, and suggests it is the high-trust institutional forms leading the knowledge-intensive industry. More recently, Scott (2014) suggests that industry can be institutionalized because there are regulations, norms, and cognitive aspects specific to each industry. Similarly, Accordingly, Child et al. (2017) suggest the importance of institutions in SME business model to internationalise and further narrow its application from country to industry and utilise institutionalisation that not only draws attention to cognitive, normative and regulative differences between developed and developing economies, but also to those of different industries to argue that SMEs located in different industries adopt different business models. More narrowly, North (2005) also suggests an institutional perspective from individual perspective, namely neo-institutionalism, to consider the primary role of individuals in making business decisions. García-Cabrera, García-Soto and Durán-Herrera (2016) follows this suggestion to study the effect of individual's perception of institutional dimensions on

firm's internationalisation, and similarly, Stenholm, Acs and Wuebker (2013) argue that entrepreneurial motivation may be conditioned due to different institutional structure of organisational field.

Accordingly, the previous studies suggest studying institutionalisation from country, industry and individual perspectives separately in SMEs internationalisation. I then argue that, based on the revisited Uppsala model and INV model that stress the importance of networks, an institutional perspective referred to this study is that institutional differences bring variance in networking in different contexts that creates SC to facilitate internationalisation. Besides, there are few studies that have applied institutionalisation to different business contexts where differences in business behaviours, networking, norms, and knowledge domains, etc. Therefore, even though it does not work as a fundamental theoretical lens for this research, this researcher follows the stream of institutional perspective in SME internationalisation, to apply it to SC creation to differentiate contexts that networking contacts locate to examine their networking activities that create SC to foster SMEs internationalisation, see details in Chapter 5.1.

2.1.4 Research on SME internationalisation

I critically reviewed the studies that focus on SME internationalisation, as indicated in Table 1 Table 1 on p.55, the critical literature review offers this research a rich theoretical background of SME internationalisation and finds the research gap that the current model barely explains the internationalisation completely by itself, and a clear view of the main research streams in SME internationalisation field, particularly the network relationships. Similarly, as Welch and Paavilainen-Mäntymäki (2014) suggested, the future research could examine micro-processes of internationalisation from a relationship-based perspective. Therefore, when SMEs internationalise, the network and its resources (social capital) can be considered as vital facilitators and have attracted much research attention into this field. Besides, the previous research also suggest a promising area of combining various aspects and facets that exist in the internationalisation, the current single model might not be able to comprehensively

explain internationalisation process, therefore, following this suggestion and research gap, my study draws on the revisited Uppsala model regarding its business network and INV model regarding its entrepreneurs' perspective with focus on early internationalising firms, which jointly inform the theoretical background this study.

Table 1 Research on SME internationalisation

Research clusters	Research themes	Critical evaluation by the researcher (myself)
Internationalisation process	<p>1) Studies have investigated <i>strategies</i> of SME internationalisation, and it may include the pathway of BG and INV, internationalising through planned strategy with both planned and accidental actions, planned and unplanned strategy to internationalisation from causation and effectuation logics, and entrepreneur could be motivated by serendipitous events to pursue international opportunities (e.g. Crick and Crick, 2014, Crick, 2009, Crick and Spence, 2005, Ciravegna, Majano and Zhan, 2014). Additionally, the <i>entry mode</i> of internationalisation has been investigated, such as the risks of joint venture, and subsidiaries, the networks of partnership (e.g. Kirby and Kaiser, 2003, Cheng and Yu, 2008, Ciravegna, Lopez and Kundu, 2014).</p> <p>2) Previous studies have unfolded the <i>barriers</i> to SME internationalisation, such as the lack of SME dimension, lack of international management experience and human resource, the limited knowledge of foreign market and key actors, (e.g. Korsakiene and Tvaronaviciene, 2012, Colapinto, Gavinelli, Zenga, and Di Gregorio, 2015, Sass, 2012, Hashim, 2015). Besides, there are studies reveal that the <i>motives</i> of internationalisation to increase sales and expand market presence (e.g. Vide et al., 2010, Sass, 2012), and the <i>drivers</i> of product innovation and the role of manager (e.g. Hutchinson, Alexander, Quinn, and Doherty, 2007, Sass, 2012) for internationalisation. Further, studies also reveal factors that influence <i>market selection</i>, such as geographic proximity and CEO’s knowledge and experience, market attractiveness</p>	<p>It can be argued that internationalisation has been studied as a process to study how internationalisation has been facilitated or hindered by e.g. networks and institutional voids, and different internationalisation models have been applied.</p> <p>Most theories of internationalisation are firm-centric, they seek to explain internationalisation behaviour and performance in terms of various characteristics and behaviour of firms. (Chandra and Wilkinson, 2017)</p> <p>However, the argument lies in there is no single approach (e.g. BG or INV or the Uppsala) that can inclusively explain internationalisation in the current business world, and it is suggested a holistic approach by combining different aspects (e.g.</p>

	<p>level, and the relationships with the partners in these markets (e.g. Korsakiene and Tvaronavičienė, 2012, Sass, 2012, Ciravegna et al., 2014a).</p> <p>3) Studies further examined the <i>role of network, alliances and cooperation</i> for SME internationalisation, including formal network and informal networks, social networks influence entry modes and international growth, networks of sharing foreign market information and knowledge, outsidership, business network versus social networks and so on, which facilitate SME internationalisation (e.g. Coviello and Munro, 1995, 1997 Agndal and Chetty, 2007, Spence, Manning and Crick, 2008, Coviello, 2006, Prashantham and Dhanaraj, 2010, Ivarsson and Alvstam, 2013, Tang, 2011).</p> <p>4) Another critical stream in internationalisation is the <i>institutional perspective</i>, which influence internationalisation process negatively or positively. For example, institutional voids could hinder internationalisation process but another perspective is institutional support that works as a facilitator in internationalisation (e.g. Stephan, Uhlaner and Stride, 2015, Korsakiene et al., 2015, Oparaocha, 2015, Narooz and Child, 2017).</p>	<p>entrepreneurs, business networks, and social capital) and few studies combining various aspects of internationalisation models to study SME internationalisation.</p>
<p>Specific factors/variables influencing internationalisation</p>	<p>1) The previous research explored the role of SME human capital (manager/entrepreneur) in internationalisation, such as their international experience and specialised knowledge, human capital resources that influence the speed of internationalisation, the cultural background, innovation orientation and attitudes, and social capital's benefits of foreign market knowledge and access to financial resources (e.g. Reuber and Fischer, 1997, Gassmann and Keupp, 2007, Ruzzier and Ruzzier, 2015, Dimitratos, Johnson, Plakoyiannaki, and Young,</p>	<p>There are many factors that have been studied in the previous literature that influence internationalisation.</p> <p>However, how social capital is developed in SME internationalisation is less explored, it only appears as resources of</p>

	<p>2016, De Clercq, Sapienza, and Crijns, 2005, Lindstrand et al., 2011, Chetty and Agndal, 2007).</p> <p>2) Studies also reveal the role of the ownership structure in SME internationalisation, for example the family ownership positive influence internationalisation (e.g. Chen, Hsu and Chang, 2014)</p> <p>3) There are studies investigated the effects of innovation and technology on internationalisation and found that the greater flexibility of technology sector companies facilitate the level of internationalisation, and in turn internationalisation also influence product innovation (e.g. Crick and Spence, 2005, Zahra, Ucbasaran and Newey, 2009)</p>	<p>entrepreneurs that facilitate internationalisation.</p>
<p>Internationalisation and performance</p>	<p>1) Studies have examined output from internationalisation on SME performance and found that the greater level of internationalisation increase SME performance, while some studies found a negative effect of increase in sales volume and number of markets on SME performance, and thus some studies document a U-shape relationship between internationalisation and SME performance (e.g. Pangarkar, 2008, Mac and Evangelista, 2016, Lu and Beamish, 2001).</p> <p>2) Further, there are studies also unfold that networks as a preponderant role in the SME international success, including formal network with business partner and government and informal partnership and social networks facilitate SME strategic and financial performance (e.g. Musteen et al., 2010, Jeong, 2016, Hessels and Parker, 2013, Zhou, Wu and Luo, 2007).</p> <p>3) Studies also find other factors including possession of global dynamic capacities (Peng and Lin 2017), orientation towards international markets (Armario, Ruiz, and Armario, 2008), the global mentality of entrepreneur;s and managers (Miocevic and Crnjak-Karanovic, 2011),</p>	<p>This is a new area focusing on SME performance and networks have been stressed in the studies of SME internationalisation performance. The majority of these studies have been conducted quantitatively to examine internationalisation and performance and the role of networks in their relationships. However, there is little qualitative case study research.</p>

	their levels of education and international experience (Hsu, Chen and Cheng, 2013), which boost SME performance.	
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Source: the author drawing on Morais and Ferreira (2020), and other reviews

By far, research on SME internationalisation has received much attention, and there are abundant studies that have investigated this field from various perspectives, e.g. entry mode, knowledge acquisition, R&D, networks, et al. For example, Costa, Soares and Sousa (2016) have systematically reviewed the role of collaborative network, knowledge and information plays in SME internationalisation. Similarly, Paul, Parthasarathy and Gupta (2017) also reviewed the exporting SMEs and their challenges. Beside this topic-specific review on previous SME internationalisation research, most recently, Morais and Ferreira (2020) inclusively identified three clusters of research themes in SME internationalisation including 1) internationalisation process, 2) variables affecting internationalisation, 3) internationalisation and its performance, through reviewing the studies between 1995 and 2018 that focus on SME internationalisation.

Inspiring by three SMEs internationalisation clusters, I summarised, updated, and extended the literature and critically reviewed with evaluation (shown in Table 1 on p.55), and it indeed suggests the certain research gaps and interests that inform this study e.g. combination of various aspects of internationalisation SMEs, case studies, social capital and SME internationalisation. While it did not elaborately extract the studies of social capital and networks in SME internationalisation, which is the key to this research. Thus, another more specific and critical research review with in-depth analysis in SC and SME internationalisation was conducted and it refers to section 2.2.5.

All in all, from the above discussion regarding internationalisation models, social capital and networks are essential components, which play vital roles in contributing to firms' internationalisation. For example, the revisited Uppsala model (Johanson and Vahlne, 2009, Vahlne and Johanson, 2013, 2017) have stressed the importance of becoming a network insider in a foreign country to create social capital which allows firms to do business in foreign market fluently, and this model mainly focuses on market relations of firms. On the other hand, the INV model (Oviatt and McDougall, 1994) emphasises the entrepreneur's social relations and social capital they create in doing business in foreign markets. Hence, the concept of social capital and networks are discussed in detail in the following sections.

2.2 Social capital

2.2.1 Conceptualisation of social capital

2.2.1.1 Definitions of social capital

The concept of social capital initially appeared in 1916 by Hanifan and then social capital has been widely applied to sociology research. For example, one of most influential sociologists Bourdieu (1986) defined social capital with consideration of institutionalisation as “*the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalised relationships of mutual of acquaintance or recognition*” (p.248).

Besides, Coleman (1990) offered another a general definition of SC from its function that has been widely accepted, and he considered it as various entities that have common facets, which are they have some aspects of social structure, and they foster the behaviours of individuals’ who are located in the structure (Coleman, 1990), thus he stressed a closed network that consist of strong ties.

On the other hand, another key definition proposed by Burt, an influential sociologist, and he added a new concept of structural hole in 1997 to social capital based on Granovetter (1973)’s weak ties and defined social capital as “*the brokerage opportunities in a network*” (Burt 1997, p.355). Burt (1997) argued a position of the actor located where she/he is able to build bridges to link the disconnected actors, namely structural hole.

Social capital has been studied within various research areas beyond sociology. For example, social capital has been studied with knowledge transfer (Inkpen and Tsang, 2005, Levin and Cross, 2004, Rottman, 2008), external knowledge acquisition (Zane and DeCarolis, 2016, Zhou et al., 2014), intra-organisational resources (Tsai and Ghoshal, 1998), organisational learning (Liu, 2018), and organisations’ personal ties

(Liu, 2013), bonding and bridging view of social capital in internationalisation (Prashantham, 2011, Prashantham, Dhanaraj and Kumar, 2015, Menzies, Orr and Paul, 2020). Social capital is clearly a mature, well-studied area and a broad and complex concept. Still, social capital lacks a general and holistic definition. Scholars have identified social capital from several different viewpoints, which are illustrated in Table 2, such as inter-relationships between actors, or relationships among individuals within organisations, or an aggregation of these two.

Table 2 Definitions of social capital

Perspectives	Scholars	Definitions
Internal	Coleman (1990, p. 302)	who defined social capital by its function. “It is not a single entity, but various and different entities that have two similarities, which are they all consist of some aspects of social structure, and they facilitate certain individuals’ behaviours who are located in the structure”
	Portes and Sensenbrenner (1993, p.1323)	“those expectations for action within a collectivity that affect the economic goals and goal-seeking behaviour of its members, even if these expectations are not oriented toward the economic sphere”.
	Putnam (1995, p. 67)	Who defines social capital as “...features of social organisation such as norms, networks and social trust that facilitate coordination and cooperation for mutual benefit”.
	Fukuyama (1995, p. 10)	“the ability of people to work together for common purposes in groups and organisations”
	Fukuyama (1997)	“social capital can be defined simply as the existence of a certain set of informal values or norms shared among members of a group that permit cooperation among them”
	Leenders and Gabbay (2013, p. 3)	Social capital has been considered as goal specific, “the set of resources, tangible or virtual, that accrue to a corporate player through the player’s social relationships, facilitating the attainment of goals”
External	Bourdieu (1986, p.248)	Social capital is defined as “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalised relationships of mutual of acquaintance or recognition”

	Bourdieu and Wacquant (1992, p.119)	They defined social capital as "the sum of resources that an individual or a group will accrue as a result of being in a network of relationships".
	Burt (1992, p.9)	"Friends, colleagues, and more general relationships through whom you receive opportunities to use your financial and human capital".
	Burt (1997, p.355)	who put up with structural hole theory and perceived social capital as "the brokerage opportunities in a network".
	Portes (1998, p.6)	"the ability of actors to secure benefits by virtue of membership in social networks or other social structures".
	Knoke (1999, p.18)	"the process by which social actors create and mobilise their network connections within and between organisations to gain access to other social actors' resources".
	Hitt and Ireland (2002, p.5)	Social capital has been put focused on an organisation's and individual's " <i>set of relationships creates value and facilitates action</i> ".
	Arenius (2002, p.51)	"Social capital is defined as the amount and quality of the external relationships possessed by an individual or a social unit."
Aggregation of above two	Nahapiet and Ghoshal (1998, p.243)	"the sum of actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. Social capital thus comprises both the network and the assets that may be mobilised through the network"
	Inkpen and Tsang (2005)	"the aggregate of resources embedded within, available through, and derived from the network of relationships possessed by an individual or organization".
	Adler and Kwon (2002, p.23)	"the goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations"
	Kwon and Adler (2014, p.412)	"Social capital, we suggested in 2002, can be defined as good available to individuals and groups, where goodwill refers to a kind, helpful or friendly feeling or attitude."

Source: Updated from Adler and Kwon (2002)

From Table 2, social capital has been viewed as a private or public good from both individual and organisational perspectives. Internally, social capital has been perceived as a public good for organisations (Coleman, 1988, Putnam, 1993). Specifically, social capital derived from networks of relationships within an organisation is an essential organisational property and resource that benefits every person in the network by providing resources. (Kostova and Roth, 2003, Ratten and Suseno, 2006). This view of social capital focuses on internal relations within a firm and takes the form of bonding social capital (Putnam, 2000, Putnam, 1993). Bonding social capital focuses on "*the social structure of the collective actors, whether these actors are groups, organisations or communities rather than individual actors*" (Ratten and Suseno, 2006, p.62). Similarly, Adler and Kwon (2002) proposed that bonding social capital is from intra-organisational relationships.

On the other hand, based on an individual's perspective, social capital has been perceived as a private good that only benefits those actors who possess it (Bourdieu and Wacquant, 1992, Hitt and Ireland, 2002). External view holders argued that an actor's network of relationships provides access to resources for these actors, while the absence of an actor's network of relationships resulted in nothing, which means actors who do not possess such networks cannot gain resources that derive from networks (e.g. Arenius, 2002, Burt, 1997). This individual perspective of social capital mainly exists as a form of bridging social capital associated with external ties (Burt, 1992) and can help in understanding why some individuals/firms are more successful than others as they may possess a unique network of relationships to access their SC with resources.

The third perspective of social capital combines external and internal aspects and lays out a neutral view wherein social capital is composed of both private and public goods, and the two different aspects of social capital are typically interrelated (Lin, 2002). A manager, for example, could use her/his personal connections and social relationships to establish a joint venture with another firm. As a result, individuals whose networks are located within a firm or outside a firm could both benefit from the firm's development. At an academic level, compared with the other two aspects of social capital, this neutral perspective has several research advantages; it, for example,

encompasses various units of analysis, including employees and their networks with other actors either within a firm or outside the firm (Adler and Kwon, 2002).

Based on the above discussion of SC conceptualisation, one can argue that resources are gained and accessed by the network of relationships at the level of the individual or social unit (Prashantham, 2005). Social capital clearly consists of relationship networks and resources accessed through these relationships. Social capital can be considered both a private and public good from internal and external views of social capital.

In this study, I focus on external relationships of the individual and social unit, an emphasis that aligns with Arenius (2002)'s statement that the individual or social unit must exercise an external network of relationships to possess social capital. Tsai and Ghoshal (1998) also suggested that external relationships with other firms containing a high degree of social capital contribute to resource sharing and product innovation. In addition, because the study's overall research aim is to explore the creation and utilisation of social capital, internal views of social capital focus on internal relations within a firm and everyone in this firm gets the benefits, which means that social capital is available even in the absence of ties, hence it cannot capture the creation of social capital. This does not fit the main aim of this research, which is to examine how to create social capital. Thus, for this study, the ways in which external relationships are formed to the extent that social capital can be utilised have been deemed necessary.

Social capital has been analysed at various levels, such as the individual, firm, and national levels (Patulny et al., 2015, Zhang et al., 2012, Leenders and Gabbay, 2013). Wang, Li and Tong (2008) argued that inter-organisational networks should be studied at an individual or organisational level of analysis. One example of inter-organisational networks that have been studied at the individual level is transactions that may have occurred between two firms due to personal contacts between firm managers. Social capital can be generated from an entrepreneur's international experience (Prashantham and Dhanaraj, 2010), and this transfer process depends on the individual's willingness and transferability (Arenius, 2002).

It can be stated that social capital can be influenced by employees' social networks. Leenders and Gabbay (2013) argued that social capital and its limitations are influenced by different levels of structures. Accordingly, Adler and Kwon (2002) categorised three structure levels: market, hierarchical and social relations. As explained above, this study focuses on external relationships at both the individual and organisational level of analysis, so that social relations and market relations are included. While hierarchy relation refers to internal networks within organisation, hence it is excluded from this study. These terms resemble those suggested by Arenius (2002), Coviello (2006) and Slotte-Kock and Coviello (2010): personal networks and business networks.

This study adopts the work of Nahapiet and Ghoshal (1998) regarding its definition of social capital, because this study focuses on external networks from both individual and firm level, and these authors take a comprehensive view of SC and integrate the significant considerations existing in the extant literature (Maurer and Ebers, 2006). Moreover, this definition has been acknowledged in major entrepreneurial studies (e.g. Kim and Aldrich, 2005, Anderson, Park and Jack, 2007). According to Nahapiet and Ghoshal (1998, p.243), social capital is

“the sum of actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. Social capital thus comprises both the network and the assets that may be mobilised through the network”.

Hence, this seminal definition of social capital provides a useful framework and allows this research to examine social capital from both individual and firm level, and integrally from its structural, relational, and cognitive dimensions of social capital. Three dimensions of social capital are discussed specifically below.

2.2.1.2 Dimensions of social capital

Nahapiet and Ghoshal (1998) identified three highly interrelated dimensions of social capital: structural, cognitive and relational dimensions. There are many studies have

examined the specific dimensions of social capital in relation to their effects, e.g. structural dimension (e.g. Ortiz et al., 2017), cognitive dimension (e.g. Shi et al., 2015), cognitive dimension (e.g. Del Giudice et al., 2017). To be specific, structural social capital has been described as “*the pattern of connections between actors, which could be networks ties, network configuration, and appropriate organisation*” (Nahapiet and Ghoshal, 1998, p.251). This dimension illustrates the existence of network ties between actors, and these network ties are associated with specific ways actors are related (Adler and Kwon, 2002). These network ties among contacts allow actors to access valuable information for their firms (Coleman, 1990). For example, an individual who has network ties has greater opportunities for finding a job. The structure of a network determines the patterns of relationships among network actors (Adler and Kwon, 2002). For example, Lindstrand et al. (2011) found that individuals’ structural dimension social capital that has networks with businesspeople who have international operation experience facilitates foreign market knowledge acquisition.

Cognitive social capital refers to “*the resources providing shared representations, interpretations and systems of meaning among parties*” (Nahapiet and Ghoshal, 1998, p.244). This cognitive dimension includes two main aspects, e.g. shared goals and culture among network members (Inkpen and Tsang, 2005). Shared goals represent the extent to which network members share a common understanding and approach toward common goals and outcomes; shared culture refers to the extent to which norms of behaviour manage relationships (Nahapiet and Ghoshal, 1998). This dimension provides a shared meaning and vision that exemplifies an organisation’s common goals and culture and can help people within an organisation gain social capital (Tsai and Ghoshal, 1998). This common meaning among different units facilitates knowledge exchange and the development of new knowledge contributing to internationalisation (Johanson and Vahlne, 2009). Common vision and goals between firms can facilitate partnerships that allow for the sharing and exchange of resources, establish a trust-based relationship, and avoid acting opportunistically (Tsai and Ghoshal, 1998; Arenius, 2002). Besides, Vissa and Bhagavatula’s (2012) who found the importance of shared business goals with the entrepreneurs to improve their possibilities of initiating economic exchanges. Hence, common goals and understandings of other actors are

preconditions for successful firm business and partnership. Shared culture also has been proved to facilitate internationalisation in many studies. For example, Musteen et al (2010) suggested that the early internationalisation of SMEs can be facilitated by sharing a common language with their international partners. Similarly, Autio, George and Alexy (2011) found that high-tech INVs using a cognitive process including shared language improve their new capabilities to respond to uncertainties.

The relational dimension refers to capital derived from relationships embedded in “trust, norms, obligations and identification” (Nahapiet and Ghoshal, 1998, p.251), which represent the nature of relationship networks (Tsai and Ghoshal, 1998). Hence, Nahapiet and Ghoshal (1998) argued that trust, obligations, expectations, identity and identification are concepts related to the relational dimension of social capital. Particularly, the importance of the relational dimension of social capital lies in trust and trustworthiness, which are crucial when sharing knowledge and resources and building partnerships that can assist firms in further development (Batt, 2008). For example, resources are transferred easily under the situation of high level of trust between actors, and it is less necessary to have strict and definite governance mechanisms (Uzzi, 1996). Similarly, Nahapiet and Ghoshal (1998) suggest the degree of trust between actors may influence resource and knowledge sharing, and trustworthiness is derived from the level of trust an actor can provide, and indicates how much s/he can be trusted. For example, Masiello and Izzo (2019) proved relational social capital in the form of trust influence SME internationalisation. Therefore, relational social capital and its main component - trust contribute to reciprocity of exchanging resources between people in good quality relationships and thus facilitate SME internationalisation.

After reviewing three dimensions of social capital, to put it simple, structural social capital mainly represents the pattern/structure of network relationships that provide resources; cognitive social capital is the cognitions within people’s minds that are able to gather people into relationships to provide resources; and relational social capital refers to the quality of network relationships that influences the extent of resources exchange. Three dimensions of social capital attract a greater attention in the internationalisation field and each dimension has been proved to facilitate

internationalisation from different perspectives, while I found the gap that there are very few studies that have explored all three dimensions of social capital. Furthermore, because this study examines social capital creation from network relationships, which are built through networking, it is fine-grained to analyse network relationships from all three dimensions to reveal social capital creation as a whole. Hence, aligning with the adopted definition of social capital (Nahapiet and Ghoshal, 1998) in this study, three dimensions of social capital are used as a theoretical lens to understand, during the process of creating social capital, whether social capital is created that contributes to internationalisation without pulling it back. It is appropriate to examine the structural, relational, and cognitive dimension of social capital that benefits SME internationalisation in order to better utilise social capital.

2.2.1.3 Social capital model

This study accepts that some studies have conceptualised social capital as resources from the above three dimensions (Nahapiet and Ghoshal, 1998, Tsai and Ghoshal, 1998, Yli-Renko, Autio and Sapienza, 2001). However, this conceptualisation does not describe the origins and usage of social capital, nor the abilities and capabilities of other networks actors, which are key in understanding social capital (Theingi et al., 2008). Hence, a complementary approach was used to explain social capital, proposed by Adler and Kwon (2002), who distinguish various types of network of relationships—social capital, and different sources yielding social capital, which are introduced below. The following Table 3 summarizes the notable papers in the past and the latest that have cited Adler and Kwon (2002). Apparently, fruitful studies have followed Adler and Kwon (2002), its research fields vary from organisational behaviours, firms' performance, to SME internationalisation, and their work makes great contributions to social capital theory, and they have further reviewed social capital and suggested that social capital has matured from a concept into a whole research field, and it needs to shift toward more specific aspects (Kwon and Adler, 2014).

Table 3 Review of papers cited Adler and Kwon (2002) to examine social capital

Authors	Aspects in Adler and Kwon (2002) they use	Research focus	Research Methodology	Research results
Martín-Alcázar, Ruiz-Martínez, and Sánchez-Gardey, 2019	Internal and external dimensions of social capital	This study focuses on the diverse dimensions of SC and knowledge creation and exchange process and their effect on performance	This study reviews of the major literature of social capital, including theoretical approaches and empirical evidence	The authors finally offer a conceptual model in which the relationship between SC embedded in research networks and the performance of researchers.
Chang 2017	OMA framework of social capital	This study attempts to elaborate on the effect of conflict on SC resulting from increasing or decreasing opportunity, motivation and ability, organisational behaviours	Quantitative research with hypothesis, and selected sample companies from 2000 firms in Taiwan	There is an inverted U-type relationship between task conflict at teams are formed and SC at established teams.
Jimenez-Moreno et al. 2013	Market relations and the contingent value of social capital	This research examines inter-organisational relations between universities and firms' relations using SC theoretical framework and its influence for business competitiveness.	Using sample of technological companies located inside Spanish Science Parks; Quantitative methods by forming hypothesis	This research showed that firms' relations with universities generate social capital and once created it had a significantly positive effect on firm performance measured as knowledge acquisition and reputation of firms
Martinez-Canas et al 2012	Market relations	This paper aims to empirically examine the mediating role of knowledge acquisition between SC and innovation for firms located in	Partial least squares offer the primary statistical technique for assessing survey data	Knowledge acquisition fully mediates the relationship between social capital and firm innovation. Moreover, SC at the firm level has a significant influence

		science and technology parks (STPs).	collected from 214 Spanish tenants.	on both knowledge acquisition and innovation
Mačerinskiene and Aleknavičiūtė 2011	Social capital is goodwill, which lies in actor's social relations	In order to investigate which of those benefits mentioned have the biggest possibility to occur in the enterprise using and promoting its SC	This is quantitative research by sending questionnaires to Lithuanian companies.	people working in different organisations assume that SC could benefit business activities of enterprise connected with work force problems and the prestige of that enterprise but in order to reduce business risk of the company, improve its sales and profit or create new products an enterprise needs much more resources than only SC
Lindstrand et al 2011	Social capital concept	In order to examine how individual social capital and its dimensions affect biotech SMEs' knowledge acquisition and financial resource	A longitudinal cross-case study of 14 Swedish biotech SMEs	Three dimensions of SC affect knowledge acquisition and financial resources, and individual SC is effective during internationalisation.
Kontinen and Ojala 2011	Types of network ties	To investigate how family SMEs recognise international opportunities through their network ties	Qualitative multiple case studies into 8 Finnish family SMEs that operating in the French market	Intermediary ties and weak ties are more important for family SMEs to recognise international opportunity, and they tend to be reactive to seek opportunity in foreign market
Kontinen and Ojala, 2010	Social capital theory	A review of family business internationalisation	Conceptual work	SC theory helps to understand networks and their nature in the context of family business internationalisation, e.g. bonding SC and bridging SC.
Theingi et al. 2008	Social structures, opportunity,	This research investigates SC assessment into structures, opportunity, motivation and ability	This is exploratory study and used in-depth interviews with 11	results indicate that the social structures from which SC is drawn are not independent for large overlaps are

	motivation and ability	within export relationships in Thailand	export manufactures and 5 intermediaries all base in Bangkok	present. Opportunity, motivation and ability are linked with a common thread of trust.
Agndal, Chetty and Wilson 2008	Social capital concept and its benefits of information	To explore the dynamics of SC in new foreign market entries of SME internationalisation, SC changes over time	Case study of 24 Swedish and New Zealand SMEs that is qualitative in nature with both quantitative and qualitative methods of analysis.	The researchers separate SC into efficacy and serendipity roles, and direct and indirect relationships, and efficacious and direct SC is associated with early foreign market entry, and serendipitous and indirect SC is prevalent with later market entry.
Zhou, Wu and Luo 2007	Social network in network relationships, and its benefits	This study investigates the relationship between internationalisation and SME performance under the mediating influence of social networks	A quantitative research in Chinese SMEs through survey data	The research shows the mediating role of social networks in the form of guanxi in the relationship between internationalisation and firm performance, with three information benefits of social networks, knowledge of foreign market opportunities, advice and experiential learning, and referral trust and solidarity
Hitt et al 2006	Relational capital	To examine the importance of human capital and relational capital derived from relations with clients and foreign government in the internationalisation	Quantitative research in US law firms to test hypotheses.	Human and relational capital generally positively influence internationalisation.

Source: the author

Even though Adler and Kwon (2002) offer an integrative model to study social capital, it also has been criticised. For example, Kwon and Adler (2014) have criticised themselves that the network ties in 2002 were considered from objective and physical connections, in 2014 they added cognitive networks into their work. Another criticism is that its multidimensional measurements are based on bonding social capital and bridging social capital and did not offer discrete measures (Appel et al., 2014, Huynh and Patton, 2017).

Besides, in the SME internationalisation literature, e.g., Johanson and Vahlne (2009), the revisited Uppsala model stresses the outsidership - being an insider of business networks to facilitate SME internationalisation, the same with the importance of entrepreneurs in the INV model (Oviatt and McDougall, 2005). However, Adler and Kwon do not take the influence of management on the mix of three types of relations into consideration, which means they do not consider the active influence of managers on the social structures through their choice of governance mechanisms (Foss, 2007, Gooderham et al., 2011) and miss the SC discussion to other types of networks relations.

On the other hand, it is acknowledged that alternative social capital models exist in terms of social capital definitions discussed in section 2.2.1. For example, Bourdieu (1986) model in respect of the size of network and the volume of capital, Granovetter (1973)'s work of weak tie theory, Burt (1992)'s structural hole theory, Putnam (2000)'s model of bonding and bridging social capital, and Coleman (1988, 1990)'s model regarding expectation/obligation, information channels, and social norms in network closure, and so on.

Despite these criticisms and alternative models, I still consider Adler and Kwon to be an appropriate theoretical model for this research. Adler and Kwon are momentous because they greatly contribute to social capital theory and provide this research with a nuanced view of social capital from different network types (e.g. social relations and market relations) and its sources, its benefits and values, which align with the research purpose of examining social capital creation enabling SMEs internationalisation and then theoretically build on social capital theory with new insights. Therefore, this study

is mainly guided by Adler and Kwon (2002) social capital model. These aspects explain the reasons for choosing the Adler and Kwon model for this research.

2.2.2 Sources of social capital

Some social capital research considers social capital lies in the formal structure of the ties (e.g. Burt (1992)'s structural hole theory and Coleman (1988)'s closure theory), secondly, some others believe social capital lies in the content of the ties (e.g. Portes, 1998, Putnam, 1993 – trust, beliefs and norms), and the third branch of views consider abilities including competencies and resources as constitutive of social capital (e.g. Lin, 1999). Adler and Kwon (2002) summarise the current main arguments of social capital sources from “opportunity, motivation, and ability” three dimensions, and argue in their social capital model that “*Social capital's sources lie—as do other resources'—in the social structure within which the actor is located*” (p.18).

Because this research examines how social capital is created that benefits MedTech SMEs internationalisation, it is necessary to discuss different aspects of social capital sources. Particularly, trust is an important concept in both SME internationalisation (e.g. Johanson and Vahlne, 2009) and social capital (e.g. Adler and Kwon 2002, Nahapiet and Ghoshal, 1998), it has been considered as a relational source of social capital (Nahapiet and Ghoshal, 1998) and a motivational source of social capital (Adler and Kwon, 2002). Therefore, I firstly discuss trust and social capital to make clear understanding and distinguish between trust and social capital, and then move to the literature of opportunity, motivation, and ability that work as prerequisites to source social capital from social structure in Adler and Kwon (2002)'s social capital model.

2.2.2.1 Trust and social capital

By reviewing social capital theory, trust has been an important element in discussing social capital. For example, Nahapiet and Ghoshal (1998) consider trusted relationships generate social capital that facilitates resource exchange, thus trust is a source of

relational social capital. For example, Masiello and Izzo (2019) examined relational social capital in the form of trust which influences SME internationalisation. Adler and Kwon (2002) also stress trust in social capital by defining SC as “*the goodwill available to individuals or groups*” (p.23), and consider it as a motivational source of social capital. For example, Theingi et al. (2008), based on Adler and Kwon (2002)’s social capital model, claim that opportunity, and motivation and ability in network relationships that create social capital are linked with trust.

However, Adler and Kwon (2000) argued that there is confusion between trust and social capital. For example, some authors equate trust with social capital (Fukuyama, 1995, 1997), some see it as a form of social capital (Coleman, 1988), a collective asset resulting from social capital construed as a relational asset (Lin, 1999), a key motivational source of social capital (Knoke, 1999, Adler and Kwon, 2002), and some see trust as a source of social capital (Putnam, 1993, Nahapiet and Ghoshal, 1998). Studies further identified that through repeated interaction between actors and/or units, trustworthiness and affirmed norms of friendship and reciprocity within the relationship generate social capital (Villena, Revilla and Choi, 2011). Thus, it can be argued that trust is a source of social capital. Adler claims that trust facilitates knowledge generation and sharing in a large scope and is a precondition for tacit knowledge transfer (Adler, 2001). Interestingly, according to Sue-Chan, Au and Hackett (2012), trust is the result of reciprocal exchanges between two parties, which generally begin with defined and agreed exchangeable resources. In this occasion, trust can be viewed as the product of social capital. Therefore, it is worth noting that trust and social capital are treated differently by different scholars.

Nevertheless, trust is broadly viewed to be relational, in relation to people’s attitudes to and beliefs about others (Pelsmaekers, Jacobs, and Rollo, 2014). This study uses Adler and Kwon (2002)’s SC model, therefore I hold the view that social capital is conceptually different from trust but trust is both the *source* and *effect* of social capital, thus trust and social capital are reinforced mutually - social capital builds trusting relationships (*effect*) and in turn the trust built creates SC (*source*) (Nahapiet and Ghoshal, 1998, Adler and Kwon, 2000, Adler and Kwon, 2002).

As discussed in section 2.1.1.2, internationalisation also emphasises trust when develop business networks - trust building is the prerequisite for relationships building (e.g. Johanson and Vahlne, 2009). Prior studies proved that trust is a fundamental element in the development of collaborative business relationships (Sako, 1992, Bensaou and Venkatraman, 1995, Ring, 1997, Child, 1998, Cope, Jack and Rose, 2007, Sundaramurthy, 2008, Shi et al., 2015) and the key in knowledge-intensive inter-organisational networks (Powell, 1990). Despite its existing broad literature of trust in different fields, e.g., internationalisation and social capital, trust has “no single consensual definition” and is considered as “an elusive concept” (Welter, 2012, p.195). Many international business studies consider trust as “willingness to be vulnerable” (Mayer et al., 1995, p.712), which generally indicates people’s capacity to trust others (Pelsmaekers, Jacobs, and Rollo, 2014). Johanson and Vahlne (2009) is based on Morgan and Hunt (1994) and view trust as “ability to predict another’s behaviour” (p.7). Therefore, it can be argued that in the reciprocity of social exchange, trust can be predicted by the behaviours of one party toward the other. From this point of view, trust is a fundamental prerequisite for entering and developing high quality relationships (Brower, Schoorman, and Tan, 2000, Sue-Chan, Au and Hackett, 2012) and is an important factor of good business relationships (Fisher and Brown, 1988).

Subsequently, similar with trust-building that has been identified as a simulative element in facilitating internationalisation as discussed in section 2.1.1.2 (Johanson and Vahlne, 2009, 2013), the discussions of SC and trust confirm trust that underpinned relationships is a pivotal element in SC (e.g. Nahapiet and Ghoshal, 1998, Adler and Kwon, 2002).

2.2.2.2 Prerequisites of social capital

According to different views of approach, such as formal or informal structure and network closure or weak ties, three prerequisites for creating social capital have been identified by Adler and Kwon (2002). Kwon and Adler (2014) have concluded that social structures that create SC depend on their features in the 1) *opportunities* provided

by the social structures, 2) norms and values that are composed of the network content and offer *motivational force*, and 3) *abilities* of each node of the network that can be mobilised by such goodwill (p.413). Accordingly, there are three conditions required for yielding social capital: opportunity, motivation, and ability have been discussed by Adler and Kwon in 2002 and Kwon and Adler (2014).

Adler and Kwon (2002) argued that “an actor’s network of social ties creates opportunities for social capital transactions” (p.24). Furthermore, after Kwon and Adler reviewing past social capital literature in terms of opportunity aspect in 2014, opportunity is considered as the structural dimension of social capital. Kwon and Adler (2014) suggested that the opportunities of social capital lies in cognitive network, objectives and physical connections, potential ties that have social capital, and mobilised ties that use social capital, as well as propinquity effect in terms of physical distance and proximity. Therefore, it is the context or setting that could employ a relationship network, and presents the existence of ties and assets accessibility (Cheung and Chan, 2010, Theingi et al., 2008). In such a context, an actor’s external ties with others could provide an opportunity for an actor to capitalise on a contact’s resources. An opportunity could be generated that allows actors located within a collective to work together (Adler and Kown, 2002). Hence, network positions tend to influence capital flow among networks (Tsai and Ghoshal, 1998; Yli-Renko et al., 2001), which overlap some aspects of structural dimension social capital (Nahapiet and Ghoshal, 1998). In addition to objective and physical connections, actors’ cognition needs to be considered in networks and different perceptions condition the social capital emergence (Kwon and Adler, 2014), e.g. the minds of individuals including memories, thoughts and desires (Kilduff, Tsai and Hanke, 2006), the perceived networks are more closely connected (Kilduff, Crossland, Tsai and Krackhardt, 2008). Additionally, access to these networks did not mean social capital can be utilised, e.g. high density networks with high-status individuals would influence whether ties are actually mobilised (Aldrich, 2005). Besides, physical proximity, e.g. face-to-face interaction and closed location, is more likely to form ties and amplify its benefits. Hence, it can be argued that opportunity is essential to create the structural social capital (Chang, 2017).

Adler and Kwon (2002) argued that network structure is not sufficient to explain social capital resources flow, motivations are important sources of social capital and represent the extent to which actors establish relations (Adler and Kwon, 2002). In a similar vein, motivation is the desire or willingness to achieve a target, e.g. exchange resources (Siemsen et al., 2008, Radaelli et al., 2014). More recently, Adler and Kwon (2002) have offered two motivations that firstly due to self-interest and then as the effect of network structure (e.g. Burt, 1992). Kwon and Adler (2014) further suggested the motivational content of ties includes norms, values, trust and community membership, which may influence the creation of social capital that benefits individuals and organisations. As Adler and Kwon (2002) argue, trust is a motivational source of social capital. For example, Smith (2005, 2010) indicated trust strengthens the role of network ties in finding a job for actors, and Marin (2012) found that less trust may result in less information flow between contacts even if they have social ties. From organisation level, network norms and network position have been discussed in public organisation and private firms (Kwon and Adler, 2014). For later firms, they stressed network positions over network norms for firms to benefit from social capital. Engel et al. (2017) suggested the importance of motivations to engage in entrepreneurial networking by reviewing recent studies (e.g. Ebbers, 2014, Alvarez, Barney and Anderson, 2013). Consistent with the current study, this statement highlights the significance of entering or building local networks to have social capital that benefits internationalisation. Another aspect of motivation is reciprocity and the expectation of returned favours (Adler and Kwon, 2002). The norm of generalised reciprocity may inspire independent individuals to come together and focus on common goals and interests (Adler and Kwon, 2002). Apparently, the relational aspects and the appearance of reciprocity norms are key to create social capital (Chang, 2017).

Adler and Kwon (2002) considered ability as the source of SC and defined it as “*competencies and resources at the nodes of the network*”. However, their argument in 2002 mainly focused on alter’s abilities and neglected the social skills of the focal actor. Kwon and Adler (2014) they further suggest that “*people are likely to obtain social capital that is more valuable from alters who possess qualities, skills, and know-how that are complementary to their own and relevant to solving the particular problems or*

objective at hand” (p. 417), and they stressed the importance of social skills (e.g. entrepreneur’s interacting skills) in facilitating social capital resource mobilisation. Similarly, Theingi et al (2008) argued that the availability of skills is a precondition for actors to access other resources, such as information, specialised knowledge, trust development skills, networking skills, and so forth. For example, Fang et al. (2015) and Tocher et al. (2015) both stressed the importance of an entrepreneur's ability to build trust with others. Arguably, even though resources theoretically exist within social ties to actors, we cannot gain any value from actors who lack the ability to help us (Adler and Kwon, 2002). Furthermore, social capital can be available when actors possess skills, qualities, and problem-solving ability (Kwon and Adler, 2014). This aligns with Gabbay and Leender (1999), who argued that the relationship must be able to provide access to technologies and resources instead of massive ties. Furthermore, Obukhova (2012) explains the ability associated with motivation to influence social capital benefits, for example, actors with strong ties have high motivation to help their contacts while they may not be the best placed to help. Kwon and Adler (2014) also stressed social skills of the focal actor. For example, Obstfeld (2005) indicated that actors who have ability to enact common goals and actions between dissimilar contacts are often associated with innovative programmes. Similarly, Nahapiet and Ghoshal (1998) built on the work of Putnam (1993), adding shared beliefs as the perceived form of ability. These arguments highlight the importance of shared beliefs between actors and the ability to collectively define and establish goals.

After reviewing the existing literature, to the best of my knowledge, there are no studies that have examined the opportunities (how) motivations and abilities (why) to illuminate social capital creation through networking that benefits SME internationalisation. Therefore, Adler and Kwon (2002) social capital framework offers a nuanced perspective to explain social capital creation.

2.2.3 Benefits and risks of social capital

In the above discussion of social capital theories, benefits can be accrued from both individual and organisational social capital. Relationships between organisations’

members can, for example, create potential market opportunities that are easily captured and do not require creation (Narooz, 2014). Social capital offers benefits for focal actors: information, control/power/influence, and solidarity (Adler and Kwon, 2002). Social capital can also be useful in facilitating actors' goodwill and legitimacy (Burt, 1992, Arenius, 2002). However, social capital does not always generate positive outcomes; for example, it may only benefit the focal actor while negatively influencing other network members (Adler and Kwon, 2002).

For the focal actor, information is one of the most important benefits of social capital: it can contribute to the collection of information from various approaches and enhance the quality and timeliness of relevant information (Adler and Kwon, 2002). For example, previous studies have shown that network ties can enhance job opportunity information availability (Granovetter, 1973, Burt, 1992). One key study was conducted by Coleman (1988), who demonstrated the informational benefits of social capital by discussing a scientist who accessed the latest research-relevant information through frequent meetings with his colleagues. For inter-organisational networks, social capital allows firms to access new knowledge and technology (Podolny and Page, 1998; Huggins, 2010; Zheng, 2010). Brokering activities between firms mutually offer in-depth information that can be enhanced by social capital, and the whole network benefits from the dissemination of this information (Burt, 1997, Batjargal, 2010). Social capital between two independent groups within an MNE can contribute to information flow and transfer (Nebus, 1988), and differing network tie quality can also influence the attainment of information: weak ties are frequently used to obtain new information by teams' cost effective search, while strong ties are crucial in cost-effectively transferring complex and tacit information (Hansen 1988, Batjargal, 2003). All such ties can facilitate positive outcomes generated from organisational social capital.

Control, power and influence constitute the second benefit of social capital. In the study of Zhang and Wu (2013), they confirm that power is significantly associated with the new product development in Chinese high-tech firms. Besides, power is frequently considered with other benefits, influence and solidarity, because power could facilitate partners' compliance and lower the possibility of opportunity behaviours (Zhang and

Wu, 2013). Similarly, Coleman (1988)'s study demonstrated that influence is based on various forms of social capital, such as trust, obligations and norms, and supported that actors who have power could achieve their goals easily. In support, Burt (1992) argued that powerful entrepreneurs' can bridge unfamiliar groups by negotiating effectively with groups in terms of their interests. Similarly, Burt (1997) also stated that managers can act as powerful actors and bridge structural holes in their oversight of multi-group projects. However, SMEs are commonly associated with power asymmetry due to resource deficiencies and the shortcoming of its size when internationalising, which emphasises the importance of relying on external networks to access more resources (Child, Karmowska and Senkar, 2022).

Solidarity is the third benefit of social capital argued by Adler and Kwon (2002). Several studies confirmed that solidarity strengthened by strong ties and network closure, where observed rules and formal controls tend to be less necessary and this external social capital accelerates knowledge flow (Mu, Peng and Love, 2008, Pérez-Luño et al., 2011). For inter-organisational networks, frequent interaction within intergroup corporate ties can facilitate resolutions when arguments occur (Nelson, 1989). Solidarity can be derived from trust networks and enhance sensitive and rich information flow between groups (Krackhardt and Hanson, 1993). Weak ties, such as friends of friends, can also generate solidarity benefits, because weak ties are often more useful than stronger ties, such as family members, because they bridge otherwise disconnected groups (Adler and Kwon, 2002). Granovetter (1973) stated that weak ties between subgroups in a large firm could increase an organisation's degree of integration.

However, as Nahapiet and Ghoshal (1998) stated, social capital is not a "universally beneficial resource" (p.245). Social capital is considered as an investment that requires financial support and may not deliver expected outcomes and with potential negative effects (Adler and Kwon, 2002, Kwon and Adler, 2014). According to Gabbay and Leenders (1999), a social structure can become a social liability if it restricts and limits behaviours and then negative ties in the social structure can impede opportunities, which indicates that over investment in social capital can lead to passive outcomes. Similarly, Prasthanam and Dhanaraj (2010) stated that financial cost and time are

required to foster and maintain relationships, and such encouragement may not always prove cost efficient. Furthermore, Narooz (2014) concluded a risk of social capital associated with uncertainty about how business relationships will evolve. The power benefits of social capital may be influenced by information benefits (Adler and Kwon, 2002), an assertion supported by Child and Rodrigues (2004), who state that local partners can be powerful enough to control and lead the business to their path if focal actors have limited market information resources, and local partners could develop superior learning ability to acquire knowledge and resources from the focal actors, local partners may lost interests in maintaining this relationship. Thirdly, solidarity may exact a negative influence: network closure can isolate focal actors and prevent those outside closed networks from accessing new information (Adler and Kwon, 2002, Coleman, 1988). As Burt (1992) stated that closed networks could be seen as a source of redundant ties restricting the free flow of new ideas and innovations outside the network. Relatedly, it has been proved that bonding SC can impede entrepreneurship and innovation (Lee and Tuselmann, 2013).

The recent studies regarding social capital effects and organisations and demonstrated an inverted-U-shaped relationship between social capital and firm performance (Yu and Chiu, 2010, Villena et al., 2011, Laursen et al., 2012), and suggested that social capital could deliver negative effects after a period of time to firm performance. Pillai et al (2017) suggested that there is an optimal level of SC up to a certain point, and proposed that high level of social capital can 1) dilute the dialectical process and 2) inhibit individual learning, and then result in 3) groupthink that has irrational and poor decisions due to a strong acceptance-seeking tendency, and 4) postponement of structural adjustments, and 5) non-rational extension of commitment, and finally 6) blur the organisational boundaries.

Therefore, the benefits and costs of social capital suggest that social capital needs to be used in a more balanced approach to diminish its undesirable effects and boost its effectiveness of utilisation to internationalisation.

2.2.4 Social capital creation-Networking approach

Since social capital is created from network relationships, network relationships cannot be neglected when studying social capital. As discussed above, many social network researchers have attempted to analyse social capital theories through relationships and/or ties (Han, 2006, Burt, 1992, Coleman, 1988, Granovetter, 1973). For example, Coleman (1988) and Han (2006) argued that social capital originates from a social network. Some researchers consider social networks and social capital interchangeable. For example, Coviello (2006) studied social capital without clear distinguishing networks, which means social networks itself cannot necessarily convey social capital, and social capital can be generated only under the situation of benefits and value that can be extracted from a network of relationships.

This study focuses on the creation of social capital from network relationships. As a result, the concept of social capital and social networks outlined by Coviello (2006) cannot be adopted. Network concepts and network theories greatly influence social capital theory, and networking and social capital are essential components in IE research area (Coviello, 2006, Prashantham and Dhanaraj, 2010). Therefore, networking is discussed in greater length below. To review networking more in-depth, the concept of network needs to be initially understood.

2.2.4.1 Network

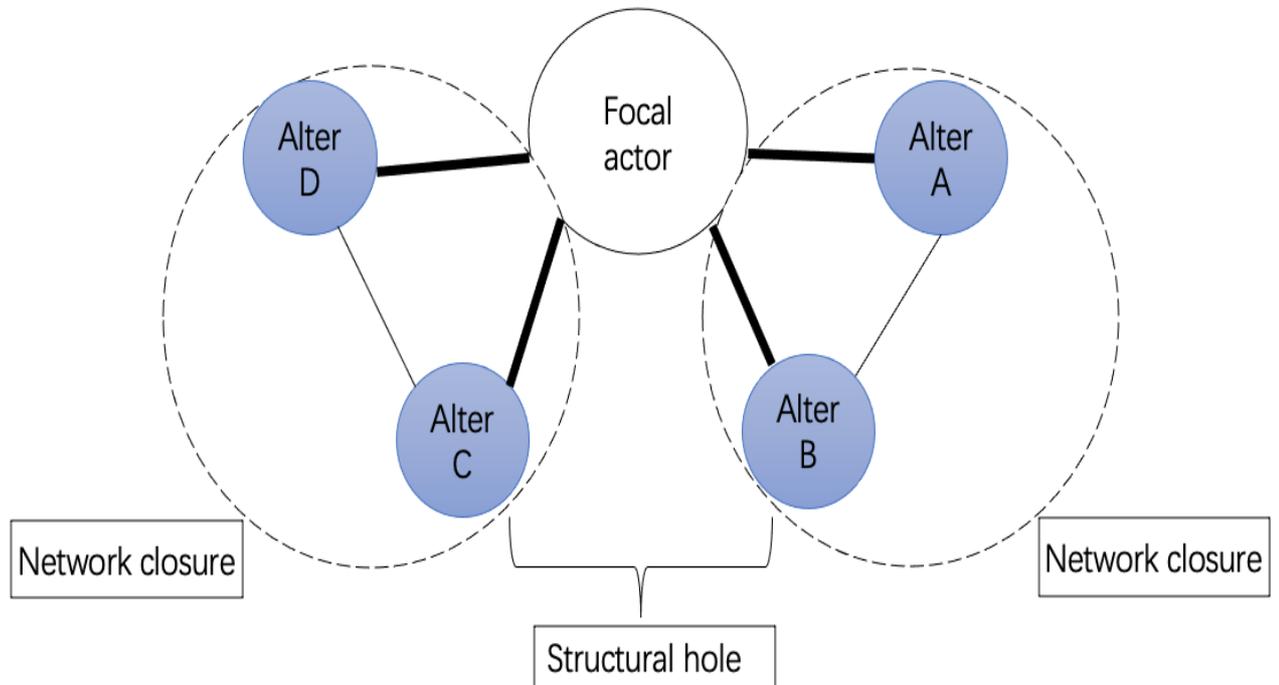
A network is described as the pattern of ties that link a set of nodes (Davern, 1997). Nodes, in this context, indicate the actors within the network, including individuals, groups, or organisations; ties refer to the relationships between these actors (Brass et al., 2004, Oviatt and McDougall, 2005). Brass et al. (2004) argued that nodes and ties are interrelated, that actors are associated with relations and structured patterns of interaction instead of existing in isolation. Two terms, ‘ego’ and ‘alters’, are used to describe each actor’s ties with others in the network. ‘Ego’ describes a network’s focal person, while an “alter” refers to an actor associated with the focal person (Knoke, 1982). An egocentric network is built around an individual person or firm (Arenius,

2002). She also suggested two terms, personal networks which are networks around a person, and business networks which refer to business, task, venture or organisational network (Arenius, 2002). Informal ties, such as family and friend relationships (Coviello, 2006) are composed of personal networks and social relations identified by Adler and Kwon (2002); formal ties focus on inter-firm relationships, such as business or market relationships (Coviello and Munro, 1997), which are described by Arenius (2002) and Adler and Kwon (2002).

Previous studies have shown that SMEs develop various types of relationships with various actors in the internationalisation process (Zain and Ng, 2006), e.g. social networks of relationships of an organisation (e.g. Tsai and Ghoshal, 1998, Kostova and Roth, 2003, Arenius, 2005, Oviatt and McDougall, 2005), and business networks (e.g. Slotte-Koch and Coviello, 2009, Johanson and Vahlne, 2009). In the same way, Lethinen and Penttinen (1999) identified three core networks that firms utilise in international business: social networks, business networks, and institutional networks. After that, Adler and Kwon (2002) divided social structure into three categories: social networks, business networks, and hierarchy networks. There is seminal work by Burt (2005) who studied social capital from network perspective, specifically, the network structure including network closure and structural holes, and suggested combining these two network approaches together to have an integrated model for building social capital. Leppäaho, Chetty and Dimitratos (2018) also studied network structure from type, strength, locality to holistically embrace the international network embeddedness to facilitate insidership and internationalisation. Additionally, some studies examined network structure (e.g. Semrau and Werner, 2014) and weak ties and strong ties (e.g. Partanen et al., 2014).

An example of a network is illustrated in Figure 6. The focal actor has ties/network relationships with different alters, A/B/C/D. The network of focal actors is composed of both strong ties (thick lines) and weak ties (thin lines). Network closure appears when the focal actor has relationships with alter A and B, and A and B are connected. The same with alter C and D. However, the gap between B and C is called a structural hole.

Figure 6 Network example



Source: Adapted from Hite and Hesterly (2001)

All in all, an ego perspective (focal actor) network relationship is adopted in this study to best understand how the focal actor creates social capital from its network relationship. In order to study social capital origin, Adler and Kwon (2002) identified three social structure types: external relationships: *market relations* (inter-organisational or business relationships) and *social relations* (personal and family relationships), and internal relationships: *hierarchical relations* (intra-organisational). According to Theingl et al. (2008), social capital flows along these three relationship types.

As explained in Chapter 2.1.1, the importance of external relationships for organisations has been identified by several fruitful studies (Stuart et al., 1999, Tsai and Ghoshal, 1998, Arenius, 2002). Lin (1999) supported this view by stating that returns

from investing in social relationships can be exchanged for the benefits of hierarchical relationships, such as job opportunities. Coleman (1988) also suggested that such returns could be deployed in market relations to ascertain benefits such as reduced transaction costs. Therefore, this study focuses on external relationships: market relationships and social relationships. This study uses the terms “tie”, “contact” and “relationship” interchangeably to indicate the alter with which the focal actor is building social and/or business relationships.

However, the previous network perspective studies are mainly static, which cannot capture the creation of social capital. Jack (2010), as one of the most prominent scholars in networking, also suggested that future network research could focus on different approaches, e.g. from its development to associated activities of networking, in entrepreneurship studies using a qualitative method. Thus, it leads to another concept-networking.

2.2.4.2 The verb version of network-Networking

Networking and networks are two separate concepts, while the latter is created by the process of networking (Tang, 2011). The importance of networking has been recognised by plenty of scholars. For example, Johannisson and Mønsted (1997, p.128) argue “unique features of networks are associated more with process than structure, so the verb form networking seems more appropriate and substantiates the use of the network metaphor as a generic conceptual tool for studying entrepreneurship.” Similarly, Bizzi and Langley (2012) have suggested a future research direction towards a verb in depicting the action of networks as - “networking”. Srivastava and Tyll (2021) identified networking and its benefits are indispensable for SME internationalisation (Coviello, 2006, Johanson and Vahlne, 2009, Zahra, 2005), as SME may encounter various uncertainties and risks (Johanson and Vahlne, 2003, 2009), a number of business opportunities (Autio et al., 2000, Zahra and Hayton, 2008), and external resources (Lindstrand et al., 2011, Watson, 2007), and eventually facilitate a rapid internationalisation (Acosta, Crespo and Agudo, 2018, Masiello and Izzo, 2019). Table 4 on p.87 below illustrates the notable studies that adopt networking concept in their

SME research, and it varies from different studies, but mainly in SME internationalisation and entrepreneurship, based on their research nature.

Table 4 Conceptualisation of networking

Authors	Conceptualisation	Key themes
Coviello and Munro 1995	Networking indicates building and employing relationships with other network contacts as an approach of foreign market selection and opportunities identification.	Network perspective, internationalisation process of entrepreneurial firms
Johannisson and Mønsted 1997	Entrepreneurial (personal) networking is considered as an important process for building the network that is necessary and fundamental for initiating the venture, but not sufficient for the sustained development.	Both social and business dimensions of entrepreneurial personal networks, entrepreneurship
Gilmore and Carson 1999	Networking is the way of “doing business”, from making decisions to gaining introductions, and in a marketing context, getting sales. (p.33)	Entrepreneur’s network, Entrepreneurial marketing
Soh 2003	Networking approach would explain how to acquire potential information about new technological opportunities more efficiently. (p.728)	Networking alliances, social network theory, entrepreneurship, information acquisition
Watson 2007	Networking can provide the approach by which SMEs owners can tap needed resources that are ‘external’ to the firm. (p.853)	Network theory, both formal and informal networks, SME performance
Tang 2011	Networking behaviours are interpreted to represent the directions and actions of firms in formulating, developing and maintaining network relationships.	Firm level networking behaviours, resource availability, SME internationalisation
Harris, Rae, and Misner 2012	Networking refers to effective network creation for founding a business and its continuing success in entrepreneurial ventures.	Networking, both social and business networks of owner/manager, SME business growth
Ebbers 2014	Networking behaviour as an antecedent of tie formation between entrepreneurs, including two types of behaviour: “individual networking orientation or building potentially valuable ties for personal gain, and tertius iungens orientation or facilitating tie formation between others.” (p.1)	Entrepreneur’s networking behaviours that positively related with the number of partners, new entrepreneurial start-ups in business incubators

Galkina and Chetty 2015	Networking refers to entrepreneurs' network during internationalisation not purely strategically driven by a predefined network goal, but also by a more effective approach.	effectuation theory from entrepreneurship, the revisited Uppsala internationalisation process model, entrepreneur's networking by internationalising SMEs
Mort and Weerawardena 2016	Networking is that firms actively build and cultivate strategic network relationships for international market entry	Networking in born global, networking capabilities, IE
Engel, Kaandorp and Elfring, 2017	Networking is an activity of creating and shaping network ties that are conducive to the generation and transformation of venture ideas, and "requires an altruistic approach to interpersonal interactions and openness to unexpected contingencies as networking activities stimulate serendipitous goal formation and transformation." (p.36)	Network theory and entrepreneurship theory, entrepreneurial networking under uncertainty to create a new venture
Narooz and Child 2017	Networking in this study explores the connections with institutional networks and actors that are relevant to the institutional networks by assessing the qualitative nature of networks, e.g. strength, function, and nature.	Networking, institutional voids, SME internationalisation
Crowley, McAdam, Cunningham and Hilliard 2018	Networking refers to behaviours through which contacts develop and omit in terms of network identity, role, and its position.	Networking identities and roles, small firm networking within a single industry sector, knowledge creation
Gerschewski et al 2020	Networking can appear at trade shows where they develop and build networks that could enhance the operational performance of ISMEs.	Business networks, network model of internationalisation, revisited Uppsala model, SME internationalisation performance
Srivastava and Tyll 2021	Networking approach refers to network development and utilisation for SME internationalisation and it needs to be industry-specific to have a positive effect on internationalisation.	Industry-specific networking, SME internationalisation and its performance

Source: the author

However, Table 4 on p.87 illustrates limited attention has been put on the networking approach with social capital creation through building network relationships, this is in line with the argument of Anderson, Park and Jack (2007) that social capital exists in social interaction, in other words, developing social interaction is the fundamental to develop social capital. Further research also indicates that SME networking implies that entrepreneurs' networks are developed via usual networking interactions and activities (Gilmore, Carsson and Grant, 2001). Similarly, Johanson and Vahlne (2009) and Vahlne and Johanson (2013, 2017) also highlight the importance of networking interaction in their internationalisation model.

In networking/network literature, aligning with Jack (2010) and Agostini and Nosella (2019) who argued that how to develop network has been under-studied, "*it is not yet clear how to configure the network according to industry requirements*" (Srivastave and Tyll, 2021, p. 365) and few studies have explored how firms are networking in foreign country that creates social capital to enable their internationalisation (e.g. Puthusserry et al., 2020). Therefore, these research gaps inform this study of networking to build network relationships that create SC for MedTech SMEs. Particularly, networking has been put emphasis in entrepreneurship research fields with different perspectives, e.g., individual entrepreneur's personal networks and firm's inter-organisational network, due to the vagueness of IE definition (Brüderl and Preisendörfer, 1998). In SME internationalisation, Child, Karmowska and Shenkar (2022) also stress the importance of SME networking with external parties and using these relationships to illuminate internationalisation, rather than networks *per se*, however they also found that this contribution of networking to SME internationalisation depend on *with whom SME network* (p.11). Accordingly, as explained before, this study focuses on both social relations and market relations in institutionalised contexts, which allows me to focus on an integrative aspect of networking.

To analyse networking approach, as Nahapiet and Ghoshal (1998)'s social capital conceptualisation implies Hakansson and Snehota (1995)'s Actor-Resource-Activity

framework in their theoretical framework to discuss social capital, ARA-framework has been chosen in this study. Not only is it one of the most cited models in network fields (e.g. Bondeli, Havenvid and Solli-Sæther, 2018, Wilson, Grant and Shaw, 2010, Batt, 2008, Gebert-Persson et al., 2014), but was it used to explain how business relationships can be shaped, and Hakansson and Snehota put emphasis on a relationship view in 1995, indicating that this model is based on how business relationships are established, and the original framework has been revised in 2009 with focus on interaction in the ARA model (Gebert-Persson et al., 2014). Besides, regarding creation of social capital, Industrial Marketing Management (2008) by Batt suggests integrating the ARA model with social capital in order to “open up the IMP literature to more cross-disciplinary ideas” (Batt, 2008, p. 489).

The ARA model has three distinct dimensions: Actors, which refer to individuals or organisations in the networking interaction; Resources, which is embedded resources within that actor; and Activities, which “*can be of any kind and can take place at any level from the individual to the organisational net*” (Lenney and Easton, 2009, p. 553). In the study of Wilson et al (2010), they consider actors are deemed to be goal-specific, resources include all tangible and intangible resources, such as knowledge and trust in the actors, and finally, activities refer to networking interaction to improve resources value in the networks of actors. Similarly, Bondeli et al. (2018) suggest that the model introduces an organisational structure, an activity structure and a resource collection to illustrate an organisation in an industrial network. Bondeli and his colleagues further suggest the nature of dyadic relationships’ interaction process can be explained in terms of mutual commitment of actors, mutual coordination activities and mutual adaptation of resources between parties, which are interconnected with and affected by actor web, activity pattern and resource constellation, and they adopted ARA model to integrate social capital into this model and proposed that social capital (residing in resource ties) can be created through involvement of social practices (residing in activity links) and social connections (residing in actor bonds) (Bondeli et al., 2018). Therefore, it can be suggested that the ARA model is widely accepted to analyse network relationships and social capital creation through interactions between business actors.

Though its importance, following Gebert-Persson et al (2014)'s discussion on network approach, I do not take the ARA model as the theoretical lens of this study, instead I consider it as an approach to assist the researcher, myself, to unfold the observed situation or problem. Hence, in this study, I use it to guide and analyse the research and describe how firms conduct networking activities and then create social capital.

2.2.5 Research on social capital and network in internationalisation

Social capital theory provides a theoretical underpinning for managing relationships and accessing resources from individuals, groups and organisations (Filiari et al., 2014). There is increasing evidence indicates that social capital created by networks contributes to SMEs' internationalisation, which allows firms to get access to critical resources, e.g. market knowledge (e.g. Coviello and Murno, 1997, Jones et al., 2011, Udomkit and Schreier, 2017) and more diverse opportunities for internationalisation (e.g. Coviello, 2006, Prashantham and Young, 2011, Park and Rhee, 2012), entry mode (e.g. Chetty and Agndal, 2007, Menzies, Orr and Paul, 2020). For example, social capital is considered as a resource helping entry modes (Kwon and Adler, 2014). Tian et al (2017) suggest that social capital has influence on international opportunity development in SMEs early internationalisation. Rieckmann et al. (2018) also revealed that social capital is crucial for SME internationalisation. Menzies et al. (2020) also supported social capital effect entry mode through offering network resources, information and business opportunities for SMEs. Additionally, Meng, Rieckmann and Li (2016) confirmed that social capital from inter-organisational networks and personal networks are vital in facilitating internationalisation.

As Table 1 on p.55 in Chapter 2.1.4 illustrates the different key themes in the SME internationalisation research field, the network relationships have attracted sufficient attention theoretically. Because social capital is composed of resources that reside in a network of relationships, SC has received considerable attention in the different studies (e.g. Nahapiet and Ghoshal, 1998, Adler and Kwon, 2002) and in the context of SME internationalisation (e.g. Coviello, 2006, Johanson and Vahlne, 2009, Prashantham and Dhanaraj, 2010, Johanson and Vahlne, 2017, Puthusserry et al., 2020). Prior research

of SC has primarily focused on the structure, type or strength of networks (Kontinen and Ojala, 2011; Musteen et al. 2014a, Partanen et al., 2014, Semrau and Werner, 2014), and their significance in facilitating internationalisation from the entry mode (e.g. Coviello and Munro, 1997), speed of entry, and the different roles played by social capital in internationalisation (e.g. Koçak and Can, 2013), and the role and influence of SC/networks on SME internationalisation (e.g. Chetty and Agndal, 2007, Prashantham and Young, 2011, Musteen et al. 2014, Paul et al., 2017, Vissak, Francioni, and Freeman, 2020). Accordingly, I extend literature to SC and SME internationalisation to give a deeper understanding of how SC that derived from network relationships influence internationalisation, shown as Table 5 on p.93 (third column) below.

Table 5 Research on SC/networks in internationalisation

Research themes	Networks in entrepreneurship (Bembom and Schwens, 2018, p.4-p.13)	Extends literature to SC and SME internationalisation (source of the author)
Network content	<p>Network helps firms to access <i>physical, financial and human resources</i> to facilitate internationalisation (e.g. Coviello and Cox, 2006, Coviello and Munro, 1997, Oparaocha, 2015, Knight and Cavusgil, 2004, Shane and Cable, 2002, Bruton, Khavul, Siegel, and Wright, 2015).</p> <p>Besides, <i>knowledge</i> is another intangible resource from network relationships to boost internationalisation (e.g. O’Gorman and Evers, 2011, Yu, Gilbert and Oviatt, 2011). Additionally, network relationships from personal and/or inter-firm level influence firms to search, assess and exploit <i>opportunities</i> to contribute to internationalisation (Coviello and Munro, 1995, Zain and Ng, 2006).</p> <p>Finally, little evidence shows that network relationships influence <i>market entry mode and legitimacy</i> when firms internationalise (Coviello and Munro, 1995, Coviello and Munro, 1997, O’Gorman and Evers, 2011).</p>	<p>Johanson and Vahlne (2006) stress the importance of social capital in internationalisation and argue that its creation and development are associated with international relationships. Recently, Tian et al (2017) found that international relationships are vital for SME pre-internationalisation. Social capital provides valuable resources, information and knowledge that contributes to an organisation’s functional decision-making process. Social capital facilitates firms’ international business and provides foreign market knowledge and information that can prove crucial in identifying potential business opportunities and reducing partner selection cost (Ellis and Pecotich, 2001, Crick and Jones, 2000, Gulati, 1995b, Shakeri and Radfar, 2016, Tian et al., 2017), as the identification of appropriate partners with complementary resources requires much time and effort (Chung, Sing and Lee, 2000). entry mode (e.g. Chetty and Agndal, 2007, Menzies et al., 2020). Social capital is considered as a resource helping entry modes (Kwon and Adler, 2014)</p>
Network governance	Studies show that <i>trust</i> is an important governance mechanism to exchange resources between network partners to influence internationalisation (e.g. Freeman et al., 2010, Simba, 2015).	Networks offer firms critical resources, such as reputation, which accelerate internationalisation (Chetty and Wilson, 2003). Shi et al. (2015) explored the social capital in entrepreneurial family businesses and examined the role of trust. Relational social capital in the form of trust has been

	<p>Besides, <i>contracts</i> are another governance mechanism to exchange resources between network contacts (Zacharakis, 1997).</p> <p>Finally, it is the <i>social mechanisms that facilitate</i> resource exchange between network contacts that influence internationalisation (Zacharakis, 1997).</p>	<p>proved to influence SME internationalisation (Masiello and Izzo, 2019).</p>
Network structure	<p>Studies suggested that different network structures influence the amount of <i>resources</i> and <i>diversity of resources</i>. For example, network size (Coviello, 2006, Sasi and Arenius, 2008, Prashantham and Dhanaraj, 2010) and network position (e.g. Coviello, 2006) influence the amount of resources.</p> <p>On the other hand, tie strength (e.g. Han, 2006, Kiss and Danis, 2008, Prashantham and Dhanaraj, 2010, Prashantham and Young, 2011) and structural holes (Coviello, 2006, Prashantham and Young, 2011) influence the diversity of resources acquired from network relationships that internationalising firms can access to utilise.</p>	<p>Ruzzier and Antoncic (2007) argued that social capital from strong network relationships have a positive influence on SME internationalisation. Strong bonding SC was found to facilitate families' SMEs internationalisation heavily (Bika and Kalantaridis, 2019, Kontinen and Ojala, 2012). structural social capital influences knowledge acquisition (Galkina and Chetty, 2015). Structural social capital in terms of tie strength also influences SME internationalisation process (Masiello and Izzo, 2019).</p>

Source: the author drawing on Bembom and Schwens (2018) and other reviews

Accordingly, social capital from network relationships is being emphasised in the context of SME internationalisation (e.g. Johanson and Vahlne, 2009, Coviello, 2006), and based on IE definition (Oviatt and McDougall, 2005), social capital is significant for SMEs who are internationalised early and rapidly (Ebbbers, 2014, Lamine et al., 2015, Engel et al, 2017), which stresses the role of entrepreneurs' played in the process of internationalisation. Besides, social capital can be divided into personal networks or entrepreneurs' social capital and network of organisational level to examine in the process of internationalisation (Jones and Coviello, 2005, Manolova, Manev, and Gyoshev, 2010). For example, firms' business relationships can provide information about international markets that reduces uncertainty and influences decision making (Chetty and Campbell-Hunt, 2003, Child and Hsieh, 2014). Gulati (1995a) supported the importance of collaboration experience, and also argued that prior ties between two firms may decrease the information of their counterparts and in turn reduce opportunities for new collaboration and degrade firms' ability to resolve uncertainties and influence performance (Chung et al., 2000).

Besides, as discussed in Chapter 2.1.2, the importance of entrepreneurs and their characteristics has been highlighted in INV literature, related to networks (McDougal et al., 1994). SMEs may use alternative governance structures to access foreign market information so they can overcome their own limited resources and other disadvantages. Stam, Arzlanian and Elfring (2014) confirmed that entrepreneurs' personal networks need to be cultivated to create bridging social capital and revealed that distinct networking activities are necessary at different points in time and vary from industries and countries. In addition, an entrepreneur's international experience has also focused on entering new markets as an explanation of rapid NV internationalisation (Ellis and Pecotich, 2000; Bell et al., 2003; Zucchella et al., 2007). Lindstrand et al (2011) support social capital of managers/entrepreneurs can achieve knowledge acquisition about international markets.

All in all, the above literature review section provides a clear view of the relevant concepts—internationalisation and social capital that provide a theoretical underpinning of the present study, and the importance of network relationships and its

social capital from firm level and entrepreneur level in facilitating SMEs internationalisation. After reviewing the extant literature, research gaps are identified.

It can be noticed that variances of social capital are largely studied in the previous research, but most of these studies are concerned with the impact of network on firm and performance and are mainly static from a variance-based perspective, e.g. network structure, the role entrepreneur and the effects of resources. It did not capture how social capital is created that enables internationalisation, in other word, there is scant attention paid on the actual process of network development in entrepreneurship research, as Slotte-Kock and Coviello (2010) argued. Similarly, limited studies have focused on the verb version of network-networking (e.g. Galkin and Chetty, 2015, Gerschewski et al., 2020, Rieckmann et al 2018) to unfold how to build network, as well as to reveal social capital creation for SME internationalisation (e.g. Puthusserry et al. 2020, Rodrigues and Child, 2012).

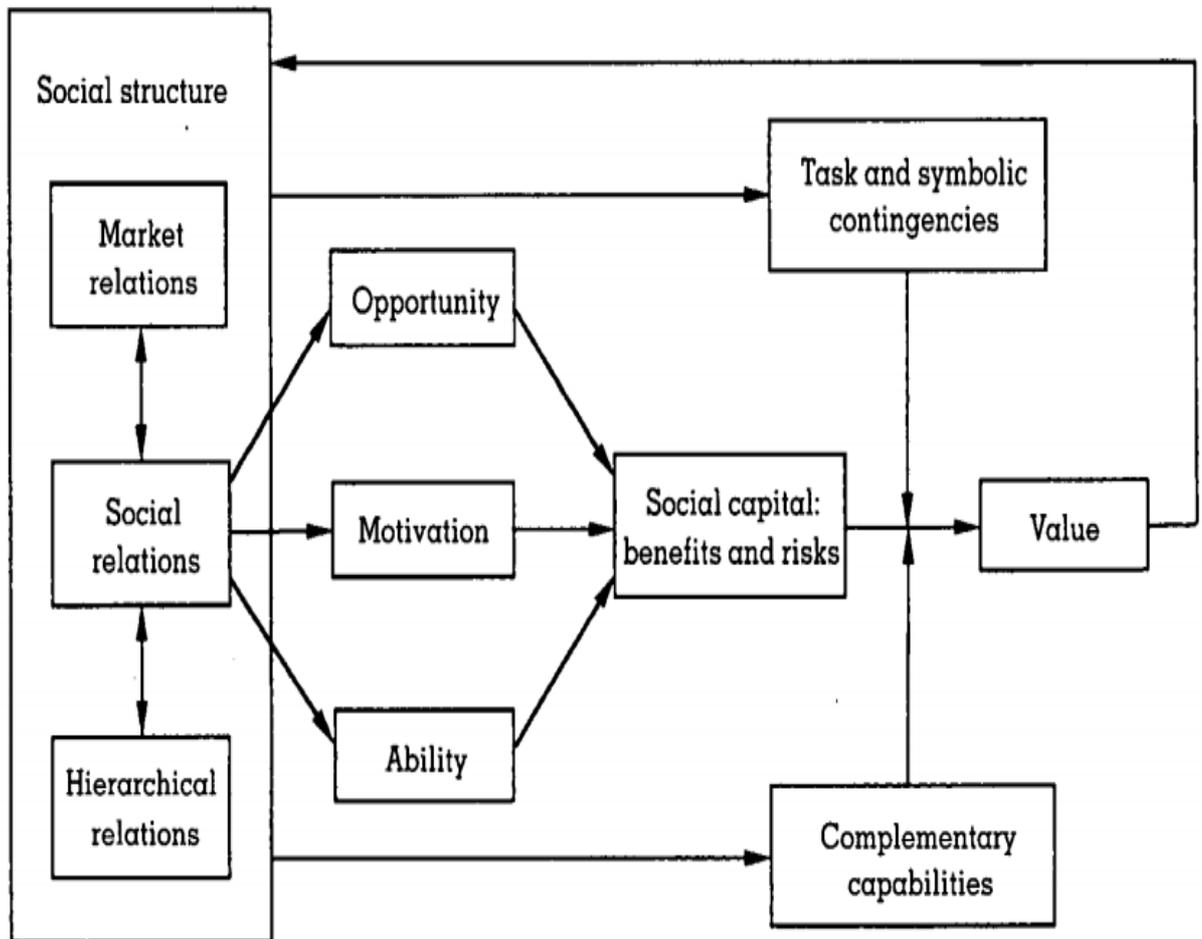
However, the contextual background argues that high-tech SMEs have difficulty in creating or entering networks in their attempts to internationalise especially outside their industry given the complex technology. Therefore, the current study is different from previous static studies, I focus on how to create social capital in terms of networking from both firm level and individual level, accordingly, how network relationship is developed is worth examining. I then develop a framework for the present study focusing on social capital development that facilitates internationalisation. This review assists this research in designing a priori framework that is formed based on social capital theory (Adler and Kwon, 2002, Nahapiet and Ghoshal, 1998), the INV model (McDougall, 1994, 2005), and the revisited Uppsala model (Johanson and Vahlne, 2009).

2.3 Developing the preliminary theoretical framework

Adler and Kwon (2002)'s model (see Figure 7) offers a holistic view of social structures that networks embedded within, actors' motivation and abilities, and the model also introduces its benefits and risks, as well as its value, which has been argued to be

different based on the task and symbolic demands and complementary resources. This preliminary theoretical framework (Figure 8 on p.99) is mainly referenced to Adler and Kwon (2002) social capital model, which allows me to understand the creation of social capital. Because this study examines social capital creation, as an invisible asset, it is difficult to capture the social capital creation process from itself. According to Nahapiet and Ghoshal (1998)'s definition, individual or social unit, network relationships and resources are stressed in social capital, these three variances are studied widely in the previous studies from the above literature review. In order to examine the social capital creation process, it is necessary to examine networks, actors, and its resources.

Figure 7 A conceptual model of social capital



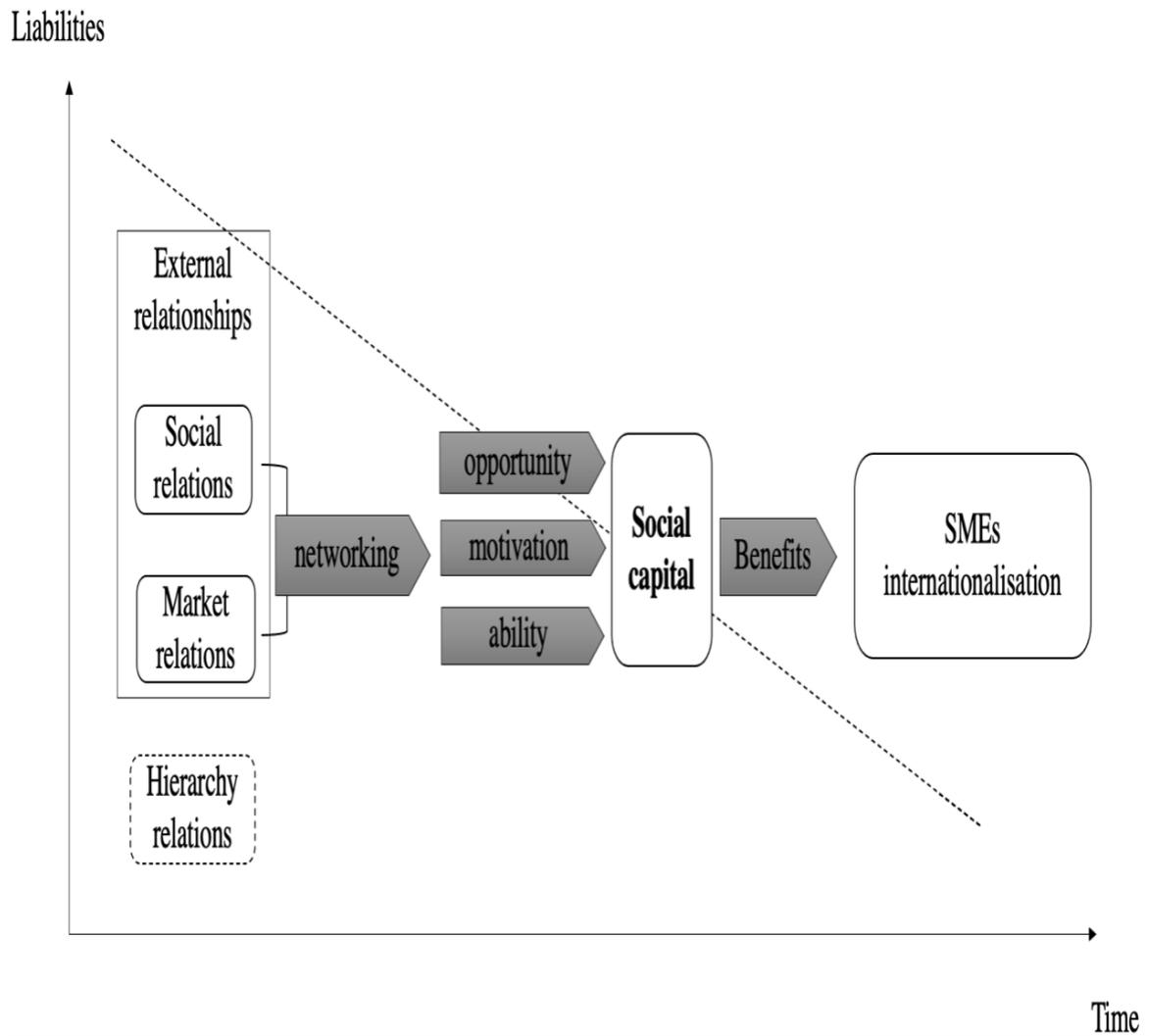
Source: Adler and Kwon (2002, p.23)

As the INV model and the revisited Uppsala model jointly set the boundaries of this study that MedTech SMEs who are rapidly and early internationalised through both firm's networks and entrepreneur's networks, this study integrates Adler and Kwon (2002) model of social capital and Nahapiet and Ghoshal (1998)'s conceptualisation of social capital, and focuses on social relations (individual level) and market relations (firm level), which shown in the Figure 8 below.

In the Uppsala model and its revisited model (Johanson and Vahlne, 1990, 2009), SMEs are constrained with liabilities of being small, foreign, new and outsider of the network to internationalise in the foreign markets (Johanson and Vahlne, 2009). This study focuses on UK MedTech SMEs who firstly enter foreign markets, and these firms are then network outsiders in foreign market, hence its liabilities is certainly higher. Time refers to networking during internationalisation, in which networking activities happen.

Therefore, Figure 8 demonstrates an assumption that before the networking, these firms are the network outsiders who have great difficulties in doing business in foreign country; with the process of building SC through networking, at a certain point, three-dimensional social capital benefits firms and contributes to their internationalisation to decrease their liabilities of doing business in foreign markets. These two variables, time and liabilities are illustrative of key concepts of the internationalisation process but not focal concepts in the study – for this reason they are shown as dotted lines.

Figure 8 Preliminary theoretical framework



Source: Adapted from Adler and Kwon (2002)

Research gaps that identified in the extant literature influence the framework (See Figure 8) creation. Hence, this framework assists in examining by which social capital is created that enables MedTech SMEs internationalisation. Accordingly, this preliminary theoretical model allows this research to address research questions that are identified below.

To be specific, as shown in the Adler and Kwon (2002) model, they suggest social relations and market relations and hierarchy relations that social capital exists in, while

this study focuses on external relationships thus hierarchy relations that within the organisations are excluded from this study. Similarly, as indicating in Chapter 2.1, firm networks are emphasized in the Uppsala model and entrepreneur's networks are emphasised in the INV model, I then decided to focus on both entrepreneurs and firms' level of network to examine their networking activities with both social contacts and business contacts that are supposed to create SC contributing to their business. Typically, social capital is considered as a static asset created from network relationships and examined widely in the previous studies, and Nahapiet and Ghoshal (1998) stated that developing social networks leads to social capital creation, and its definition implies that focal actors conduct networking activities with alters to gain valuable resources. Similarly, Bizzi and Langley (2012) have suggested a future research direction towards verbs action of network- "networking", which has inadequate research previously, and Srivastava and Tyll (2021) argued various industry characteristics, e.g. institutional context have an influence on networking approaches of SME internationalisation. Therefore, in order to unfold social capital creation for internationalising MedTech SMEs, how to network is critical to fill the research gaps.

Besides, as Adler and Kwon (2002) argue social capital is sourced from opportunity, motivation and ability, I identified that network does not equal to social capital. The opportunity of creating social capital would be addressed in the RQ a through networking activities to understand 'how' they network to create SC. As discussed in the contextual background, MedTech SMEs face an uncertain and highly dynamic environment and scarcity of valuable growth resources; this situation is generally not appropriate for building social capital reliant on the stability and continuity of social structures (Arenius, 2002). Therefore, it is important to examine the motivations of entrepreneurs behind the networking and networking alters' abilities embedded in the network relationships to understand 'why' they network that condition social capital becoming available to MedTech SMEs. Accordingly, I consider social capital to become available from network relationships under certain conditions, e.g. what are the motivation behind networking, and then this model assists this research to explore the conditions that social capital can be created, which is limited explored in the previous studies.

Finally, is social capital created to decrease the liabilities of SMEs and enable their internationalisation? Coviello and Munro (1995) argued that technology-based firms that attempt to conduct internationalisation can gain valuable resources and information from their networks. This finding aligns with the definition of social capital (Nahapiet and Ghoshal, 1998). Although social capital's benefits have been identified from the literature (Adler and Kwon, 2002), it is not clear how it benefits internationalisation during the networking process. According to Cohen and Prusak (2001), social capital is not always created intentionally, and it could be invisible to actors who may not realise the existence of social capital. This may lead to ill-usage of social capital for firms even if it exists. Hence, it is necessary for firms to realise the benefits they derive from their networks, and then to fully and effectively utilise them for firms.

Briefly, this preliminary framework demonstrates how the theoretical lens underpin this research and the research gaps that need to be filled to solve the main research problem that:

existing theories barely reveal the process of how SMEs create social capital and its benefits that enable their internationalisation.

The above discussion informs the following research questions for this research:

RQ a) What are the networking activities that UK MedTech SMEs conduct when they attempt to internationalise in foreign market?

RQ b) Under what conditions is social capital available for UK MedTech SMEs to internationalise in foreign market?

RQ c) In what stage in the process of interaction, between UK MedTech SMEs and foreign firms, does social capital become available and its benefits realised?

2.4 Chapter summary

To conclude, this comprehensive literature review offers a broad understanding of the theoretical lens and concepts adopted in this study. The review of SME internationalisation (e.g. Johanson and Vahlne's Uppsala model), international entrepreneurship (e.g. INV model), and social capital (Nahapiet and Ghoshal, 1998, Adler and Kwon, 2002) offers a holistic view of what are the research streams in the extant literature.

The Uppsala model was revisited in 2009 by Johanson and Vahlne to respond to the importance of networks, and the revised Uppsala model shifts focus from the liability of foreignness to outsidership, and stresses the importance of becoming a network insider when firms internationalise. The INV model appears to respond to the new types of firms who are rapidly and early internationalised immediately after firm establishment, and the role of the entrepreneur is the key in this model. While it has been argued that some of the INVs also follow the gradual process depicted in the revisited Uppsala model when they internationalise soon after inception. Thus, some scholars criticise that a single model barely explains internationalisation in a unique approach comprehensively, and limited studies have explained internationalisation by integrating various aspects and facets in the extant models. Briefly, this study follows the revisited Uppsala model and INV model to understand how social capital is created in SMEs internationalisation.

This research also reviews social capital in the current literature. There is increasing evidence that social capital created from network relationships plays a key role in boosting SME internationalisation to access various resources. However, little is known about the approaches by which social capital is created from network relationships. Based on the literature review of social capital and network in SME internationalisation, it is evident that the extant studies put emphasis on network structure, tie strength, density, closeness, centrality. The networking process that unfolds how to build network relationships of SMEs is under researched in the literature. Therefore, my study aims at offering a nuanced explanation of social capital creation from how to

network to build network relationships, why networking, and finally when is SC benefiting SME internationalisation (when is benefiting from networking). Briefly, this study adopts Nahapiet and Ghoshal (1998)'s social capital conceptualisation and Adler and Kwon (2002)'s social capital model to guide this research.

All in all, this literature review can assist this research in identifying the research gaps, e.g. how to do networking. To the best of my knowledge, the extant literature barely explains how to create SC through networking that benefits SME internationalisation, combining the revisited Uppsala model and INV model which stress the network relationships from firm-level and individual (entrepreneur/managers) level separately. In addition to the key theoretical models that guide this research, the literature review also suggests institutionalisation and ARA model to assist this research to analyse the data.

3. RESEARCH METHODOLOGY

Chapter Aim:

To address the research questions that are set in Chapter 2.3, in this context, the proposed research methodology, a qualitative case study, is introduced below. This section begins with outlining the rationale behind this study's research questions, research paradigm and approach. In addition, the research strategy is also explained, followed by sampling strategy. Moreover, this section presents how data is collected and analysed and discusses the techniques employed in this study.

3.1 Research paradigm and approach

This research draws on the philosophical assumption of interpretivism, and adopts a qualitative, abductive approach to examine social capital creation and its benefits for internationalising SMEs. The reasons of having the following discussions are previous researchers' perceptions of epistemological, ontological or methodological positions that influence a study's research paradigm (Lincoln et al., 2011, Ritche and Lewis, 2003). Ontology considers what exists in the world what people can know, while epistemology concerns itself with how knowledge is acquired (Moon and Blackman, 2014). These philosophical perspectives are shaped by researchers' beliefs, experiences, and chosen discipline (Creswell, 2009). These assumptions guide a study's purpose, design, and methods (Crotty, 1998).

3.1.1 Research paradigm-Interpretivism

Based on this study's research aim, which is examine how to create social capital enabling SMEs internationalisation, interpretivism attempts to understand and explain human and social reality and more appropriate for IE to benefit from the emerged findings (Schwandt, 1994, Crotty, 1998, Ramoglou and Tsang, 2016, Ji et al., 2019), and an interpretivist approach then is deemed appropriate. Specifically, Bryman (2015) states that interpretivists employ a pattern of research logic that reflects the particularity of humans from those from natural science. Accordingly, an interpretivistic approach

emphasises the significance of humankind in the world and the consistency of their engagement and communication with the world, stating that the world is composed of human kind (Creswell, 2009). Additionally, some have argued that realities, phenomenon, and the researcher are mutually engaged and interactive, and thus all research outcomes are socially constructed with interconnected causes and effects (Brown, 1995). This research is also influenced by mine views of reality, such as the researcher's assumption that social capital creation is different between people in different country settings. Research interpretation can be influenced by unique historical and cultural contexts that shape individuals' views of their world, and as a result, researchers form a subjective and general meaning of each phenomenon (Moon and Blackman, 2014). Thus, aligning with this research, interpretivism combines different perspectives that include each person's experience, beliefs, and attitudes of networking, emphasising the subjective view of the individual. This is because the research questions, which examine MedTech SMEs create social capital through networking that enables their internationalisation, and social capital is considered as resources derived from network relationships (Nahapiet and Ghoshal, 1998) and networking with the alters largely depend on how participants consider, perceive and interpret the phenomenon of how to appropriately network and successfully create social capital which allows firms to internationalise.

On the other hand, Bryman (2015) proposed that positivism is associated with objective and independent research that seeks universal truths. Cohen, Duberley and Mallon (2004) supported positivism within epistemological position depends on whether the observations are true or false, and the unlikelihood of reality that could be changed within ontological position. Positivism is objectivist and considers knowledge accurate and true if acquired via a scientific approach and without a biased view (Crotty, 1998). Those with positivist views consider reality based on objectivity and exist independently from the perceptions of observers and non-participant observers (Bryman, 2015). Silverman (2014) states that positivist researchers should offer an objective explanation of reality. Because social capital, as an invisible asset, barely can be measured quantitatively by itself but can be measured by outcomes, e.g. quantifying social capital through measuring SME internationalisation performance that influenced

by SC, it cannot be treated as true or false, it is from human behaviours of networking rather than acquired via a scientific approach. This study focuses on how UK firms network and create social capital for internationalising SMEs, its assumption lies in that the approaches of networking and creation of social capital are different for each individual, and thus it does not exist independently from the researcher's and participant's perception, but is various among their perceptions. Accordingly, positivism, based on objectivity and observations isolated from participants, is not appropriate for this study.

Therefore, consistent with the justification from philosophy, it is important to understand participants' (e.g. entrepreneurs) subjective view regarding their own social capital creation. Because networking and social capital is a social process, which is influenced by different cultures, beliefs, perceptions, and experience of actor (Lin and Si, 2010), interpretivism can enable this study to capture and reflect the personal and interpersonal experiences and perspectives of the study's subjects, in the close context of their networking behaviours.

3.1.2 Research approach - Abductive qualitative approach

3.1.2.1 Abductive approach

This section outlines this research's rationale for selecting the qualitative method and an abductive approach. This study is abductive because it is an iterative analysis between theories and data to generate rational explanations. This study is on the inductive side to build on theory, but not a pure grounded theory as this study uses a priori theoretical framework (please see Chapter 2.3) to guide the research design to collect the data and aiming at build new insights on the theories of social capital and internationalisation.

Abductive approach is a systematic combining of deductive elements and inductive elements and indicates that the researcher interacts theoretical framework with the data

collection and case analysis process, which is particularly useful for developing new theories from case study (Dubois and Gadde, 2002). On the one hand, an inductive approach enables the researcher to access a profound understanding of the observed phenomena of social capital creation (Miles and Huberman, 1994). The inductive approach begins with data collection and data analysis and then employs findings in positing a theory associated with the context in which a phenomenon occurs. On the other hand, the deductive first begins with associated theories from previous studies and tests a theory by establishing a set of hypotheses (Saunders, 2015), and instead of testing theory, this study uses the previous theories to guide the research design. What Dubois and Gadde (2002) suggested an abductive approach to case study is inspired by ‘abduction’ that investigates the relationship between ‘everyday language and concepts’ (Lines and Peirce, 1931, Kirkeby, 1994), and is a systematic combining instead of a mixture of inductive and deductive approaches, and it is closer to an inductive approach than a deductive approach in order to achieve new concepts generation and theory development through interplaying between theory and empirical data. According to Dubois and Gadde (2002), the key to abductive approach to case study is the ‘framework’, which is designed based on the existing theories, this research therefore developed a preliminary theoretical framework shown in Chapter 2.3 and then it is developed and evolving with what is emergent through data collection, analysis and interpretation and finally formed the theoretical framework shown in Chapter 6.4.

Being specific on this research, in order to build on refinement of existing theories of social capital and SME internationalisation instead of generating new theories, the details of an abductive approach are introduced then. Specifically, this research needs an initial theoretical model to guide the data collection process. To be specific, in this study, different from traditional SMEs, high-tech SMEs, usually take a fast and different approach to internationalise in foreign country, and the importance of social capital and networks in internationalisation has drawn much attention. As the firms attempt to internationalise in foreign country, they usually engaged in interacting with foreign partner (Musteen et al., 2014b, Fink and Kraus, 2007). Besides, smaller firms are tending to rely on external parties to gathering resources e.g. information, finance, knowledge, international networks and other supports for internationalising (Jones, et

al., 2011, Harris et al., 2012, Torkkeli, Kuivalainen, Saarenketo and Puumalainen, 2019), and domestic institutions to provide financial assistance and/or market information (Narooz and Child, 2017), e.g. Chambers of Commerce and Department of International Trade to understand specific situation that local market is. Therefore, to better understand how firms could create social capital that contributes to their internationalisation, this study from a holistic view to explore external networks from both individual and firms' level that drive their networking activities to create social capital. This study draws an initial theoretical model adapted from Adler and Kwon (2002) and INVs model (McDougall, 1994, 2005), and complemented by the revisited Uppsala model (Johanson and Vahlne, 2009). This model helps to design the data collection process. More interestingly, the specific research setting is looking at U.K. MedTech firms internationalising into the foreign market, which exerts difference from the foreign countries in many ways, such as cultures and experiences (Jansson, Johanson and Ramström, 2007, Duysters et al., 2015). Hence these differences generate new insights and enrich the social capital theory from how to create social capital through networking to internationalise.

Accordingly, an abductive approach is appropriate for this study because its inductive aspect is to make new theoretical contributions to the relevant research fields through following Gioia, Corley and Hamilton (2013) analysis method and the deductive approach suggested by Eisenhardt (1989) allows the researcher to be inspired by the theory to design the current research. Therefore, it is the abductive approach constantly goes 'back and forth' between empirical field work and theory to guide the current research design to build new insights to the theories from the case study to expand my understanding of both social capital and SME internationalisation theories and empirical phenomena of social capital creation enables internationalisation.

3.1.2.2 Qualitative method-Technique in respect of this study

Along with the above section, this study is qualitative research. Instead of seeking to measure a variable through quantitative methods, this research focuses on the process of networking and social capital creation. Social capital has been defined as 'an

aggregate concept that has its basis in individual behaviour, attitudes, and predispositions' (Brehm and Rahn, 1997, p.1000), and more recently, Lindstrand and Hanell (2017) stated that social capital is only available and used by the actors who exist in the network, all of which emphasises the significance of social actors. As confirmed in the relevant literature, in the social sciences, a qualitative research strategy is commonly used to explore social and cultural phenomena. Qualitative methods perceive the social world as processual and composed of social individuals (Myers, 2013, Bryman, 2015). In addition, qualitative research is more contextual and process-specific, emphasising the development of events and patterns (Bryman, 2015). Previous studies such as Puthusserry et al. (2020) followed qualitative study to understand social capital development as internationalisation evolved, and Welch and Paavilainen-Mäntymäki (2014) suggested future research on micro-processes of internationalisation from a relationship-based point. These prior studies provide theoretical background for the current research to adopt a qualitative approach to examine social capital creation through networking in the internationalisation process. Thus, this chosen method allows the researcher to have satisfactory results, as this study attempts to examine in which means social capital is created (e.g. Engel et al., 2017, Puthusserry et al., 2020), which as mentioned above is influenced by individuals with different experiences and perceptions. Similar to Silverman (2014), qualitative methods deeply explore phenomena to better understand people's subjective experiences, knowledge, views and interpretations with rich and in-depth data.

However, this type of methodology leads to greater subjectivity, as findings are based on researcher interpretations of phenomena (Bryman, 2015). The qualitative approach stresses theoretical generalisation generated from investigation (Bell and Bryman, 2007). This theory building perspective of qualitative methods does create disadvantages that limit the applicability of findings in a wider population (Saunders, 2015).

In contrast, quantitative method is not appropriate for this research because it includes such as surveys, laboratory experiments, statistical analysis, and econometrics, which are frequently employed in the natural sciences, and they emphasise measurement and

data quantification. This method cannot assist the researcher to have in-depth investigation of the research phenomena of how to create social capital in internationalisation. The quantitative approach stresses objectivity, repeatability and generalisability through large sample sizes and attempts to simplify complex phenomena into concrete and measurable laws that facilitate cause and effect relationships (Myers, 2013). However, quantitative methods do exhibit some disadvantages; for example, they ignore the social constructs present within a social phenomenon and low ecological validity (Bryman, 2015, Johnson, 2000). Therefore, quantitative method cannot assist the researcher to understand the subjective experiences, behaviours, and perceptions of participants to achieve the research aim of this study.

Accordingly, qualitative research allows me to focus on the process and acquire rich and in-depth information of entrepreneurs' and top managers' experience, perceptions and behaviours regarding networking and social capital.

3.2 Research Strategy

This section explains the research strategy-case study and the rationale behind the selection. As Gehman and his colleagues (Gehman et al., 2018) synthesise, in qualitative management studies, there are three prominent qualitative approaches to theory building, including Eisenhardt's (1989) and Gioia's (2013) case study approach, and Langley's (1999) process approach. Along with the philosophical assumption (interpretivism) and research approach (abductive) that explained above, this study, along with other IB studies (Welch et al., 2011, Piekkari et al., 2009) and IE studies (Coviello, McDougall and Oviatt, 2011, Reuber et al., 2018), adopts qualitative multiple case study to explore this research.

Case study has been considered as an approach including cases act as meaningful units or a series of units that examine a phenomenon in its context through various sources of evidence in order to confront theory with reality (Piekkari et al., 2009). To conduct and design an appropriate case study research, it is important to consider what the "case"

is in a case study. According to Eisenhardt and Graebner (2007), cases are the basis for inductive development of theory, and case could be “decision”, “individual”, “organisation”, “process”, “program”, “neighbourhood”, “institution”, and “event” (Yin, 2014). Accordingly, based on the research aim of examining social capital creation for internationalising SMEs, the ‘case’ for this study is the studied phenomenon-social capital creation process in the internationalisation. Because as explained in Chapter 3.1, social capital is considered different among individual, therefore how social capital is created is considered with a unique pattern among individuals, and multiple cases in different companies provide sufficient data to compare their networking behaviours of creating social capital across cases and build on the existing theories with new insights from multiple empirical evidence (Yin, 2014, Eisenhardt and Graebner, 2007).

Despite the fact that this study examines the process of creating SC, the term ‘process’ used throughout the thesis in relation to social capital creation does not refer to the *process* methodological approach (e.g. Langley, 1999), but rather to a simple English definition - a process that encompasses a series of networking actions that people conduct in order to create SC. Therefore, I studied the process through retrospective recall of my participants to understand their interpretations and understandings of involved events and people.

From the methodological point of view, a *process* approach includes qualitative *process* data and *process* analysis strategies to address ‘*How does the issue emerge, develop, grow or terminate over time?*’ (Van de Ven 2007, p. 145), and “*concerned with understanding how things evolve over time and why they evolve in this way,*” (Langley, 1999, p. 692). The *process* data includes “*events, activities, choices ordered over time, [...], and process theories provide explanations in terms of the sequence of events leading to an outcome*” (Langley, 1999, p.692). Two elements are then important in *process* approach. First, time - the evolution, activity, and flow over time, requiring rich longitudinal data in the studied *process* to capture the *process*; secondly, it is the temporal relations among events in sequence that explain how and why the change occurred (Gehman et al., 2018). *Process*-based research has become popular in

internationalization research due to the importance of developing *process* theory to capture internationalization's dynamics and how and why it occurred (e.g. Hewerdine, and Welch, 2013, McMullen and Dimov, 2013, Welch and Paavilainen-Mäntymäki, 2014, Suddaby, Bruton and Si, 2015, Reuber, Dimitratos, and Kuivalainen, 2017).

Although this study seeks to address how does the issue (social capital creation) develop, it does not use time as a focal concept, nor does it explain the sequence of events or examine its evolution through time, because this study does not examine the methodological *process* itself - how networking events happen over time, but examines the networking that individuals conduct in order to create SC and their understandings, and thus participants were required to recall their memories and a chronological way is easier to have retrospective stories. Instead, the term “process” as used in this study has a straightforward English definition: “a series of actions that you take in order to achieve a result”, according to the Cambridge English Dictionary. As a result, rather than a rigorous *process* methodological approach suggested by e.g. Langley (1999), in this research, I view social capital creation as a series of networking actions that people conduct in order to create SC. This is due to the fact that social capital is an asset derived from network relationships, the development of relationships leads to the creation of social capital, and its definition implies that focal actors engage in networking activities with others to obtain valuable resources (Nahapiet and Ghoshal, 1998, Puthusserry, Child and Khan, 2020). In real life, developing network relationships is not something that happens automatically, it takes a series of activities of interactions and/or communications for individuals to start networking. For example, I asked my participants regarding how they sought and created social capital and therefore their explanations were retrospective constructions of their own understanding of how social capital evolved and how the process developed over time.

Therefore, I studied the process through retrospective recall of my participants by asking them about what they did and who they interacted with, then confirming it with them later, and it could make sense of what happened in the past and understand their perceptions and understanding of the networking events and people involved. For example, it is the sense-making - people's understanding of past experience - that

enables them to make decision on how to proceed in future (Welch and Welch, 2009, Jones and Casulli, 2014, Fletcher, Harris and Richey, 2021) and thus, develop appropriate networking activities and make quicker decisions and proceed more quickly in pursuing and establishing social capital.

Therefore, both theoretical and practical grounds explain that it is a process that occurs when a relationship develops and social capital is created. In other words, creating social capital is a process that requires people to engage in a series of networking activities. This understanding of the process enables me to elucidate how social capital is created by addressing the three research questions.

This study followed Eisenhardt (1989) and Gioia et al. (2013) to guide the research strategy - case study - through selecting appropriate case companies through purposeful sampling and generating new insights to make theoretical contributions to the research areas. The following sections present my arguments and support for the decision on multiple case study and sampling approaches.

3.2.1 Case study method

This study follows a qualitative case study approach designed to build theory. Additionally, according to Yin (2014), unit of analysis is associated with the basic research problem that defines the case's nature, and electing an appropriate unit of analysis relies on the information that is necessary to explain the research (Patton, 2015). As mentioned earlier, Yin (2014) suggested several units of analysis, including individual, event, group of individuals, or organisations. For this study, we focus on the external networks from SMEs decision-makers' and firms' aspect, therefore it includes both social and market relations (Adler and Kwon, 2002) to explore the creation of social capital, hence it is the specific network relationship acts as the units of analysis in this study.

Building on the earlier section on the case study approach, I now discuss alternative definitions of case studies and case study applications. There are some notable

researchers have explained the case study from different theoretical logics. According to Patton (2015), the definition of case study lacks comprehensive and generalisable perspective due to the various disciplinary aspects and theoretical traditions with which cases are associated. One of the influential works on defining case study is Stake (1995), who defines case study as “*both the process of learning about the case the product of our learning*” (Stake, 1995, p.237). Another important work regarding case study is Yin (2014), whose definition is based on the scope and features of a case study. The scope of a case study refers to a ‘contemporary phenomenon’ and the boundaries between phenomenon and context is not clear (Yin, 2014, p.16). Secondly, the features of a case study indicate that research is to investigate technically distinctive situation where has many interesting variables with multiple sources of evidence and theoretical propositions guiding data collection and analysis (Yin, 2014, p.17). Apparently, these definitions include a comprehensive method to conduct a case study, starting with logic of design, the approaches of data collection and data analysis.

To be specific, Yin (2014) has stated that the case study research in his book is mainly on the side of realist perspective, in contrast to interpretivist that this study follows. Each case is considered as independent unit with a unique pattern, and multiple cases provide sufficient data to compare across cases and generate a more valid and robust theory, as multiple cases could offer robust propositions that are greatly grounded in multiple empirical evidence, and enable extensive exploration of research questions and theoretical elaboration (Yin, 2014, Eisenhardt and Graebner, 2007). Further, Yin’s research design approach is similar with Eisenhardt (1989)’s who was considered as positivist, and her approach focuses on generating propositions from previous and existing literature that are generalisable across settings rather than populations, and she proposed a theory building approach from multiple case study to have analytical generalisation and high level of robustness of a finding. To be specific, Eisenhardt supported multiple case study with multiple data sources to triangulate findings and stressed the importance of finding out the logic reasons between relationships, rather than just provide evidence that there is relationship between variables. She also indicates the significance of replication logic on selecting cases based on literal replication and theoretical replication, and a robust could be replicated across cases

(Yin, 2014). For example, in the study of Puthusserry et al. (2020), they select cases based on the heterogeneity (Ritchie, Lewis, & Elam, 2003) and variation (Miles and Huberman, 1994) to have theoretical replication to explore the social capital development. Similarly, Leonhardt-Barton in her study also supported the importance of multiple cases to follow both literal and theoretical replication. However, Eisenhardt has been argued that she follows a positivist approach from case study research by reaching several testable propositions (Gehman et al., 2018). While Ritchie et al. (2003) stated that even though inductive researchers are not testing a hypothesis, the data collection process and categories they use in the process of analysis have been influenced by assumptions that are deductively generated from previous literature, and this indicates the importance of abductive approach to interact fieldwork with literature to guide the research design. Furthermore, other case study scholars such as Stake (1995) and Gioia et al (2013) stressed the use of interpretivistic case studies for generating theory, and they perceive the importance of single case to get richness in data (Piekkari et al., 2009). Besides, Gioia does not consider the replicability of findings as important as Eisenhardt does (Gehman, et al., 2018). Gioia, Corley, Langley and other colleagues in their work of 2018 believe that it is unlikely to have same explanation for the same research phenomenon with two different researchers, as they have different ways to communicate with informants which result to various findings (Gehman, et al., 2018). Besides, Gioia has further stated that his approach is different from Eisenhardt's who follows a multiple case study comparisons approach and in the goal of testable propositions, he puts emphasis on the richness of data by capturing informants' experience and their interpretations of these experiences (Gehman et al., 2018). All in all, it can be stated that Eisenhardt (1989) and Gioia et al (2013) both focus on building theory from case study, while they propose approaches with focus on different perspectives, the former one focuses on building generalisable and testable theory from multiple cases while the latter one stresses grounded theory from subjective interpretations of participants.

After above discussions of relevant case study theoretical perspectives, this study selects case study as appropriate, because it allows the researcher to explore the contemporary phenomenon, which is about firms' social capital creation process in

internationalisation. Further, the inductive side of this research is to build or augment theory, and relevant IB and IE studies have suggested the importance of generating theory from a case study (e.g. Welch et al., 2011, Piekkari et al., 2009). Additionally, Bembom and Schwens (2018) have reviewed 61 networks studies from 1995 to 2016 among IE and IB areas and found that qualitative empirical methodologies are a mainstream method and most of them adopted case studies. Thus, its importance and application can be best reflected in plentiful IB and IE empirical studies, which offer sufficient empirical evidence for conducting case study to examine social capital creation process in internationalisation (e.g. Narooz and Child, 2017, Puthusserry et al., 2020). Accordingly, case study is selected to conduct the research.

3.2.2 Multiple case studies

Following on from the discussion above, multiple case studies are utilised to create propositions and theoretical constructs with rich empirical evidence instead of providing description or testing theory (Eisenhardt, 1989, Eisenhardt and Graebner, 2007).

I believe that, even though, the multiple case study approach has been argued that each individual case lacks rich information (Eisenhardt and Graebner, 2007), and it is different from the typical single case study and whether it can be considered as case study (Piekkari et al., 2009), there are fruitful IB/IE studies have used multiple case study, e.g. Ciravegna, Lopez and Kundu (2014) and Narooz and Child (2017). These previous studies offer theoretical rationale of selecting multiple case studies, as they could provide comparative insights in the studied phenomenon regarding social capital creation in different companies. Besides, given its specific research context, multiple case studies could allow me to get the in-depth understanding of the specific characteristics of the studied context, life sciences. Therefore, I argue that multiple case studies are appropriate for the current study to make both theoretical and practical contributions.

In addition, I consider what Langley said in Gehman's study is meaningful, "we are not completely theory free, it is illusory to say that there is not really any prior theory there, to develop richer understanding of the world, we do need to connect to prior theory" (Gehman et al., 2018, p.297). Since I have clarified that my study is following an interpretivist assumption, and an abductive approach rather than a pure grounded theory, as this research has built an initial theoretical model from extant theory and literature to guide the data collection process, I would rather use both Eisenhardt (1989) and Gioia et al (2013) approach to build theory. Because Eisenhardt allows the researcher to select multiple appropriate case companies that in line with the initial theoretical model to collect information to address research questions, and then Gioia et al (2013) could assist me in providing with new insights to build theory to analyse my data. To be specific, I followed Eisenhardt's approach to design multiple case study by selecting multiple case companies based on purposeful sampling and theoretical sampling (explained in Chapter 3.2.3) and collected data from various sources, and then analysed the collected information using the nodes from existing literature. Furthermore, instead of single case study that Gioia insisted, I am in line with the analysis approach in the case study he suggested to generate new insights and analysed new emerging information and understanding informants' experience and their interpretations and then develop theory by filling the gap of proposing networking and social capital creation for UK firms' internationalisation and making theoretical contribution to relevant fields. This study has four case companies according to purposive sampling, which is explained in the following section, the detailed information of case companies can be found in the Table 7 on p.122 in Chapter 3.2.3.

3.2.3 Case study selection- Purposive sampling

There are various researchers, e.g. Welch et al. (2011) and Patton (2015), stressing the importance of appropriate case selection strategy for qualitative case study method because different case selection approaches lead to different research design and results. A review study regarding case study adopted in the management research by Fletcher et al (2018) stated that sampling in qualitative case study research is associated with "appropriateness, purpose and access to information-rich cases", which are embedded

in the notion of purposeful sampling. An exhaustive work of studying purposeful sampling was undertaken by Patton (2015), who identified eight groups within this strategy, including single significant case; comparison-focused sampling; group characteristics sampling (e.g. maximum variation or typical cases); concept or theoretical sampling; instrumental-use multiple case sampling; sequential and emergence-driven sampling; analytical focused sampling; mixed, stratified and combination sampling (p.265). For example, Ciravegna, Lopez and Kundu (2014) have adopted multiple case studies by purposefully selecting 58 high technology small firms from Italy and Costa Rica to explore how to develop and use networks to penetrate their first foreign market. Similarly, other studies also supported purposeful sampling in the network and IB/IE research studies (e.g. Lawal et al 2018, Child et al. 2017).

Accordingly, after reviewing the relevant methodological literature in Patton (2015) and the extant empirical studies (e.g. Welch and Welch, 2012, Child, Karmowska, and Shenkar, 2022), I have decided to follow a theoretical sampling with focus on partially similar samples, to control extraneous variables and enable a clearer understanding of social capital creation that facilitates SME internationalisation (Child, Karmowska, and Shenkar, 2022, Teune and Przeworski, 1970). The following sections explain the sampling design process and their application to this study.

3.2.3.1 From maximum variation sampling to partially similar sampling

This study initially adopted maximum variation aiming to have a heterogeneous sample (Patton, 2015) to capture all theoretical possibilities with regard to SC creation, which consists of factors that cause variation in the studied phenomenon, and they act as a broad framework guiding the sampling process, including as much variation in the sample as possible, such as firm size, firm industry, the ownership, firm scope (Flick, 2017). Fletcher et al. (2018) argued that maximum variation sampling could represent the complexities in the studied phenomenon. According to the overall parameter of this study is the social capital creation of internationalised SMEs in the UK medical devices sector, this study had used five criteria to select a wide range of cases to identify common social capital creation patterns that cut across variations.

Nevertheless, along with data analysis, I realised maximum variation is not possible because of the specialised nature of the studied sector - MedTech SMEs which requires different actors with diverse knowledge domains, and institutional influences on networking activities with e.g. hospitals and universities require different networking approaches (Powell et al., 2005). Thus, each case has its uniqueness of conducting networking and maximum variation in this context would unlikely be achieved due to the specialized nature of individual firms in this sector.

Following the interpretivism logic, this study is abductive and aims to build on theory with new insights rather than studying the representatives and generalising pattern that suits for the whole medical device industry where there are differences and complexity in this specialised industry. Instead of achieving “maximum variation” that has a heterogeneous sample among the selected cases, it appears that the selected cases are similar in some ways (the pre-set five criteria), but vary in other aspects that are critical to analyse the creation of social capital, e.g. different networking approaches. Thus, it is the sample actually containing what Teune and Przeworski (1970) call “partially similar” cases, which are similar in some characteristics but differ in one, or a few, of them. In effect, Teune and Przeworski (1970)’s partial similarity controls for similar features and enable a clearer understanding of the impact of those that vary. For example, it is particularly recommended to analyse cross-national international business studies to emphasize on certain elements, e.g., industry, national culture or institutional environment (e.g. Ma, Huang, and Shenkar, 2011, Ronen and Shenkar, 2017, Shenkar, Tallman, Wang, and Wu, 2020, Child, Karmowska, and Shenkar, 2022). Therefore, this study aligns with the partial similarity method (Teune and Przeworski, 1970), which selects cases share attributes (the five pre-set criteria) but differ on the theoretical aspects (e.g. entrepreneurs’ background that influences networking approaches in which social capital is created) for this research, and then is conducive to better control extraneous variables, enhance reliability and generalizability (Ma, Huang, and Shenkar, 2011), control the similar ones and enable a clearer understanding (Child, Karmowska, and Shenkar, 2022) of social capital creation that facilitates SME internationalisation.

Thus, the five criteria generate six partially similar case companies which reflect the nature of the purposive sampling, rather than a heterogeneous sample. This sampling revision process also reflects the abductive nature of this study, that iterative process between literature and data. These points of difference (e.g. entrepreneurs' background) and partial similarity (e.g. entrepreneurial start-ups) also inform my coding and/ or interpretation later on i.e. how and why might their different backgrounds have influenced their approaches to and success in social capital and its value. Eventually, six case companies had been identified based on five criteria shown as Table 6 on p.120.

Table 6 Criteria of purposeful sampling

1	The ownership	To simplify the research context, this study selects only independent (private) firms (Prashantham and Young, 2011).
2	Firm industry	The study further limits its industry to high-tech industries, with specific on medical device SMEs, given its unique industrial characteristics (Powell et al., 2005, Jones et al., 2011, Laurell et al., 2013) and its rich theoretical background (e.g. Child et al., 2017, Andersson, Evers and Griot, 2013). Firms are required to provide related services or products. The high-tech industry operates within a highly dynamic business environment mainly made up of small entrepreneurial firms, and high-tech firms often encounter high-level uncertainty and short product life cycles, and small knowledge-intensive firms require appropriate strategies and partners to compete in the global market (Scarmozzino et al., 2017, Presutti et al., 2016). There, the industry is experiencing explosive growth and entering a "Golden Age" (Sang, 2017). As a result, it has attracted enormous attention from developed countries (Sang, 2017). Some of studies have focused on the high-tech industry (Vonortas and Zirulia, 2016, Jones, 2001, Crick and Jones, 2000, Hallam, et al., 2018, Presutti et al., 2016) and provide results for comparison. Detailed information can be found in the section of contextualisation Chapter 1.3.
3	Firm size	In adhering to the European Commission's (2017) definition of SMEs, the study limits its sample to companies with fewer than 250 employees. This study focuses on SMEs because Chetty and Agndal (2007) suggested that the structure and size of such firms allows

		researchers to better observe social capital, similar to other studies such as Narooz and Child (2017), Ghauri and Elg (2018). The selected companies in this study are small (<50) or micro (<10), this research focuses on firms in three categories, i.e. <10 employees, 10-15 employees, and over 50 employees.
4	Firm scope	This study selects UK firms who are evolving with international operations in foreign markets and provide related services or products to business (B2B), rather to consumer market as this study does not explore consumer behaviours and psychology (Arenius, 2002).
5	Internationalisation experience	This study selects firms who are new to the internationalisation and conducting inward or outward international activities in foreign markets. The importance of network and social capital in the early stages of internationalisation have been studied variously which provided sufficient information (e.g. Zhou, Wu, and Luo, 2007, Kerr and Coviello, 2019).

Following this process, six companies were chosen for initial data analysis for this study (see Table 7 on p.122). These six companies in the healthcare industry that are relevant to medical devices and associated services based on partially similar sampling, which allows the researcher to build on new theories from these case companies and find social capital creation within the selected companies. They are the UK medical device firms who have international activities to some extent, shown as Table 7 below.

Table 7 Case companies' information

Firm	Year of establishment	Nature of product	Firm size (No. of Employees)	Background of participants	Year of cross-border activities	Role in the industry	No. interviews	No. participants	Role of value chain
1. AFB	1995	Orthodontic product device	13	Industry experience	2019	Medical device	2	1	Manufacturer
2. PC	1997	Scalp cooling device	20	Industry experience	2013	Medical device	6	3	Manufacturer
3. Case company B	2006	Obstetric product device	5	Scientific background	2013	Medical device	2	3	Commercialisation
4. Case company A	2014	Wearables to epilepsy seizures device	7	Scientific background	2019	Medical device	2	1	Commercialisation
5. Case company D	2016	IPs/Treatments	23	Industry experience	2016	Medical device	7	3	Commercialisation
6. Case company C	2017	Transfer Know-how from UK to Bangladesh	11	Industry experience	2017	Medical device	4	1	Commercialisation
Total							25	11	

Source: the author

This study is to examine how UK MedTech SMEs create social capital to contribute their internationalisation, and this study's underpinning theory for the research design is the social capital theory. According to theoretically sampling as explained in the following section, this study has mainly focused on four case companies which have been categorised into two groups. The first category includes a cluster of two inter-related start-ups (e.g. companies shared common directors), and another category includes two non-related companies (companies are independent with no common directors), details can be found in the section 3.4.

3.2.3.2 Theoretical sampling

To further generate new theory, theoretical sampling following a down-top approach, selects the cases along with the data collection and analysis process (Flick, 2017). Because this study follows an abductive approach, its systematic combining nature is similar to theoretical sampling in grounded theory (Glaser and Strauss, 1999, Dubois and Gadde, 2002), which is to reach an appropriate matching between the phenomenon and theories. After the initial phase of data analysis of the selected cases, I noticed the importance of narrowing the cases to make in-depth theoretical contributions. Relying on Oviatt and McDougall's (1994) definition of INVs as a reference point, the selection criteria focused on firms with global activities from inception, the details can be found in the later paragraphs. I then narrow the six case companies into four case companies based on theoretical sampling to have cases that more suitable for this study and support theory development to make in-depth theoretical contribution including case company A, case company B, case company C, case company D, which allow to study the social capital creation within non-related companies and inter-related companies with deeper data and analysis. These four case companies were selected as part of a purposeful sampling strategy in order to illustrate divergent technologies of products and founders/op manager's background.

According to Miles, Huberman and Saldana (2014), case selection sampling should also follow a theoretical lens when it comes to within-case and multiple-case analysis stage, which is based on conceptual grounds rather than representativeness. Therefore, after

the initial data collection from the purposefully selected firms, which present different perspectives and networking approaches of each participant, theoretical sampling is adopted to further narrow cases that more suitable for this study and support theory development and selects cases that be able to replicate. The selected cases need to fulfil the above mentioned five criteria and provide sufficient evidence of social capital creation and international activity to study the phenomenon. Theoretical sampling has considered as essential process in developing theory from case study (e.g. Eisenhardt, 1989, Gioia et al., 2013, Yin 2014). For example, according to Eisenhardt and Graebner (2007), theoretical sampling, instead of random or stratified sampling, is appropriate for research designed to develop rather than test theory. Piekkari et al. (2009) have also supported the importance of theoretical sampling in the case studies, while they have reviewed many studies in IB areas and found that multiple case studies, especially for those more than 10 cases, did not have theoretical logic for case selection which contradicts the argument of selecting case theoretically rather than statistically grounded stated by Yin (2014). Accordingly, the discussion above has informed the case selection which explained in detail below.

These four firms have been established less than 15 years, who are rapidly and early internationalised startups and their international activities have taken place within the last six years after their creation or after a critical incident of product achievement. As explained in Chapter 2.1.2, they might not strictly follow the INV definition that NV's internationalisation usually happen within 6 years of establishment (Oviatt and McDougall, 1997), as the number of years varies from different industry, and high-tech industry e.g. medtech requires more time to internationalise in the foreign markets after their creation or after a critical incident e.g. product patent, investment and so on, which is essential to internationalisation (Coviello, 2015, Gabrielsson et al., 2014, Neubert, 2015). All of these firms allow this research to have the recent information, and this collected information were structured and organised as the analysis, which are sent back to the participants to verify its trustworthiness and validity and the secondary data also collected to overcome retrospective bias (Yins, 2014). It is well aware that the other two companies are excluded from this research because they are traditional internationalized SMEs who take a longer time and follow a typical and traditional

international process, which is not suitable for this research that focuses on newly established start-ups who are early and rapidly internationalised.

To have deeper understanding and new insights of networking and social capital theory as well as internationalisation, I select two categories of firms. The first category includes case company D and case company C. Case company D is a life sciences company working with top research sites, towards the commercialisation the medical treatments, and case company C is a company aiming at transferring knowledge from UK to Bangladesh. Even though these two firms are not legally included in one group company, these two firms are interlinked, as their networks are intertwined between firms, one of the participants in this research is engaged with both their international activities and networks, therefore, their networks can be utilised for both firms, which could be identified as 'inter-related' in this study, and then this can be new perspective of how to create group social capital. On the other hand, another category includes two independent firms, case company B, and Case company A. Case company B aims to design and develop simple but innovative products for use in emergency obstetrics to reduce risks associated with childbirth. Case company A is to produce affordable medical equipment for hospitals and community, and currently the company is progressing wireless technology for epilepsy. Their networking and social capital creation and international activities are explored separately, and then the social capital creation is also explored within these two firms.

This selection approach allows this research to have new insights of how social capital is created within 'group' and understand the independent firms networking and social capital creation process, and how it contributes to the internationalisation.

3.2.3.3 Sample adequacy

In terms of sample adequacy, as Eisenhardt (1989) suggested, there is no ideal number of cases; however, a number of 4 to 10 cases could work well, fewer than 4 cases makes it difficult to generate theory with much advancement and lacks empirical grounding; and more than 10 cases makes it difficult to deal with the complexity and a large amount

of data. Therefore, my study initially had 6 case companies that offer information and eventually narrowed down to 4 case companies that offer sufficient information and fit into the qualitative research design. In my study, the adequacy of the cases is that the collected data is sufficient to address the research questions, any more interviews and analysis are not necessary and will not provide more meaningful information both theoretically and practically.

For example, in order to ensure that sufficient information was collected from the selected companies, I interviewed entrepreneurs/founders and top managers who are responsible for the company's international business. Due to the strategic nature of my study, only the founder/top manager was suitable, as Welch et al. (2002) claimed, in qualitative IB research, top managers and firm founders possess considerable international and industry experience and personal relationships. Due to the small size of the selected case companies (see Table 7 on p.122 Case companies' information and two companies are less than 10 employees), these participants are typically in charge of multiple aspects of business operations and have sufficient knowledge regarding firms' international business activities, though there were limited numbers of people in a firm that were suitable participants for my research. Also, I conducted two to three rounds of follow-up interviews with the participants to provide data transcripts, data presentation, and asked questions about missing information, and there are two companies where I interviewed more than one person, to ensure I had adequate and accurate information. Because some of my companies are entrepreneurial start-ups, set up by an entrepreneur with sufficient business experience, other start-ups were by entrepreneurs who have scientific knowledge but did not have business experience at the time. More than one participant can offer diverse information.

Additionally, this study follows an abductive approach and discusses the emergent theory with the existing literature, and case study is a better way to achieve this because it is in good condition of combining traditional case studies that stresses contexts to tell stories and deductive way e.g. Eisenhardt, in a way of focusing on both contexts that generate new theories and confirming the existing theories - "tell good stories that have theoretical import" (Dyer and Wilkins, 1991, p.619). As this study stresses the

importance of context i.e. MedTech, and, as discussed by Powell et al (2005), it has various knowledge domains and mindsets which influence networking behaviours and social capital creation, an abductive approach is appropriate for this form of interpretation. Though Eisenhardt is commonly considered as deductivist, she also confirms the importance of iterating between data and theory in building new insights into theory by stating that *“tying the emergent theory to existing literature enhances the internal validity, generalizability, and theoretical level of theory building from case study research. While linking results to the literature is important in most research, it is particularly crucial in theory-building research because the findings often rest on a very limited number of cases.”* (Eisenhardt, 1989, p.545). Therefore, this study relied on Adler and Kwon (2002) serving as the reference point for establishing the theoretical adequacy of the cases, as well as data collection and analysis to verify that the final four case companies provided enough information.

Thus, the selected cases were expected to explore its networking and social capital creation which fills the theoretical gap regarding in studies of creating social capital enabling internationalisation, and further provides practical implications to firms regarding effective networking.

3.3 Data collection

3.3.1 Participants access

This study collected qualitative data from both open-ended depth interview and semi-structured interview, complemented by secondary data from documents and websites, to augment study findings, Table 8 on p.131 presents the data summary. Semi-structured interviews were used to address and focus on the research questions during the interview process (Daniels and Cannice, 2004). Data source types may include interviews and archives, questionnaires and observations (Eisenhardt, 1989, Yin, 2014, Chetty, 1996). Key informants were selected based on the study’s research objectives. The best approach in selecting key informants is to identify those who view the observed phenomena from contrasting perspectives in order to minimise interview data

prejudice (Miles and Huberman, 1994; Eisenhardt and Graebner, 2007). Welch et al. (2002) discussed business executives, such as top managers and firm founders, in qualitative IB research, and considered them to possess considerable international and industry experience and wide range of personal relationships. This study aims to explore how firms build or enter local networks to create social capital that contributes to their internationalisation, from both individuals' and firms' level external network relationships, namely social relations and market relations. Therefore, the study limits interviewees to firm founders and top managers who are responsible for international business and able to provide accurate responses.

The first and most important step in conducting a case study through interviews is identifying and approaching appropriate case companies. However, identifying the target companies and inviting them to participate in the PhD research was a difficult task. There were issues acquiring access to the relevant firms. For example, when I searched the SME database to identify the companies, I found just a handful that could be identified and contacted, because SMEs, particularly start-ups, are not always registered as companies even after several years and often alter their form or nature. Additionally, the GDPR also makes it harder to search for individuals, unless they are registered with Companies House or actively advertise, information about entrepreneurs may be difficult to get access to for research purposes. For instance, I made cold calls (Conti and O'Neil, 2007) when personal contacts and email addresses were unavailable, and after 40 calls, no participants were approached; I also searched and made contacts with entrepreneurs via LinkedIn, and some of them were interested and actively responded - and one of the participants was successfully approached via LinkedIn, though the majority of them were unsuccessful. Accessing the case companies was tough, but I was eventually able to do so thanks to my supervisors' relationships and relevant research seminars at Sheffield University Management School. Besides, because of the pandemic, I was unable to return to the companies to ask further questions, but, I was able to return to two of them to present and discuss the transcripts and preliminary findings. Section 3.3.3 has more information on data triangulation.

Hence, this study collected sufficient data from firms' decision makers and top managers who are responsible for firms' international business. The interviews were taken place in a formal face-to-face meeting in the public area, such as Sheffield University Management School café, or through telephone meeting, to ensure both the researcher and participants' safety, and the interviews typically lasted one to two hours to ensure sufficient data. The participants I interviewed are the contacts I built relationship on the academic sessions organised by my supervisors or introduced by my supervisors or through direct emails.

3.3.2 Interviews guide and procedure

Interview questions, see the appendix 3, have four sections related to research questions. The interview guide is designed to address the research questions of revealing social capital creation, this theoretical language was unfolded into common language and the interview question logic was due to the Actor-Resource-Activity (ARA) model, as explained in Chapter 2.2.4. Firstly, informants were free to talk about the firms' background. Secondly, inspired by the ARA model, the researcher encouraged interviewees to talk about how they interact with local people or networking activities associated with entering local networks. Thirdly, aligning with the ARA model, its *actor* aspect was used to design the research logic to analyse this study, aligning with social capital framework from Adler and Kwon (2002), the researcher encouraged participants to answer questions regarding the conditions that make social capital available to them. Finally, towards the *resource* aspect in the model, the researcher focused on questions about how participants feel when they realise they benefit from social capital in internationalisation. The follow-up interviews were more open and based on the information from the first-round interviews, the researcher guided the participants to talk about the critical events of the business as well as the person who makes contributions to the events, and the detailed information of networking activities with each person and the benefits derived from the network relationships were explored.

This study initially selected six UK MedTech SMEs to do the field work. To begin with, the researcher had multiple interviews with entrepreneurs or top managers of each

selected firm allowing me to collect data from an individual perspective (social relations) (e.g. Welch et al., 2002), and participants were talking about their previous experiences and perceptions regarding the topic. Besides, another group of interviews with top managers are associated with firm perspective (market relations) (e.g. Puthusserry et al. 2020). These managers were chosen because they are responsible for firms' international business activities, they have enough information regarding firms' business relations, such as suppliers, customers and competitors. These interviews allow the researcher to understand and explore how firms enter or build local networks to create social capital that contributes to internationalisation. Additionally, the researcher did the open-ended follow-up interviews with the participants, with the aim of verifying the first-round interviews' information and asked for the missing information as well as the detailed information regarding each business event and critical relationship. These follow up interviews provide the researcher with more fine-grained information to analyse. Further, I did interviews with two policy makers who provide additional information regarding how UK SMEs conduct internationalisation through the UK department to validate the research and triangulate this study's findings. All collected information is recorded on a confidential basis with interviewees' authorisation and permission. Table 8 on p.131 below depicts the details of primary and secondary data.

3.3.3 Data summary

As mentioned in the section of sample adequacy, this study used Adler and Kwon (2002) as a reference point for establishing the theoretical adequacy of the cases, as well as the process of collecting and analysing data to ensure that the final four case companies supplied sufficient information. To ensure the collected information reaches the theoretical adequacy of the cases, I began the data analysis by identifying key concepts and themes of networking activities that create social capital to facilitate internationalisation from each case and cross cases. I continued to examine the data through abductive reasoning (iteration between literature and data etc), which allowed me to broaden and deepen the line of enquiry with the responding cases. Eventually, its abductive nature decides that this iterative data analysis is completed when it reaches

theoretical adequacy, at which point no further themes can be identified. The overarching goal was to augment extant theory on SC in SME internationalisation in the specialised context of MedTech.

Table 8 summarises and demonstrates the key information of data collection for both primary data and secondary materials. It presents the 6 participating companies and 2 policy makers that I interviewed with, and the sources of primary and secondary data which is composed of interviews, company and government brochures and websites, and there are 27 interviews and 24.5 hours of interviews in total including the follow-up interviews. I finally generated a work of 158,738 words of transcripts.

Table 8 Data summary

Interview companies	Data sources	No. interviews	Interview length	Words of transcripts	Total
1. AFB	Interviews, company's brochures and website	2	1hr14mins	9,341; 3,309	12,650
2. PC	Interviews, company's brochures and website	6	2hrs44mins	1,353; 3,967; 4,044; 5,034; 2,603; 3,816	20,817
3. Case company B	Interviews, company's website	2	2hrs18mins	10,970; 6,310	17,280
4. Case company A	Interviews	2	1hr3mins	1,173; 4,895	6,068
5. Case company D	Interviews, company's website	7	9hrs6mins	10,076; 10,896; 8,516; 10,867; 8,163	48,518
6. Case company C	Interviews, company's website	4	5hrs3mins	10,076; 10,896; 8,516	29,488

Policy maker A	Interviews, government brochures	1	1hr16mins	8,971	8,971
Policy maker B	Interviews	1	1hr34mins	14,946	14,946
Total		27	24hrs18mins		158,738 words

Source: the author

3.4 Data analysis

I start with the within case analysis and then conducts cross-case analysis to analyse the collected information to address the research questions. Within-case analysis assists in better understanding cases differences and similarities, each case is individually analysed due to case complexity. According to Dey (2005), characteristics of object and event studies must be interpreted to have a profound explanation of the processes and contexts of interactions and intentions of the actors. Miles and Huberman (1994) argue that research conclusions must be reached through analysis of collected data rather than completely quoting field texts. Within-case analysis is associated with an enormous volume of data that involves primarily narrative data for each case and presented in-details (Eisenhardt, 1989). This data allows researchers to better understand and become familiar with each case as a “*stand-alone entity*” (Eisenhardt, 1989, p. 540). This in-depth analysis describes each case as it explains the research phenomenon and why it occurs (Miles and Huberman, 1994). Subsequently, cross-case analysis is followed after identifying the unique social capital creation pattern of each case, which in turn contributes to cross-case analysis which is to compare unique patterns from each case and conclude a comprehensive social capital creation pattern for all of the cases (Eisenhardt, 1989). Along with the level of data collection, the level of data analysis is based on entrepreneurs (individual), who is the key element in the SMEs. Qualitative content analysis is followed in this study to analyse data using categories that are partly generated inductively (derived from the data), as stated in Forman and Damschroder (2007) that content analysts often engaged a combination of both inductive and deductive approach to firstly analyse the data through theoretical frameworks to get into the data and inductive approach to identify emergent new

insights from the data. Therefore, align with the research approach of this study, on an inductive side but not a pure inductive approach, (abduction approach), this study involved with both deductive and inductive data analysis approach (Eisenhardt, 1989, Miles and Huberman, 1994, Strauss and Corbin, 1990, Gioia et al., 2013). The detailed analysis process is introduced below.

3.4.1 Within-case analysis

Table 9 below summarises the different steps that I conducted to do the data analysis for this research, and the analysing process that specifically to this study is introduced in the following.

Table 9 Different steps of data analysis

	Stage of data analysis	Steps of data analysis	Tool used	Aim
Step 1	Data preparation	Recording transcription	Xunfei Translator	Representation of data
Step 2		Uploaded to the NVivo	NVivo	Organising the data and preparing for the coding process
Step 3	Within-case analysis process	Open coding	NVivo	Data reduction and identify the key information, e.g. critical events for business development and critical contacts (Strauss and Corbin, 1990, Miles and Huberman, 1994) and write up summary of case description
Step 4		Pattern code against the priori codes	NVivo	To identify the emerging themes and to write up the within-case analysis (Miles and Humberman, 1994)
Step 5	Cross-case analysis process	First-order concepts coming from cross the cases using the constant	NVivo	Based on the pattern codes, this step is to identify and organise a number of concepts cross the cases (Gioia et al., 2013)

		comparison method		
Step 6		2 nd order themes analysis, which is similar to the axial coding (Strauss and Corbin, 1990)	NVivo	Seeking similarities and differences among the many categories and consider whether the emerging themes suggest concepts that could help describe and explain the studied phenomena, and select the highly theoretical relevant concepts (Gioia et al., 2013)
Step 7		Aggregate dimensions		In this third level of aggregate dimensions as suggested by Gioia et al (2013), more aggregative and abstractive dimensions come from the 2 nd order themes to achieve fine-grained data analysis and formulate data structure.

Source: the author

Based on the data analysis steps, I consults the literature so the research process is transformed from inductive to a form of abductive research, because data and existing theory are considered intertwined (Alvesson and Kärreman, 2007).

The first step in doing data analysis, I started with transcribing the interviews and the recordings were transcribed by the software initially and then I verified the transcriptions by comparing them to the recordings to make sure the accuracy. Eventually I uploaded interview transcripts of six firms and two policy makers to NVivo for analysis, a computer-assisted tool, NVivo, which supports the coding, organisation and representation of data as the researcher organises and interprets the empirical material.

Next, due to the rich information from multiple interviews, it is necessary to have clear classification data to do data analysis deeply and thoroughly. To simplify the analysis process, all data can be classified within categories based on research topics and then recombined according to research concepts or theories (Dey, 2005). Suggested by Miles and Huberman (1994), I conduct “data reduction”, as qualitative data from interviews

in this study includes extensive information, which need to be reduced and organised to discard all irrelevant information, through coding and writing case summaries. I also make sure to have full access to it if required as the emerging findings may need to re-read data. Subsequently, to identify the specific network relationship from such rich information, I decide to identify the critical events for case companies' business development in the initial data analysis, as critical events could be useful in presenting an exploration of entrepreneurial behaviours (Cope and Watts, 2000). An event is defined as "as a specific action or occurrence mentioned by any respondent and not denied or disconfirmed by anyone else". Thus critical events are decided to be initially identified in the first data analysis to classify the critical information. This study is focusing on the networking and social capital creation process of the firm, it is necessary to focus on the actors and relationships that enable these critical events, therefore, to make the analysis in more depth, the unit of analysis is the specific network relationship behind these events, and finally explore its relationships inside. This process allows the researcher to analyse the collected information more in-depth and rigorously to address the research questions.

Therefore, to reduce and organise information and identify the critical events and network relationships, I started with "open coding", which means all the statements that relevant to the research are identified, and each of them is organised under an appropriate code or category (Strauss and Corbin, 1990). Coding process is necessary to organise massive initial data into conceptual categories, as Miles and Huberman (1994, p.56) note "*Codes are tags or labels for assigning units of meaning to the descriptive or inferential information compiled during a study. Codes are usually attached to 'chunks' of varying size – words, phrases, sentences or whole paragraphs*". This stage is not based on existing theory, instead it is based on the meaning that emerges from data. In the context of the current research, the research identifies the events that contributes to the firm's business development by looking at its websites to identify some of the key events shown online and then ask them the details of the events also the contributions to their business, as well as asking questions such as "what are the key contributing events behind your business" and key contacts that enable this event in a timeline, and then write thick description of each event and especially of

network relationships. For example, this involves nodes “personal friend”, etc. Table 10 below summarise the units of analysis across the four companies.

Table 10 The overall units of analysis of case companies

Unit of analysis	Specific network relationship				Total amount
Case companies	case company D	case company C	case company B	case company A	
Number within each firm	16	9	10	8	43
Overlapped relationships	There are overlapped relationships between case company D and case company C.				

Source: the author

After the open coding stage in the within-case analysis, I then used a theoretical framework to “pattern code” (Miles and Humberman, 1994), patterning code against theoretical categories to identify emerging themes regarding networking activities and social capital, which enabled me to write up the within-case analysis. Specifically, I used priori codes which are identified from theoretical frameworks as a way to “get into” the data (Forman and Damschroder, 2007). Specifically, from the theoretical lens of social capital (Nahapiet and Ghoshal, 1998, and Adler and Kwon, 2002), I examine the social capital creation process by exploring networking activities that create structural, cognitive, relational SC. Besides, according to previous literature, Leenders and Gabbay (2013) argued not all of the ties not all of the ties contain benefits, and thus social capital cannot be generated randomly when ties exist, but in the networks providing resources and only under certain conditions. Similar to Adler and Kwon (2002), they suggested three prerequisites to generate social capital, which are opportunity, motivation and ability. Thus, conditions that social capital is available are explored from emerging findings. Finally, due to this study following an abductive approach, it is critical to build new insights to contribute to the theoretical fields, emerging findings are deeply explored to propose the stages of interaction that social capital and its benefits has been realised. Therefore, this analysis process finally

proposes networking and social capital creation enabling SME internationalisation. Table 11 below is an example from within-case analysis findings to illustrate the concepts in the columns that used to pattern code and empirical findings in the rows. The within analysis is not an easy but an iterative process to organise the key network relationships and key internationalised events, the initial part of the analysing process to extract key points can be found in the appendix 4 and eventually each case findings were formed together (see appendix 6) and lead to cross case analysis was conducted (see appendix 5). Finally, within-case analysis was formed with detailed case study write-ups for each company with a figure to demonstrate visually.

Table 11 Within-case analysis summary examples

Actors	Types	Institutionalised contexts	Modes	Directions
Actors in case company C				
Prof A.D.	Newly established	Hospital	Unplanned	Outgoing
Prof A.K.	Newly established	Hospital	Unplanned	Outgoing
P.D.	Newly established	Hospital	Unplanned	Outgoing

Source: the author

3.4.2 Cross-case analysis

After the within-case analysis described above, I move to cross-case analysis, which assists this research in exploring the unique characteristics of each case and generates a comprehensive pattern (Eisenhardt, 1989). Cross-case analysis considers data through diverse aspects, and I used cross-case analysis to examine how structural, cognitive, and relational social capital is created that contributes to SME internationalisation. Following an abductive approach, its inductive aspect is to make new theoretical contributions to the relevant research fields through following Gioia et al (2013) analysis method to do the final stage of data analysis, starting with the first-order coding, and then organise the 2nd order themes, and eventually form the aggregate dimensions

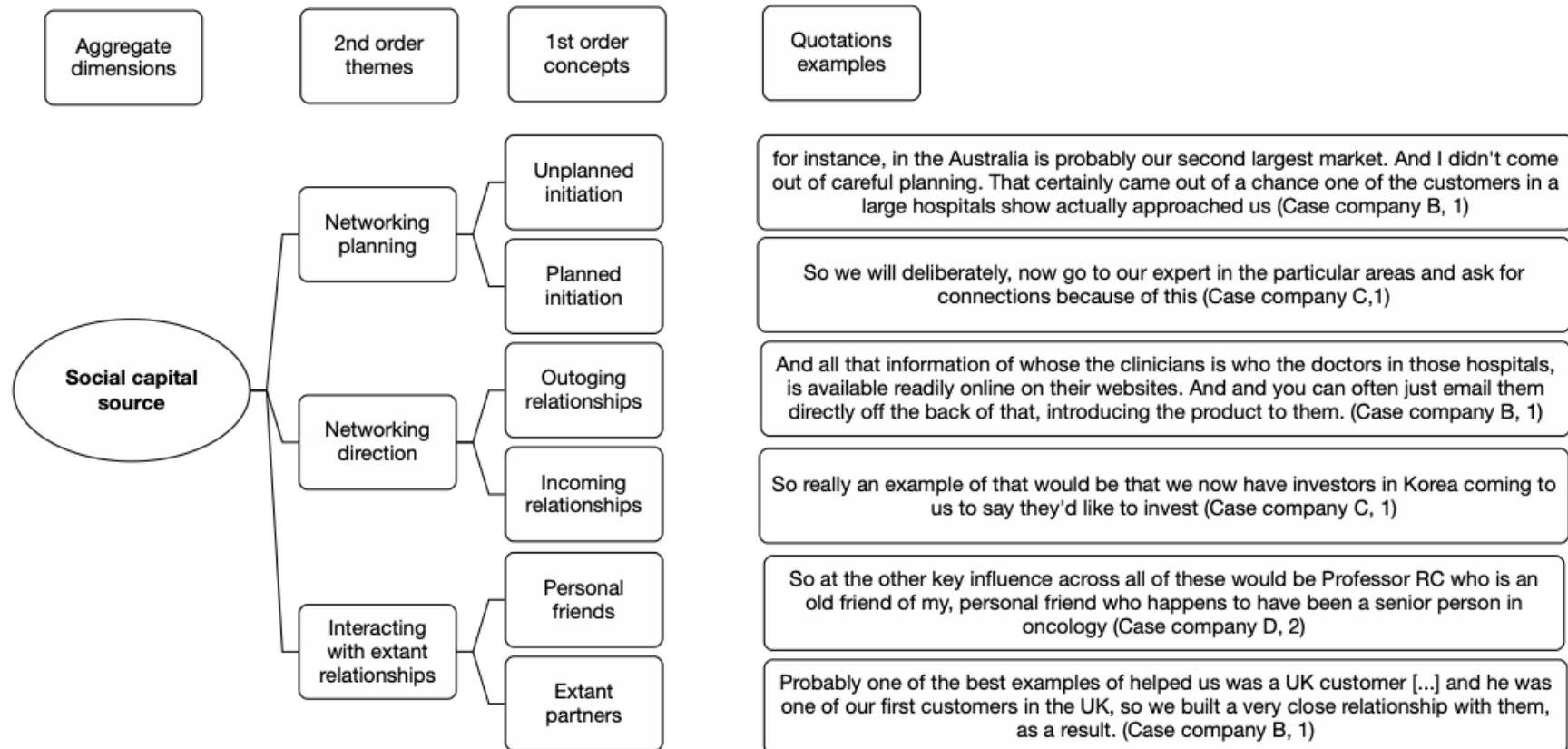
to address the research questions, and the deductive approach suggested by Eisenhardt (1989) allows the researcher to be inspired by the theory to design the current research. Seeing Figure 9, Figure 10, Figure 11 below illustrate the coding process of this research following Gioia's logic. To make it easier for readers to directly grasp the key findings of this research, I present the figure from left to right (aggregate dimensions to quotations), which is different from Gioia's presentation (quotations to aggregate dimensions), but the underpinned analysing logic is the same.

With respect to the unit of analysis of this study, the specific network relationship, a review of the within-case analysis distinguishes two types of firms: a cluster of inter-related firms (case company C and case company D), in which their network relationships are interlinked to some extent, and a group of non-related firm (case company A and case company B). The networking activities and conditions of social capital becoming available, as well as its benefits in the stage of internationalisation have been identified from each within-case analysis, and followed by a figure to present. Finally, the cross-case analysis is developed to the basis of within-case analysis, I use cross-case analysis to explore the networking activities that create SC and focus on the common and different features between two types of case companies in the SC creation process. The comparisons of cases are focused on discussing the unit of analysis (the specific network relationship) of each company, in addition to comparing cases, the author compares the two types of firms to identify the similarities and differences. Cross case analysis indicates that categorisation of the network relationships in two groups on the basis of their nature, not only enables the researcher to gain a better understanding of the SC creation process in the internationalisation of firms, but also identifies the potential differences and similarities of SC creation between two types of firms.

In the within-case analysis, I identified the list of specific network relationship of each firm, and then in the cross-case analysis I engaged in first-order coding using the constant comparison method, in which each interpretation and finding is compared to previously emergent findings from the data analysis (Gioia et al., 2013). Accordingly, I identified the first order concepts such as “previous friends” “unplanned relationships”, “planned relationships”, “incoming relationships” and “outgoing relationships” which

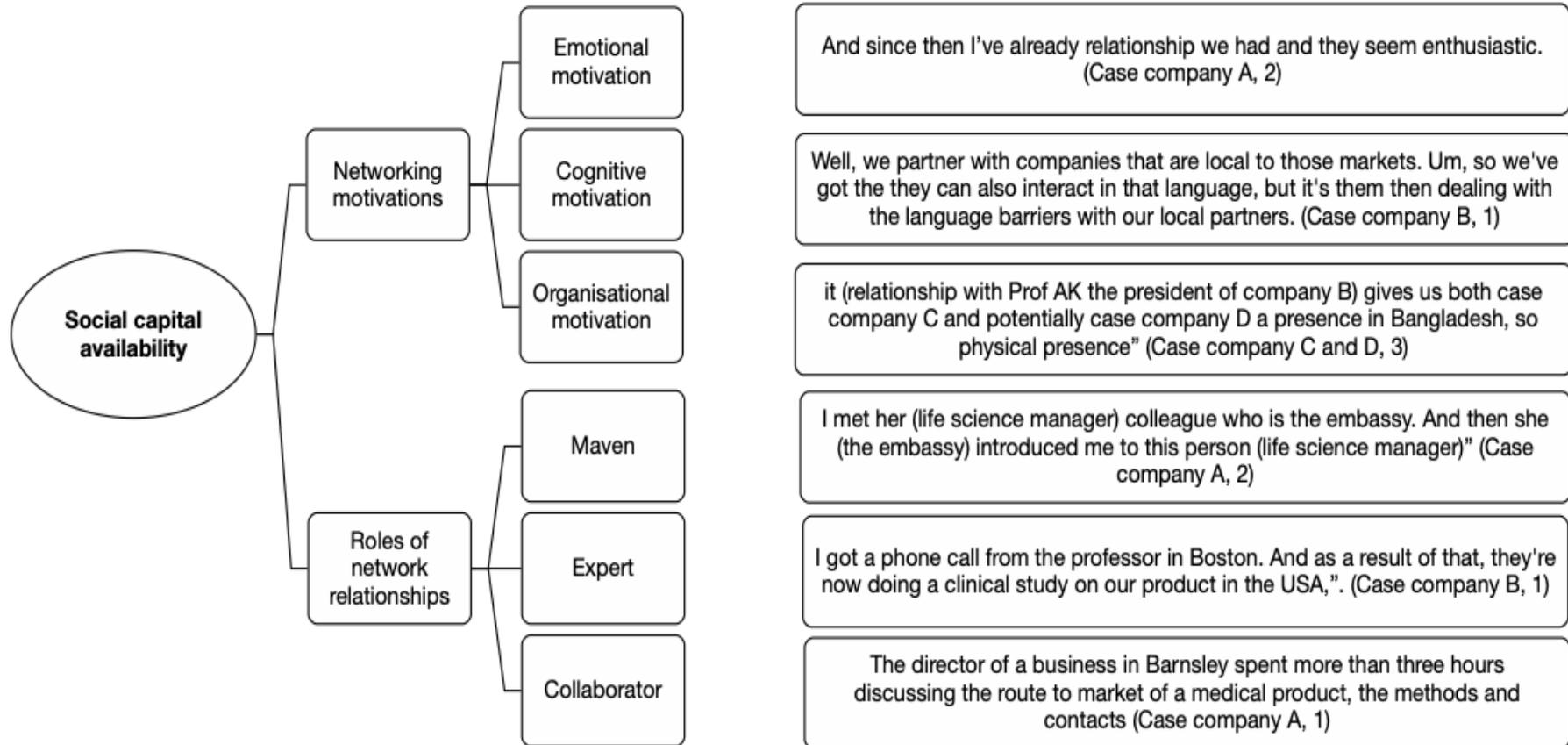
are composed of activities of creating social capital; the details can be found in Figure 9 on p.140. Secondly, 2nd order themes analysis is followed by the first order concepts and used in the cross-case analysis to seek similarities and differences among the many categories and consider whether the emerging themes suggest concepts that could help describe and explain networking and social capital creation, and select the highly theoretical relevant concepts (Gioia et al., 2013). This stage is similar to the axial coding suggested by Strauss and Corbin (1990), which is towards the theoretical level, which means conceptually organising open codes into categories and generating theory to explain the data through constant comparison, thus theoretical codes conceptualise the relationships between first order concepts integrated with theory. Therefore, the second-order themes are generated from the first-order concepts, aligning with the extant literature, e.g. purposively managed (Hite and Hesterly, 2001), met by chance or through introduction (Coviello, 2006), incoming and outgoing ties (Coviello, 2006), and then formed themes such as “interact with extant relationships”, “networking planning”, “networking directions”, shown as Figure 9, Figure 10, Figure 11 below.

Figure 9 Summary of coding process - 1



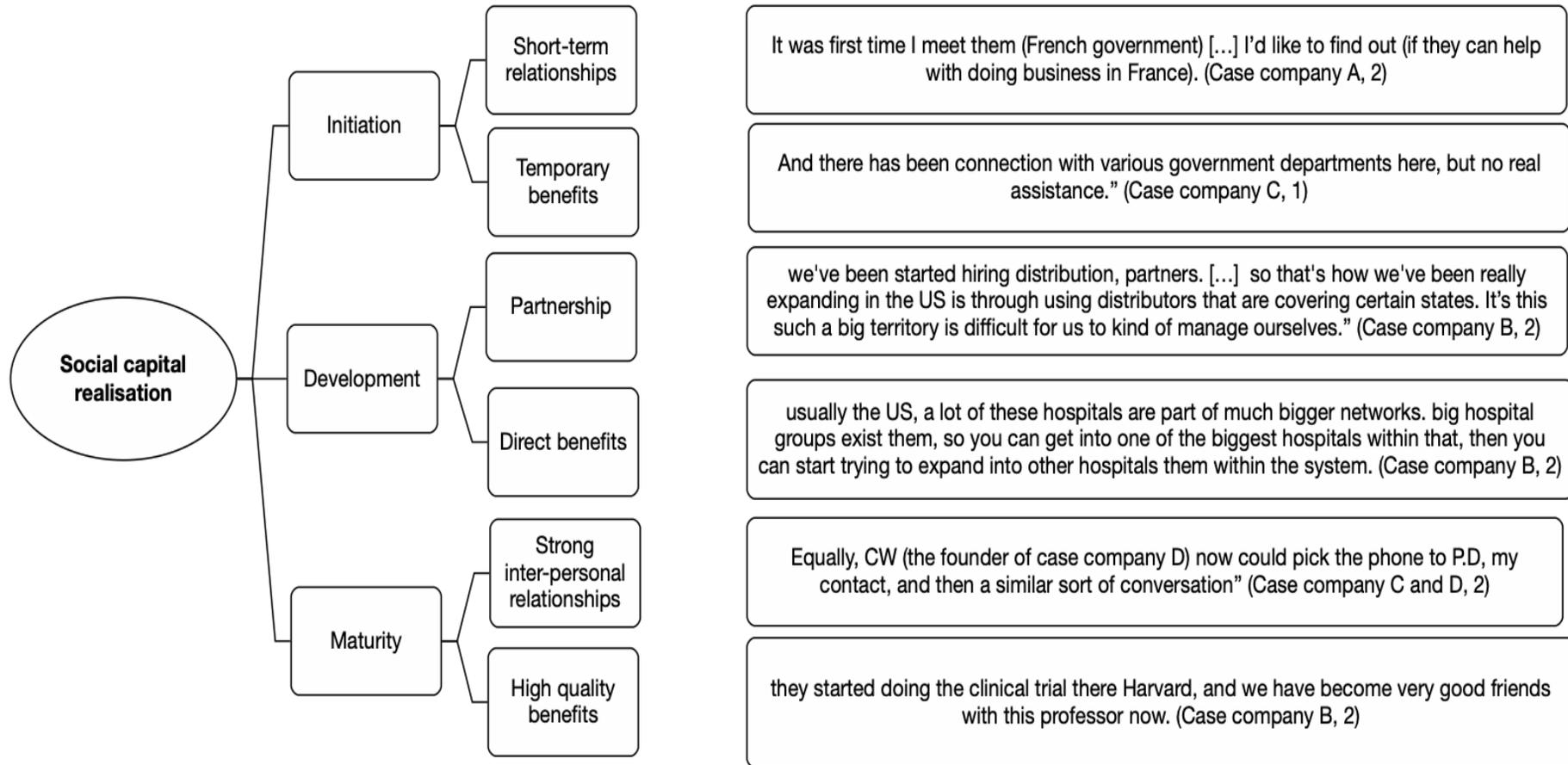
Source: the author

Figure 10 Summary of coding process - 2



Source: the author

Figure 11 Summary of coding process - 3



Source: the author

3.5 Quality of this research

Quality of the qualitative case study is usually assessed in terms of trustworthiness of data (Ji et al., 2019). Different to quantitative research that stresses reliability, validity, generalisability and objectivity, which are proposed by Eisenhardt (1989) and Yin (2014) and are commonly criticised by their positivism, alternatively, Welch and Piekkari (2017) suggest alternative interpretive criteria proposed by Lincoln and Guba (1985), namely *credibility*, *dependability*, *transferability* and *confirmability*. Lincoln and Guba (1985)'s criteria research findings are context dependent that can assist in illuminating the participant's networking experience in MedTech industry. Welch and Piekkari (2017) suggest this is promising in IB area though few IB studies follow (e.g., Yagi and Kleinberg, 2011). According to the research nature - interpretivism and abductive qualitative case study, and its research context – MedTech – which is complex and affects research findings, I follow Lincoln and Guba (1985)'s criteria to achieve 'verisimilitude' or 'truth-likeness' (p.636) rather than provable 'truth' of the research data and improve the research quality and make qualitative research findings more trustworthy and realistic.

Credibility, which is considered to be parallel to internal validity, refers to establishing a match between the constructed realities of participants and the realities from the researchers' perspective (Lincoln and Guba, 1985). According to Eisenhardt (1989), the internal validity of findings can be established if qualitative data theoretically explains why a relationship exists or occurs. Eisenhardt (1989) suggests that internal validity can be enhanced by linking results to existing literature and ensuring findings are plausible in different contexts—a crucial step in theory building research. Lincoln and Guba (1985) suggest using various approaches to ensure credibility, e.g., member-checking, iterative questioning of the data, and returning to examine it and so on.

As Lincoln and Guba (1985) suggest, members checking is a useful approach to enhance *credibility* when the researcher confirm the emerging findings with participants, so that participants can reflect and comment the interpretive information.

Therefore, I used feedback to informants, and I wrote up a case summary including some of the critical findings and presented them to the four of the final selected case companies to ensure that I have collected and interpreted the information accurately. I also organised figures of each case company regarding their critical events and critical people behind the business development. Another round of follow-up interviews with the participants enabled member checking that increases credibility.

I also returned to one respondent who was particularly receptive to giving feedback on the transcripts as well as my interpretation and understanding of what various aspects meant, which achieves iterative process of data analysis as Lincoln and Guba (1985) suggest enhancing *credibility*. It was at the stage in the processing of the data that my supervisor reviewed my transcriptions and we discussed the importance of Powell et al. (2005)'s work and other articles (e.g. Scott, 2014, Child et al., 2017) in the institutional field enabled me to triangulate meaning and implications from the data to this body of theory. This behaviour allows the raw data to lead to a new theory (e.g. institutional perspective of Powell et al., 2005), which reflects the abductive nature of this study. Besides, I gave a presentation to one of the participants, eventually he agreed with most of the interpretation and suggested some valuable feedback to revise the documents, example abstract from case summary that refined after discussions with my participant: *“One of the first critical events happened before the firm was set up in local city S (2014). He met the critical contact. He was introduced to a professor of EEG, who works in a German University, through his neighbour in 2011.”* (Case company A). Besides, I followed Gioia et al (2013)'s approach of data structure (a succession of tables) to present the first order concepts and second order themes to establish chain of evidence to ensure outsiders can easily understand how research progressed from research questions to final conclusions, and finally, offering a draft of the case study report to key participants for review.

Dependability, equivalent to reliability, is criterion of the stability of the results over time (Sinkovics, Penz, and Ghauri, 2008). Reliability describes the likelihood that researchers would draw the same findings and conclusions provided they follow the same research procedures (Yin, 2014). However, this abductive research that has

interactive nature of data collection and analysis is difficult to replicate the same procedure with another informant. Yin (2014) suggested two approaches to increase reliability. Firstly, researchers must establish a detailed case study database that includes notes and documents collected during research. Second, researchers should follow a case study protocol that outlines a detailed process that case study experienced (Yin, 2014). Following his suggestions, in this study, reliability was ensured through a case study and the storage of all field notes, materials, case study reports, and data analysis documents within a case study database made available to other researchers for review (Yin, 2014). As suggested by Sinkovics, Penz, and Ghauri (2008), when dealing with qualitative data, especially from interviews, computer assisted qualitative data analysis software (e.g. NVivo) is in its advantageous of establishing formalisation procedures of collecting, analysing, and interpreting qualitative data, which enhance the trustworthiness and quality of qualitative research. I enhance transparency of the research analysis process by using NVivo to store and organise a large amount of data in a transparent way, e.g. textual data/manuscripts management and records keeping, which has a standard application, coding and search procedures (King, Keohane and Verba, 1994), and helps in forming a systematic and formalised process to generate more reliable research findings (Sinkovics, Penz, and Ghauri, 2008). (a case study protocol and a detailed case study database with all the documented information and materials have been stored within NVivo).

Besides, Welch and Piekkari (2017) summarise that Lincoln and Guba (1985) have an inquiry auditor to ensure *dependability* through checking for verisimilitude and truth-likeness as research analysis progressing instead of provable 'truth'. Aligning with this suggestion, my supervisor helped to review my transcriptions and listen to the recordings and we discussed aspects that were unclear - for example very specific aspects of the health and the technology context of this specialised sector. Further, these conversations enabled me with the supervisory team to identify literature and sources relevant to this context to enable further understanding.

Transferability, parallel to external validity or generalisability in quantitative research, indicates that the research findings can "be applied fruitfully to other social settings that

have some similar characteristics” (Lincoln and Guba, 1985, p.636). It implies the extent to which significant conditions overlap or match which can be replicated in the future studies (Crawford, Leybourne and Arnott 2000). As this qualitative study is not about generalisability in the same sense as quantitative study, the generalisability is indeed a weakness to a qualitative given to its limited case numbers, partially similar sampling and theoretical sampling ensure the theoretical generalisation to research fields due to similar networking and social capital creation for similar types of SMEs. Also, Lincoln and Guba (1985) suggest thick description regarding the research context is needed for the qualitative research that is limited to wider application due to its small scale. In line with their suggestion, I grounded my data analysis in the context of MedTech SMEs including the networking behaviours, interpretations and feelings of the participants. Besides, I have a specific section 1.3 that provides contextual information with richness, section 3.3.3 data summary that demonstrates the data collection time and participants information, and chapter 4 that offers thick description of cases.

Confirmability, equivalent to objectivity in quantitative research, refers to that data and the interpretation of data need to be objective, coherent and logically assembled, to locate outside the researchers’ perception (Ghauri, 2004). Reflexivity is another critical approach to ensure *confirmability* as Welch and Piekkari (2017, p.7) suggest that the quality of a study is derived from whether the researcher is able to reflect on how the “field interactions, philosophical commitments and theoretical preconceptions” constructed the interpretations and findings. Following their suggestion, I used presented theories, such as social capital theory, networks, internationalisation, which are likely more plausible than others. In order to enhance trustworthiness and *confirmability* of this study, this research uses the preliminary theoretical model (e.g. Adler and Kwon 2002, Nahapiet and Ghoshal, 1998) of this study to analyse and interpret data. Also, in order to support the data analysis and interpretation, I used direct quotations from participants to serve as evidence to the findings to reduce subjective bias.

Triangulation is also critical in increasing *confirmability* of the research findings (Lincoln and Guba, 1985, Welch and Piekkari, 2017) and increase richness and clarity of studies (Heale and Forbes, 2013). One of the seminal qualitative research works is Denzin (1978), he defines triangulation as “the combination of methodologies in the study of the same phenomenon” (p.291). In case study research, Yin (2014) states that data triangulation “is to collect information from multiple sources but aimed at corroborating the same finding” (p.120), which contradicts Denzin’s data triangulation which includes matters of time, space and people. Therefore, due to the fact that this study is a qualitative case study, I followed Yin’s (2014) definition of data triangulation to ensure the *confirmability* and thus trustworthiness of this research, the information collected is reliable and enhance trust and confidence in the findings.

I collected data from multiple sources to triangulate the collected data, including primary data from a series of in-depth interviews with entrepreneurs and secondary data. For example, document information offers access to data that cannot be directly observed and leads the researcher to pose appropriate interview questions (Quinn, 2015). Hence, secondary data, such as official websites and brochures, were used to collect relevant information to better understand the company’s business and identify the key information and to achieve the data accuracy and reliability. Table 12 below is the summary of achieving data triangulation by combing primary data and secondary data.

Table 12 Data triangulation

	Summary
Interviewees	Mainly the founders, top managers, Chairman, policy makers
Secondary sources	Company’s website, newsletter, company’s profiles, company’s brochures, government brochures
Data triangulation	I consulted the company’s websites before I conduct the interviews, and took notes of the business nature and latest news which published on their website. This helped me to have initial understandings of company and its activities. For example, when I conducted interviews with the founder, I asked “ <i>I have seen on your website that your company have entered a lot of markets, could you please tell me why you enter these markets and how you entered?</i> ”. I also asked the participant to write the name of the

	<p>critical events and critical contacts if possible. Additionally, I have also talked with policymaker, who talked about how the company conduct internationalisation and the role of networks. Hence, when I do the data analysis I checked the interview transcripts with the events and partner details and company's website to confirm the accuracy. Besides, I was also involved in the research seminars organised by my supervisors (SME going international forums), and I had informal discussions with people in several different events and observed their research round table meetings, the communications between them are somehow difficult because they are from different domains that have different knowledge. This behaviour also further enabled me to examine my transcripts and findings for consistency with the general knowledge I gained from involvement in meetings and discussions involving people from different institutional settings, but which were focused on SME internationalisation.</p>
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Source: the author

3.6 Ethical consideration

Ethical issues, such as the confidentiality of participants' information, and participant consent must be considered in the research process (Bryman, 2015). This research conforms to the ethical guidelines of the University of Sheffield⁶. First of all, permission for the study is granted from supervisors and the researcher's university, and the university's ethical application and report were ascertained prior to field work. The ethical approval of this study was released on 13 Aug 2018, reference number 017829, see as Appendix 1. In order to keep safety and rights of participants, including the researcher's, with the minimum possible risk to all those involved or affected by it, all participants were informed of their right to continual consent and strict privacy protection, and the field work was conducted at public areas at both conveniences, e.g. Sheffield University Management School, or through virtual media. Before the interviews, the researcher introduced the details of this research and code of ethics to the participants and obtained an informed consent from the participants by distributing the consent form (see Appendix 2) to them if they agree with these protocols to participate in this research. For example, the researcher asked for their permission to

⁶ Please refer to <https://www.sheffield.ac.uk/rs/ethicsandintegrity>

record this research digitally. In addition, to ensure data security, all the data collected is confidential and anonymised and controlled access to digital files through password protection and/or encryption, and used of the University of Sheffield VPN when working off campus. Data is stored securely and backed up regularly, with access available only to those who need it in, three copies of crucial data is stored on a hard disk and in cloud storage service through google drive, and only use for research purposes.

4. WITHIN-CASE ANALYSIS-CASE OVERVIEW

Chapter Aim:

To provide an overview of each case company with the detailed information of each network relationship. As explained in Chapter 3.2.3 theoretical sampling, this study adopts this sampling to further narrow the cases to those more suitable, and finally four case companies, A, B, C, D are selected. I organised these four companies into two groups, inter-related MedTech SMEs, in which two firms are legally independent but share common directors, non-related firms are independent from each other with no common directors exist.

This chapter provides an overview of each case firm through thick descriptions of the studied phenomenon, the critical events of each case company and the underlying critical network relationships, to present social capital creation that contributes to firm's internationalisation, with the tables and figures within each case company demonstrate the networking activities of companies that create social capital and demonstrate the researcher's interpretation process of each case. This chapter paves the way to conduct more in-depth cross-case analysis.

4.1 Non-related companies

In this study, non-related firms are independent from each other with no common directors existing.

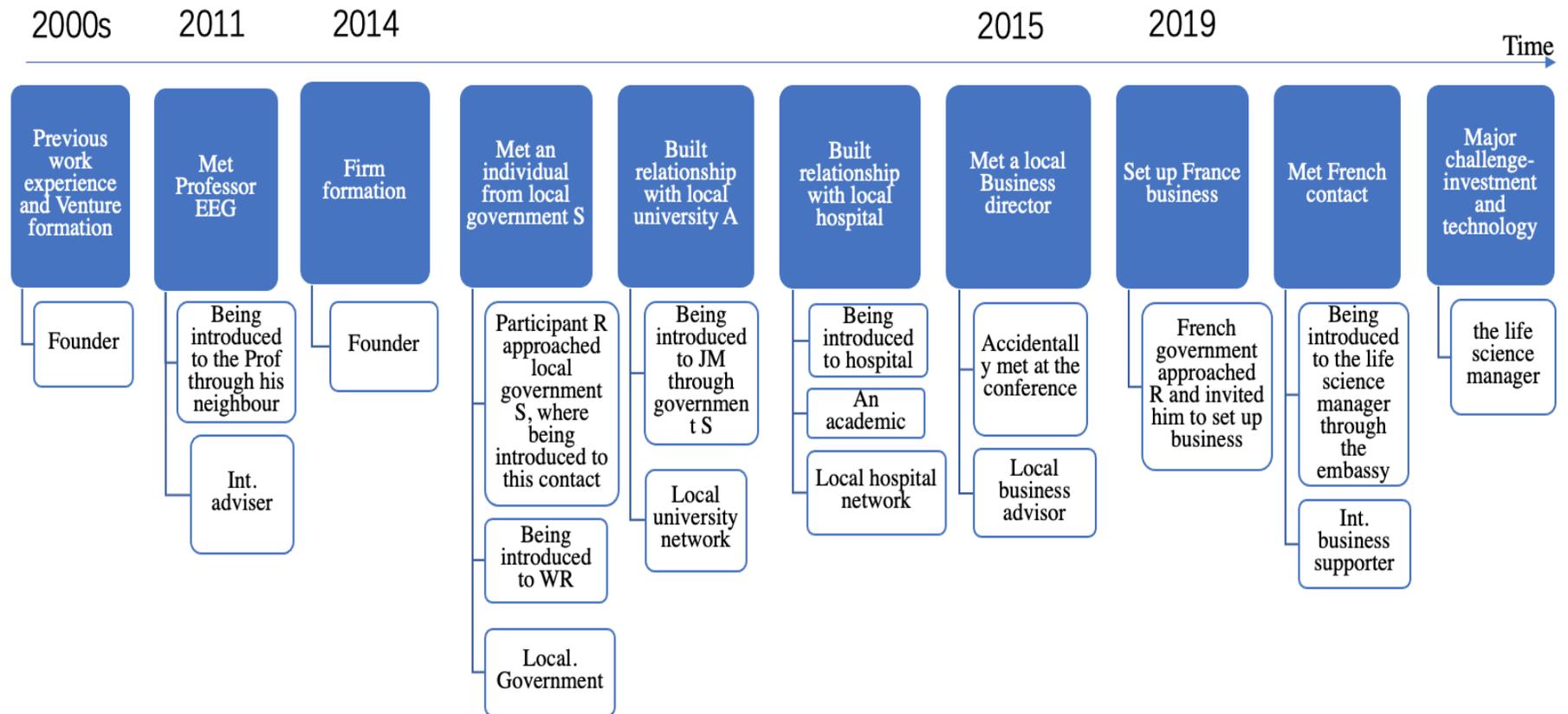
4.1.1 Case company A-case overview

Case company A was established by participant R in 2014 and now located in local city L. Participant R has been working in the NHS for many years, and then he worked in Germany for the British Forces. The experience in Germany has opened his eyes to the extent technology is used in German hospitals. This culture of combining high technology with clinical medicine in Germany, and he believes that the UK is not far

behind, the important thing to emulate such a model is that the equipment will have to be affordable. Additionally, he has worked with patients suffering from epilepsy and his research on devices for an epilepsy alarm has resulted in three prototypes. Besides, he worked as a consultant paediatrician at a city in NNY between 1990 and 2000 and noticed that the industrial wealth of local city S is declining, and he felt that the company could contribute to the local economy. These aspects jointly contribute to the firm's establishment.

The company is to produce affordable medical equipment for hospitals and community, and currently the company is progressing in wireless technology for epilepsy. The company currently employs seven people including the Managing Director and its first cross-border activity happened in 2019 after France government's invitation, while the company has not started making any revenue yet by the date of interview. To fully present the critical contacts that contribute to the firm's business, I drew a figure of the critical events and contacts behind them of case company A in a chronological way, and they are depicted in Figure 12.

Figure 12 Case company A critical events and contacts



Source: The author

One of the first critical events happened before the firm was set up in local city S in 2014, he was introduced to the critical contact, a professor of EEG, who works in a German university, in 2011. The professor was in the field of neurology with special interest in Electro-Encephalogram (EEG), Participant R noticed that he had an extensive knowledge on neuroimaging and current trends and believes in and recognised participant R's work, even though they met three times only by the date of interview, participant R found the professor a trustworthy man. This key contact also offered an impressive knowledge of local SMEs and also introduced other two local companies (SMEs) (a software company and a local medical electronics company) to the case company A. Additionally, he has quite big research committee, and he also conducted research with the local university Y, and then the professor is willing to do laboratory testing subject to a formal approval from a university in Southern Germany, to generate clinical research data of the firm's technology. This is the critical contact in foreign country working as a specialised expert that happened at the stage of developing the product and business.

The next critical event is the firm's establishment, in June 2014, and before that, Participant R had a patent and formed a company, CRME, and also other critical events back to the 1990s. Identified these historical events as critical because participant R believes that these experiences helped him gain fruitful knowledge through these ventures and find the best approach to epilepsy is wireless technology, which informed the basis of the current venture, Case company A.

When it comes to the firm's establishment in 2014, participant R has come across to the local government S for advice, where he was introduced to an expert, P, who was working for business in local city S. Participant R confirmed that P is a critical person who gave greater help, e.g. made introductions and helped with the new patent by organising a meeting with WR, the patent attorney. Currently, the company's major activity is to patent the technology in the EU and host it in Germany where it has the German Utility Model, which means the registered patent is accepted and valid in Germany, Netherland, Belgium and Luxembourg. Participant R found the discussions with WR was very productive to progress his new patent, and in turn, the prospect of

the case company A is attractive to the patent agent. P from local government S leads to the next critical event in 2014, she introduced case company A to JM in local university A, who helped with the marketing study and provided market information for participant R's business.

Another critical event in 2014 is that participant R made contacts with local hospitals, where did the Patient Public Initiative (PPI), and eventually they chose participant R's invention and his invention was confirmed to be popular and of use to patients. Besides, his technology was examined through Medical Electronics, by local hospitals who believe that the product will be acceptable. While the problem is the technology complexity, as an expert in the hospital said the product is too complex to execute, and there is a competitor HP that does the same work. Therefore, participant R has considered the technology would be one of the biggest challenges for the company to develop its business.

In 2015, participant R met a business director in local city B who has a well-established business of medical products at the Medilink conference in local city B, which is an accidental relationship. After two meetings with the business director, case company A received enormous help with medical electronics, strategy in marketing, and how to price. Therefore, the benefits the director provided were associated with information and medical manufacture.

The company now moved to local city L in 2019. This movement was because the French government invited participant R to establish business in France. Accordingly, another critical event happened is participant R plans to set up business in France in April 2019, which is also the first cross-border activity for case company A. The founder R was attractive because he is able to access research facilities and electronics laboratories within the French hospital, which means that there is a seamless source.

In this year 2019, participant R met an important French contact, a life science manager, who has been introduced by the embassy. The life science manager works with the medical companies, and provides specialist help. Surprisingly, participant R stated that

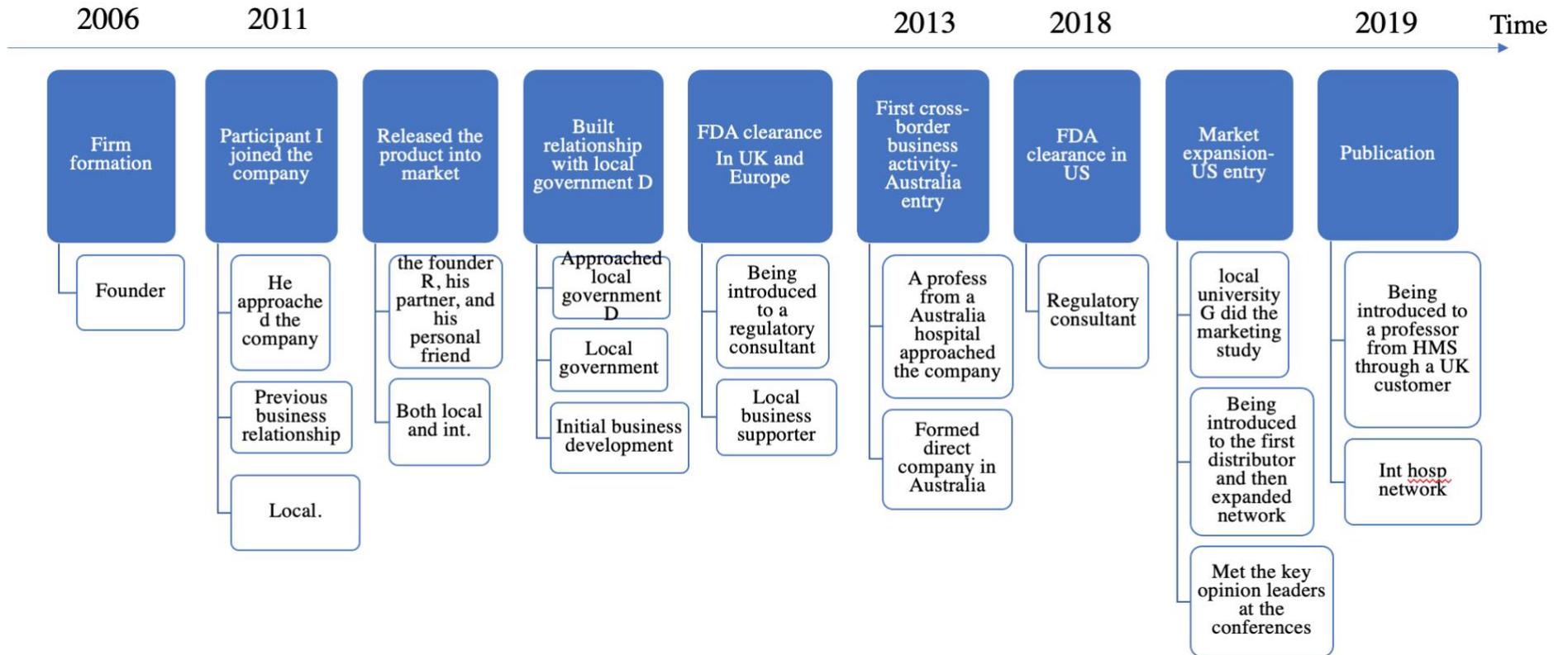
he did not see any life science managers in the UK, and they seemed more forward to that area. The life science manager basically is helping with setting up France business, and making introductions, and as well as exploring funding opportunities. Participant R confirmed what he was looking for from this person, good contacts in the hospitals and research accessibility that he is hoping to make it. So, this French contact introduced participant R to the person who is in the project of the hospital lab, and to a technology company and a director, and she (the life science manager) held meetings about funding applications with the relevant people which assist participant R to have potential external investments. Because, participant R has confirmed that the current main problems are funding and technology. Accordingly, the life science manager is the key person to explore the funding opportunities, e.g. Immigrate UK, EUREKA/The European Union Funding, and French Funding.

4.1.2 Case company B-case overview

Case company B was launched in 2006 to develop Fetal Pillow®, and its founder and CEO is Dr RV, who has 38 years' experience within the field of Obstetrics and Gynaecology and designed the device. Case company B aims to design and develop simple but innovative products for use in emergency obstetrics to reduce risks associated with childbirth, and one of the first critical incidents that leads to business development is the product was released into the market in May 2011. Due to the small percentage of the childbirth cases in both domestic and international markets, the firm feels necessary to widely internationalise the product, by 2019 the product has been used in 20 countries worldwide, and in the UK more than 85 hospitals are using Fetal Pillow® and adoption continues to grow. Internationally, case company B has established a direct sales team in Australia and New Zealand and operated in North America through case company B Inc. The company currently employs five staff, including the managing director. Financially, the company has achieved £1.6m of sales in 2018, which generated 70% profit in the same year. Besides, 65% of sales came from foreign operations and 44% of current profits derived from foreign operations. Thus, the company has relatively successful international business. Figure 13 below depicts

the critical events and contacts behind case company B that identified three participants, CEO (R), CFO (N), and Sales and Marketing director (I), in a chronological way.

Figure 13 Case company B critical events and contacts



Source: The author

The first critical event would be the company establishment in 2006 by Dr R, and the next influential incident is product launch into the market in 2011. During this time, R stated that his previous personal contacts provided enormous assistance, as the founder R has been working in this field for a long time, he is the person with sufficient experience and trustworthiness and numerous personal friends in the industry, and these extant relationships provided business advice, product design, manufacture, patent, and so on, all of which facilitate the business development domestically and internationally. Similarly, participant I also confirmed that the founder's personal friends in India helped with developing the product and other aspects, and friends in the US helped with US market entry in 2018.

In 2011, participant I joined the company to help with business operations. Participant I used to work for company J, and founder of case company B, Dr R, was one of the company's customers, who was introduced to participant I to have an informal talk about the device, and few months later, participant I came to R and expressed that he is interested in the product and would like to help to promote the device into the market, so they started working together. Both participants I and R have very strong networks in the UK. Participant I is the sales and marketing director for case company B and involved in all aspects of the business, from finance to operations and regulatory, and now he is mainly working for the USA business activity.

When it comes to the initial development stage of the company, participant I stated that they did go to local government D for advice, and the government agency provided certain financial support to the company to attend conferences, but participant I stated that they did not rely much on the government or the agencies, instead, it was mainly on their personal commercial relationships.

There is a regulatory consultant, who was met through introductions. This person helped with regulatory issues in the UK and Europe, and assisted the company in acquiring the FDA clearance in Europe. Even though they tried German and France,

they did not put emphasis on these two markets, given the fact of cultural difference and language difficulties.

After then, they accidentally started their first across border activities in Australia in 2013, two years after product launch into the market, where a professor from a Brisbane hospital approached the company and would like to purchase their product, Thus, Australia entry came out of a chance, and this professor drove case company B to introduce the product into the Australian market from his needs, and he supported case company B with the registration of products, and introduced case company B to a sales partner that knew in Australia. While this relationship was a one-transaction business relationship, participant R confirmed that they did not have any connections now. This business opportunity did open the international business gate for case company B, and now they penetrate Australia and New Zealand by establishing the direct sales team. The director of the Australia sales team used to be their Australia distributor when they first did business in Australia and eventually, they built a close and trusted relationship with this director, and he recommended case company B to form their own business in Australia and he would like to be involved in.

After international attempts in Australia, the company was willing to expand their business in wider foreign markets, and the US, which has a larger market, attracted the company to enter. In 2017, the company received FDA clearance in the US, contributed by participant R who has good relationships with the FDA regulatory team that accelerated the process. R was using his reputation in a clinician position rather than the commercial position, to gain clearance for the market much more easily. The company focuses on penetrating the US market, on the commercial side, R has very close personal friends in the US who helped with registration business in the US by providing business help and information.

Compared with Australian business that happened accidentally, case company B knew US market is a critical market for them and they did adequate work and research into that in order to enter the US market. For example, participant I considered local university G is one of the critical relationships. The company has worked with the

master students there for many years to do the market research for which the students did actual interviews with potential partners or customers and suggested an entry mode of distribution as appropriate. Therefore, US distributors are the next critical relationship for the company to sell their product. In 2019, the company has eight distributors as partners in the US. These distributing relationships were from a critical contact in the US that is introduced below.

An American company and an individual that case company B met at the conference was interested in their product and would like to do an acquisition, but it did not happen after business interactions. Fortunately, they built a good relationship, and the company introduced case company B to his network within the US. Out of the relationship with the American company and the individual, case company B has successfully built its first distributor network in the US, and finally expanded their distributor network through the first distributor.

Participant R and participant N (the CFO) of the company, both confirmed the importance of attending the conference. For example, they made contacts with numerous US doctors at the conferences they attended, and this is the vital avenue for the company to start entering the US market, and N confirmed that once they get into one US hospital, they get the large US hospital networks, as hospitals are all connected with each other.

Another critical activity is publication, which provides clinical data for the company's product, as this unique product requires sufficient reliable clinical data to support, including the first publication in 2011, a very important paper published in 2015, which was a big study done in India, and the Brisbane study published in 2016 from the Australian professor. In 2019, the critical contact is a Professor from HMS in the US. The product and the company were introduced to this professor by a company's UK customer, and then the professor approached the company and expressed his interest to do a study on the device to assess its value. The professor did the clinical trial and the data and the results will be published soon in an international journal, which Participants R and N have confirmed this publication is vital for a medical company

who has a new innovative product, as they found it is difficult to convince the doctors to try the whole new product without any reliable data. Besides, this professor has introduced case company B to another big institution in Seattle, US, and case company B is going to do the research then. Participant R confirmed that, unlike the Australian professor that has disconnected along the time, they have built a good relationship with the US professor and considered him as a friend.

4.2 Inter-related companies

In this study, inter-related MedTech SMEs are two firms that are legally independent but share common directors or investors.

4.2.1 Case company C-case overview

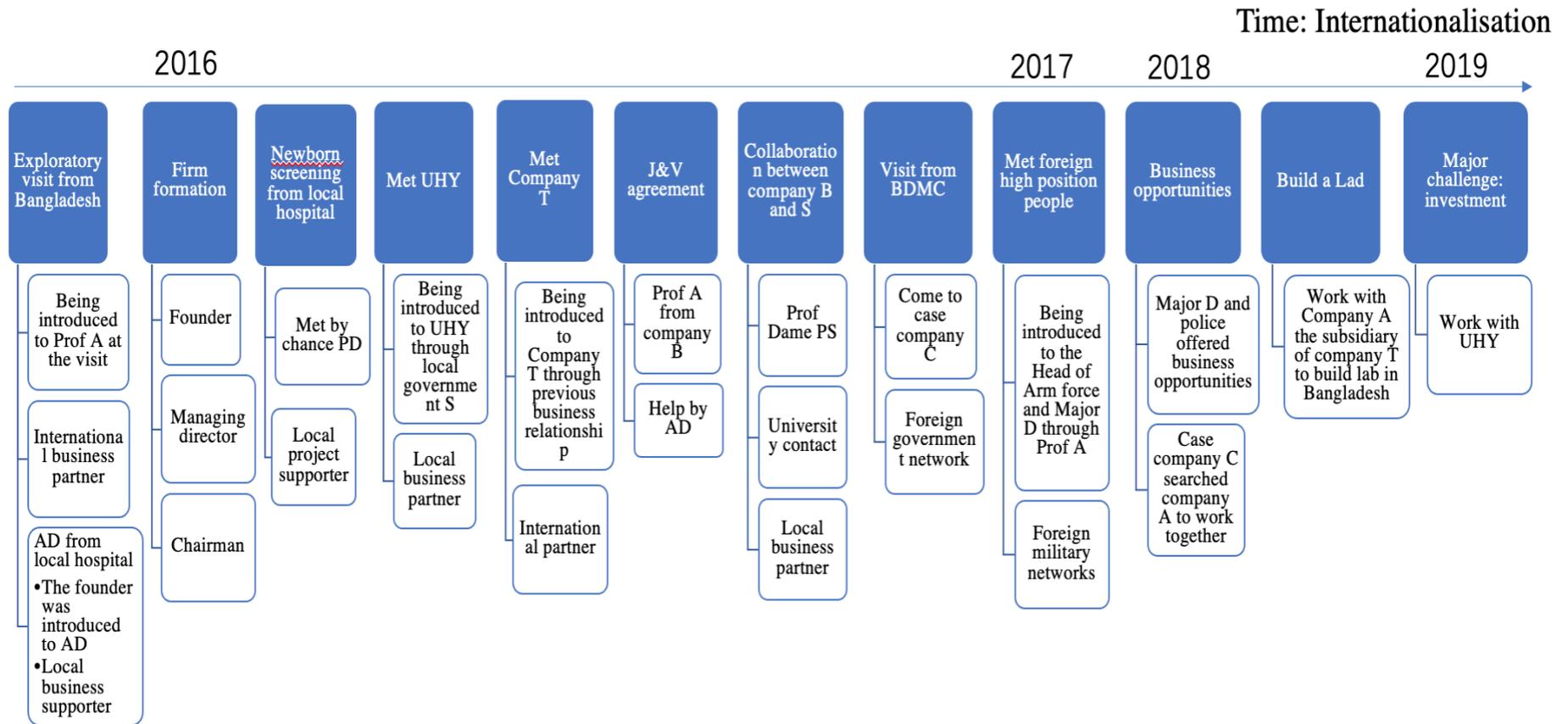
Case company C is a firm aiming at transferring established health practices, e.g. newborn screening, optics and genomics. It is a typical international venture who starts its international business immediately on its inception. The company was established in 2016 and thus it is still at the early stage of internationalisation. The company had not had revenue by the date of interview (16th Jan 2019) and has 11 employees, including Dr S.D (the Founder and CSO), and his wife A.D (the Managing Director), and participant B (the Chairman). Currently, they are doing business internationally in Bangladesh with knowledge transfer of newborn screening from the UK. One of the motivations of doing business internationally is that the team of people in the company all had experience of working with either in export sales or in R&D internationally.

The founder is a Bangladeshi citizen who has been living in the UK for 20 years, and he would take know-how back from the UK to Bangladesh. Bangladesh is the foreign market that the company currently conducts business with and because Bangladesh lacks experience in newborn screening, and one of the company's main objectives is to establish a service and replicate this service in Bangladesh. Therefore, the founder started making connections with people through his extant university contacts and making market visits to start building new connections, eventually they built a network

of connections in the UK widely, such as local children hospital, local university B, local university C, and in Bangladesh they also established relationship with hospitals, universities and various community departments. Therefore, the connections the company has made in the UK take them to Bangladesh then identify business opportunities.

Accordingly, the following sections are explaining the critical events for case company C business development and the critical contacts that are important to a firm's business with particular interests of how they connect and how social capital is created and in turn contributes to their international business. The details of these networks behind the events and how they helped the firm are introduced below in a chronologic way, shown as Figure 14.

Figure 14 Case company C critical events and contacts



Source: The author

To begin with, the company was founded in 2016 by a Bangladesh citizen Dr S.D, who has been living in the UK for 20 years. Prior to the foundation, the founder completed his PhD in local university B as a biochemist, thus his main connections in the UK are within the academic world and several research companies, and then he decided to stay in the UK and saw an opportunity and needed to transfer knowledge back to Bangladesh. He is the driving force that created the ideas and along with his wife A.D. Dr S.D started building a number of connections, for example, our participant B who is the chairman of the firm, and the founder was introduced to Prof A.D from the local hospital.

Additionally, Dr S.D had an exploratory visit from Bangladesh in 2016, and he was introduced to a critical contact, Prof AK, and they built a good relationship. Prof AK has a not-for-profit entity, the company B, in Bangladesh, which has hundred hospitals. Even though Prof AK is nearing the end of their careers, both Prof AK and Dr SD are looking for what they can do to make a lasting impact on the country. Accordingly, case company C has been established in 2016.

Therefore, it can be noticed that the critical event behind the firm's internationalisation is the critical contacts that the founder had before the company, this international influencer met by chance (accidentally met) who has shared understanding and same goals towards their careers. Therefore, they build really good relationships and work together. They initially worked as business partners by referral approach, and now they move towards closed social relationships. This relationship allows case company C to get access to the market information and physical presence in Bangladesh, and get more referrals through this contact.

Following this, a critical event involved establishing a strategic partnership between case company C and company B at the end of 2016. Through the JV agreement they formed, The Centre for Genomic Medicine (TCGM), which is a new concept in Bangladesh in 2019, was formed to develop knowledge of genetics and genomics that

could change the way healthcare is delivered and lead to preventative health which plays back into the sustainable development goals.

This long-term vision of TCGM attracted Professor AD, who is an influential person with whom case company C built trust and she has interest in the project and is critical in building such objectives and from the UK. She has been instrumental in building relationships with the UK government, e.g. local government, and Prof AK in Bangladesh. While this is still in the development stage, it gives case company C an initial good physical presence in Bangladesh, and makes good further connections. For example, the company has been working with a local children hospital, local university B, and local university C. Accordingly, the founder established wide connections in Bangladesh, such as with Ministry of Health, Ministry of Science, Ministry of Education, and the Prime Minister's office, and the group of hospitals, through his university contacts in UK.

In 2016 case company C is working as a connector to facilitate an agreement between company B and company S, and the main purpose is to build a bridge between the UK and Bangladesh where knowledge could flow both ways. Company S is a partner of local university B, the head of company S, Prof Dame PS is an important contact in the UK. The connection with company S gives case company C credibility in Bangladesh to bring people to the meetings and connect them. This agreement takes knowledge transfer as the key and could provide financial benefits to all of three involved companies. Besides, it offers company S a potential research base in Bangladesh. Additionally, one of other benefits to case company C is company S's connections to others like local government H, and the relationship with local government H has been strengthened by Prof AD and Prof Dame PS, which means there are credible introductions available to case company C. Local government H is able to provide an pathway to case company B to enter Bangladesh with a nurse training in the Bangladesh hospitals, while this programme is also in progress without actual results by the date of interview in 2019.

Given the good presence and good relationships in Bangladesh, case company C had an important visit from a Bangladesh council, which is the equivalent of a British council. Case company C introduced them to the General Medical Council in the UK, and created links between them, which though they do not immediately lead to any commercial benefits to the company. Case company C believed that they show the trail of all the things that they have done as a knowledge transfer organisation or facilitator. So clearly, the whole purpose case company C was about transferring knowhow in healthcare, which focused on new-born screening, but still not delivering new-born screening yet. Interestingly, it represents the pre-foundation or pre-commercialisation phases of high-tech SMEs and how complex and lengthy this can be in a science-based area where the partners are public bodies such as universities to generate commercial benefits.

One of the ensuing critical events that the respondent identified is the company has connection with the head of armed forces medical corps in 2017. Prof AK from company B introduced Major D, the head of military hospital in Bangladesh to case company C. It takes time to achieve progress, therefore the managing director AD and Dr SD spent considerable time in Bangladesh to build a strong relationship with them and that led to the other connections.

Following this, in 2018, a strong relationship with the military hospital and police has offered business opportunity for case company C, e.g. drug testing, which is a major issue in Bangladesh where people taking drugs, and the military and the police would like have the product to do on the spot check like a Breathalyzer, so that they are able to do a test on the roadside get a result make conviction. Case company C is responsible for finding such products, and finally they found a company in the US who has a product that can be used for them to do the test. Case company C then formed a business relationship with the US company to take the opportunity to sell the product into this, but this business deal is still in the process.

Case company C noticed the importance of creating a lab in foreign market to increase physical presence. Accordingly, company T from India, one of the international

partners of case company C that was introduced to company T through previous business contact (company LAB from Finland) in 2016, offered an opportunity to build a lab in Bangladesh. Case company C then worked with company T's subsidiary (company A) and aimed to build a lab in Dhaka, Bangladesh, while this is also in progress and has not been opened yet.

Accordingly, these critical actions provide a really strong presence in Bangladesh, good relationships, the right people to contact, but getting those people to act to make meaningful decisions is very difficult, as it takes time to build at the level of trust and lack of money as it is all about relationships rather than things being delivered.

Therefore, the major challenge for case company C now in 2019 is that it has never reached the point where they have been able to attract big investment because it is pre-revenue. Currently, they have £400,000 from the Bangladesh community, and participant B and other UK investors. Therefore, they started working with a professional accountancy firm to find appropriate investors, and the company they worked with is UHY and what they are expecting is finding the right investor to support their business continuity. Initially, the key person behind this collaboration is NP at local government S. Participant B was introduced to NP who introduced participant B to AH at UHY in 2016. The participant B confirmed that such introductions from the government give case company C trust and credibility. They have been working with UHY from 2017 as the accountants, and in 2019 UHY has been working with their finance team to find investments. Although this collaboration has not provided any investments yet, it offers connections and credibility and good reputation to find investments and gives case company C confidence to work. The staff within case company C are able to and have experience to decide whether the person is the right partner.

Even though local government S has made this introduction, case company C found that the UK government barely supports their business in Bangladesh as they already have connections in Bangladesh.

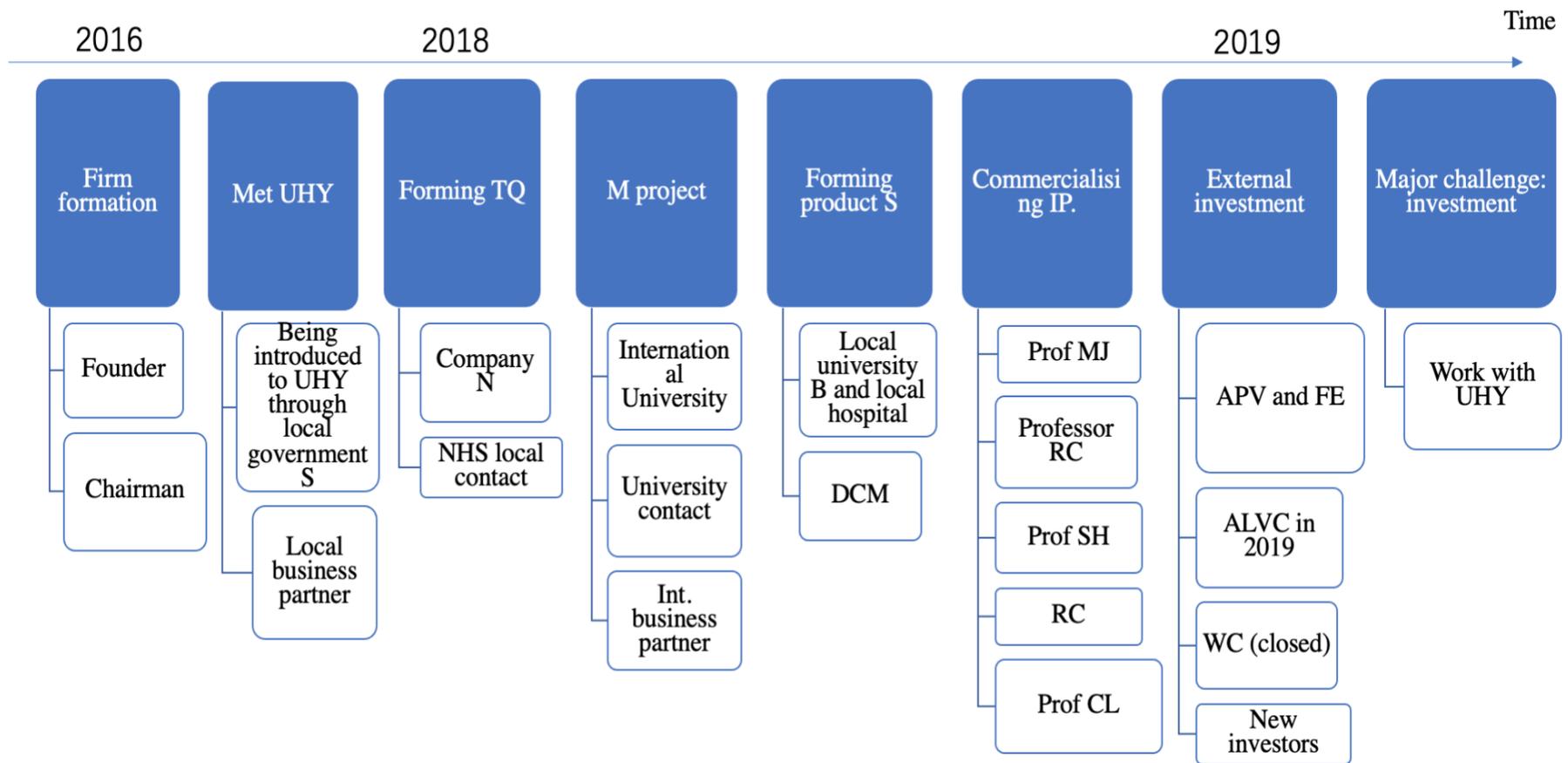
Based on the above discussion of key contacts of case company C that contribute to the business development, it can be noticed that case company C started their relationships from the UK, and then moved towards foreign market, and social capital is created within these contacts through various networking activities. Therefore, the connections in Bangladesh are important to their business, their tactics include starting with high profile people. For example, they have relationships with the president of the biggest hospital group in Bangladesh, then they got introductions through Prof A into government ministries at the Deputy Minister level, who are at the high position to increase the possibility of achievement. Case company C have more structural social capital as they built and expanded a wide range of networks, cognitive social capital is created with the local contacts who has shared cultural background and express interests in their business, and also with some of the international contacts who has speak the same language and share business goals to collaborate with the founder. Relational social capital is easier to create within the local contacts, while it takes many efforts to create in the foreign contacts. Additionally, not all of these have generated satisfied outcomes.

4.2.2 Case company D-case overview

Case company D is a life sciences company working with top NHS research centres and global medical innovation hubs, aimed at the commercialisation of revolutionary medical treatments for better patient outcomes. The company focuses on treatments around medical technologies, which include devices, diagnostics and digital.

According to the participant, there are several critical events that contribute to internationalisation, the details of the contacts behind the events and how they helped the firm are introduced below in a chronologic way, shown as Figure 15.

Figure 15 Case company D critical events and contacts



Source: The author

Case company D was established in 2016 by Dr C.W with a science and technology background, his idea was to create a vehicle, a company that could collect IP from hospitals and to develop. Even though the company is newly established without a mature international business in foreign markets, one of their strategic objectives is identifying intellectual property in the UK, particularly in hospitals, which is largely unused and filtering those opportunities with international potential. Therefore, they have formed a basis to support their international business and align it with their international expectations: they can actually build a business that would expand globally from the beginning. Currently the major international activities for case company D are raising external investments from South Korea through sublicensing their product to SK company, which is explained in detail below.

In 2018, one of the critical events for case company D was negotiating a contract with company N, one of the NHS mental health trusts, providing a range of services that treat anxiety depression and assess mental health in a more scientific approach or objective approach with measurements through EEG to picture a brain map. Case company D spun TQ out of company N to provide a mental health service. The service is based in the UK and looking at how to establish business in South Korea and in the USA, as the company has networks as distributors in these two foreign markets. The main contact behind this collaboration is S.B, who is finance director in SK. In 2019, TQ has worked with several companies, like company S, and a national company, to generate revenue and obtain case studies to support the company's international business. It is a new service although the core knowledge TMS has been available for 30 years, one of the reasons that company N wished to spin out is to make the treatment available to a wider audience. Even though it is currently UK based, once TQ have had case studies and data with these companies in the UK then it can be helpful to expand into other markets.

One of the routes to open the US market for case company D is working with the international university W regarding its project, called M, and case company D had connection with international university W through the introduction of hospital WH. Participants B and E who are the key people in case company D are dealing with the M

team in the US, they meet with the team every two weeks. Because case company D have not spun it out of the university W yet, they have the license to use the product on other markets in the world to commercialise it, but the team still sits within the university W, case company D deals with M as a separate entity. It takes time to spin them out the university W. There are mutual benefits of working with the international university W. It is a financial implication to commercialise the project, M, for case company D to generate revenue, and participant E further confirmed that the technology behind M is underpinned by the patented technology that is much more complex than it looks on the surface, so as a technologist, participant E was able to identify its value behind, and that is why case company D were interested. On the other hand, M was developed through federal grants and then they were lined up to individual states in the US, and then these states would pay the university W while the M team was not allowed to make any profit but on developing the product. Whereas when case company D had transitioned, the model is going to be different as case company D will commercialise it and sell the product outside the US and the international university W will have a royalty fee based on the sales. There are five million individuals have used the system, which has generated important data that validates both the effectiveness and impact of the system.

Furthermore, in 2018, another critical event for case company D is an IP spin-out from local university B, called technology S. Material scientists are working with a world leading urologist in the local hospital. Case company D has sublicensed this IP to its South Korean associated company, which enables investment to be raised in South Korea to support the project in the UK through advanced royalty payments to case company D. This product is about two years away from being commercial, since the product must undergo clinical trials.

From the above discussions of critical events of case company D, licensing IPs from these universities are the main business activities for the company now, and there are some key people helping case company D to develop and commercialise these IPs, and behind these projects, there are some advisors from different institutions. For example, Prof MJ, participant B was introduced to MJ through NP who is from local government

SY. MJ is the professor in the local university B, has been a good sounding board for ideas, so she is one of the advisors for case company D helping to commercialise the product with their knowledge. Additionally, Professor R.C, who is a personal friend of participant B and now has been a senior person in oncology local hospital W, a work authority on breast cancer. He could help case company D not just with his know-how, but also he knows numerous specialists in certain areas, which provide credible introductions to case company D. Prof S.H, Prof C.L and Prof R.CP from local university A, and Prof R.CP is also the director of local research centre, are important contacts to help case company D to develop product and project and commercialising it with their own knowledge and know-how, in turn, case company D also helped the local research centre on how to commercialise.

Another critical event for the company is raising investment from foreign markets in 2019. Few years ago, the founder, Dr C.W. has successfully raised funds in South Korea through his connections. In addition to the personal investments from the board, case company D acquired investment from company APV and company FE, which are part of the British Business Bank, an investment from company ALVC in SK in 2019 is still in progress, and a negotiation with company WC in SK leads to nothing due to no shared understandings of business. The key person behind these SK investments is D.C. who is the Director of case company D in SK. He built relationships with people in SK. The challenge behind the investments from South Korea is cultural difference, Korean investors look for a company's people to operate as a team in a formal way, in a physical office or in a building, while in UK, the team could be working in Cambridge, in Manchester, through a virtual arrangement only meeting in person when Korean investors prefer PhDs or expectations of qualifications or good technology and then they invest. While the difference between SK investors and UK investors is that SK investors are willing to invest earlier in Western companies who have know-how with an idea and can take it into those countries than UK investors who are preferring to invest in companies with revenue. Accordingly, the connections of the founder and director in SK and the know-how technology would grant them investments.

Therefore, it can be noticed that the critical challenge for now in 2019 is investment. Therefore, one of the key contacts here is UHY met in 2017, as their accountants, and similar with case company C, case company D work with UHY finance team to find investments in 2019. Although this collaboration has not provided any investments yet, it offers connections and credibility and good reputation, and gives the company confidence to work.

Case company D was talking with the local university C in 2019, which might license some IPs at some point. The key contact behind this event is Prof A.G., who used to work in local university B and now went to be the Dean of Life Sciences at local university C.

The above discussions of case company C and case company D presents the detailed information critical contacts behind the business events along with tables and figures. As stated in the methodology chapter, after the initial analysis, these two firms can be categorised as an inter-connected group which has interlinked networks and two companies share common chairman and/or collaborator. For example, their common key business partner, UHY accountant, which was introduced to the participant B through local government SY when they were setting up case company C in 2016, and then when case company D was established in 2017, participant B, who also have positions in both case companies C and D, took case company D to UHY and appointed UHY as their accountants as well. Another example is PD from case company C's project, and participant B told PD that case company D includes some things they are working on in another part of the hospital, and attracted PD to join case company D's project as well.

This indicates that due to the common contacts that case company C and case company D have, case company D is able to expand their international business into Bangladesh through the connections of case company C. In this case, both inter-related companies can quickly access more connections that benefit their business.

4.3 Chapter summary

Based on the above discussion of key contacts of case company B that contribute to the business development, the initial thoughts of how to create SC through the above identified activities and contacts have informed a table formation (see the appendix 4) to demonstrate how the researcher did her initial within-case analysis. It can be revealed that network relationships are critical to firms' international business, and social capital is indeed created through these key contacts. The different networking activities that companies undertake which enable the company to build relationships that create social capital. The findings of within-case analysis can be found in the critical events figures shown in the text to guide the future in-depth analysis of networking and social capital creation during the examined MedTech SMEs' internationalisation. This analysis provides considerable background information of each case company and depicts the networking behaviours and how network relationships contribute to the firm's business, which underpins the following cross-case analysis. Therefore, this within-case analysis information assists the researcher to further conduct an in-depth analysis across the cases.

5. CROSS-CASE ANALYSIS AND FINDINGS

Chapter aim:

This chapter provides an in-depth analysis of cross cases to unfold social capital creation and its benefits for internationalizing SMEs in the context of MedTech to address the research questions. Referring to the section in the introduction in section 1.4 by:

- 1) Revealing the networking activities of each case companies that create SC
- 2) Identifying the conditions that make social capital available,
- 3) Reporting in what stage in the process of interaction, between UK MedTech SMEs and foreign firms, does social capital become available and its benefits realised.

The researcher then reports the findings of each research question based on the cross-case analysis.

5.1 RQ a. Networking activities that UK MedTech SMEs conduct when they attempt to internationalise in foreign market.

As explained in section 3.4, this section examines the social capital creation from both individual and firm level by considering the networking activities, to demonstrate how they meet and how the relationship is being initiated. As discussed in the methodology, after the within-case analysis, the four case companies can be divided into two groups of company, the inter-related companies, Case company C and Case company D, who share common stakeholders such as an investor, director - have access to and may benefit from the networks built by those key stakeholders. Another group is non-related companies, Case company A and Case company B, who have independent and separate networks and conduct their internationalisation process independently. To have in-depth understanding of their networking activities, the cross-case analysis starts from examining the networking activities of each group and then comparing two groups of companies to identify their differences and similarities that could generate the networking activities that emerge from the analysis as emergent findings to address the

RQ a. Following Table 13 on p.178, the next section explains the analysis to examine who they connect and the different ways conducting to network to examine how they build relationships; therefore, the networking activities are explored from the cross-case analysis of four case companies. The cross-case analysis addresses RQ a - “what are the networking activities that the UK MedTech SME conducts when they attempt to internationalise in the foreign markets?” and presents the emergent findings that the four case companies were engaged with various networking activities to create SC that contributes to their internationalisation.

Initially, networking activities are addressed in terms of *whom* the case firms connect with in order to build social capital that improves their international business. This refers to the many sorts of institutionalised contexts in which connections can be found. As a result, the first emerging finding is that the networking actors may be classified into four institutionalised contexts: government, business organisation, hospital, and university. To put it another way, developing relationships with individuals from these four institutionalised contexts is the primary object of gaining access to their resources for international business. I apply to this study the institutional perspective, following the conceptual logic of Scott (2014) explained in Chapter 2.1 and Child et al (2017), to institutionalise contexts within which networking actors are operative. The rationality of using institutional perspective into analysis is explained below.

When analysing a network, Powell et al. (2005) asserted the importance of the specific industry, referring to it as "an organisational field," which is a group of organisations with comparable activities and are influenced by similar reputational and regulatory forces (Dimaggio and Powell, 1983). They discovered that the life science industry is progressing in its scientific and commercial areas, necessitating a variety of actors such as research organisations, universities, venture capital firms, and huge corporations, among others. Because one form of institution has certain knowledge domains, abilities, and competencies that another does not, communication and knowledge exchange across these diverse types of organisations, as well as the exchange of goods and services, are critical. Because different institutional players in an "organisational field" play different roles, serve different purposes, and inhabit different knowledge domains,

Powell et al (2005) used institutional theory in their study to analyse networks within the life-science industry to understand how and why different organisations connect. As a result of the complexity of the high technology sectors that have evolved, an institutional perspective can assist the researcher to understand how diverse actors in organisations are connected through networking activities, and therefore how social capital is created.

Furthermore, institutional perspective is often utilised in nation or industry where particular features are considered as distinct within each country and industry in terms of rules, norms, and cognitive orientations, for example, classify the industry from an institutional perspective because standard industry classifications have limited identification of the systematic characteristics of different industries, such as typical strategies, technologies, and knowledge domains (Child and Hsieh, 2014, Child et al., 2017).

This research claims that institutionalisation may be useful to examine networking contexts in the MedTech industry through analysing the data to distinguish different actors in the MedTech industry that have different backgrounds, play different roles, serve different purposes and inhabit different knowledge domains (Powell et al., 2005). It helps to explain the types of alters to understand who the focal actors can engage or where the networking actors can be established.

Besides, *how* they connect with these actors is another aspect to address the networking activity. Based on the previous literature, e.g. the planning of networking Hite and Hesterly (2001) and Puthusserry et al (2020), unplanning (Bourdieu, 1986), incoming and outgoing relationships (Coviello, 2006), and data emergent, there are two major activities, A) “interact with extant relationships” and B) “engage with new network relationships” through (un)planned incoming/outgoing initiations, that are found from cross-case analysis. Below Table 13 on p.178 illustrates the key concepts of the networking activities and how I define the concepts.

To be specific, Hite and Hesterly (2001) and Puthusserry et al (2020) have stated the SMEs create new relationships intentionally. Tang (2011) also suggested that SMEs plan and conduct networking activities strategically could benefit from their contacts. I define planned initiation as focal actors are proactive to build relationships with careful planning and/or make decisions to build, e.g. active approach and plan. On the other hand, the relationships are built without planning, and it might be spontaneous that the social tie may emerge naturally, with no premeditated purpose, and may be initiated due to chance event (Bourdieu, 1986; Crick and Spence, 2005) and may rise without knowing it. I define the unplanned initiation as relationships are built without planning and goal-orientation. Besides, in Coviello (2006), networking relationships can be studied in terms of the direction of relationships, incoming and outgoing, as well as relationships formed by third party-introductions. In this study, following Coviello (2006), this study also examines network relationships from the direction of initiation, outgoing and incoming, and considers the third-party introductions as the incoming relationships. Therefore, in this study, incoming relationships refer to the contacts approach/come to the focal actors and third-party introductions, and outgoing relationships are those focal actors initiate (Coviello, 2006). Puthusserry et al. (2020) suggest that networking activity can be divided into building new ones and re-activate with extant one. In this study, I define the extant relationships that exist before the companies' internationalisation and personal friends. Besides, according to the data emergent, I define the inter-related relationships as relationships of a group that are connecting to the relationships in another group.

Table 13 Summary of key concepts of networking activities

	Concept	Variations	Definition	Source
How Networking for SC Occurred	Planning	-Planned -Unplanned	Planned initiation as focal actors are proactive to build relationships with careful planning and/or make decision to build, e.g. active approach and plan. Unplanned	Data emergent, and or ref (e.g. citations in definition)

			initiation as relationships are built without planning and goal-orientation (Hite and Hesterly, 2000, Puthusserry et al., 2020, Tang, 2011, Bourdieu, 1986)	
	Direction	-Incoming -Outgoing	Outgoing: it is the focal actor initiated. Outgoing: the contact approached the focal actor or through third party introductions (Coviello, 2006)	Ref (e.g. citations in definition)
Type of Interaction or Relationship	Relationship	-New -Extant	Whether the relationships are the new ones or extant (Puthusserry et al., 2020), or inter-related	Data emergent and ref (e.g. citations in definition)
Type of Institutionalised contexts	Institutionalised contexts	-Government -Business organisation -Hospital -University	The different types of institutional contexts that contacts located (Scott, 2014, Child et al., 2017)	Data emergent and ref (e.g. citations in definition)

Source: the author

The below two tables, Table 14 on p.180 and Table 15 on p.181 illustrate the summary of cross-findings of networking activities of MedTech SMEs to create social capital, including the two major networking activities, interact with extant relationships and build new relationships. The greatest number of network relationships that create SC is in business organisations, less in university and hospital, and the least less in government. Therefore, for medical devices companies to conduct international business, business organisations could lead to direct access to foreign markets, due to

the firm’s business nature, universities and hospitals are the places to provide technology and resources to the companies.

To be specific, Table 14 on p.180 demonstrates that case companies’ network with the extant relationships, which is classified into extant relationships in non-related companies and in inter-related companies. It suggests whether case companies have extant relationships with government actors, business organisation actors, hospital actors, university actors, and how many instances of institutionalised actors appear in each of the case companies. It can be stated that inter-related companies have more extant contacts in the four types of institutionalised actors than non-related companies. This suggests that inter-related companies have easier access to valuable relationships and social capital when they share common directors.

Table 14 Summary of cross-case findings- Interact with extant relationships

Networking activities	Groups of company	Types of institutionalised context			
		Gov	BusOrg	Hosp	Univ
Interacting with Extant relationships	Non-related companies	NONE	B (1)	NON E	A (1) B (1)
	Inter-related companies	C (2) D (1)	D (3)	C (1) D (2)	C (2) D (1)
<p>Key: Case companies: A, B, C & D Type of Actors: Gov = governmental; BusOrg = business organisational actors; Hosp = hospital actors; Univ = university actors Number in Brackets shows the number of reported instances. This is not quantifiable in analytical terms but shows the prevalence for each company.</p>					

Source: the author

Similarly, Table 15 on p.181 demonstrates how case companies engage with new relationships, which is classified as incoming, outgoing, unplanned and planned relationships. It suggests whether case companies build new relationships with government actors, business organisation actors, hospital actors, university actors and how many instances of institutionalised actors appear in each of the case companies.

Table 15 Summary of cross-case findings- Building new relationships

Networking activities	Categories	Types of institutionalised contexts				Total
		Gov (6)	BusOrg (12)	Hosp (8)	Univ (8)	
Engaging with New relationships	Incoming	A (1) C (1) D (1)	A (2) B (3) C (3) D (3)	A (2) B (2) C (2)	A (1) D (6)	27
	Outgoing	A (1) B (1) C (1)	C (1)	B (1) C (1)		6
	Unplanned	A (1) C (1) D (1)	A (2) B (2) C (3) D (3)	A (2) B (2) C (2)	A (1) D (5)	25
	Planned	A (1) B (1) C (1)	B (1) C (1) D (1)	B (1) C (1)		8
<p>Key: Case companies: A, B, C & D Type of Actors: Gov = governmental; BusOrg = business organisational actors; Hosp = hospital actors; Univ = university actors Number in Brackets shows the number of reported instances. This is not quantifiable in analytical terms but shows the prevalence for each company.</p>						

Source: the author

5.1.1 Network activities of non-related companies

The cross-case analysis shows that two case companies (Case company A and Case company B) were networking with multiple actors through different activities.

5.1.1.1 Government

It has been shown that both two case companies A and B adopted building new relationships with government actors, and there are no extant relationships that have been interacted.

As mentioned in Chapter 4 within-case analysis, when the companies initially started their business or international business, case companies A and B actively sought government assistance. Case company A actively went to local government agency S in order to seek business advice, similarly, case company B also said that they actively went to local government with the aim of asking for support. Therefore, it can be revealed that networking for government social capital is proactive outgoing relationships that the focal actors build relationships with a purpose. The following quotations from case company A and B suggest the above findings by saying that

“I wrote to City S Council and I was introduced to P.” (Case company A, 2)

“When we first started (business) that we did go through UK trade and industry at the time was changed his name again, and we had support from them” (Case company B, 1).

The above networking activities suggest a *planned outgoing initiation*, which indicates that when case companies encounter business difficulties, they go to government departments to build relationships and ask for help.

While case company A also presented an *unplanned incoming initiation* with government actors because it is French government approached case company A and invited the founder to set up business in France, confirmed as below:

“And also, I was invited by the French government and set up my company in France.” (Case company A, 2)

My findings also suggest that even though building relationships with the government to create SC benefiting their business is commonly accepted by businesses, the

effectiveness of government SC was lowered. Case company B, participant B from case companies C and D expressed that they received limited support from the local government. For example, case company B said:

“we had support from them (government) a lot of that support was just general overview of introducing into new markets, but they certainly provided some financial support in that early stage and funding for us to visit the markets that we are looking at introducing the product, and certainly that was that was very useful for us in the beginning stage where we didn't have huge funds to be able to internationalized, so as to have just that financial support, although not you know in the grand scheme of things are huge amounts of money, but back then enabled us to buy a plane ticket and a hotel room, And that was a huge financial and benefit for us back then, we're not revenue was still very low. Other than that, we're not utilized huge like government agency networks. We just used our own personal commercial networks that we have, both clinical and commercial from both of us.”

(Case company B, 1)

To conclude, case companies A and B built new relationships with government actors that create social capital, in which planned outgoing relationships prevail. A likely interpretation is that for new and small companies who do not have sufficient resources and information as well as international experience, lack useful relationships, government is one of the essential facilitators for SMEs to start their internationalisation, therefore government support is well accepted by the medical device SMEs to facilitate their business. In other words, MedTech SMEs who are small and newly established and where their entrepreneur has a scientific background but without sufficient business experience and useful relationships, government contacts, can e.g., help connect SMEs with other related government agencies and offer advice on business rules and regulations. A different case of unplanned incoming initiation occurring at case company A suggests that even though as a medical device SME who suffers from the liability of newness and smallness when internationalising, their innovative and competitive technology/product would be the core competence that attracts foreign actors. However, government support is less instrumental in practice.

5.1.1.2 Business organisation

For the business organisation actors, both case companies A and B rely on building new relationships. These new business organisation relationships could be further classified into planned initiation and unplanned initiation, as well as incoming relationships and outgoing relationships.

The findings indicate that *unplanned incoming initiation* for creating business organisation SC prevails at the initial business stage. For example, case company B suggested one of the potential business partners is met at the conference without planning, and case company A also confirmed that they built a relationship with a business director who met at a conference without planning and/or purpose to meet. For example, case company A said:

“We met at the Medilink conference in local city B. He also there, then we introduced ourselves, and then he said it would be better to have a discussion with me. I followed up his offer went to see this company showing this set up. He thought of and then discuss these issues.” (Case company A, 2)

Interestingly, the participant of case company B stated that after business interactions with this new unplanned incoming contact, they realised it is not appropriate to form a formal business relationship, but they indeed built a good relationship after social interactions, and thus, case company B was being introduced to more contacts in US, which starts case company B’s distributor network. Therefore, it can be stated that even though case company B and this contact did not achieve any business results, this relationship opened their US distributor network without planning. This indicates the relationships in business organisations can be built and expanded through introductions without planning it. The following statement supported this finding by saying:

“We actually met a company and an individual, and he had a network within the USA. And he was very, he was very happy to help us and introduce us to his

contacts and partners that he's worked with. And so that's been a certainly a key relationship for us from sales and marketing point of view to start distributor network. And really off the back of that, we set one distributor and they recommended us to other distributors in different regions of America. So almost off the same initial relationship. It's filtered down and expanded outwards. So we're now go up a range of distribution partners covering key areas within the US all really as a result of a single relationship, the top,” (Case company B, 1)

After unplanned networking with business organisations actors to enter foreign markets, *planned initiations* that focal actors are proactive to build relationships with careful planning and/or make decisions to build play a vital role in networking with potential business partners in order to expand networks in foreign markets after an initial attempt. For example, case company B represents planned initiation within the American market to expand the market and being active to build business relationships. The following statements suggested this finding:

“but we certainly used local suppliers within the market to utilize their sales channel and their sales team and their network that they already have existing. And we try to find local partners that have products that are in the same space in particularly in obstetrics or labour and delivery.” (Case company B, 1)

Another example to show the importance of planning searching the appropriate contacts is that case company B intends to enter Japanese market where is psychological distant and culturally different area:

“We haven't done it yet mainly because one I think there's a lot of cultural and language barriers and even the registration process of the for the product to be approved to sell, got to be done in Japanese. And then also we would need to forge relationships with strategic partners to sell the product. And we don't have any of those in those markets. [...] I think it's with this a market that we not attempted to, because we don't have that support network that we have in other markets around the world.” (Case company B, 1)

This indicates business organisation SC is important to generate business results and after initially entering the foreign markets without planning it, case companies started adopting more planned initiation to build and expand new relationships with business organisations to expand the market, as well as to enter the markets where exert greater psychological distance and cultural difference.

In addition to new relationships, networking with the extant relationships in business organisations is also important in facilitating internationalisation. According to the entrepreneur's background, for example, case company B suggested they interact with the extant relationships that existed before the international business for support, they are either personal friends or previous business relationships of the founder. Because the founder is from India originally and the good friends there have set up and run successful business, case company B used this network to start the US business by, e.g. helping with finding accountants, setting up business, registering the company within the US and providing a US address and contact number. The participant from case company B illustrated that:

“Yeah, there's been a few personal relationships. We have some family friends in the US uh, there's a family friend is close friend of my dads who actually owns a big business to the US. So he for example was very helpful in us incorporating the US subsidiary. Yeah, he allowed us to use offices already, the rest of the address. He helped us with accountants and that was the kind of business side of things. We have some good help there” (Case company B, 2)

However, case company A did not suggest extant relationships in business organisations that help their business.

Therefore, it can be interpreted that medical device SMEs who lack experience and suffer from liability of outsidership tend to interact with the extant relationships, e.g. personal friends, to start their international business, revealing that the extant relationship in business organisations has been considered to be an important facilitator

for SMEs when they attempt to start their international business. Besides, building new relationships with actors in business organisations is preferred to enter and expand a new market straight.

5.1.1.3 Hospital

Cross-finding indicates that building new relationships with hospital contacts to create SC is essential for medical device SMEs who need credibility and to validate their product internationally. Similar to government actors, hospital contacts (e.g. doctors and professors) can be attracted by the unique and innovative technology and actively approach the medical device company.

For the hospital contacts, both case companies A and B tended to build new relationships. The cross-case analysis of case company A and B has suggested that most of the new relationships from hospital are initiated *unplanned*. For example, case company A indicated that one of the hospital contacts came to the participant and they were introduced through the embassy, which indicates an *unplanned incoming initiation*. This unplanned incoming initiation is also apparent in case company B, whose first international business in Australia are happened accidentally because a professor from Australia hospital approached the company, and a professor from a USA hospital approached the case company B, all of two professors were attracted by the unique and innovative product of case company B and helped with validating the technology with data and publication in the host countries. The following quotations supported that:

“And for instance, Australia is probably our second largest market. And I didn't come out of careful planning. That certainly came out of a chance one of the customers in a large hospital show actually approached us, okay, and really kind of drove us to introduce the product into the Australian market from his needs, also he found out about the product online when searching the problem, and then approached us to say we've had this problem a number of times we need to resolve and your product looks like it will do that.” (Case company B, 1).

“he actually had a very good relationship with a professor in Boston, And he was visiting him both and socially and for work purposes. And they struck a conversation, talked about our product, the fetal pillow. Off the back of that, .I got a phone call from the professor in Boston. And as a result of that, they're now doing a clinical study on our product in the USA, which they we're not having to pay for where we're providing the product free of charge. But all of the study is being facilitated and funded externally from us.” (Case company B, 1)

Additionally, case company B further used planned outgoing initiation with hospitals actors in the USA to create SC to expand the market, as they actively attend various conferences where doctors are likely to attend, search the appropriate USA hospitals and approach them. It can be indicated that:

“And there's also a case of, you know you, the good thing about births is there's a lot of statistics. You actually see um, where the largest hospitals are by the number of births that are performing. And you can you can easily identify your top targets off of the back of that. So you can we can find hospital delivering the most birth in New York, for instance. And all that information of whose the clinicians is who the doctors in those hospitals, is available readily online on their websites. And and you can often just email them directly off the back of that, introducing the product to them.” (Case company B, 2)

“So we started approaching some of those contacts to tell them we were now FDA approved and we could sell the device in the US. So New York with the first state we approached. And we knew there a couple of big hospitals that we made contact with and we reached out to them and for the first probably five or six hospitals” (Case company B, 2)

“obviously exhibiting a key conferences, whether the customers would attend, and they're mainly sort of clinical academic conferences. And that is there's the

exhibiting and time where the companies will have a booth were able to display ensure products.” (Case company B, 1)

While case company A did not illustrate *planning* initiation with hospital contacts to build relationships and create social capital, this could be due to case company A is newly established and at an earlier stage of their business than case company B is.

Also, there is no extant relationships in hospitals that were being interacted for both case company A and B, this could be the reason that two founders of case companies have specific expertise and background that may limit their relationships in hospitals.

All in all, my findings of more *unplanned incoming* hospital relationships to the case companies A and B than business organisation and government contacts. This may be that hospital specialists are able to recognise the value of their technology due to their professions. The participant from case company B confirmed that hospitals are sometimes willing to welcome new and innovative products to make them advanced in the world. This indicates that due to this study research context, MedTech companies are more appealing to the hospitals when they have innovative and competitive technology/product. Hospital contacts are more instrumental in supporting company’s technology to facilitate their business internationally. After having an important contact within the hospital, case company B was becoming strategic to expand their hospital network with planning.

5.1.1.4 University

The cross-case analysis indicates that the extant relationships in university are considered as primary facilitators at the initial business stage, and new university contacts are also being introduced to assist their international business through marketing research.

Case company A stated that the founder has an extant relationship from university that existed before the business establishment and helps their business. For example, the

founder had one university contact in Germany, Professor of EEG, who was known before the firm formation, and he provided product knowledge to help case company A's product design. It can be supported by the following quotation:

“As an example, I had found that my neighbour's son was working in the field of EEG. Although I had known that he was an academic working in southern Germany, I did not ask her which field. It was several years later that when she mentioned that he was doing a joint project work in York that I found that he was in the field of neurology with a special interest in Electro-Encephalo-Gram (EEG). I had mentioned about my invention and she arranged for her son a Prof to see me during one of his visits. He felt he could help me. In April 2011, I visited his department in the first instance to gain an overview of his work.” (Case company A, 1)

In addition to interacting with extant relationships, a networking activity of *unplanned incoming initiation* is illustrated in case company A, which was introduced to the university contact through local government S. The following statement supported through:

“She (P) introduced me to me the local university A. They did marketing study.”
(Case company A, 2)

Similarly, case company B also built new relationships with the local university that helps them to do the market research, by saying:

“The other flip side of things is we and we previously used the local university G to do projects for us to look at market access and how we should introduce the product within the market. And obviously from a financial point of view, having a direct sales team is often the best route to market, but it's a very expensive rich market. And they (local university G) identified utilising a distributor network to sell the product.” (Case company B. 1)

All in all, it can be suggested that although universities are not a major context to build relationships creating SC that benefits their business, the found universities contacts are also effective to help with their business.

5.1.2 Networking activities of inter-related companies

To have fine-grained analysis of networking activities, a comprehensive contrast and comparison between non-related inter-related companies could help to generate networking activities by considering its difference and similarities. This section examines the networking activities of inter-related companies (Case company C and Case company D). As shown in the Table 14 on p.180, there is an interesting different finding from these two inter-related companies is that they used “inter-related relationships” to create social capital, as they share common stakeholders such as an investor, director which may access to these stakeholders to get benefits.

5.1.2.1 Government

The cross-case analysis of inter-related case companies, C and D, has revealed that they engaged with a networking activity of building new relationships with the government actors through *unplanned incoming initiation*. For example, case company C was being introduced to local government H out of the relationship with company S. This represents that case companies C built incoming relationships without planning. Similarly, case company D also built new relationships through introduction without planning it. The following quotations reveal that:

“The benefit is Company S connections to others like local government H. Uh, so government bodies in the UK, potentially the parts of the University.” (Case company C, 3)

“N.P. (from local government S) was introduced to me through the Chamber of Commerce.” (Case company D, 4)

Case company C also built an outgoing relationship with the High Commission in Bangladesh, while achieving planning. This could be the reason that actors in foreign governments are difficult to connect and need SMEs to be active to connect with planning. It has been shown as below:

“In Bangladesh we've got a good relationship with the High Commission, which is part of the Department of Trade over here. But we made that connection, they didn't find us.” (Case company C, 1)

An interesting finding has been found between these two inter-related companies, due to participant B joining both case companies' business activities, the relationships that participant B has in one case company can be accessed by another, which means social capital created from these relationships is able flow between the two case companies. It can be stated that the entrepreneur's extant relationships from personal friends and/or relationships at one case company could benefit both companies. Due to the common directors they have, who acted as a brokerage to make relationships become inter-related and therefore, social capital becomes accessible for both case companies. The following statement suggested that government actors (Y.A and N.P) from case company D can be accessed by case company C and assist their business:

“So set the same way that she's (Y.A) help with introduced some people have been helpful. N.P help with some export questions because that's his space international trade.” (Case company C, 4)

Interestingly, participant B of case company D lowered the importance of initiating a network with government, which is a similar opinion on the effectiveness of government relationships for case company A and B. This is illustrated as below:

“Chamber of Commerce to a small extent, UK government no input at all, well that's not expected to.... Usually, you would go through the Chamber of Commerce and you'd go on some kind of overseas Commission visit it, we not needed to use

those because we've always had some established connection in the countries.”
(Case company D, 1).

Therefore, it can be stated that case company C and D both engaged with building new government relationships to create social capital through unplanned incoming. Case company C suggested that planned outgoing initiation is useful to build foreign high position people in the government. An interesting finding is that, beside the building new relationships, both companies can access more relationships that locate at these companies due to the inter-related nature.

5.1.2.2 Business organisation

According to the cross-case analysis of the inter-related case companies C and D, the findings suggest that as newly established medical device SMEs, who lack sufficient business experience, business organisational relationships are able to help. New relationships creating social capital tend to be the core to new medical device SME's initial internationalisation, and these inter-related extant companies also tend to interact with relationships that existed in the group, which speed up the process of identifying and accessing social capital.

Both case company C and D illustrate building new relationships with business organisation actors, for example, case company C build relationship with an Indian company T to build a laboratory in Bangladesh to enter the market, and case company C built business relationship with an accountancy company UHY to find investment through introduction, and case company D built business relationships with South Korean investing companies and some UK Venture companies through introduction.

These new relationships can be further divided into initiation with planning and without planning, as well as incoming relationships and outgoing relationships. For example, case company D has UK investors come from introductions without planning it, which represents *unplanning incoming* relationships. Similarly, case company C also suggested that they engaged with unplanned initiation of incoming relationships, for

example, they were being introduced to Professor AK from company B and to UNY who worked as their accountancy. These new relationships are built without planning but because someone knows someone that is unexpected and unplanned. This is illustrated as below:

“Company FE came through Y.A., introduced A.M., well actually, DL who is company FE, company ALVC, that's well same thing. Introduction.” (Case company D, 4)

“They were introduced by someone of the Chamber of Commerce. So uh it was actually mention I was talking to. So I met someone... he's local government S [...] part of the Chamber of Commerce. And so I was introduced to him, at the time, we were setting all that. So he introduced me to A.H. at UHY,” (Case company C, 3)

Another example of *unplanned incoming* relationships with business organisation actors is South Korean investing companies approached case company D without planning. The following quotation illustrated that:

“I mean whereas in South Korea that coming to us and saying we like what you're doing, how can we invest. So really an example of that would be that we now have investors in Korea coming to us to say they'd like to invest, whereas in the UK where we're continually having to go out to investors to say what you'd like to invest us, generally they say no. I mean whereas in South Korea that coming to us and saying we like what you're doing, how can we invest.” (Case company D, 1)

Beside unplanned initiation, *planned initiation* with business organisations happened in case companies C and D. For example, case company D planned to search investors through asking for support from government to have more introductions, and then a local investing company FE was introduced (incoming). Another example is case company C built a relationship with an American company A to sell their product to the Bangladesh market with active planning and search (outgoing). As case company C said

“and finally, we found the company in American called company A, who had a product which could be useful to them.” (Case company C, 2)

This planned outgoing initiation can be due to after initial attempts of international business, the companies and its entrepreneurs were more strategic and planned to network to solve challenges and facilitate their business.

An interesting finding of inter-related network relationships happened within business organisation context, the participant mentioned that case company C built business relationship with UHY, who is also available for case company D and now UHY works for both case company C and D, shown as below

“When do we start, that would have been 2016? So first start talking to A when we were setting up case company C. and then the logical progression must say A with mouth we're go case company D, so this was 2017 this was born. So we took case company D to A in 2017 and appointed them as accountants. So they do the accountancy in order for all of our companies.” (Case company D, 3)

Another example is the common actor - participant B has good social relations with the president, Prof AK, of company B, thus case company C built strategic relationship with company B to enter Bangladesh, and the participant B suggested that this strategic relationship also gives case company D opportunity to enter Bangladesh market, It has been supported as below:

“it gives us both case company C and potentially case company D a presence in Bangladesh, so physical presence” (Case company C, 3)

All in all, the above cross-case analysis of business organisation relationships that create SC indicates that both case companies C and D started building with these business contacts unplanned and most of them are incoming relationships at the initial business stage, after a period of time of their international activities, case companies

become more strategic and planned to search suitable business partner and interact with useful extant relationships to achieve their objectives and sustain their business. Interestingly, one case company is able access to one business partner of another company due to their inter-related, therefore, it is possible that the business partner of one company can be directly to be the partner of another company, but most of the business partners cannot be directly worked for both companies even though two case companies are inter-related.

5.1.2.3 Hospital

Case company C and D engaged with various network activities with hospital contacts. My finding shows that building new relationships with hospital contacts is one of the major activities, which unfold planned and unplanned initiation, and incoming and outgoing relationships.

For example, *unplanned incoming initiations* appear in case company C, who initially met their hospital contacts, Professor AD and Professor PD, by chance through introductions, and this is the initiative in which case company C works with hospital to start with their business. The following statements suggested that:

“So the first accidental encounters were with the local children hospital” (Case company C, 1).

“Professor A.D. she currently while she just retiring from the post of medical the of clinical director at the children's hospital for genetics. And Prof P.D. He's been working on the newborn screening program that we started. That was the first initiative we wanted to take out there. So he's influencer as well, a influencer, a supporter.” (Case company C, 2)

Furthermore, my findings suggested that after the business initiative with the hospital mentioned above, case company C actively planned to network with foreign hospitals

to do international business. Accordingly, they began to build relationships with planning, confirmed as below:

“So the initial connections were a bit accidental, but then we've quickly moved those accidental encounters into much more organized. So we will deliberately, now go to our expert in the particular areas and ask for connections because of this” (Case company C, 1)

“so we established connections with the president of the biggest hospital group in Bangladesh. [...], so we made a great effort to start the discussions as high position as possible” (Case company C, 1)

“we first talked to the military hospital, Major D, about newborn screening on a visit that I made back in 2017. And we built and through the those continuing dialogues”. (Case company C, 2)

It can be stated that case company C started building unplanned incoming relationships and moved to planned outgoing relationships along with international activities progress.

Case company D did not build new relationships within hospitals, but they engaged with interacting with the extant relationship that participant B has in hospital. A professor from a local hospital is a friend of participant B, and the professor is willing to assist the projects. This is confirmed in the following quotation:

“So at the other key influence across all of these would be Professor R.C., who is an old friend of my, personal friend who happens to have been a senior person in oncology, local hospital”. (Case company D, 2).

An interesting finding appears that case companies C and D can access with some relationships that of common directors and that are willing to assist with business. This is illustrated as below:

“P.D who I met around the case company C project who have that said actually you're doing other things that could be really interesting, we went to P.D originally, for him, to tell newborn screening in Bangladesh but P.D is very involved with children's medical technologies, will be developing devices that help the children health. And so when I told them what we're doing with case company D said here are some things we're working on another part of the hospital. So it's all those it's all those kind of, could say almost random connections. There was no reason why I didn't say P.D. out for this, I have to admit it through case company C which and it's a bit like now we have case company D potentially um is the route to Bangladesh for all of the things we're doing it case company D.” (Case company D, 4).

All in all, the cross-case analysis of networking with hospital contacts to create SC indicates that, *unplanned incoming initiations* prevail in the beginning of the case company's business and *interact with extant relationships* who are able and willing to help, and afterwards, the firm started to be *planned to search* to form relationships in hospitals, especially with prestigious people in the foreign market, these hospital supporters that the common shareholder established in one company are able to be accessed by another company.

5.1.2.4 University

Inter-related MedTech SMEs whose business spinout from the university are actively engaging with university actors. The finding shows that one of major networking activities with university contacts is building new relationships, which further clarified into unplanned initiation, and incoming and outgoing relationships.

For example, the finding shows that case company D adopted *unplanned incoming initiations* with the local universities and international university through introductions at the initial business stage, and then afterwards, they deliberately interacted with

contacts to strengthen their relationships and planned to interact. This is illustrated as below:

“So S.H. was a personal introduction, not a personal friend. So I was introduced first to S.H. by Local hospital WH, and (Prof R. CP) was introduced by S.H.” (Case company D, 4)

“Usually in their environment. So if it's academics we met them in universities, sometimes it's events, but usually deliberately going to their wherever they are so the university or academic institution” (Case company D, 1)

Another networking activity appears in university contacts is interacting with extant relationships initially. This is illustrated in case company D, the participant has personal friend in the local university C, shown as below:

“So he's (Prof A.G.) a friend. Yeah. So he was a friend, then he was at local city S, then moved to local city B. So then that opened up the opportunities of local university C. Because I could go in there and talk to people. He was able to introduce us to.” (Case company D, 4)

“And I connected with him in the early days, through case company C. But he then went to the Dean of life sciences at local university C, and maintain that connection.” (Case company D, 2)

The above quotation also suggests an interesting finding indicates that the extant university relationship of case company C can also be accessed by case company D because the common shareholder (participant B) work in both case companies, he is able to link his personal relationship to both companies through various projects. Thus, it becomes available for case company D. This is illustrated as below:

“And I connected with him in the early days, through case company C. But he then went to the Dean of life sciences at local university C, and maintain that

connection. And now we're looking at other things within case company D, so in city C, they're got some IP that we might license at some point.” (Case company C and D, 2)

All in all, similarly, cross-findings suggest that only incoming relationships appeared in the new university contacts and happened unplanned initially, this could be due to as newly established SMEs it is difficult to form the relationships fully by themselves, but through external introductions and/or initiated by the networking contacts, and afterwards, the case company planned to search and interact to select more appropriate academics. Extant relationships in hospitals also appeared in the initial business stage suggest its importance to the medical devices SMEs, and these extant relationships can be interacted by another inter-related company, which also stresses their effectiveness. Thus, a company from the inter-related group can interact with the extant relationships who are beneficial in any of the group's companies easily.

Drawing on Adler and Kwon (2002)'s Opportunity-Motivation-Ability (OMA) schema in social capital discussion, there is opportunity to contribute social capital transactions within organisations in terms of network structure, e.g., structural hole and network closure. It is useful to allow the researcher to understand that when it comes to social capital, there must be opportunities being created. Adler and Kwon (2002) and their revised work in 2014 (Kwon and Adler, 2014) discuss social capital and its benefit from a static view in terms of network structure, but did not discuss how the opportunities are created to contribute to social capital creation. Therefore, RQ a. addressing networking activities that create social capital also theoretically reflects how opportunities exist.

5.2 RQ b. Conditions that make social capital available

After identifying the networking activities that create social capital in RQ a., RQ b. regarding *under what conditions that make social capital become available for SMEs* were addressed accordingly.

From section 5.1, I found these specific actors that are supposed to have opportunities to exchange resources, shown in the Appendix 6, illustrating the specific contacts that each case companies have, which indicate the number of opportunities of exchanging resources, in other word, the amount of social capital. Next, it comes to the motivation that facilitates their networking and resource exchange and ability of relationships that attracts focal actors to pursue these relationships that are able to create SC, which draw on OMA schema (Adler and Kwon, 2002, Kwon and Adler, 2014). To understand resource exchange that reflects social capital transaction, the resource mobility is considered because it acts as evidence through representing social capital resource flow to prove the availability of social capital. Therefore, by considering resource mobility (SC) under these network relationships, various motivations and abilities that embedded in the network were examined to elucidate the availability of social capital. I specifically discussed motivations that drive networking of entrepreneurs and the competent aspect to explore the valuable network relationships in terms of connecting contacts' abilities, which finally enable resource mobility (SC) and are the conditions of social capital availability. To clearly illustrate the cross-case analysis and the emergent findings, I formed Table 16 and Table 17 below to summarise findings that make social capital available.

Table 16 Summary of cross-case findings-Conditions of social capital in extant relationships

Conditions		Types of institutionalised contexts					
		Gov	BusOr g	Hosp	Univ		
Motivations	Cognitive motivation		B (1)	D (1)	A (1) C (2)		
	Emotional motivation						
	Organisational motivation	C (2)	C (1)	C (1) D (1)	D (1)		
Roles	Collaborator		C (1)				
	Expert		B (1)	D (1)	A (1) C (1)		
	Maven	C (2)		C (1) D (1)	C (1) D (1)		

<p>Key: Case companies: A, B, C & D</p>	<p>Type of Actors: Gov = governmental; BusOrg = business organisational actors; Hosp = hospital actors; Univ = university actors Number in Brackets shows the number of reported instances. This is not quantifiable in analytical terms but shows the prevalence for each company.</p>
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Source: the author

Table 17 Summary of cross-case findings-Conditions of social capital in new relationships

Conditions		Types of institutionalised contexts				
		Gov	BusOrg	Hosp	Univ	
Motivations	Cognitive motivation		A (1) B (2) C (3)	B (2) C (3)	B (1) D (5)	
	Emotional motivation	A (2) B (1) C (1) D (2)	A (1) B (1) D (4)	A (2)	A (1)	
	Organisational motivation					
Abilities	Collaborator		A (2) B (2) C (3) D (4)	B (2)	D (2)	
	Expert	B (1) C (1)		A (2) C (3)	A (1) B (2) D (3)	
	Maven	A (2) D (2)	B (1)			

<p>Key: Case companies: A, B, C & D</p>	<p>Type of Actors: Gov = governmental; BusOrg = business organisational actors; Hosp = hospital actors; Univ = university actors. Number in Brackets shows the number of reported instances. This is not quantifiable in analytical terms but shows the prevalence for each company.</p>
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Source: the author

Motivation is the desire or willingness to achieve a target, e.g. exchange resources (Siemsen et al., 2008, Radaelli et al., 2014). In my study, motivation refers to the motives that drive the focal actor networking with the actors. The case finding of entrepreneurs' networking motivations to exchange their resources were identified as, *emotional motivation*, *cognitive motivation* and *organisational motivation*. The previous literature has examined emotional and cognitive perspectives towards trust behaviours (e.g. Komiak and Benbasat, 2006, Couper, Reuter and Prashantham, 2020). For example, cognitive aspect refers to rational choice, which is motivated by a careful consideration of advantages and finally, lead to good reasons have been identified, while emotional aspect indicates a feeling towards behaviour, the extent to which the actors feel secure and comfortable about replying on their partners (Komiak and Benbasat, 2006). In my study, I conceptualise and explain these motivational behaviours from emotional, cognitive, and organisational drives.

Another finding is the abilities of connecting actors, referring to the competence that the actors have enabling resource mobility. Based on the four institutionalised contexts that network relationships embedded in and abilities that the network relationships possess, I found three different roles of these contacts concluded as *expert*, *maven*, *collaborator*. I categorised them into three roles played in the networking in terms of similar values of network relationships because this study focuses on social capital creation, which is the value of network relationship.

The definitions of these key concepts are summarised below in Table 18.

Table 18 Summary of key concepts of social capital conditions

Key concepts	Variations	Definitions	Source
Motivations of networking	Emotional motivation	Couper et al. (2020) studied affected-based trust from a relational governance (e.g. goodwill) that delivers ongoing willingness of doing favours as friends. Frijda (2010) suggested feeling is a main aspect of emotion, and the feelings “are about something and concern one’s relation to that something”. Similarly, Davitz (1969) argued that feelings have relational content. Therefore, I define emotional aspect indicate a feeling towards behaviour, the extent to which the actors feel secure and comfortable about replying on their partners to trust the contacts, e.g. personal friends and families, reliable introduction, previous relationships.	Reference (e.g. citations in definitions) and data
	Cognitive motivation	Cognitive social capital refers to “the resources providing shared representations, interpretations and systems of meaning among parties” (Nahapiet and Ghoshal, 1998, p. 244). Most recently, Couper et al. (2020) studied trust from a cognition-based perspective through discussing the competence of potential partner that may hinder their collaboration if there are doubts about company competence. Inspired by their study, I define cognitive motivation as a rational selection given to the good reasons and after the considerations/evaluation towards their ability, values, advantages, and so on, which accountant for a reasoning of exchanging resources.	Reference (e.g. citations in definitions) and data
	Organisational motivation	Inspired by structural hole theory of Burt (1997) that social capital as “the brokerage opportunities in a network” (p.355) and structural social capital, “the pattern of connections between actors, which could be networks ties, network configuration, and appropriate organisation” (Nahapiet and Ghoshal, 1998). In this study, I use "organisational motivation" to indicate the reasons that drives networking with the contacts are due to the position of common directors or investors (act as a broker) in the organisations/companies. It means social capital flow between companies/organisations given to the social relationships that common directors have between companies/organisations.	Reference (e.g. citations in definitions) and data

Roles of relationships	Expert	By defining expert, it refers to person who is knowledgeable about or skilful in a particular area. In this study, I define the actors as the case companies built relationship with and are able to provide with knowledge, information, and expertise.	Reference and data
	Maven	In the marketing study by Feick and Price (1987), market maven is market information diffusers, referring to “individuals who have information about many kinds of products, places to shop, and other facets of markets, and initiate discussions with consumers and respond to requests from consumers for market information” (p.85). Similarly, in this study, I define maven as the actors that the case companies built relationship with act as connectors leading to other contacts in diverse knowledge domains.	Reference and data
	Collaborator	The actors who have business-related collaboration with the case companies that contribute to their international business.	Data

Source: the author adapted from literature

The following paragraphs reveal the detailed cross-case analysis findings to examine the conditions that make social capital become available.

5.2.1 Entrepreneur's motivations of networking

This section introduces the focal actors' motivations to network with connecting actors from the perspective of entrepreneurs to examine why entrepreneurs build or interact with the actors in these institutionalised contexts.

5.2.1.1 *Emotional motivation*

Emotional motivation is a secure and comfortable feeling of entrepreneurs to trust and network with actors. The cross-findings of motivating entrepreneurs to network with the specific actors suggest that medical device SMEs can be emotionally motivated with new government contacts who are commonly considered as trustworthy and authoritative to benefit their internationalisation, and thus make SMEs feel secure to trust and network without many considerations. For example, case company B is motivated by the trustworthiness of the local government that has commitment to help the SME. Another example is that case company A built a new relationship with an adviser from local government S and the French government, who express enthusiasm for the product of the company and are actively inviting case company A to set up business in France. This indicates emotional motivation of networking stresses a reliable feeling of entrepreneurs toward connecting actors, e.g. sharing resources driven by the contacts' enthusiasm. It suggests that the entrepreneur was feeling comfortable to network with the contacts who are interested. Similarly, For example,

“And since then I've already relationship we had and they seem enthusiastic”.
(Case company A, 2)

The two government relationships in case companies C and D are also driven by emotional motivation, but out of a reliable introduction that leads to mutual trust. For

example, case company C had built a relationship with the local government H that is able to provide case company C with a pathway to enter Bangladesh. This is out of a reliable introduction from their business partner, thus bringing greater level of trust between each other. The finding illustrates the emotional motivation could be due to a reliable introduction that makes entrepreneurs feel comfortable and secure to trust that drive their networking activity without cautious verification e.g. due diligence process that commonly happens within business transactions between seller and buyer. The finding is supported by the participant:

“NP was introduced to me through the Chamber of Commerce [...] What would go in here would be trusted source. It is a mutually trusted, mutual trust really, mutual trust between parties. So in other words, he (N.P) trust as we trust him, means reliable introductions.” (Case company D, 4)

Therefore, my findings are that the new medical devices SMEs who are in the initial stage of internationalisation can be driven emotionally due to a trusting and secure feeling towards the government. A likely interpretation of this finding is that government contacts are typically considered to have greater trustworthiness to network with, medical device SMEs tend to trust government actors or feel secure to trust government without reasoning verification or evaluation of its qualifications, to get benefits of appropriate introduction and information to start their internationalisation.

Cross-finding also suggests that the focal actors' network with a business partner can be driven emotionally due to existing trustworthiness of the contacts that has been strengthened by previous collaboration. This is appeared in the case company B, supported by:

“And you know that only occurred out of the circumstance that we were in, but we would only really have occurred win of a card if we had formed such a good strong working relationship, and as a result of social relationships.” (Case company B, 1)

“...And I think if you can build a strong social connection with people and friendships really, and we certainly find one that's been, you know, great and having that, but people are much more likely to help and support you. And we certainly tried to reciprocate that where we can and support people.” (Case company B, 1)

Besides, the reliable introduction that increases trust and an interest in business also are found to make a focal actor feel secure and comfortable to trust the contacts in business organisations without reasoning evaluation (emotionally motivated). For example, case company A is motivated to network with the business partner WR given the reliable introduction from the government, and another example is company UHY who is a business partner of case company C and being able to help case company C to find investments. Accordingly, it is the emotional motivation out of reliable introductions is confirmed in the following quotation:

“Yes. So we didn't go to talk to lots of firms accountants. He says he's a good guy. I met A.H and then I got on really well. So we can so let's work on this.” (Case company C,3)

Similarly, the four investing relationships with case company D are emotionally motivated given to the reliable introductions, which strengthen trust between each other, and they can provide financial support as an investor. Another foreign investment company who can provide with investment was attracted to approach case company D and expressed interest in their business that motivated case company D to connect, which also represents the emotional motivation to connect. This further indicates that as small and new UK medical devices companies, they lack funding and investment that is the major hindrance to their internationalisation, and social capital can help them with financial support. Therefore, the foreign investors actively approach the company and express interests that would motivate the case company to be active to connect and obtain the investment. The following quotation supported by:

“the real challenge for case company C, It’s raised initial investment” (Case company C, 2)

“And then um, main problem was funding.” (Case company A, 2)

However, these medical device SMEs with the business organisational relationships who are investors need to form formal business relationships to obtain investment, while its success depends on the reasoning evaluation, e.g. shared understanding of the business. It is essential for social capital that becomes available for the focal actors to use, not only emotionally trust but cognitive evaluation. There is an example of unsuccessfully accessing to social capital from the relationship with financial company which results nothing given to that the company did not understand case company D’s business, as the participant stated:

“...and they're talking to company calls Company WC who might invest, they said they would invest. And then they I think they got what we turned cold feet, they got bit nervous about it and withdrew. And now they come back and said they will invest. And it's a bit like so that's one of the challenges in South Korea, that uh, there is a lot of money to be invested. Uh, they don't really understand med tech, or at least these investors don't, but this one, kind of it gets it. But the lease based on some of the questions that ask, they don't really understand it.” (case company D, 3)

Thus, emotional motivation without reasoning about their abilities and common ground might lead to unsuccessful relationships and cannot make social capital available to use. Thus, the finding suggests that it is possible that emotional motivation could lead to an unsuccessful business organisation relationship with formal partners, and cognitive motivation is an essential motivation that drive the focal actor to connect with business organisational contacts who form the formal business relationships out of reasoning evaluation (e.g. due diligence process). This is introduced in the next section of cognitive motivation.

Emotional motivation out of connecting actors' interest towards their technology and reliable introductions was also found in networking with hospital actors. For example, case company A has been motivated to network with a local hospital due to their interest and believe in the commercialisation of the product, and another example is that case company A has a new hospital relationship with a French life science manager, who is considered as trustworthy due to it is a reliable introduction from the government and they can provide expertise to help with company's patent registration.

Another example is that the relationship with local university A lies in the reliable introduction, which strengthens the trust between actors. This also reflects the emotional motivation that the focal actors are motivated to network given to the consideration of trust and whether the actors are feeling secure to trust this contact, therefore, it could be a rational and/or irrational decision. In the reliable introduction approach, the participants are feeling comfortable in trusting the referrals through the reliable third party. This is illustrated in the following statement:

“the easiest way to get a meeting with somebody is by a referral from somebody that they trust know and respect. [...] because the people that are being introduced, they're trusting of them. And then they give us a sort of respect and trust in the market if we're getting referred and makes life a lot easier.” (Case company B, 1).

Briefly, the findings indicate emotional motivations stress a secure and comfortable feeling of entrepreneurs to network with actors in four institutionalised contexts. It was found that this motivation originated from reliable introductions, contacts' interest or enthusiasm to the product, and own authority, to exchange resources that make social capital available to benefit SMEs internationalisation.

5.2.1.2 Cognitive motivation

Cognitive motivation drives entrepreneurs' networking to access SC out of reasoning consideration and evaluation of the connecting actors. The cross findings suggest that the most common place that needs cognitive motivation is business organisation, where

the focal actors prefer to build new business relationships. For example, case company A was networking with a business director, and the participant confirmed this person is trusted because he is successful and provided information and knowledge to the company. Thus, it stresses an evaluation of connecting actors' abilities from the entrepreneurs. The following quotation proves by stating:

“It is because of the fact that he is the well-established business man in the medical products. The secondly, he can trust. [...] Because the first of all, he got the key. Secondly, he gains time. And thirdly, what he advised me make sense” (Case company A, 2).

Similarly, another example is network relationship that case company B was newly met and was to pursue a business collaboration, an individual and a company, while it achieved nothing out of business purpose, but they were being active to help with case company B given to the good relationship they built, which represents a goodwill of the actor. This indicates that case company B was motivated to network with this actor given the cognitive motivation from reasoning evaluation of their common ground, including shared language and market similarity, to sell the product within their suitable customer base, in order to access social capital from this collaborating relationship. Therefore, the importance of rational considerations/evaluation is reflected in the statement of the participant as followed:

“So we've got a huge network and all of, I'd say the majority of our distribution partner networks [...] because they're selling similar products.” (Case company B, 1).

The majority of case companies C and D business organisational contacts are motivated cognitively by reasonably considering the same vision and share cultural background, mutual benefits with work as partners. One relationship that case company C has with company T is encouraged given to the shared vision to the business between each other (cognitive motivation) and they can provide resources, such as reputation and research resources of a collaborator. Another relationship with Company A is based on the

commercialising mutual benefits and provides an appropriate product. Thus, this is also the cognitive motivation out of good reasoning that delivers their resources, making social capital available. Therefore, it indicates a reasoning evaluation of contacts who can be business partners is valuable for new and small firms like case companies C and D who are trying to enter a distant market.

It suggests that cognitive consideration is important for collaborating with a partner when internationalising in foreign market, for example, abilities, common ground and common language facilitate and drive their networking activity that condition social capital becoming available, which benefits their internationalisation, otherwise will hinder the business process. The following statement supported by:

“Well, we partner with companies that are local to those markets. Um, so we've got the they can also interact in that language, but it's them then dealing with the language barriers with our local partners. [...] three main markets will be UK, France and Germany, because we've got such a huge opportunity in markets outside of Europe, [...] So we just we're probably just left them, honestly not dealt with them.” (Case company B, 1)

In addition, due to the companies' business nature, case companies prefer to form formal business relationships with hospitals to internationalise it. Their cognitive motivation is out of reasoning evaluating their abilities, common identification or status, shared vision and shared interests to the business area and drives medical devices SMEs to network with hospital contacts to access SC to obtain benefits of expert knowledge, resources such as hospitals, appropriate referrals, as well as their reputation that could power the case companies to be able to do business in the foreign market. This motivation is necessary to reasonably select new contacts in the hospitals, but also necessary to evaluate the focal actors' previous friends to rationally identify who is more appropriate to connect to access SC successfully that benefits their business.

For example, the relationship with Prof A.K. of case company C was motivated based on reasoning, evaluation of the business abilities, same vision, shared understanding

and shared cultural background. Another example is case company B was collaborating with an Australian professor from a hospital because their markets are similar and speak the same language, as well as the professor can introduce and sell the product within the hospital in Australia. Therefore, case company B has been driven to network with this contact. Another example is networking with the professor from a prestigious American hospital is driven by case company B believes that the reputation this contact has will make case company B becomes prestigious in the US market, as well as this professor has expertise to do the research study for case company B. This means a rational selection after the reasoning considerations towards values and status is the motivation driving their networking activity to access SC. The following quotations confirmed the reasoning of this rational selection of this contact that attract case company B:

“On the back of that, he (a UK customer) actually had a very good relationship with a professor in Boston, Brigham and women's. And he was visiting him both and socially and for work purposes. And they struck a conversation, talked about our product, the fetal pillow. Off the back of that. I got a phone call from the professor in Boston.” (Case company B, 1)

“I think it kind of makes us all appear larger than we are. I think having a strong network, you know, because we've managed to forge, you know, in the US we've got a strong network with HMS. You know, often that's perceived as something very prestigious, also very difficult to have. And because we we've got that relationship and network almost makes this sort of gives us that kudos. And I think it kind of make you appear larger than you are, which can support you within the market. And so it's definitely got benefits on that front.” (Case company B, 1)

An interesting finding is that cognitive motivation that drives entrepreneur to network and access SC, is not only derived from reasoning evaluation of the connecting actors, but also from reasoning evaluation of themselves, e.g. self-confidence due to unique product and own specialized knowledge also is an important facilitator and motives that drive the medical device SMEs to network in foreign market, which also indicates

cognitive motivation including both evaluation of self and partners that conditions SC availability. An example is that one of the participants from case company B has confirmed that given to the experience and reputation of the founder and their unique product, they attract US hospital to work with case company B that represents the rational evaluation of themselves underlying cognitive motivation to be confident to network with large hospitals, though a new and small firm they are, explained in the following quotation:

“Yeah, I think, it’s the fact that, he’s (the founder) got the experience and he’s (the founder) come up with such a strong, innovative device that helps other doctors solving important problems. I think that’s a kind of trust is already there because it’s come from someone with a lot of experience. So I think we go and talk to doctors and you tell them that, you know, this is developed by a doctor who came to experience the problem that he wanted to solve.” (Case company B, 2).

Cognitive motivation is also found in networking with extant universities actors to access SC to benefit SMEs internationalisation. For example, the Professor of EEG has the shared understanding towards the product with extensive knowledge, and he can provide expertise and introductions to Case company A. This indicates the cognitive motivation out of cognitive evaluations that have shared understanding drives the networking and condition SC availability, and the following quotation illustrates why the founder decided to network with this professor of EEG:

“It was clear that the Prof had an extensive knowledge on neuroimaging and current trends. He was one of few people who immediately recognised the value of the circuit diagrams I had shown and described how they could be used with current technology.” (Case company A, 1)

Similarly, due to the companies’ business nature, case companies prefer to network with extant and new universities’ contacts to facilitate firms’ internationalisation. The cross findings suggest that to connect with a university, it is necessary to have reasoning evaluation of the contacts regarding its abilities, knowledge, potential useful contacts,

and whether mutual benefits are available, which would benefit their internationalisation. For example, cross-finding suggests that case company C connects with the extant relationships the founder had in the university given to the competence of the contact due to his position and abilities as well as mutual benefits they would have if collaborate, and eventually case company C formed a trusted partnership with him who helps with knowledge and expertise to develop case company C business.

Examples of three case company D's newly established contacts within the local university are built based on the consideration of their business experience and mutual benefits.

“we're advising him, so I think if we say case company D advising AWRC, so we're providing advice to him on how he can do. He can turn the AWRC into something that can make some money, Whereas S.H provides case company D with 20 years of experience in the space that we're working in. So it's his experience over 20 years we're able to tap into. [...] this is I think this is our mutual. what we can see is on mutual benefit, [...] So we're able to use the AWRC, for instance, in talking to a group in Finland that we want to work with.” (Case company D, 4)

Another example is the collaborating relationships with universities are both rationally encouraged with evaluation of their abilities as collaborators. The following quotations confirmed that:

“he's giving his health that is relevant as opposed to lots of help, lots of people try and help but their help with them wrong things. So he's very focused on pointing as at the right places for health and introducing us to the right people.” (Case company D, 4)

In a nutshell, cognitive motivation stresses a rational networking behaviour with new and/or extant capable contacts in business organisations, hospitals, and universities. It is derived from reasoning evaluation and rational consideration of the connecting alters' abilities, expertise, identification, common ground, and language, and of the focal

actors' self-confidence, to access social capital that facilitates SMEs internationalisation more effectively. It is worthy to notice that this cognitive motivation is missing in networking with government actors to access SC. A likely interpretation is that government actors are commonly considered as trustworthy and reliable who do not extra reasoning evaluation to be able to help and given that the participants confirmed limited effectiveness of government SC to firm's internationalisation. Besides, extant relationships are commonly considered as reliable connections, but they are found to be rationally evaluated by entrepreneurs while networking. It could be the reason that not all of the extant are helpful and useful to facilitate internationalisation and entrepreneurs need to evaluate which one is able to help.

5.2.1.3 Organisational motivation

After cross case analysis, there is an interesting finding of organisational motivation that occurs in the inter-related companies that have shared common network relationships and occurs in the extant relationships within inter-related companies. The common directors have positions at different companies and are considered as trustworthiness, thus the focal actors (SMEs/entrepreneurs) trust the common directors and can be motivated to network with the actors that the common directors have established and introduced and have strong norms of reciprocity among members to make them feel obliged to share their resources. I term it as "*organisational motivation*". Because the relationships had already existed in one company and became a personal connection of the common director, I then indicate it is organisational motivation that drives the entrepreneur to network with these extant contacts of the common directors due to the position of common director (act as a broker) in the organisations/companies. It indicates social capital flow between companies/organisations given to the social relationships that common directors have between companies/organisations. The participant B confirmed that:

"so we're now sort of some linked into this team. [...] Then he (CW) was introduced to me and I introduced into these other people. so a lot of what's

happening is coming together of people who have got individual personal networks and people in those networks are proving useful to what we're doing. So if we want information on particular area of medicine, we know somebody who knows the right as either the person we know". (Case company C and D, 2)

"So one of CW's (the founder of case company D) contact might be somebody elderly part, Uh CB for instance. So I could now directly go to CB, and say CB I got this idea. What do you think? And because she (CB) knows CW, and know CW and I work together, she would willing give me the time and she would without rest of something." (Case company C and D, 2)

Therefore, their networking activity happens out of the network position that the participant is, located as a bridge linking two legally independent companies to be network inter-related, and thus trust exists already. A likely interpretation is that a common phenomenon in the high-tech SMEs is that business angels who sit different companies and take a position e.g. a shareholder in various companies, and SMEs require resources from angel investors to support their complex technology.

For example, these two government actors of case company D also are available to case company C due to their inter-related nature that participant B worked for both case companies C and D and is able to bring the relationship that he had built in one company to another. Therefore, I term it as "organisational motivation". Another example of social capital from the hospital relationships that are organisationally motivated to network is confirmed by participant B:

"And then my connections that partly come back from years and years ago, people like Prof RC, Uh he's just one example (of personal connection that can be used for both companies)." (Case company C and D, 2)

"That's a good example of how we met PD through working with him on the case company C. And then as we got to know each other better, these ideas for other

things he so said, i've got these other ideas, perhaps you can help with that. We say yes we could help through case company D.” (Case company C and D, 4)

“C.W (the Founder of case company D) now could pick the phone to P.D, my contact and then a similar conversation, ‘I’ve been looking at this, what you think for’ and P.D would say yeah” (Case company C and D, 2).

“there was no reason why I didn’t say P.D. out for these, I have to admit it through case company C and it’s a bit like now we have case company C potentially is the route to Bangladesh for all of the things we’re doing it case company D” (Case company C and D, 2).

The above cross findings represent that organisational motivation happens when the strong personal relationship and trust they have built and strengthened, which allow social capital to flow between two inter-related companies.

Additionally, organisational motivation also appears in the connection with the extant university contacts to make SC from this network relationship available for both companies:

“And I connected with Prof AG in the early days, through case company C. But he then went to the Dean of life sciences at local university C, and maintain that connection. And now we're looking at other things within case company D” (Case company D, 2)

Though under the organisational motivation, no collaborating/formal business relationships with universities can be brought from one case company to another. A likely interpretation is that to access SC from formal business relationships, it needs reasoning evaluation to form such formal collaborative relationships, pure trustworthiness from extant relationships cannot ensure social capital that delivers direct business outcomes (as identified in the cognitive motivation).

Though there are few examples of social capital from business organisation relationships that are available for both case companies with direct business outcomes. Because after intense interactions and business involvements, there are trusted and strong social relationships that can be built by the common director with the business partners, entrepreneurs can be organisationally motivated to network with these trusted contacts formally that the common director has built in another inter-related company. The following quotations confirmed that:

“So they (UHY) do the accountancy in order for all of our companies.” (Case company C and D, 3)

“it (relationship with Prof AK the president of company B) gives us both case company C and potentially case company D a presence in Bangladesh, so physical presence” (Case company C and D, 3)

“bit like case company C is our (case company D’s) presence in Bangladesh” (Case company D, 3)

One interpretation to explain the focal actor is able to bring the partnering relationships from one case company to another is that they have built a personal connection with the decision makers within the partnering companies, which enhances trust between each other that allows social capital flows between two inter-related case companies. It is unlikely to bring a formal partnering company without personal connection from one case company to another case company that are inter-related to allow SC flows easily.

In short, organisational motivation occurs in the inter-related MedTech SMEs that share common directors, to indicate the motives drive entrepreneurs’ networking with the contacts due to the common contact two companies have. It means social capital flows easily between companies given to the social relationships that focal actors built within companies. While it becomes more in government and hospital contacts, less in business organisation relationships, indicating formal collaborating relationships is hard to be directly brought from one company to another, and thus SC from these

relationships is difficult to generate similar direct business outcomes to another company, which confirms what I found in the cognitive motivation that is essential to have reasoning evaluations of the potential partner.

Therefore, the findings of three motivations suggest focal actors can be motivated to network and achieve resource mobility with actors due to trust that is caused by out of different emotions (objective judgements or subjective feelings) and position - how the entrepreneurs feel directly, how they evaluate according to cognitive process that transform the stimuli into perceived events, and whether there are common directors have positions in different companies.

5.2.2 Alters' roles in the networking

This section unfolds the roles of the connecting alters' in networking to examine why entrepreneurs decide to build or interact with the actors in these institutionalised contexts.

5.2.2.1 *Maven*

Cross findings show that the contacts are able to provide reliable and appropriate contacts, as well as business advice to case companies, in order to help with their international business. These contacts are considered as *maven*, who are the actors that the case companies built relationships with act as connectors leading to other contacts in diverse knowledge domains. For example, case company A confirmed the examples of government actors who act as maven:

“I met her (the life science manager's) colleague who is the embassy. And then she (the embassy) introduced me to this person (life science manager)” (Case company A, 2)

“So she (P) gave me a lot of help. [...]. She introduced me to me the local university A. [...]. and she comes to meet with the company WR”. (Case company A, 2)

There is one example of new relationships in the context of business organisation for case company B, and the business contact plays the role of maven and was able and willing to introduce appropriate people to start international business, instead of forming a collaborative relationship as usual. The participant I confirmed:

“We actually met a company and an individual, [...] a number of times as both socially and commercially [...] we're not sold the product to them but we've developed a relationship with them. And he had a network within the USA. And he was very happy to help us and introduce us to his contacts and partners that he's worked with.” (Case company B, 1)

Examples of maven were also found in the two government relationships of case company D, and they provide with right contacts, as well as market information, to both case company C and D due to their inter-related nature:

“So he's (NP) very focused on pointing us at the right places for health and introducing us to the right people.” (Case company C and D, 4)

“introductions really. [...] I would like to get into this market, she's (YA) able to point us in the right people. [...]. So She again is more of a bridge to information rather than doing things directly.” (Case company C and D, 4)

Other examples of maven in the university and hospitals are extant friends of the participants and are able to point case company C and D to the appropriate and helpful contacts. As confirmed by the following quotations:

“Professor RC, who is an old friend of my, who happens to have been a senior person in oncology, WP hospital, world authority on breast cancer. And he knows

lots of people. So if we said we need to find somebody who's a specialist in brains, and do you know somebody?" (Case company C and D, 2)

"he's (AG) a friend [...], Because I could go in there and talk to people. He (Prof AG) was able to introduce us to." (Case company C and D, 4)

The participant B also expressed similar opinion of extant personal contacts are important to expand networks, as he said:

"So essentially you have various personal contacts who made introductions to new contacts that were relevant [...] who just knew the right names of people" (Case company C and D, 4)

The findings show that there are more extant contacts of the entrepreneurs that can play the role of maven to introduce the right people to the case companies, especially contacts in the government departments are considered to have a wider useful network of relationships that could be introduced to case companies. Besides, contacts in hospitals and universities and business organisations are considered to play the role of maven more effectively to point the right and more appropriate person who is specialised in certain areas. Therefore, it suggests that the "maven" is someone who has knowledge from several fields, has experience and may know people in these different institutions (where the knowledge is particular to that institution) and is therefore able to operate within and between these institutions but also has the knowledge to connect other people, or to share that knowledge.

5.2.2.2 Expert

Another role of being an *expert* in the networking to provide specialised knowledge, information and expertise is found and prevails in the four institutionalised contexts to condition SC availability to facilitate SMEs internationalisation.

Cross findings of new relationships with the UK government suggest these contacts are able to provide general business advice and financial support to SMEs internationalisation at the early stage. For example, case company C has a new government relationship with the local government H who plays the role of expert and advises case company C with a pathway to enter Bangladesh. Similarly, case company B also suggested that the UK government assisted them to enter foreign market to some extent. It can be supported by the following quotation:

“When we first started that (international business) we did go through UK trade and industry at the time was changed his name again, and we had support from them a lot of that support was just general overview of introducing into new markets, but they certainly provided some financial support in that early stage and funding for us to visit the markets that we are looking at introducing the product, and certainly that was that was very useful for us in the beginning stage where we didn't have huge funds to be able to internationalized, so as to have just that financial support” (Case company B, 1)

The role of being expert is also found to have the greatest number in the new and extant hospital contacts who are able to provide specialised help, e.g. professional knowledge and information. For example, case company A was networking with the local hospital who can play as an expert to help case company A to examine their technology. Another example is case company A has a new hospital relationship with a French life science manager, who is able with specialised help, as well as provides with market information reliable referrals. Thus, the abilities of experts they offered is the condition of social capital availability to facilitate SMEs internationalisation. The following quotations support that:

“and the life science manager looks after medical companies. So there's a specialist help. I don't see any life science manager in the UK” (Case company A, 2)

Another example of case company B is the professor from USA who is able to provide with specialised help:

“I got a phone call from the professor in Boston. And as a result of that, they're now doing a clinical study on our product in the USA,”. (Case company B, 1)

Similarly, case company C and D also confirmed a professor who is expert in the specialised area and provide with specialised knowledge:

“Prof PD, who is in children's hospital. He's been working on the newborn screening program that we started. [...] PD helped to devise the programme, the protocol that is used in the UK in hospitals here so that we can take them.” (Case company C and D, 2)

Similarly, the role of being expert in the extant and new universities also takes a major contribution to assisting SMEs internationalisation with specialised knowledge and help. All of the case companies A, B, C were found to have university experts who have specialised assistance in offering professional knowledge and information to facilitate their internationalisation. Thus it would be suggested that the role of being expert that extant and new universities contacts played conditions SC availability to access benefits easily. The following quotations from case company A, B and C confirmed that:

“His (Professor of EEG) contribution was valuable as he was able to introduce two local companies (SME) that could contribute to [...] I was impressed with his knowledge of local SMEs. [...] he was willing to do laboratory testing subject to a formal approval from a university in Southern Germany”. (Case company A, 1)

“we previously used the local university G to do projects for us to look at market access and how we should introduce the product within the market. [...] to do a number of projects for us over the years. They the extensively researched the US market and looking at population by region birth and reached the market. They did actual interviews with customers. They did questionnaires, we got lots of

feedback around pricing about the nature of the problem, where the country is the best locations to utilize our time, all that side of things.” (Case company B, 1)

“we've got a Professor Dame PS, who is the Head of the medical school here and director of company S. which is research development and ears and science.” (Case company C, 3)

Thus, it suggests that small and new MedTech SMEs tend to connect with prestigious hospital and university experts e.g. professors who have high reputation in the specialized area and could benefit SMEs to enhance credibility and become influential and powerful. The participant of case company B also stated that a hospital professor with reputation is preferred because it makes outcomes more accessible. It indicates that social capital is easily accessed under the condition of the high level of degree of ability that contacts deliver. Similar opinion was confirmed by the case company C as the following:

“so we made a great effort to start the discussions as high position as possible because there's a danger of you start to low down you get some enthusiasm in you can't actually get achievement made, [...], there were our key tactics.” (Case company C, 1)

In short, the above cross findings suggest that for new medical device SMEs, it is common that due to their business nature, specialized assistance was sought in the contexts of government, hospital and university to find professional and reputational experts who are specialised in their knowledge domains and are able to help, in order to access social capital effectively which benefits their business.

5.2.2.3 Collaborator

Collaborator is the role identified in the cross-findings analysis, played by the connecting actors in the extant and new relationships who are in business organisations

hospitals and universities, and these formal business relationships indicate the social capital availability from the firm perspective.

Business organisations are found to be the most popular contexts to have extant and new network relationships to play the role of collaborator that could formally partner with the case companies. Thus, case companies prefer to network with business organisations who can help with core business to generate potential satisfied outcomes and achieve business goals. For example, case company A suggested that there is a business director who was willing to provide market and product information to assist their business. Another example is that case company B works with certain business organisations who can partner with and play the role of collaborator to facilitate their core business. As the following quotations suggested that:

“The director of a business in a city spent more than three hours discussing the route to market of a medical product, the methods and contacts” (Case company A, 1)

“he introduced me to a medical electronics person. And also he started to market my product. And pricing [...] And as a result of his help, I know how much to charge, how much to sell. [...] and (information of) medical manufacture [...] for firm’s development.” (Case company A, 2)

“...but we certainly used local suppliers within the market to utilize their sales channel and their sales team and their network that they already have existing. And we try to find local partners that have products that are in the same space in particularly in obstetrics. So they had the same customer base, that our product would be fits with, and that's been very successful for us in a number of the regions in the USA. And also as a result of that, because they had similar products in that space, they knew the suppliers in other regions selling the same products, and they were able to introduce us to them. So we've got a huge network, [...] because they're selling similar products.” (Case company B, 1)

“we need a partner that's able to navigate the systems within the countries, the hospitals where they can introduce a brand new product into the system. And that requires you to show the value analysis of that product by demonstrating the value of the product commercially, financially and patient safety and using a lot of daytime and costs arguments.” (Case company B, 1)

The majority of the business organisational contacts of the case companies C and D play the role of collaborator. For example, the collaborating relationship with company UHY can play as a collaborator find external investments as well as enhance their credibility to work with UHY, which condition social capital from this relationship to be available for case company C and case company D, as following quotation said:

“So we work closely with UHY as our accountants. We're now engaged that their corporate finance team, so UHY corporate finance will become a key partner of what we do, because they basically they will find investors that want to do something with it. And that saves us a lot of time. [...] they're an organisation that got good reputation. So the fact that they want to work with us gives us confidence that we've got a good story.” (Case company C and D, 3)

Another example, Prof A.K., case company C collaborates with his company B which has hundreds of hospitals that would be able to assist case company to facilitate their core business baby screen and easily enter Bangladesh, as the participant B said:

“we built a relationship with this organisation (company B), which has hundred hospitals, and we've got partnership, [...] we've got an arrangement between their needs and company S, [...] So they're working together now. And the benefit to us is that it builds our credibility in terms of being able to deliver. [...] this is a company that is helping us to facilitate something, those would be strategic relationships where we're trying to do something together for mutual benefit, commercial gain” (Case company C, 2)

Due to case companies' nature, MedTech SMEs, one of the important partners, are the hospitals that have technology. Therefore, case company B network with the hospital contacts to build formal business relationships to sell their product, therefore a "collaborator" role can facilitate their initial international business. Thus, it is necessary to identify the hospitals that are able to accept their product and the key actors - doctors who are able to recognise the value of their product. It suggests that a "collaborator" role of hospital contacts played makes SC derived from formal business relationships available to facilitate their business development. The following quotations confirmed this by saying:

"primarily it's obviously the hospitals that deliver that babies and particular the ones that deal with the caesarean sections and off that within that the key user would be the obstetrician actually is the doctor performing those cases. But within the hospital, there's a huge array of stakeholders involved in that from the business manager of the obstetric department, the doctor." (Case company B, 1)

"if they (doctors) like your idea that invite us to come and present to one of their department meetings. So they're (US doctors) the ones that can help facilitate that initial presentation for us. Um. So that's really the first on a point of contacting to bring it bring the device into their hospital." (Case company B, 2).

The role of "collaborator" is also found in the university's contacts. Due to the companies' business nature, one of the case companies is partnering with universities and spinout their technology and internationalise it to the foreign market. These universities are considered to play the role of "collaborator" who has technology and provides business opportunities to case company D to commercialise and market this technology. It indicates that SC derived from the partnership that benefits SMEs business is accessible due to the role of collaborator the universities played in the network relationships. The participant explained this opinion in the following quotations:

“So we're talking to the NHS and universities about new products, new services that we can either add into” (Case company D, 4)

“So the university want to commercialize ideas. We want to commercialize them. And the mutual benefit is that we are the root for them to achieve their objectives and their ideas that the root for us to achieve ours. So it's they bring the ideas, we bring the commercialisation skill two things.” (Case company D, 4)

“so I think if we say case company D advising the research centre (part of university A), so we're providing advice to him on how he can do. He (Prof RCP) can turn the research centre into something that can make some money, whereas Prof S.H. provides case company D with 20 years of experience in the space that we're working in. So it's his experience over 20 years we're able to tap into. So we can say, if we did this, would that work? And he can say yes or no.” (Case company D, 4)

“So we're able to use the AWRC, for instance, in talking to a group in Finland that we want to work with. And the idea AWRC adds a lot of credibility to our story.” (Case company D, 4)

Finally, the role of collaborator played by the contacts in the business organisation to invest has only appeared in the case company D. Case company D has external investments from investing companies. As participant B said, the current main challenge is investment, it is necessary to receive external investments to sustain their business development. There were four business organisations who were willing to invest, and eventually three of them have successfully invested. It suggests that as small and newly established MedTech SMEs, they lack sufficient funds to support their business, thus external investments are the key. To overcome this liability, networking with those who are able to invest and then play the role of collaborators is necessary, as SC from these relationships are available for SMEs to receive investments to facilitate their business. The following statement of case company D confirmed this opinion by saying:

“So fund raising is key, that's our primary objective. [...], and so this is an investment fund and they put some money in very early into case company D and then that puts certain points to TQ, and we got down that route. so we've had investment, we now rising significantly more money to grow these businesses.”

(Case company D, 3)

All in all, the section 5.2.2 unfolds the three roles (maven, expert, collaborator) of connecting contacts' played in the network relationships that condition SC availability to facilitate SMEs internationalisation. The interpersonal relationships between the contacts in the institutionalised contexts and focal actors in the case companies demonstrate SC availability from an individual perspective, illustrated by the roles of “*maven*” and “*expert*” played by the connecting contacts. These two roles prevail in the institutionalised contexts e.g., government, hospitals, and universities. On the other hand, inter-organisational network relationships between the connecting contacts and case companies demonstrate SC availability from a firm level, illustrated by the role of “*collaborator*” e.g., supplier, investor, distributor, and customer, played by the connecting contacts. This role mainly exists in the context of business organisations where they offer more business opportunities, as well as of hospitals and universities due to the case companies' business nature-medical device that requires collaborations with them.

However, as an invisible asset, social capital might not be realised until the abilities that actors possess are utilized by the entrepreneurs to take advantage of the resources in the network to benefit SMEs internationalisation. The next section then addresses this problem by discussing at what stage of interaction that social capital and its benefits have been realised.

5.3 RQ c. Stages that social capital becomes available and its benefits have been realised

From the previous two sections, it can be concluded that each case company was engaged with various contacts with functional networking activities and there are conditions (based on entrepreneurs' networking motivations and connecting contacts' roles) that create social capital and make it becomes available to use and ultimately contribute to their internationalisation. In this section, the stages in the process of interaction, between UK high-tech SMEs and foreign high-tech firms, that social capital become available, and its benefits are realised are examined and addressed.

After reading the past literature and analysing my data, I conclude three interaction stages that SC and its benefits have been realised, namely initiation, development and maturity. According to Rodrigues and Child (2012), there are three phases in building SC, starting from initiating the creation of SC, to developing personal trusted-based relationships, and finally "*the evolution of social capital at which it has attained a stable, sound and steady state*". Puthusserry et al. (2020) also examined social capital development stages and divided into "initiation referring to the process of identification and selection of a trade relationship, progression referring to the transformation of the already established social capital to the end of realising benefits, and maturity which is characterised by closed interpersonal relationships and personal bonding and is generally associated with committed internationalisation" (Puthusserry et al., 2020, p.16). In my study, I identified and defined three interaction stages that social capital and its benefits are realised based on the relationship and outcomes to internationalisation, because this study examines social capital creation which is the value of relationships. Therefore, it helps to understand how and why social capital and its benefits have been realised by the focal actors.

Accordingly, combing previous literature and this research aim, I defined the *initiation stage* is that the focal actors select and identify the appropriate contacts which are at the get-acquainted stage where the relationships can be strengthened or weakened and

trust might be enhanced due to the interactions, however, business commitment is hard to arrive. The *development stage* means that the focal actors and their contacts establish a partnership, e.g. contract-based relationship and consulting relationship. Finally, it is the *maturity stage* that the stable, sound, and steady interpersonal relationships with mutual trust and support have been built after social interactions. Table 19 below illustrates the key concepts in section 5.3 and how I conceptualised them in this research, in order to explain the stages when social capital and its benefits have been realised.

Table 19 Summary of key concepts of social capital realisation stages

Key concepts	Variations	Definitions	Source
Stages of social capital realisation	Initiation	It is the focal actors select and identify a number of appropriate contacts which are at the get-acquainted stage generating temporary benefits thanks to entrepreneur’s efforts of experience and skills	Reference (e.g. Rodrigues and Child (2012), Puthusserry et al (2020)) and data
	Development	It refers to the focal actors and their contacts establish a partnership with actual business benefits, e.g. contract-based relationship and consulting relationship.	Reference (e.g. Rodrigues and Child (2012), Puthusserry et al (2020)) and data
	Maturity	This stage is that the stable, sound, and steady relationships interpersonal relationships with mutual trust have been built after interactions, e.g. personal friends, with mutual supports.	Reference (e.g. Rodrigues and Child (2012), Puthusserry et al (2020)) and data

Source: the author adapted from literature

The tables below, Table 20 on p.233 and Table 21 on p.233, demonstrate the findings of interaction stages that social capital and its benefits have been realised by the focal actor, the medical devices SMEs. They illustrate each of the network relationships that create social capital and its benefits are realised at what interaction stage (e.g. initiation,

development, maturity). From Table 20, it can be concluded that social capital and its benefits from the extant relationships are realised at the maturity stage, this indicates that extant relationships of the focal actors are interpersonal relationships with mutual trust and support. Besides, it can be seen from Table 21 regarding the social capital from new relationships, initial SC appears in four institutionalized contexts indicating network relationships expansion into development and maturity with an amount of SC, and developmental SC appearing in three institutionalised contexts represents that SC could specifically benefit SMEs internationalisation with diverse outcomes, as a new and small medical device company, it might confront liability of newness who enters a foreign market without sufficient experience and network and smallness who lacks credibility and funding, especially for a newly established company whose product is new to the market, and they might in the face of acting as outsider in the foreign market network. Finally, mature SC appearing in both new relationships and extant relationships represent they require a high level of resources exchanging.

Table 20 Summary of cross-case findings-Stages of social capital in extant relationship is realised

Stages	Types of institutionalised actors				
	Gov	BusOrg	Hosp	Univ	
Initiation					
Development					
Maturity	C (2)	B (1) D (1)	D (1) C (1)	A (1) C (1)	
<p>Key: Case companies: A, B, C & D Type of Actors: Gov = governmental; BusOrg = business organisational actors; Hosp = hospital actors; Univ = university actors. Number in Brackets shows the number of reported instances. This is not quantifiable in analytical terms but shows the prevalence for each company.</p>					

Source: the author

Table 21 Summary of cross-case findings-stages of social capital in new relationship

Stages	Types of institutionalised actors	
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	Gov	BusOrg	Hosp	Univ	
Initiation	A (2) B (1) C (2)	C (1) D (1)	B (1) C (1)	B (1)	
Development		A (2) B (2) C (2) D (3)	A (1) B (1) C (1)	C (1) D (3)	
Maturity	D (2)	B (1) C (1)	B (1) C (1) D (1)	D (1)	
<p>Key:</p> <p>Case companies: A, B, C & D Type of Actors: Gov = governmental; BusOrg = business organisational actors; Hosp = hospital actors; Univ = university actors.</p> <p>Number in Brackets shows the number of reported instances. This is not quantifiable in analytical terms but shows the prevalence for each company.</p>					

Source: the author

5.3.1 Initiation-Social capital from individual level

The cross findings identify the interaction stage at which social capital and its benefits are realised. I term it as the “initiation” stage of interaction, referring to focal actors select and identify a number of appropriate contacts which are at the get-acquainted stage generating temporary benefits. At this stage, relationships are neither strong interpersonal nor business partnerships. Instead, relationships could be short-term, strengthened or weakened, trust could be enhanced due to the interactions and social capital has indirect and temporary benefits to SME internationalisation but the actual business commitment is hard to arrive at. The importance of this stage to newly established SMEs is to search and identify a number of useful contacts to benefit their internationalisation, more importantly, the findings identify a facilitator - the entrepreneurs’ efforts, behind this interaction stage that explain the networking behaviours.

Table 21 on p.233 illustrates that there are many new network relationships in the four institutionalised contexts that are at the initiation interaction stage, where social capital

from these relationships and its benefits are realised to facilitate MedTech SMEs internationalisation.

The finding shows that the majority of new relationships with government actors of medical devices SMEs were at the initial interaction stage without forming a partnership or personal relationships and provided indirect and non-substantive benefits to their internationalisation, while actual business commitment was not achieved yet. For example, case company A's relationship with France government offered case company A an opportunity to set up business in France after the first meeting, though it is not clear whether France government helped case company A to do business in France. The following statement supported:

“It was first time I meet them (French government) [...] I'd like to find out (if they can help with doing business in France)”. (Case company A, 2)

Similarly, case company B also interacted with government actors superficially without forming a partnership or sound personal relationship and they provided general help to the company's initial international activities, illustrated as below:

“When we first started that we did go through UK trade and industry [...]and we had support from them [...] was just general overview of introducing into new markets, but they certainly provided some financial support in that early stage and funding for us to visit the markets [...] Other than that, we're not utilized huge like government agency networks.” (Case company B, 1)

Another example is case company C has a potential training programme working with local government H to open a business route to enter foreign markets, thus the relationship with local government H would create social capital that facilitate case company C, though business commitments and outcomes are very slow to achieve to directly facilitate case company's foreign business. The participant confirmed this opinion by saying:

“And there has been connection with various government departments here, but no real assistance.” (Case company C, 1)

“They're (local government H) a bit sort of not really doing very much [...] It's all strengthened. I think this is a bit slow, a bit weaker. Really. It's not a great deal happening.” (Case company C, 4)

“Those relationships (with high commission) are very positive and enthusiastic, but actually getting them to commit to actually doing something that delivers, [...] we're only just starting to do that, so it's taken three years. So decision making can be slow, building up trust with new connections is a challenge on both sides” (Case company C, 1)

“I think this is now strengthening relationship (with local government H). So it's much stronger. So we now know them. We've met them lots of times and was much more shared interest in making something happen. [...]” (Case company C, 4)

Therefore, the value of the new government relationship that at the initial stage can be perceived as neutral with various indirect outcomes e.g. general market information.

A likely interpretation of the above analysis is that as a newly established company, it is difficult to form a partnership with government departments where it is perceived as authoritative, and one of the disadvantages for SMEs is being new to enter foreign market. Therefore, social capital and its benefits from these relationships with government provide general help of market information and referrals which decrease the liability of newness.

Table 21 on p.233 also reveals that few new relationships with business organisation actors were at the initial interaction stage and no actions towards core business to benefit their internationalisation. An example of the initial stage of interaction is that case company C has a relationship with company T and is willing to collaborate with this influential foreign business company to build a lab in the foreign market in the

future. Social capital that created from this influential relationship provided a benefit of credibility and confidence enhancement to do business in the foreign market, and the future collaboration will give a case company C business opportunity to get access, and physical control over business in the foreign market, as suggested below:

“And this is a company that have now agreed to build a laboratory in Bangladesh, the still in progress not has been opened yet. It's a bringing light what we found like all the time in Balderdash that everybody gets very excited to do things” (Case company C, 2)

“because existence of lab that we'll have control of.” (Case company C, 3)

“credibility, [...] that gives that company B confidence. So confidence building here.” (Case company C, 3)

However, the actual business results are still in process. This is illustrating as below:

“we've created something that has given us a really strong presence in Bangladesh, good relationships, the right people to call but getting those people to act to make meaningful decisions is very difficult” (Case company C, 2)

“It's a good relationship, but again very, you the feeling that when we're active talking, very interested, [...] if they say we're working on it we want to do this you just have to trust them. But it's very slow,” (Case company C, 3)

“so delivery it's been a very slow process, [...], and it didn't work. [...], So that's can been like a three year, three year journey. We still haven't done any.” (Case company C, 3)

Additionally, the relationships with new hospital and university contacts were found to have social capital and its benefits to be realised at initial stage, in which has limited direct business outcomes and relationships could be weakened. An example showing

that social capital and its benefits are realised at the initiation stage is that case company C has a relationship with the foreign military hospital and their relationship has been strengthened due to the continuous dialogues but again, the actual core business activities are still in process. The following quotations illustrate that:

“So these relationships (with military hospitals) are now very strong. The founder and his wife, spends probably four weeks in ten out in Bangladesh, spends about the same time that they alternate.” (Case company C, 2)

Another example of initial social capital and its benefits from case company B’s new university relationships are realised is though they did not form a partnership or trusted personal relationships, the valence of the relationship was neutral due to assisting them with market research but not real business outcomes were achieved through this relationship. The following statements support that:

“we previously used the local university G to do projects for us to look at market access and how we should introduce the product within the market. [...] They extensively researched the US market. [...] they did a lot of actual interviews with customers. [...] we got lots of feedback around pricing about the nature of the problem, Where the country is the best locations to utilize our time, all that side of things.” (Case company B, 1)

“we have lots of contacts in UK universities, but we haven't really had, [...] but nothing specific as such (to support international business)” (Case company B, 2)

A likely interpretation is that as new small companies, networking with prestigious actors in each context is difficult to receive expected business outcomes e.g. real business deals for SMEs, even though there is innovative product and right connections, real business outcomes and commitment are slow and takes time with these influential contacts. This is illustrated as below:

“it’s all about relationships rather than things being delivered. So when you look at it from an investor point of view, what you see is, you got some really good connections, and if you could introduce this connection to that connection, something could happen, but we don't see how you are gonna make any money out of that.” (Case company C, 2)

An interesting finding of social capital and its benefits are realised at the initial stage is that the relationship could be weakened due to limited interactions. For example, the relationship of case company B with hospital contact is weakened due to inconsistent communication after short cooperation it had, while the relationship was positive by generating many direct outcomes that offered a business opportunity to enter the Australia market and enhanced their product legitimacy and had more referrals. Case company B’s the participants confirmed that:

“We are not in contact with this guy (Professor from Brisbane) at all now, it's all you know they buy the devices that they use it.” (Case company B, 2).

“the customers in a large hospital show actually approached us, and really kind of drove us to introduce the product into the Australian market from his needs, [...] And he supported us with the registration of the products. He actually introduced us to a sales partner that he was aware of in the country.” (Case company B, 1)

The above analysis of SC and its benefits from new relationships in four institutionalised contexts at the initial interaction stage are realised to facilitate SMEs internationalisation indicate that companies are cognizant that a number of initial network relationships could gradually contribute to SME internationalisation with accumulative benefits, even though it is not the direct and actual business outcomes. The participants in the case company B and C and D confirmed this by saying:

“if you can forge as many relationships [...] you might not see it for a year or two or not about it, but they might know somebody that's that could be crucial for the development of your business and your largest market” (Case company B, 1)

“So we try and all always to bring some added value so that we make interactions where there can be collaboration. There's a massive network.” (Case company C and D, 1)

“We expect, whenever we make a new connection, we expect we have some idea of what we want to try and achieve from that network, and we have some ideas of early indicators that it's worthwhile, but it's only when you actually start to develop the network connection that you figure out whether it's worthwhile.” (Case company C and D, 1)

In other words, it is mainly around connections that would lead to contributions to internationalisation. Starting the selection and identification of appropriate and useful contacts to build relationships are an important step to acquire initial social capital from these new relationships.

More interestingly, the emergent findings show the importance of entrepreneurs' efforts (e.g., interaction skills, prior experience, and background) in this initial stage of selecting and identifying appropriate contacts. For example, the cross findings show that the interaction skills are critical to select and develop relationships, as the participant said:

“The founder is very good at talking. Essentially he has got lots of ideas, and he is very good at reaching people, [...] he seems to be able to say the right things that they then engage. So quite often that you will be granted a five-minute interview with the minister and then within two hours, they're still talking.” (Case company C, 2)

Additionally, the prior experience of entrepreneurs were also found from the cross-case analysis because the founders/entrepreneurs have been worked in the field for a long time and have sufficient experience to decide who is the better connection, which is illustrated as below:

“Experience of knowing, knowing who any discrete but to be able to filter out wasting time, So there's a large degree of its experience knowing how to get what we're seeking” (Case company C and D, 1)

“So I think one of the things that we experience brings is the ability to decide very quickly if somebody is the right.” (Case company C and D, 3)

Also, the findings show that the background of entrepreneurs is crucial in the selection and identification of appropriate contacts to engage with a number of network relationships and thus lead to an amount of SC to contribute to SMEs internationalisation. For example, both case companies D and B stated that their founders' scientist background could add more value to their product and accelerate the interactions process. As the participants from case company D and B suggested:

“CW (the founder of case company D) is a scientist background, but he would as the foremost as an investor fund manager, entrepreneur really, and it's the coming together of those people.” (Case company D, 2),

“because of CW background in mind, we know lots of venture capital companies, and we know lots of people who invests. So we've gone to those people directly. We've now decided that while we can do that as well to have somebody specializes in” (Case company D, 3)

“he's obviously an obstetrician gynaecologist, he's got clinical network of the actual end users of the product within his career and which is spanned over thirty years now. [...] but he's previously worked for many and large international companies as a trainer for them and globally [...]. So he [...] has networks within other countries that he's developed over the years, but also by working with some commercial companies in that period. he developed commercial networks as well in manufacturing and product design” (Case company B, 1)

In a nutshell, the findings show that the initial interaction stage where social capital and its benefits are realised in an accumulative influence with the amount of benefits e.g. more referrals, increase their market presence and influence, due to entrepreneur's efforts (e.g. skills, experience and background). At the initial stage, focal actors who can select and identify the appropriate contacts could expand network relationships and the relationships can be strengthened and trust might be enhanced after frequency of interactions into development and mature network relationships creating SC. However, the findings also show that social capital from relationships at the initial interaction stage due to entrepreneurs' efforts cannot ensure actual business commitments and form a partnership. It indicates that it still needs more efforts to build a partnership and achieve their business goal and conduct their core business in the foreign market. This leads to the next interaction stage of network relationships, the development interaction stage was found and discussed below.

5.3.2 Development-Social capital from firm level

Table 21 on p.233 illustrates MedTech SMEs are able to utilise social capital from the new relationships that at the development interaction stage in business organisations, hospitals and universities to contribute to internationalisation. In this study, the development stage refers to the interaction stage between the focal actors and the alters that forms a partnership and/or transactional relationships with actual business outcomes of internationalisation. More importantly, the findings reveal that intense business communications strengthen their relationship from initial to development stage and cognitive connections lead to the formation of a partnership between the focal actor and business organisational actors, to utilise social capital and its benefits that boost their internationalisation through actual business outcomes.

The findings suggest that even though new established case companies lack adequate market experience, their social capital and its benefits from the relationships at the development stage with business organisational actors are realised through benefiting their business with more direct business outcomes, e.g. business opportunities and business actions. There are some examples proving that social capital and its benefits

are realised at the development interaction stage and being positive to their international business through enhancing product legitimacy. For example, case company A is working with a business company, company WR with the realised benefit of legitimacy enhancement that facilitates the company's operation in the EU market. The following statement supported that:

“the major activity is the patent, patent it in the EU, host it in Germany, and then at the Germany have what is called German Utility Model. So German Utility Model is that registered patent is accepted, then this valid in Germany, Netherland, Belgium, Luxembourg.” (Case company A, 2)

Another example is that case company B is working with a regulatory consultant and achieved a good quality due to business communication, which also assists to increase legitimacy through the FDA clearance process, and then was allowed to enter the US market, it gives case company B “legitimacy” in the network as a worthy actor. It is supported by the participant:

“So we started approaching some of those contacts to tell them we were now FDA approved and we could sell the device in the US.” (Case company B, 2).

Therefore, social capital and its benefits from new business organisational relationships can be realised at the development interaction stage as it forms contractual cooperation and its benefits are helping to legalise the business in the foreign market to enhance legitimacy, which means SC help to decrease the liability of foreignness.

The finding also indicates its benefits of network expansion for new established case companies who lack network in the foreign markets to do international business. SMEs tend to partner with prestigious contacts to enter their network enabling market entry, which would decrease the liability of outsidership. An example is that case company C is working with Professor AK a prestigious business partner and they formed a J&V agreement, social capital that created from this relationship helped case company C increase physical presence in the foreign market, enter the foreign market network, and

increase their credibility, and provided with referrals. The following quotations supported:

“So a lot of the early interaction was with senior like the decision makers or interns, so we established connections with the president of the biggest hospital group in Bangladesh. We quickly got introduction into government, ministries, at if not minister level, at the Deputy Minister level, so we made a great effort to start the discussions as high position as possible...” (Case company C, 1)

Another example of social capital and its benefits from new business organisations have been realised at the development interaction stage is that after initial entry to the foreign markets and foreign market networks, case company B realised the difficulties of managing foreign markets by themselves as a small company, they started hiring distributors to manage foreign markets. Therefore, social capital from the relationships with their distributors is realised through the way that SC is applied to the market entry process by enhancing SMEs’ power to control foreign business and identifying more business opportunities that overcome the liability of smallness. The following statements illustrate:

“we’ve been started hiring distribution, partners. So these companies, they have their own sales force, they have maybe four or five sales reps working for them, and they cover different states across the country. So we now we’ve got about eight distribution partners in the US, so that’s how we’ve been really expanding in the US is through using distributors that are covering certain states. It’s this such a big territory is difficult for us to kind of manage ourselves.” (Case company B, 2)

The findings further suggest that MedTech SMEs are constrained to internationalisation due to lacking resources e.g. investment and credibility, the new business organisational actor arrived at developmental interaction stage by forming partnership, social capital and its benefits can be realised at this stage by investing, increasing their credibility and confidence due to the reputation of the partners to facilitate internationalisation. For

example, there are two external investors and one financial partner for case company D which are strengthened after frequent business interactions, as illustrated as below:

“So we work closely with UHY as our accountants. UHY corporate finance will become a key partner of what we do, because they basically they will find investors, [...] connections and credibility.” (Case company D, 3)

“and close relationship as they’re now an investor. So they’ve invested into case company D and TQ. So they trust us to deliver on what we say will be.” (Case company D, 4)

Another interesting example is that case company A collaborates with a business director after two meetings and confirmed this contact as a useful relationship and benefited case company A with marketing and pricing the product, which is illustrated as below:

“The director of a business in a city spent more than three hours discussing the route to market of a medical product, the methods and contacts” (Case company A, 1)

“It is because of the fact that he is the well-established business man in the medical products. The secondly he can trust.” (Case company A, 2)

“it just two meetings committed things” (Case company A, 2)

“Very helpful. He is in the medical business, he produces a critical product and they’re established his company has expanded quite well. He gave me enormous help because respectable three others going through my business, he introduced me to a medical electronics person. And also he started to market my product. And pricing.” (Case company A, 2)

An interpretation of development stage where has formal partnership is that even though it lacks sufficient interactions between the focal actor and business organisational actor, shared understanding and trust facilitate the relationship to arrive at the development stage where has partnerships and actors commit to do things and social capital from the development stage of relationship can be realised and generates actual business outcomes that directly facilitate their internationalisation.

Additionally, the cross-findings reveal some evidence of social capital and its benefits from new relationships with hospitals and universities have been realised at the development interaction stage. It suggests forming a partnership that assists case companies to internationalise in foreign markets and facilitates the business interactions between case companies and hospital contacts to arrive at developmental stage, thus social capital is realised by the focal actor and utilised social capital to achieve market entry and generate outcomes e.g. more of business opportunities. An example of case company B also confirmed the developmental interaction that social capital and its benefits are realised in the way social capital from these relationships is applied to the market entry process which decreases the liability of outsidership. For example, case company B confirmed that their key partnering relationship with foreign hospital customers was built. The following quotations confirmed this by saying:

“And once you get into one hospital, usually the US, a lot of these hospitals are part of much bigger networks. Um, big hospital groups exist them, so you can get into one of the biggest hospitals within that, then you can start trying to expand into other hospitals them within the system.” (Case company B, 2)

Another example of case company C also supports that developmental SC and its benefits from the new relationships with local hospitals leads to various business outcomes, e.g. assisting in devising the programme, enhancing relationships with local government, as well as the expert’s reputation that increases case company’s credibility in the foreign market as a small company to overcome its liability of smallness. This is illustrating as below:

“So Prof A.D from local hospital has been instrumental in building strength in these relationships P.D., been instrumental along with them in joining the reinforcing these connections so that things don't know what do.” (Case company C, 2)

“She was right at the beginning. So say probably almost bring Prof AD in here, because she went on a very early visit early to Bangladesh. Yeah. So she gave early credibility to..,” (Case company C, 4)

“first is the connection with decision makers. So people who can ultimately do things,[...] because we've got through that relationship we have a space in office, so it's physical footprint. Further, its credibility. So they're a big organisation in Bangladesh respected by others in Bangladesh and known in different parts of the world. So, that's the main things I think. so those three would be that would be the main benefits.” (Case company C, 3)

Similarly, partnering with local and international universities was also found to be beneficial to case companies, which indicates that social capital from universities and its benefits are realised at the development interaction stage. For example, case company D built key partnering relationships with the local and international universities. The following quotations supported by saying:

“so we were closer with the local university B. They're seeking to commercialize their ideas and we're the route to do that. So it's a mutually (benefit)”. (Case company D, 4)

“and so we talked to him (Dr CL) about lots of different projects, but he's a very good connect.” (Case company D, 2)

The way that social capital from these universities relationships is realised is that social capital and its benefits assist the case company D to obtain experience and enhance credibility, and they are benefiting from having business opportunities and appropriate

referrals to connect that decrease the liability of smallness to internationalise. For example, case company D works with the local university, and the relationships here create social capital that benefits case company D who is newly established company, because at the process of research centre establishment, social capital benefits both actors in the relationship, and case company D benefits from learning their partners' experience that helps develop business and credibility. The following quotations illustrate that:

“so I think if we say case company D advising the research centre (part of university A), so we're providing advice to him on how he can do. He (Prof RCP) can turn the research centre into something that can make some money, whereas Prof S.H. provides case company D with 20 years of experience in the space that we're working in. So it's his experience over 20 years we're able to tap into. So we can say, if we did this, would that work? And he can say yes or no.” (Case company D, 4)

“So we're able to use the advanced wellbeing research centre, for instance, in talking to a group in Finland that we want to work with. And the idea AWRC adds a lot of credibility to our story.” (Case company D, 4)

“So you know, within the US, they retain a higher proportion, outside the US they got smaller proportion. Um, but what will work from a point of view of the credibility as that they have currently five million users of the system. Thus the credibility.” (Case company D, 5)

The above analysis and findings indicate that network relationships at the development stage is important because it is composed of partnerships and/or contractual relationships, which create SC to directly benefit MedTech SMEs internationalisation with various direct outcomes and decrease the liability of foreignness, newness, smallness and outsidership when internationalising.

More interestingly, the emergent findings are that in order to arrive at the development stage where has partnerships and contractual relationships that generate SC, cognitive efforts are the crucial, e.g., less cultural barriers, common ground, shared understanding, shared interests and common goals of business between focal actors and connecting actors. This is similar to the cognitive motivation that is discussed in the Chapter 5.2.1, which is found to be critical to form partnerships and contractual relationships. For example, less cultural barriers e.g. common language could accelerate the formal business relationship formation in the foreign market, as case company B explained:

“And we try to find local partners that have products that are in the same space [...] So they had the same customer base” (Case company B, 1)

“[...] but again, [...] most of these places, you can speak in English and they're all understanding English. [...] There are some countries like Germany, France, where there are significant cultural differences, [...] And that's we found those markets very difficult to enter.” (Case company B, 2)

Other cognitive efforts e.g. common ground, shared goals, also were found to be important to form partnership and contractual relationships, to utilise SC and its benefits to facilitate internationalisation. The following statements confirm this opinion:

“we've talked to people who think it's a great idea, and so that was meant you've got common ground and then the challenges to then get people outside that immediate circle to buy into the idea” (Case company C, 1)

“all of those university connections. So that's similar situation in with the local university B, and also you have the shared goal, and they're (local university A) equally trying to commercialize their ideas, where we're going to do that.” (Case company D, 4)

“[...] the key people that we work with closely and working with us in it, and ready for shared goal [...]” (Case company D, 2)

However, the cross-case analysis found that this developmental stage yet arrives at the mature interaction stage because at this stage the relationship is not stable and depends on the contacts' willpower, which could vanish and is not stable. For example, case company C supports this opinion by saying that:

“particularly A.D. is a key partner. As long as she maintains interest in it, she'll keep driving it. If she decided it wasn't going anywhere, then it will all evaporate.”

(Case company C, 3)

Accordingly, the findings further identify the importance of intense business interactions, e.g. frequent meetings, in strengthening the partnerships and contractual relationships to acquire social capital and its benefits after initial selection and identification. For example, two different contacts from local hospitals and local university are the key partners for case company C along with the business involvements and formed key partnering relationships, while these relationships do not arrive to the mature interaction stage because the business relationship depends on the contacts' willpower that could vanish and thus needs continuous business interactions. Other examples of case company B and D also supported the importance of continuous business interactions by saying:

“But we would certainly try and support them and quarterly or by annually with field visits to support with sales activities, and primarily we would use video calls and to keep that relationship going and of, we will, supplement that with telephone and email, but certainly having a face to face contact, the video call enables you to do, I think has been a key tool to enable a sort of a better relationship to be forged.” (Case company B, 1)

“Whereas for me, most of my time spent with the actual distribution sales partners, [...] and particularly in the US market where we're growing and trying to penetrate. I'll spend a number of weeks with them throughout the year, where I

can support them and develop that relationship, obviously, with a view to drive in commercial success with them.” (Case company B, 1)

“At least covered most things. I mean, I was there for US, the distributors who are selling it for us in the US they are highly important, and we make a lot of effort to try and train them and meet them regularly.” (Case company B, 2)

“(we meet the foreign partners) Daily. There's communication going on all the time through email, and channels like whats app for messaging, and then we almost every day will have some sort of teleconference with somebody, and it won't be the same people every day, so we might be doing work on this on the US with the US team on one day, and South Korea the next day, but almost every day there's at least a face-to-face meeting via the internet if not physically face-to-face.” (Case company C, 1)

“B.M. and I every two weeks we meet with the M team, got effectively the board of M” (Case company D, 5)

The above analysis suggests the importance of continuous interactions in maintaining developmental relationships and strengthening relationships towards a mature stage where is stable and sound with mutual support, otherwise it leads to a weakened relationship as an example mentioned in the Chapter 5.3.1.

Briefly, the development interaction stage is the network relationships that have formed partnerships or transactional relationships with various actual business outcomes that directly facilitate international business to decrease the liability of foreignness, newness, smallness and outsidership. At this stage, the key tactic is cognitive efforts that are able to form these relationships as well as time spent on business interactions to strengthen and maintain these relationships.

5.3.3 Maturity-Social capital from individual level

Table 20 on p.233 and Table 21 on p.233 report that social capital from extant and new relationships in four institutionalised contexts and its benefits can be realised at mature interaction stage in the case companies A, B, C and D. The findings show that it generates a higher level of outcomes to help SMEs internationalisation, which suggests that mature SC is created from the stable, sound, and steady relationships, e.g. closed interpersonal relationships with mutual trust and supports, and its benefits are utilised to achieve more in-depth contributions, e.g. knowledge transfer. The cross-case analysis found that this mature stage requires trust and time to achieve strong interpersonal relationships that generate mature SC.

The findings show that social capital from new governmental actors can be realised at the maturity stage. At this stage, the new relationships with government actors were strengthened into personal contacts with mutual trust and support, social capital is derived from these mature relationships and benefits case companies to internationalise with e.g. research resources and appropriate contacts, which helps to decrease the liability of smallness. An example is from case company D, participant B has two government actors that strengthen closed and trusted relationships, and then given to the strong connections they have, participant B was able to introduce these two interpersonal relationships to case company C that he also has a position. Thus, the reliability of the relationships and the inter-related relationships could benefit both inter-related companies C and D. The following quotation illustrate that:

“he (Y.A.) trust, I think that's similar category. Essentially they understand what we're trying to do. They think we're capable of doing what we say, the trust is to do it” (Case company C and D, 3).

“So Y. A is the key person, I can go to any one of those people that say, who do I talk to so that they're very good at making introductions to the right people.” (Case company C and D, 2)

Additionally, cross-findings reveal that social capital and its benefits from network relationships with new business organisational partners can be realised at the mature

interaction stage where it commonly constitutes strong and stable interpersonal relationships with mutual support. For example, case company B has a new business organisational relationship that steps into a strong social relationship through social interactions, and the value of the relationship is positive by means of offering a key introduction that directly facilitates internationalisation. As the following quotations suggest:

“But we met with them a number of times as both socially and commercially to discuss that opportunity. But through those discussions, we haven't actually, we're not sold the product to them, but we've developed a relationship with them.” (Case company B, 1)

“And he had a network within the USA. And he was very, he was very happy to help us and introduce us to his contacts and partners that he's worked with. And so that's been a certainly a key relationship for us from sales and marketing point of view to start distributor network.” (Case company B, 1)

Similarly, the findings also indicate focal actor can realise social capital and its benefits at the mature interaction stage where is stable, sound, and steady relationships with hospitals contacts through intense interactions, e.g. closed interpersonal relationships, with mutual supports, and the relationship is being positive by offering specialised knowledge generating higher level of outcomes that benefit case companies internationalisation process, e.g. clinical study, credibility enhancement. For example, case company B suggested that they were benefiting from a professor in the hospital in the US, by forming a mature relationship through intense communications. The following quotations supported that:

“they started doing the clinical trial there Harvard, and we have become very good friends with this professor now. So they have just finished the study now, just last month. So they're going to publish it early next year. So that's another very important connection for us. He is now somebody we meet every time he comes here or we go there. So he's a good friend.” (Case company B, 2)

Therefore, the focal actor benefits from professor's knowledge and reputation which enhance the business' and product's credibility through the clinical study and the clinical results, as well as enhance their influence and expand network in the foreign market, the participant said:

“I think it kind of makes us all appear larger than we are. I think having a strong network, you know, because we've managed to forge, you know, in the US we've got a strong network with H medical school and hospital. You know, often that's perceived as something very prestigious, also very difficult to have. And because we we've got that relationship and network almost makes this sort of gives us that kudos. And I think it kind of make you appear larger than you are, which can support you within the market. And so it's definitely got benefits on that front.”
(Case company B, 1)

“I think when the study gets published as well, that could really open up some doors in terms of the some of the national committees. And you know, I think that will help reach other organisations, because this will give a lot of attention to the device once this gets published in a medical journal, which it could help the device being included in some of the national guidelines. Maybe, yeah, that could have a big impact.” (Case company B, 2)

In addition to new hospital relationships that mature SC is realised, my findings also suggest that social capital and its benefits created from extant relationships, e.g. personal friends, can be realised at the mature interaction stage due to the stable and steady nature of these personal relationships. Participant B from case company D offers an example of his personal friend who is a professor and helpful to their business:

“So at the other key influence across all of these would be Professor RC, who is an old friend of my, personal friend who happens to have been a senior person in oncology, WP Hospital, uh, world authority on breast cancer. And he (Prof RC)

knows lots of people. So if we said we need to find somebody who's a specialist in brains, and do you know somebody?" (Case company D, 2)

Similarly, the inter-related case companies can realise social capital and its benefits from these interpersonal relationships of the participant B that is overlapped in two case companies C and D, and available for both companies. This indicates a special example of a mature interaction stage of inter-related relationships, and its social capital is able to flow between companies to assist their business. Examples of Professor RC in WP hospital and PD in local children hospitals were considered as strong interpersonal relationships of participant B, and he is able to introduce these two hospitals contacts to another inter-related company he has a position with. As the quotations stated:

"Equally, CW (the founder of case company D) now could pick the phone to P.D, my contact, and then a similar sort of conversation" (Case company C and D, 2)

"There could actually say now that he (PD) is now linked with case company D, i'll say helping case company D" (Case company C and D, 4)

Similar findings of mature SC realisation of inter-related companies were also found in the extant university relationships, e.g. Prof AG, personal friend of participant B, due to the stable and steady relationships they have and positive outcomes of introducing companies' projects and partners to internationalise. The following quotation supports that:

"So then that opened up the opportunities of local university C. Because I could go in there and talk to people. He (Prof AG) was able to introduce us to. So he's introduced us to a team that working in local city B, between local city B and one of the cities in China where they built a knowledge exchange. And we're so that adds there are sort of Chinese connection there." (Case company D, 4)

Furthermore, cross-findings suggest that medical device SME can realised social capital created from extant university relationship at the maturity interaction stage due to the trustworthy the contact is and personally known, for example, the case company A supported that:

“I had found the Professor (EEG) in Southern Germany was more easy to communicate with. This was partly because I had known him personally.” (Case company A, 1)

“Trust is critical to its. not only was impressed with his knowledge and willingness to help and also, um, because I felt he is a trustworthy man”. (Case company A, 2)

Also, its value is positive by offering product R&D process with expert knowledge and introduced valuable contacts, as case company A saying:

“It was clear that the Prof had an extensive knowledge on neuroimaging and current trends. He was one of few people who immediately recognised the value of the circuit diagrams I had shown and described how they could be used with current technology. His contribution was valuable as he was able to introduce two local companies (SME) that could contribute to A. writing software and an app android and smartphone. I was impressed with his knowledge of local SMEs. B. He had also introduced me to a local medical electronics company C. he was willing to do laboratory testing subject to a formal approval from the University in Southern Germany” (Case company A, 1)

Therefore, above analysing shows that stable, sound, and steady relationships in four institutionalised contexts, e.g. closed interpersonal relationships with mutual trust and support are critical in achieving mature interaction stage and utilise this mature SC to benefit internationalisation.

More interestingly, the emergent findings show that these mature relationships need sufficient time spent on social and business communications, in order to achieve strong interpersonal relationships that have mutual trust and are stable and sound to have a greater level of outcomes to support case companies' internationalisation. This is different from the relationships of entrepreneur's at the initial interaction stage as it is difficult to build mutual trust when initially meet, and the following quotation confirms that:

“building up trust with new connections is a challenge on both sides” (Case company C, 1)

Accordingly, it indicates that time spent on social and business interactions are crucial to enhance mutual trust and facilitate the strength of relationships to be interpersonal relationships which is stable and sound to benefit case companies' internationalisation. The findings show that the subsequent communications in either socially or commercially are essential to strengthen the relationship into stable and sound personal relations that create mature SC. An example from case company B illustrates the importance of time spent on communications that strengthen the relationships. The following quotations suggest that:

“But we met with them a number of times as both socially and commercially to discuss that opportunity.” (Case company B, 1)

“He (professor in US)'s you know, very busy, but we would certainly try and meet him three or four times a year, one on one to catch up and interact with them.” (Case company B, 1)

“He (professor in US is now somebody we meet every time he comes here or we go there. So he's a good friend.” (Case company B, 2)

All in all, maturity SC are realised at the network relationships that are as trustworthy extant friends, or after time spent on communications both socially and commercially

strengthened new relationships into steady and sound personal relationships with mutual trust and support, and benefit case companies with high level of outcomes.

5.4 Chapter summary

In summary, the Chapter 5's cross-case analysis presents findings to three research questions. First of all, the first research question found that case companies conducted various networking activities to create social capital with specific focus on whom and how. The analysis above of identifying various networking activities that internationalising MedTech SME conduct when they attempt to internationalise, their connecting actors can be clarified in terms of types of institutionalised contexts, the greatest significance starts from actors in business organisation, university, hospital, and government, and it can be concluded that four case companies are engaged with various networking activities to create social capital, consisted of A) interacting with the extant relationships, B) building new relations through (un)planned incoming and outgoing initiations. It was found that the UK medical device SMEs' networking activity to create social capital that benefits their internationalisation is mainly through building new relationships to expand the network relations and increase the amount of SC and interact with the extant relationships to quickly and easily access useful relationships to create SC within different institutionalised contexts. The matrices of cross-findings demonstrate the above summary which can be found in the Appendix 5

The above cross-finding suggests that few entrepreneurs' extant relationships and a number of new relationships are found to benefit their business. At the initial international business stage, the entrepreneur's extant relationships and a number of unplanned new relationships play an essential role to start new business due to easier access and creation of social capital. An explanation for unplanned relationships is found to be crucial to their initial international business is that these firms were not members of a network in the foreign countries, thus, the information to new customers and opportunities was not available to them due to the lack of network relationships in these markets. Therefore, unplanned relationships that create social capital become more important at the early internationalisation stage. Besides, the company and

entrepreneur's strategic decisions are essential to select appropriate contacts, e.g. sought support from government and market expansion. These new relationships are mainly composed of incoming relationships, which means there are the external contacts who approached the case companies and/or the introductions through third party for these MedTech SMEs who are new to internationalising their business. Another useful networking activity is interacting with the extant relationships of entrepreneurs' and firms', which is more quickly and effective to create SC benefiting their business. The inter-related companies who share the common director or investors present an interesting finding that they are able to interact with extant relationships that participant has and that are associated with in one of the companies. Relationships in one company from an inter-related group can be easily accessed by another company from an inter-related group, which speeds up the process of identifying and creating social capital that benefits both two companies.

Secondly, the researcher addressed the second research question-*under what conditions social capital is available for UK high-tech SMEs to internationalise to foreign market.* From an entrepreneur's motivation networking perspective, the networking motivations are unfolded into emotional motivation, cognitive motivation and organisational motivation. From the alter's role played in the networking perspective, the interpersonal relationships demonstrate the role of maven and expert that demonstrate individual level social capital become available, and the inter-organisational relationships demonstrate the role of collaborator that demonstrate firm level social capital become available. The motivation and roles condition SC availability that access SC more effectively to address the difficulties of case companies face when internationalising. Therefore, motivations and role of contacts help to quickly decide who is more appropriate to network and access SC more effectively to benefit internationalisation.

Finally, this research examined the third research question regarding the stages in the process of interaction, between UK high-tech SMEs and foreign firms, that social capital becomes available and its benefits are realized. From the above finding analysis, it can be concluded that there are three interactions stages, including initiation, development and maturity, based on the strength and value of relationships that create

social capital, including the specific evidence to support (e.g. strong relationships) and the reasons behind this realisation (e.g. time efforts, entrepreneurs' efforts, cognitive efforts, and trust), as well as the benefits that value the case companies. Therefore, stages that social capital and its benefits are realised with deep understanding of how and why this realisation occurs. It starts with social capital from individual level that entrepreneurs select and identify network relationships that are useful based on entrepreneurs' efforts, where amount of initial SC is created and realised to benefit SMEs internationalisation, and then moves to SC from firm level as it is the development stage where forms partnership and contractual relationships between organisations due to cognitive and time efforts, where diverse development SC is created and realised to benefit SMEs internationalisation, and finally, it goes again SC from individual level but in a more depth level, that interpersonal relationships with mutual trust and supports after time spent on socially communications, where high level mature SC is created and realised to benefit SME internationalisation.

6. DISCUSSION AND DEVELOPMENT OF PROPOSITIONS

Chapter aim:

This discussion chapter discusses the main findings of the study in terms of the three research questions and interprets with the relevant existing literature and proposes how UK MedTech internationalising SMEs create SC that enables internationalisation. The research questions are:

RQ a) What are the networking activities that UK MedTech SMEs conduct when they attempt to internationalise in foreign market?

RQ b) Under what conditions is social capital available for UK MedTech SMEs to internationalise in foreign market?

RQ c) In what stage in the process of interaction, between UK MedTech SMEs and foreign firms, does social capital become available and its benefits realised?

The researcher develops arguments/statements with theoretical grounds which were derived from discussions and are suggested to be future directions in section 7.4.2

6.1 Phase I: Social capital source

As shown in Figure 16 on p.268, the first mechanism of UK MedTech SMEs creating SC that contributes to internationalisation is what I term as the “*social capital source*”, indicating SMEs/focal actors are engaged with various networking activities as “sources” of SC. First, the main finding is with “*whom*” to connect. The networking actors were identified in four types of institutionalised networking contexts with which the UK MedTech SMEs build relationships, including *university, government, business organisation, and hospital*. Secondly, another main finding is “*how*” the egos interact with these contacts to create SC, including 1) *engaging with the extant relationships* and 2) *building new relationships through a mixed of unplanned/planned incoming/outgoing activities*.

This finding of four institutionalised contexts (and how the actors interact with each to create social capital) reflects Powell et al. (2005) in that the life science industry is progressing in its scientific and commercial area, which necessitates diverse actors of research organisations, universities, venture capital companies, and large corporations. Similarly, Chandra and Wilkinson (2017) also of the idea that SMEs interacting with actors in sectors that are contextually diverse in the sense of its different institutions as already discussed, but also that those institutions may be well connected internationally, construct a network of relationships that is conducive to helping them recognise international opportunity. Instead of classifying networks of relationships into simplified types of network structure, this study draws on institutional perspective (institutionalization suggested by Scott, 2014 and Child et al., 2017) during the analysis stage when it was found that the Uppsala model's attention to the institutional context was limited, focusing broadly on business networks only. Incorporating an institutional dimension to the analysis helped distinguish different actors that have different backgrounds, play different roles, serve different purposes and inhabit different knowledge domains (Powell et al., 2005).

My finding found a higher number of business organisations actors in SME internationalisation supports its major influence in internationalisation, similar with previous studies that business networks are crucial (e.g. Coviello, 2006, Johanson and Vahlne, 2009, Vahlne and Johanson, 2017). More importantly, the case findings further indicate that actors in the government, university and hospital are core to the business of MedTech SMEs. Particularly, government SC is used to get access to information and referrals to start their international business which could lead to business organisation SC, hospital SC, and university SC that are related. This aligns with prior studies that institutional networks have positive impact in the internationalisation of SMEs (Oparaocha, 2015, Udomkit and Schreier, 2017), university and local research institutions can acquire knowledge (Child et al., 2017), prestigious experts (Bembom and Schwens, 2018), and their connections (Andersson et al., 2013) that help firms' international business, and firm's international credibility enhancement through academic publications and networks (Pettersen and Tobiassen, 2012, Bembom and Schwens, 2018).

The findings support that these contacts have their own specific knowledge domains and the exchanged knowledge, abilities, competencies and goods/services are specific to one type of institution and not to others (Powell et al., 2005). Therefore, my study further adds that, out of the MedTech SMEs' business nature, differential networks with diverse partners in the institutional settings are more important to new MedTech SMEs to start their internationalising business.

The finding of engaging with extant relationship supports prior studies that MedTech SMEs could use the extant relationships to benefit their international business, e.g. family and friends have trust and reciprocity and allowing resource exchanging e.g. knowledge and information (Adler and Kwon, 2002, Davidsson and Honig, 2003, Chollet et al., 2014, Buchmann and Pyka, 2015), and existing personal ties they developed in educational or professional contexts (e.g. Hallen, 2008), and who are in the similar business area to help with business development and offer timely information about foreign markets (Ellis, 2000; Ozgen and Baron 2007). Because these persons know the entrepreneur personally and then they can offset the insufficient track record and recommend them to other potential collaborative companies, e.g. MNEs who would otherwise never take the new established SMEs into consideration (Shane and Cable 2002; Stuart et al. 1999). The recent study also explains why internationalising SME heavily rely on personal networking in that SMEs try to compensate and combine resources via personal relations and social capital in which personal relations create (Child, Karmowska and Shenkar, 2022). This study then suggests that new MedTech SMEs that do not have business experience tend to rely on the entrepreneurs' extant personal relationships to easily and quickly access SC that contributes to their initial internationalisation.

Additionally, this study found inter-related companies that could have more extant contacts than non-related companies, as inter-related SMEs could use the relationships that the common directors already established well in other companies and take them as the reliable and trust-based extant ones. This supports the role of 'business angels' who have position in different companies and are willing to help companies'

development especially the new established high-tech firms by offering useful contacts, direction and hands-on support (Madill et al 2005), or the “co-directorship” that the directors of corporations frequently hold positions in other enterprises, and this affects other firms; the different linkages may be viewed as a kind of information transfer between the particular firms, namely “interlocked companies” that are common in biotech industry (Myint and Vvakarnam, 2004, Myint et al., 2005, van Egeraat and Curran, 2014). This is similar with “broker” who brings brokerage opportunities between disconnected actors (Burt, 1992). The finding then supports Li and Fleury (2020) who confirm the importance of network brokers who have diverse ties and rich information in building relationships in the foreign market. A difference is that inter-related companies are connected due to common contacts.

This study supports what Powell et al (2005) found, there are hundreds of small science-based firms in the life science industry, which requires the communications between the organisations, and the exchange of knowledge and good/services are important, due to the specific knowledge domains and abilities and competencies to one type of institution and not to others. However, what Powell et al (2005) did not found is that these small firms may be constrained from accessing this specialised knowledge in the specific institutions, nor the individuals in the institutions, they could fail to succeed. Similarly, as Casson, Della Giusta, and Kambhampati (2010) state, different norms (informal institutions) in all sorts of organisations affect cross-cutting networking in these organisations (formal institutions), an actor thus may or may not have the ability to network diversely in different organisations to access more SC and various resources. In other words, SMEs could encounter greater communication difficulties with contacts outside the industry due to their specialisation having fewer knowledge bases in common, and therefore lack a basis from which they can communicate with each other (Kirkels and Duysters, 2010). Similarly, the differentiated technological know-how and large cognitive distance make it more difficult to efficiently communicate with companies outside their own industry to create SC that benefits internationalisation (Nooteboom, 2000, Nooteboom et al., 2007). SMEs are affected by this problem because they have less time and resources to spend on efficiently networking to commit things and learning to acquire knowledge (Lavie and Rosenkopf, 2006, MacGregor,

2004). My study supports and addresses this problem by finding that the common actors of inter-related SMEs could assist SME in coping with these challenges by referring useful established extant contacts from one company to another.

Therefore, my findings add greater specificity that having common directors who can link his/her connections in different institutions to the company he/she sits is critical in the complex industry and this approach speeds up the process of networking and SC creation. This suggests that inter-related companies have easier access to valuable relationships and SC when they have a common director. Therefore, as shown in Figure 16 on p.268 Phase I, focal actors can go directly to the extant relationships, the inter-related SMEs having common directors or investors, can speed up the process of accessing network relationships and creating SC, which informs an argument with theoretical grounds:

- a) *Having a common director (e.g. Madill et al 2005, Myint and Vvakarnam, 2004, Myint et al., 2005, Egeraat and Curran, 2014) can make social capital creation more efficacious, faster, and valuable in terms of potential values for MedTech SMEs.*

Additionally, my study found a mix of unplanned/planned and incoming/outgoing networking activities could build new relationships that expand networks, which led UK medtech SMEs to internationalise. On the one hand, similar with Coviello (2006)'s study, this study found network could be initiated by chance, and this research also supports Warner (2014) who problematizes the traditional assumption (e.g. Larson and Starr, 1993; Hite and Hesterly, 2001) that networking is a calculated, efficient, and intentional process. Therefore, *unplanned* activities are found to be critical in triggering foreign market entries.

On the other hand, this study also found building new relationships with *planning* aims to find appropriate and useful actors, which aligns with previous studies that SMEs intentionally and strategically create new business relationships in the foreign markets to expand their networks and obtain the essential resources to facilitate the international

business (Hite and Hesterly, 2001, Tang, 2011, Engel et al., 2017, and Puthusserry et al., 2020). Therefore, this study suggests that SMEs strategically find and select their key contacts who can give them access to the foreign market with planning to become a network insider.

Despite these contributions, my findings further suggest that unplanned networking often happens when the firms initially entered the foreign markets without foreign network relationships. Planned networking activities that could expand networks happen more often in later international market entries and penetrating stage. In summary, SC from unplanned relationships is critical in the initial foreign market entries and psychically distant countries and SC from planned relationships happens more often in later market penetration, in order to become a foreign market network insider to create SC facilitating internationalisation.

The findings of unplanned and planned networking activity can be further classified from the direction of networking into *incoming* and *outgoing* relationships (e.g. Coviello, 2006, Jack, 2010). My study found the most common direction is *incoming*, which refers to the alters approach the focal actors or the relationship is built through third party introductions. This finding supports Coviello (2006)'s critical suggestion that third party introductions are vital, while it contrasts with her argument that outgoing relationships are the common direction. This research believes this difference is not a significant theoretical conflict, an increasing number growth in incoming relationships could be due to that I categorised the third-party introduction as "incoming relationships" and MedTech SMEs with innovative products can attract incoming relationships (explained in the later paragraph).

The finding of MedTech SMEs with innovative products can attract incoming relationships could be explained as the relationship direction can elucidate that firms having more incoming ties are commonly considered as prestigious to easily access resource and those having more outgoing ties are perceived to be more dependent on relationships (Brusco et al., 2011, Crowley et al, 2018). This study found that though the examined MedTech SMEs are small and newly established firms who suffer from

the liability of newness and smallness, some firms having unique technology were able to attract the incoming relationships that are interested in their technology and these MedTech SMEs largely rely on the incoming relationships from the third-party introductions. In other words, high-tech SMEs consisting with unique and innovative technology and product can attract the external contacts to approach and satisfy contacts' needs. The finding corresponds with previous studies using various theoretical lens to explain, e.g. resource based (Barney, 1991; Peteraf, 1993), resource dependence (Salancik and Pfeffer, 1978) and INV (Oviatt and McDougall, 1994), that unique resources are adequate to enhance SMEs' advantages.

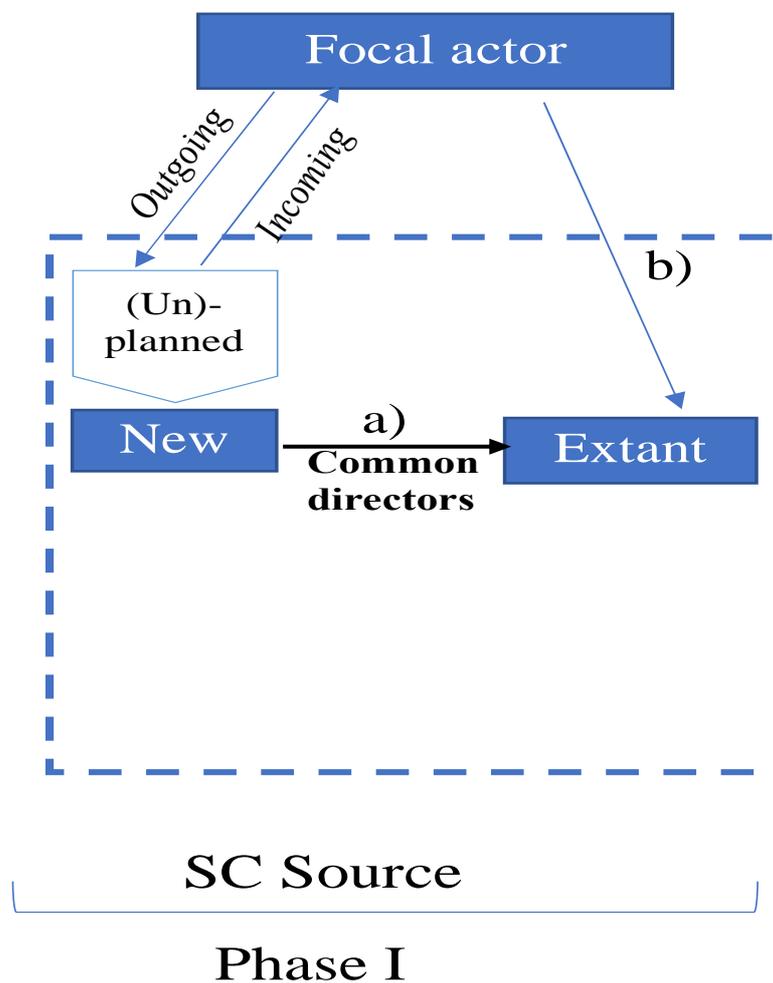
The study then suggests that newly established SMEs is difficult to go out to build new relationships directly and straightforward - fewer outgoing ties, it is the incoming ties take the major position in forming new relationships to create SC by the means of 1) third party introductions and 2) being approached by external contacts who come for its innovative technological nature of MedTech business.

Thus, the overall findings of sourcing SC through networking approaches of engaging with the extant and new relationships align with previous studies, e.g. Coviello (2006) and Puthusserry et al. (2020), who found path-dependent networks (through pre-existing ties) and intentionally managed networks appear in young INV's internationalisation. Similarly, this study is consistent with the revisited Uppsala model (Johanson and Vahlne, 2009), in which new and extant relationships are useful to internationalisation to decrease uncertainty. My study further advances these studies by revealing that most of the initial new networking approaches are incoming and happen unconsciously and then firms put extra attention and effort to build new relationships strategically and intentionally in broader contexts. My study indicates that extant relationships have been considered as easier and quicker sources to create SC. New relationships are the sources of expanding SC by building a number of new relationships. In other words, MedTech SMEs use their valuable extant network relationships to create SC in order to start market quickly and build new key relationships with contacts in government, business organisation, hospital, and

university to expand networks. Therefore, as shown in Figure 16 Phase I, these networking behaviours lead to another theoretical argument:

- b) *MedTech SMEs with extant relationships in institutionalised contexts (Powell, et al., 2005, Scott, 2014, and Child et al., 2017), including government, business organisation, university and hospital are able to produce social capital more efficiently.*

Figure 16 Phase I - social capital source



Source: the author

All in all, the above findings and discussions inform the first phase, shown as Figure 16. Phase I demonstrates that the source of SC comes from networking activities with diverse actors in the *four institutionalised contexts*, with which through the approaches of building the unplanned/planned and incoming/outgoing *new* relationships and interacting with the *extant* relationships.

6.2 Phase II: Social capital availability

The development of network relationships during internationalisation confirms the importance of developing a network and supports the previous studies that networking has a positive impact on internationalisation (Coviello and Munro, 1995; Mort and Weerawardena, 2006, Prashantham et al., 2020). While the findings reveal SC and benefits are not always available to let the contacts commit business, thus this research argues that network relationships are indeed important, but its SC and benefits availability are dependent on certain conditions. As illustrated in Figure 17 on p.275, SC creation phase II, I term it as “*social capital availability*”. It indicates the entrepreneur’s *motives* (emotional, cognitive and organisational) of networking and the *roles* (expert, maven, collaborator) of the connecting contacts (alters) played in the relationships, two conditions making SC become available to benefit the firm's internationalisation.

Three entrepreneur’s network motivations explain why the networking with the contacts occurs. The finding of emotional networking motivation leads to SC creation and resource mobility out of feeling secure/comfortable and willingness to trust the contact, e.g. reliable introductions, friends and families, and the focal actor networking can be driven by the contacts’ enthusiasm, stressing an interest feeling towards behaviour, which leads trust to their contacts to get access to resources. This finding is consistent with previous studies that personal relationships facilitate knowledge transfer (Yuan, Carboni and Ehrlich, 2010), extant friends or referrals that make them feel secure to trust facilitate information sharing (Fulk and Yuan, 2013), and self-interest and/or self-satisfaction are perceived as intrinsic motivation to promote knowledge sharing (Chedid et al., 2020), and a close emotional relationship who has

high-level of trust will positively influence knowledge transferring (Kang and Kim, 2017), and extant friends are considered to be homophilous extant ties that lead to emotional perception to network and ease the process of creating SC (Puthussery et al., 2020), and an emotional tendency to network and collaborate with partners who share a personal and emotional attachment with (e.g. Uzzi and Gillespie, 2002; Ruef et al. 2003; Warner, 2014), credibility and trust can be strengthened particularly through the home-based network relationships, and entrepreneurs of new ventures are less likely to pursue geographically and psychic distant markets (Agndal et al. 2008, Idris and Saridakis, 2018).

Despite these contributions, this research argues that this emotional motivation could be rational and irrational decision, as Fulk and Yuan (2013) argued a possibility of opportunistic behaviours for the connecting actors who vary in their ability to assist with business. Therefore, another rational networking motivation was found in this study.

Cognitive motivation represents a rational evaluation/consideration of the alters' unique resources and cognitive aspects e.g. common language and business goals, prestigious contacts, motivating focal actors' networking activities to create SC. As previous studies shown, shared business goals with the entrepreneurs (Vissa and Bhagavatula, 2012) and common language with their international partners are perceived as facilitators to internationalisation (Musteen, 2010) and improve their new capabilities to respond to uncertainties (Autio et al., 2011), people in the organisations rationally decide to involve with knowledge sharing when they ensure the positive outcomes derived from it (e.g. Lam and Lambermont-Ford, 2010, Weerakoon et al., 2020), and prestigious contacts give access to resources and increase the effectiveness of networking and the instrumentality of SC (e.g. Burt, 1992, Engel et al., 2017, Prashantham et al., 2015), and extrinsic motivation that certain rational reasons e.g. monetary rewards, learning opportunities, reputation enhancement, and reciprocal benefits facilitate knowledge sharing between organisations (Chedid et al., 2020). This study then suggests SC is easily available under the condition of the high level of degree

of resources that contacts deliver and rational evaluations of common language, business goals, and reputation.

The findings of emotional and cognitive motivations are based on trust, which is of importance in building relationships and becoming network insiders to facilitate internationalisation through affecting the willingness to commit resources exchange to the market (e.g. Johanson and Vahlne, 2009, 2013, Fiedler, Fath and Whittaker, 2017, Couper et al., 2020) and trust is commonly studied as affective and cognitive dimensions. My findings of emotional motivation and cognitive motivation reflect affective trust which is developed by social bonds and personal relationships, and demonstrated by mutual feelings of interdependence and belongingness, emotional feelings of connections based on benevolence and relational experience to show goodwill (Thorelli, 1986, Sako, 1992, Greenberg, Greenberg and Antonucci, 2007, Chua, Ingram and Morris, 2008), and cognitive trust which is out of objective assessment based on other parties' reliability and competence, which indicates a calculative process according to accumulated experiential knowledge (Ng and Chua, 2006).

Organisational motivation refers to the position of common directors have in different companies, and focal actors is motivated to network with the actors that common shareholder/directors introduced. Similar to Adler and Kwon (2002) motivation of network structure, this research identifies the third motivation from the perspective of the structural component - the central position of the common directors located in the network. This finding reflects structural aspect of network and structural SC from Nahapiet and Ghoshal (1998), and prior studies explored the structural SC in terms of the network size, range, density, and its position (e.g. Coviello, 2006, Musteen et al., 2014, Nyuur, Brečić, and Debrah, 2018). It supports Tasi and Ghoshal (1998) that in a networking interaction, an actor positioning a central place can be considered as trustworthy by other actors in the network and facilitates resource exchanging. My study further contributes to previous studies (Tasi and Ghoshal, 1998, Adler and Kwon, 2002) by adding a new finding that inter-related high-tech SMEs can be motivated and express willingness to network with the actors that the common directors have

established in other contexts. Because of the central position of the common directors, they are perceived as trustworthy and thus focal actors trust them, which to ensure resources availability and enhance trust between contacts and companies to network and achieve resources mobility, and SC flow between companies.

The study found another condition – the connecting actors' roles (expert/maven/collaborator), representing small entrepreneurial ventures lack resources towards internationalisation and what resources from SC are needed from their contacts. Previous studies have examined the abilities of connecting actors to SME internationalisation through their resources, e.g. knowledge and information (Wasko and Faraj 2005, Bock et al. 2005, Kankanhalli, Tan and Wei, 2005, Chou et al. 2014, Kang and Kim 2017). Boter and Holmquist (1996) explained the importance of the specific industry that SME is located in identifying knowledge domains and relevant key external networks. Specifically, Powell et al. (2005) argues that the life science industry needs diverse contacts who have specific knowledge domains to satisfy their complex needs. My research supports their arguments and finds that networking contacts in the four institutionalised contexts have their own roles in the network relationships based on their specialised abilities that condition SC availability to facilitate internationalisation.

For example, *an expert* is able to provide resources e.g. market/product knowledge and information and expertise to MedTech SMEs, e.g. people in hospital and university who are able to offer product knowledge. This finding aligns with Tang (2011) that the early internationalisation of SMEs is boosted by the availability of the foreign business resources (information and knowledge) through network relationships, for example, high-tech SMEs need to network highly trained contacts to meet the needs of their technical requirements (Salavisa, Sousa and Fontes, 2012). Particularly, these expertise resources are usually from a high level of technical network requiring product development, market positioning, complementarities in the high-tech industry (Srivastava and Tyll, 2021). A likely interpretation is that SMEs lack information, market experience, and knowledge on the international market, which are perceived as

key constraints to internationalise their business, and SC created from network relationships offering specialised knowledge can help SMEs to overcome these barriers.

Maven can introduce further useful contacts to access SC, and collaborators e.g. as distributor, customer, supplier, investor, joint ventures partner leads to business collaborations. Feick and Price (1987) in their study of market information diffusers found that “*individuals who have information about many kinds of products, places to shop, and other facets of markets, and initiate discussions with consumers and respond to requests from consumers for market information*” (p.85), namely “market maven”. Similarly, this study supports and adds value to “maven” by defining it as the specialised expert that is able to introduce various useful connections, which is particularly important for SMEs to expand their networks. As sufficient network relationships in high-tech SMEs, and referrals are considered to be the most valuable approach to expand network of relationships (Kumar, Petersen and Leone, 2010). Maven is an effective role in introductions, as small and new firms lack reliability and these extant mavens have knowledge and reputation to build trust between the focal actors and the referrals, which may help their business (Jack, 2005; Uzzi, 1997; Zhou, Wu and Luo 2007). To the company itself, this study supports Udomkit and Schreier (2017), who also stated that companies’ credibility in the foreign markets can be enhanced by network of relationships, because being introduced or recommended by trustworthy and reliable contacts, e.g. governmental actors, high position people and MNEs, can offer benefits and advantages to the companies.

Collaborator e.g., as distributor, customer, supplier, investor, joint ventures partner, in networking, is a crucial enabler in the internationalisation of SMEs. For example, out of MedTech companies’ nature, all of the case companies have built business-related collaborations with contacts in either business organisations, hospitals or universities to spin out their knowledge and/or form business collaboration to open and penetrate foreign markets. This finding aligns with prior studies that establish collaborative networks are effective to facilitate SMEs’ internationalisation process (Ciravegna, Lopez and Kundu, 2014, Puthusserry, Khan and Rodgers, 2018, Child, Karmowska and Shenkar, 2022), through e.g. joint ventures, distribution networks to access external

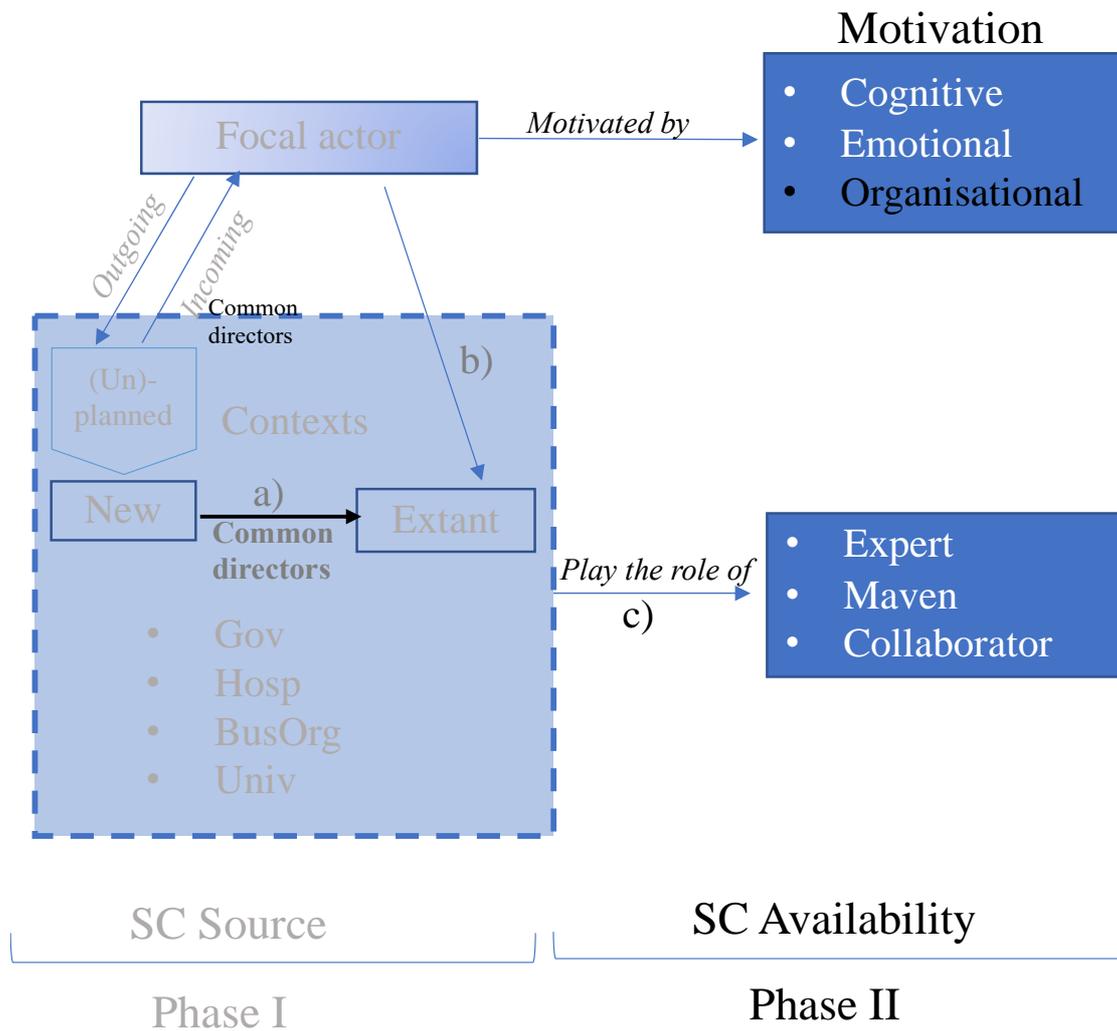
valuable resources (Lu and Beamish, 2001, Li and Qian, 2008), through accessing market specific information and knowledge (Musteen et al., 2010), and overcoming resource constraints (Ciravegna Lopez and Kundu, 2014). A likely interpretation is Johanson and Vahlne (1977), who argued partnership in foreign markets is important to individual companies who may not have sufficient resources to expand overseas. For example, entrepreneurs are commonly considered as finance constrained, and then external financing is necessary and a central position to entrepreneurship (Evans and Leighton 1989, Casson, 1982, Beck and Demirguc-Kunt, 2006), while limited informational asymmetries, insufficient assets, and higher risk of business failures imply the uncertainties in investing a SME (Vasilescu, 2014), especially difficult from formal banking and governmental institutions (Kersten et al., 2017).

Thus, the findings of the three roles (*expert*, *maven*, and *collaborator*) of the connecting actors support and add values to Jack (2010) that the different roles of networking actors who are identified in terms of their knowledge domains and abilities reflect the needs of entrepreneurs and their companies to operation, and they can be categorised into *expert* who can offer information and knowledge, *maven* who can point to right person, and *collaborator* who can provide business transactions, which is novel to explain why the networking happen and conditions of SC availability.

Therefore, the findings of entrepreneurs' networking motivations and roles of connecting actors helps to understand why the networking activity happens and then accessible SC from the capable networking actors who are able to help and provide with valuable resources, shown as Figure 17. From the above discussions, it can be theoretically stated as below:

- c) *More social capital is available for MedTech SMEs when the external connecting actors can play the role of experts, maven (Feick and Price, 1987) or collaborators in the network relationships.*

Figure 17 Phase II - social capital availability



Source: the author

In a nutshell, the above discussion and new insights then lead to the formation of phase II, SC availability, shown as Figure 17. It found three entrepreneur's *motives* of networking that create SC (cognitive, emotional and organisational motivations) and three *roles* of the connecting contacts (alters) played in the relationships (expert, maven, and collaborator), all of which condition SC availability to benefit firm's internationalisation

6.3 Phase III: Social capital realisation

The final phase of SC creation of MedTech SMEs in internationalisation, as seen in Figure 18 on p.286, is referred to “*social capital realisation*”, which is the interaction stage where SC and its benefits can be realised. According to the cross-findings in Chapter 5 regarding stages that social capital and its benefits are realised, Table 22 is formed to summarise the specific benefits for internationalisation are derived from the creation of social capital and which benefits were particularly important at different stages. As illustrated in Figure 18 and Table 22, the findings identify three interaction stages: initiation, development, and maturity, which underpin the realising SC phase and suggest that SC and its benefits from each interaction stage contribute differently to internationalisation under various efforts, e.g. trust, time, entrepreneur’s and cognitive efforts.

According to Jack (2010), diverse requirements of entrepreneurs and companies lead to the needs for various network formations with different features and qualities at a given time. This helps to understand how and why specific types of networks and SC are used at different stages. As shown in Table 22, my findings of three dimensions SC and its benefits, which can be used at different stages of networking, supports and adds values to Jack’s (2010) claim that networks develop over time, and networks used during establishment and subsequent development may differ.

Table 22 Main benefits for SME internationalisation at each interaction stages

Interaction Stages	Social capital	Main Benefits	Implications
Initial	Structural SC	Referrals; Credibility/reputation; Physical presence; information	Social capital’s benefits are abundant, which is useful to facilitate SMEs to internationalise e.g. general information, but they are not core to their business and

			are brief benefits that may graduate away over time.
Development	Cognitive SC	Credibility; legitimacy; business opportunities; network insider; business experience; resources	Social capital offers diverse benefits that have direct business outcomes, which assist company to enter a new market and form partnerships
Maturity	Relational SC	Knowledge transfer	Social capital offers in-depth benefits that higher level of resource exchanging , e.g. gain access to a specific institutional knowledge source and acquired their specialised knowledge and specialised supports from experts.

Source: the author

The *initiation* stage involves the selection and identification of a number of appropriate contacts, which generates brief and indirect benefits (e.g. general information and referrals) as a result of entrepreneur's efforts of experience and skills in gaining access to the amount of SC, similar to earlier research of Puthusserry et al. (2020). Also, Coviello (2006) found that an increase of network range, density and centrality will lead to a quantity increase of INV's SC. This study extends to prior research by demonstrating that structural SC, as defined by the network characteristics e.g. network range and density, is available at this initial stage because there are an increasing number of contacts available to firms with abundant temporary benefits, e.g. a number of referrals, reputation, sufficient information and credibility enhancement.

This study also advances previous studies by identifying the *entrepreneur's efforts* as a facilitator to network at this stage which may have weakened relationships due to lacking interactions to accelerate the initial SC creation process. In relation to networking that creates social capital, this study finds the importance of entrepreneurs' prior experience in both domestically and internationally, including background, networking skills, and working, on influencing their current networking activities and decision makings. This research argues that it can be considered as feedback loops in which knowledge learnt from an entrepreneur's prior experience (background, networks, and working) can be utilized for the current activities of business and networking. Thus, this study suggests that social capital creation through networking also can be considered as the learning in which entrepreneurs can learn knowledge of how to develop networks and create SC from prior experience. It aligns with prior studies that learning from the past generate experiential knowledge to develop network (e.g. Welch and Welch, 1996, Blomstermo, Eriksson, Lindstrand and Sharma, 2004, Loane and Bell, 2006, Fletcher and Harris, 2012).

Accordingly, it confirms the essential role of entrepreneur in the IE theory (Oviatt and McDougall, 1994), in terms of the past international experience facilitating the network insidership in the foreign network and expand a broader network of relationships to benefit SME internationalisation (e.g. Hilmersson, 2013, Child et al., 2017), and experienced "social competence" – i.e. their ability to interact effectively based on social skills – enhances SC and leads to greater networking and business success (Baron and Markman, 2003). This study also supports Child and Hsieh (2014) who identify the importance of entrepreneurial intuition and personal experience in the SME decision making process. Similarly, previous studies (e.g. Becherer and Maurer, 1999; Ciavarella et al., 2004; Covin and Slevin, 1989) suggest that CEOs are persons who perceive, understand, and react to their environment variously, which indicates that any benefits they may obtain from their SC will also vary according to their individual characteristics. It suggests that entrepreneurs of rapidly internationalising firms have exceptional capabilities that learnt previously to utilise their network relationships to react to different environment and market uncertainties.

The finding of entrepreneurs' effort supports the IB and IE literature that many studies have suggested that the learning process accumulates knowledge from prior experience/activities of firms and entrepreneurs and facilitates internationalisation (e.g. Jones and Casulli, 2014, Welch and Welch, 2009). An interesting example of experiential knowledge from learning is some firms are international even before its establishment, which could be due to that founders' prior knowledge, skills, experiences, and networks can be developed internationally before initial internationalization, or even before the firm's formation (Fletcher, Harris and Richey, 2021). Therefore, not only can prior knowledge from learning explain the traditional gradual internationalisation process that benefits from experiential knowledge from firms' experience (e.g. Johanson and Vahlne, 1990), it can also explain INV that is able to quickly established and operated in diverse countries due to entrepreneurs' experiential knowledge (e.g. Oviatt and McDougall, 1994). Therefore, the importance of entrepreneurs' prior knowledge is critical in explaining and facilitating early internationalization, particularly for start-ups that do not have prior business operations experience.

Overall, entrepreneurs have the ability to reconfigure, combine and adapt their network relationships to require resources to the different markets their firms operate in. Thus, this study suggests the qualities of the entrepreneur are the key at the initial interaction stage of selecting and identifying alters, thus the initial networking process is more intuitive than it is calculated, and more emergent than it is intentional, which supports my findings in Phase I.

In general, this study suggests the effect of SC should be contingent on an entrepreneur or top manager's individuality. My findings add value to previous studies by revealing the reasons for network relationships' strength/SC value is due to entrepreneurs' interaction skills and learning from prior experience (intuition) which facilitate the networking process by selecting and identifying appropriate contacts.

Based on the above discussion, I then theoretically argue that:

d) MedTech SMEs having entrepreneurs/directors with prior experience, not just in e.g. in internationalisation (Johanson and Vahlne, 2009), but also in different industries (Powell et al., 2005) that they could learn from and extend knowledge across boundaries that enable interactions in different institutionalised contexts are likely to use social capital quickly towards internationalisation.

Interestingly, findings show at this initial stage business commitment is hard to arrive and relationships would be weakened due to lacking interactions at this stage. For example, my research found that initial SC barely speeds up the process of internationalisation due to no committing business deals achieved at this stage. Thus, it does not support SC continuously speed up the process of internationalisation, its growth of international operations and success to foreign markets (e.g. Batas, 2015). A likely interpretation is weak ties defined by Söderqvist and Chetty (2013) as “superficial tie not yet based on strong trust, where the parties do not know each other well and are not emotionally close”, but these weak ties are able to offer greater access to sufficient informants and information (Granovetter, 1973). Similarly, as Srivastava and Tyll (2021) found, although brief contacts can offer temporary benefits for firms, these short-term and temporary contacts may graduate away along with time and the resources and time spent on building these relationships do not offer the firms a vital superiority in the foreign markets. It leads to the next networking stage.

Development interaction stage where the focal actors establish a partnership and commit to business outcomes with contacts, e.g. contract-based relationship and consulting relationship. For example, the findings show that SC and its benefits can be realised at this stage by enhancing legitimacy and credibility of their business in the foreign market, assisting in market entry through becoming a network insider in the foreign market, and accessing resources e.g. market and product knowledge and expertise. Similar with Puthusserry et al. (2020) who also suggested a SC progression process, which transformed the already established SC to the end of realising benefits to post-internationalisation stages (Morgan-Thomas and Jones, 2009).

In brief, SC and its benefits can be realised at this stage by forming partnerships and collaborative relationships and offering various direct valuable resources to achieve internationalisation outcomes, e.g. successful market entry. While this study further adds value with greater specificity to this stage, SC can provide a variety of benefits to help SMEs manage various liabilities they face when they go global.

An interpretation from IB theories of the liability of SMEs constraining internationalisation (e.g. Johanson and Vahlne, 1977, 2009) helps to understand SC from these relationships at developmental interaction stage can directly contribute to companies' internationalisation through forming partnerships and collaborative relationships to overcome the liabilities of SMEs constraining internationalisation.

As small and newly established companies, e.g. four case companies, they lack resources and information to establish their business, especially foreign business setup. SC and its benefits can be realised because it complements human resources (e.g. referrals) to decrease the liability of smallness (Rivera, Soderstrom and Uzzi, 2010), and offers market knowledge and information and enhances legitimacy to overcome the liability of foreignness (Mezias, 2002; Zaheer, 1995, Udomkit and Schreier, 2017), and offers business experience and routes and enhances credibility to decrease the liability of newness (Freeman, Carroll, and Hannan, 1983). The finding of SME belonging to a network in the foreign market that facilitates their internationalisation process is consistent with the revisited Uppsala model (Johanson and Vahlne, 2009). It stresses the importance of being a network insider in internationalisation. This study shows SC from these relationships can let the focal actors to become a network insider that decrease the "liability of outsidership" (Johanson and Vahlne, 2009) and identify new opportunities in the foreign markets (Chetty, Karami and Martin, 2018), provide firms with the opportunity to become a network insider and solutions to the problems as an outsider (Morais and Ferreira, 2020, Ghauri, Tasavori and Zaefarian, 2014, Ivarsson and Alvstam, 2013), and manage SMEs resource dependence and uncertainties through cooperative relationships (Li and Fleury, 2020). Therefore, it would be suggested that at the development stage, diverse values are available from SC to overcome different liabilities of SMEs encountered when internationalised.

This study found time spent on interactions would strengthen relationships, but lacking interactions would lead to tie decay, which relationships can be weakened. This finding is in line with Jiang, Xia, Cannella and Xiao (2018) who suggest that established relationships should be carefully maintained and managed, otherwise they may dissolve. An interpretation is tie decay, indicating relationships decay over time (Prashantham and Dhanaraj, 2010, Ariño et al., 2008, Doz, 1996) that may affect the decay of SC and international growth. In other words, it is not always the case that network relationships are maintained and developed especially when it is time-cost and financially costing that drain a firm's resources, which shows the liability of SC when the network relationships were decaying (Chetty and Agndal, 2007). This finding confirms Puthusserry et al. (2020)'s regular communications (time) that ensure SC to benefit internationalisation, e.g., reputation and legitimacy enhancement. Similar to Ahuja, Chetty and Wilson (2012) and Giuliani (2013) who also suggest that routine interactions are crucial to influence networking propensity and reciprocity.

While this study is novel to identify cognitive efforts of the focal actors, e.g. shared goals and cultures, form the relationships to arrive at the developmental interaction stage and create SC that benefits their internationalisation by forming partnership and/or collaborative relationships. This would reflect cognitive SC and Tsai and Ghoshal (1998) suggested that this dimension provides a shared meaning and vision that embodies a corporation's common goals and culture and can help people gain SC. As previous studies argue that in situations of business relationships with high uncertainty due to product complexity or the need for substantial mid- and long-term commitments (Bensaou and Anderson, 1999, Mooi and Ghosh, 2010), someone recommends a MedTech company with complex technology to a potential customer does not certainly lead the latter to become a definite customer. Therefore, this study suggests at the development interaction stage, cognitive efforts are important to establish partnership to create SC that directly achieves internationalisation.

From above discussion, this research suggests the following statement:

- e) *MedTech SMEs having cognitive understanding (Nahapiet and Ghoshal, 1999) with external connecting actors in different institutionalised contexts are likely to form formal relationships and internationalise quickly.*

Maturity stage indicates the stable, sound, and steady interpersonal relationships with mutual trust and support that have been strengthened after interactions, under the efforts of time spent on social and business communications. The findings show SC from these relationships offers high quality benefits, e.g. in-depth level of expert knowledge transfer to develop their core technology. Similar with Puthusserry et al. (2020), who suggested that a high level of shared identification and trust in the social relationships and homophilous ties that had reached the SC maturity stage ensured interactions among individual members by incorporating a general understanding of the appropriate ways to interact (Lindstrand, Melén, and Nordman, 2011, p. 197). The findings also support Ahuja et al. (2012) who argued that firms prefer to make intentional efforts to enhance trust and add a social element to their market and/or transactional ties, representing a personal bonding between business contacts, as social ties facilitate a high level of product and market related knowledge transfer and economic benefits, as well as mutual trust and support in overcoming foreign market uncertainties.

A likely interpretation is the concept of strong network relationship defined by Söderqvist and Chetty (2013), as “*close, based on trust, mutual, respect, commitment, deep knowledge and experience of each other*” (p.539). This reflects relational SC which is derived from relationships embedded in “trust, norms, obligations and identification” (Nahapiet and Ghoshal, 1998, p.251). Therefore, SC and its benefits that are realised at the mature interaction stage could be considered as solid relational SC with in-depth benefits, which is unlikely to decay, as Puthusserry et al. (2020, p.17) stated “*the lack of homophily and social overlay in the partnerships led to a decay in the relationships*”.

As Figure 18 on p.286 shows, the findings add greater specificity to that these extant relationships including entrepreneur’s previous friend - strong interpersonal relationships are composed of a high level of trust, which achieve mature relationships

and SC with higher quality of benefits to SMEs internationalisation. Particularly, this study identifies that inter-related firms are easier to access to mature SC because the common director is willing to introduce the actors that are trustworthy and have developed the strong interpersonal relationships in the current companies to the other companies they also have a position.

To explain this phenomenon, this study found the reason why networking with extant relationships can reach the mature stage that generates high-level of SC outcomes, it is the trust, especially interpersonal trust between actors that have been built to generate in-depth outcomes to facilitate SME internationalisation. This aligns with prior studies that confirm the importance of trust-based relationships, which are considered as an important lubricant in facilitating SMEs internationalisation to access and acquire knowledge (Geneste and Galvin, 2015, Fiedler, Fath and Whittaker, 2017). This also confirms previous studies of that trust in networking is more relevant to person instead of firm (Thorelli, 1986), and supports the importance of interpersonal trust in international business studies that trust and perception at individual-level can lead to internationalisation outcomes at firm-level (Coviello, Kano and Liesch, 2017, Couper, Reuber and Prashantham, 2020), and further contributes that interpersonal trust in networking with extant relationships lead to relational SC utilisation. A possible interpretation is that a social actor having trust may be able to become a boundary-spanner crossing different organisational boundaries where they can exert differences in cultural logic, knowledge domains and mindsets, and her/his knowledge and ability to comprehend the culture and logic of those organisational domains may enable others in the diverse institutions to trust him, and therefore mutual trust is formed.

The findings also extend to new relationships that have been strengthened to strong interpersonal relationships that are composed of a high level of trust due to frequent social interactions. This study then identifies another facilitator that is crucial to develop mature SC from developmental stage to mature stage where it has strong interpersonal relationships, it is time spent on social interactions to ensure trust and trustworthiness of the connecting actors. These findings align with Villena et al. (2011) that repeated interaction between actors generates trustworthiness and affirmed norms of friendship

and reciprocity within the relationship, which create SC. The finding also supports Jeong et al (2017) who found some established business network relationships can be transformed into friendly personal bonding networks over time.

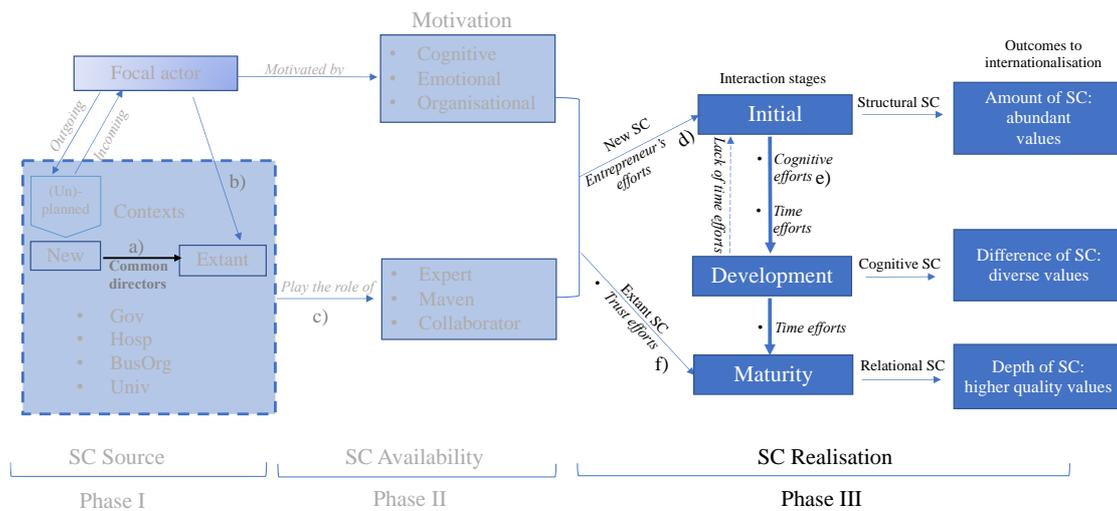
While it is worth noting that strong and stable interpersonal relationships cannot ensure business deals through forming partnership and collaborative relationships that highly depend on cognitive efforts e.g. common goals, instead of purely depending on time efforts, as explained in the development stage. Thus, SC at the mature stage cannot directly lead to the same values as the development stage has at which partnership and collaborative relationships are formed based on cognitive efforts. In general, at the mature interaction stage, trust, time efforts on business interactions and social interactions are crucial to form stable interpersonal relationships to utilise this relational SC.

The above discussion leads to the following argument with theoretical grounds:

f) Developing trust (Johanson and Vahlne, 2009) is an effort that needs to be made when utilising social capital in MedTech SMEs internationalisation: MedTech SMEs building interpersonal trust with an actor who is boundary-spanner are likely to utilise in-depth values (e.g. knowledge transfer) of social capital towards internationalisation.

The discussion and contributions inform the Phase III social capital realisation, shown as Figure 18.

Figure 18 Phase III - social capital realisation



Source: the author

All in all, the findings identify the three interaction stages aligning with previous studies (initiation, development, maturity), but are new in identifying the different efforts needed to form each interaction stage, and distinguishing the utilisation of three dimensions SC at each stage. During the initial interaction stage of selecting and identifying the appropriate contacts through entrepreneurs' efforts e.g. experience, the amount of SC generating a number of benefits to internationalisation is realised indicating the structural SC is created. Besides, during the development interaction stage of building relationships that have cognitive efforts such as shared understanding and/or cultures, the difference of SC offering a wider range of benefits to internationalisation is realised showing that cognitive SC is created. Finally, the maturity interaction stage of building relationships requires efforts including time spent on communications to strengthen the relationships and trust between actors, and then the depth of SC with a higher quality of outcomes to internationalisation can be realised indicating relational SC is created.

6.4 Chapter summary-social capital creation theoretical model

Summarily, after discussion of the key findings with relevant literature, this research would suggest SC for high-tech SMEs is created through the process of networking that

builds relationships with certain contacts and under certain conditions, and its benefits for a firm's internationalisation can be utilised with optimisation under different efforts. This research unfolds SC creation from where it comes from (source), how to access it (availability), and when to utilise it to facilitate SME internationalisation (realisation). Accordingly, Figure 19 on p.290 is integrally structured from Figure 16, Figure 17 and Figure 18 as an emerging specific theoretical framework generated from above findings' discussions and the new insights to the theories. Initially, this study started with a preliminary theoretical framework derived from the existing literature to guide this research, and then I further revised and developed a new theoretical model according to the new insights from the analysis and findings of this study, which is more specific. As Figure 8 on p.99 presents the initial preliminary theoretical framework as mentioned in section 2.3, this chapter builds on the existing framework and brings the key findings to generate a SC creation approach.

Briefly, Figure 19 on p.290 illustrates the phase I, SC source. At this phase, focal actor can network through building new relationships (including un/planned incoming and outgoing relationships) and engaging with the extant relationships, with the contacts in the institutionalised contexts (e.g. government, hospital, business organisation and university). Specifically, the figure also says the networking process through building relationships can take longer time as the focal actor goes out and/or is approached with unplanned and planned approaches. While this process can then offer more relationships in number. On other hand, Figure 19 shows that focal actors can go directly to the extant contacts, which could speed up the networking process to create SC, while its single arrows tells that it is a limited number compared with new relationships. Interestingly, Figure 19 also demonstrates there is a link between new relationships and extant relationships. Because this research notices an interesting relation between firms, namely inter-related firms, this type of firms is connected due to the common shareholder and/or directors they share, the shared contacts can introduce the new relationships they have built in one company X to another company Y. Therefore, it would suggest that company Y could access more extant relationships when there are more new relationships the shared contacts built in one company X.

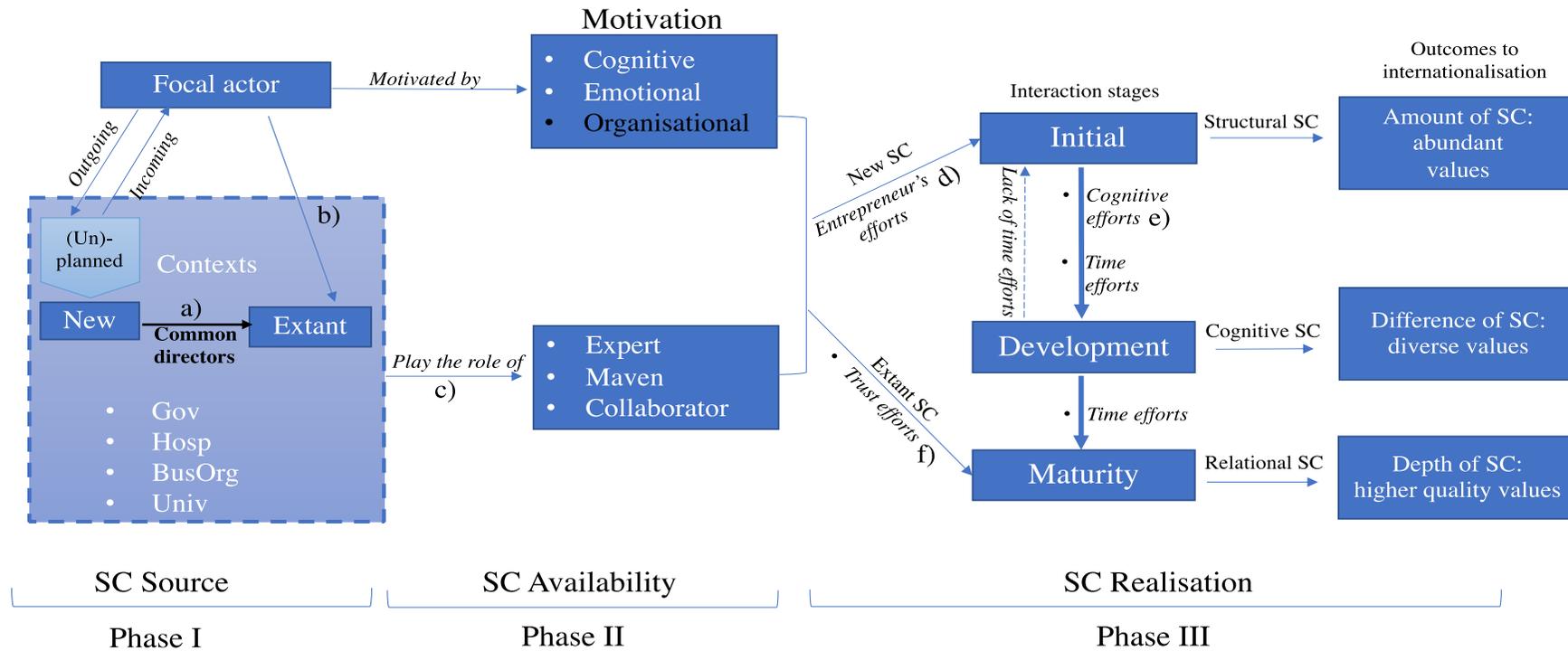
After network relationships are built, Figure 19 illustrates the next phase to create SC-SC availability, in which SC becomes available for the focal actors under certain conditions. As Figure 19 n p.290 presents, focal actors can be motivated cognitively (e.g. rational evaluation), emotionally (e.g. interests, mutual trust), and organisationally (e.g. the position of the shared directors in inter-related companies) to network with the specific contacts. Besides, as SC is the resources from the network relationships, relationships with specific need to be capable of offering resources. In other words, the abilities of the contacting actors need to be considered when networking. Thus, it is suggested that the connecting actors in the institutionalised contexts would be able to play different roles in facilitating internationalisation according to their specific abilities, including expert (e.g. specialised knowledge, information), maven (e.g. referrals), and collaborator (e.g. investment, business opportunities). The three roles indicate that SC can be accessed from networking with the actors who possess abilities to facilitate internationalisation.

Finally, Figure 19 demonstrates, after the sources and availability of SC are addressed in the Phase I and II, the final stage is SC realisation implying that as an invisible asset, SC could not be aware by the focal actors, which could lead to ineffective usage of SC to facilitate SMEs internationalisation. Thus, this research suggests that different dimensions of SC and its various benefits can be realised by the focal actors at different interaction stages due to diverse efforts, and then further indicates that SC can be utilised at different interaction stages to optimise SC effectiveness to facilitate internationalisation with various values. Figure 19 illustrates that SC from new relationships can be realised when the relationship is at the initial interaction stage, the development stage and the maturity stage. At the initial stage, entrepreneurs' efforts (e.g. networking skills and experience) are vital to select and identify appropriate contacts, which could lead to a number of contacts. Thus, structural SC is the key at this stage to generate a number of values to internationalisation. At the development, cognitive efforts (e.g. shared goals) and time are critical to form partnering relationships, which could be able to overcome various liabilities of SMEs internationalisation (e.g. smallness, foreignness, newness, and outsidership). Thus, it indicates cognitive SC and its benefits are realised at this stage with diverse direct values to facilitate

internationalisation. Finally, the maturity stage is achieved due to trust between actors and time spent on social/business interactions that leads to strong interpersonal relationships (e.g. mutual trust), and thus both new SC and extant SC can be realised at this stage. It implies relational SC and its benefits are realised at this stage with higher quality of values to facilitate internationalisation.

Thus, this discussion chapter presents the key findings that have new theoretical insights, which inform Figure 19 formation. The next chapter then synthetically and inclusively introduces its theoretical contributions to the specific research areas, including SC, international business and international entrepreneurship.

Figure 19 Social capital creation-A theory building approach



Notes :

→ Bold line refers to relationships have been strengthened

- - - - - → Dashed line refers to tie/social capital decay

→ Organisational motivation

The black arrow and the term are specific to inter-related companies

a) to f) refer to arguments/statements with theoretical grounds that are developed from this study

Source: the author

7. CONCLUSION

Chapter aim:

The contributions in regard to social capital knowledge and SME internationalisation are comprehensively presented in this concluding chapter. Besides, the implications for practical actors and policymakers are discussed in the chapter. Finally, the limitations of the study and the prospects for future research are presented.

7.1 Theoretical contributions

This study examines how to create social capital for early internationalising MedTech SMEs. Even though these high-tech firms commonly enter countries where they have less cultural conflicts, they still need to interact with their foreign business partners, who require appropriate and skilful intermediation services, or boundary spanners in the network with thorough understanding of different industries. As discussed in Chapter 2, this study tackles the research problem that existing theories only scratch the surface of how MedTech SMEs create social capital that enables internationalisation through networking. The next sections, which are based on Chapter 6, give fresh insights gleaned from the discussions, which contribute theoretically to SC, IB, and IE.

7.1.1 Contributions to Social Capital theory

Social capital is composed of resources that reside in a network of relationships, and it has been extensively studied as an intangible asset and has received considerable attention in the different studies (e.g. Nahapiet and Ghoshal, 1998, Adler and Kwon, 2002, Coviello, 2006, Johanson and Vahlne, 2009, Prashantham and Dhanaraj, 2010, Johanson and Vahlne, 2017, Puthusserry et al., 2020). However, few studies capture the approaches by which social capital is created, which is critical for examining how to create social capital that allow SMEs to expand internationally.

As a result, this research's primary contribution is an essential step toward a networking approach of social capital creation. By superimposing the three identified stages of social capital creation through networking onto internationalisation, this new framework (Figure 19 on p.290) complements the earlier description of the social capital framework (Adler and Kwon, 2002) and provides an understanding of how social capital creation relates to networking that is enhanced by trust and learning in order to facilitate MedTech SME internationalisation. Briefly, this study builds on Adler and Kwon's (2002) social capital model by 1) discussing how to build networks and create social capital from both entrepreneurs' and business networks, and 2) explicating social capital from bilateral sides of entrepreneurs' motivations that are based on trust and structural position and the connecting actors' roles in networking, and 3) making connections to SME internationalisation by demonstrating the values of social capital to SME internationalisation vary depending on the efforts, including entrepreneurs (learning from past), time, cognitive and trust.

As discussed in literature (see p.76-79) that Kwon and Adler have reviewed and further developed their social capita model in 2014, social capita is argued that in addition to the objective and physical ties that have discussed in their 2002 model, individual's cognition and attitudes are critical factors in influencing their perception of network ties, thus different individuals have different perceptions, and then condition social capital availability (Kwon and Adler, 2014). Also, in terms of motivations of flow of social capital resources, Kwon and Adler discussed trust, network norms, values and community memberships, all of which go beyond Adler and Kwon (2002)'s self-interest and network structure. For example, trust in a reliable contact does not only facilitate information exchanging (Adler and Kwon, 20002, Kwon, Heflin and Ruef, 2013), but also bring durable resources (Kwon and Adler, 2014). Furthermore, Kwon and Adler (2014) added the focal actors' social skills into ability aspect which condition social capital resources to be available. Therefore, the summary of these developments shows how social capital model of Adler and Kwon (2002) has changed and developed so far, more importantly, my study, based on their model, offers fresh and new theoretical insights to social capital theory.

In this research, context is critical and complex, just as previous studies argued that high-tech firms need to build many and diverse cross-border relationships to access specialised resources (Powell et al., 2005, Hewerdine, Romyantseva and Welch, 2014), my study suggests multiple institutions and individuals tend to interact with other individuals in a context where business networks are independent or entangled with institutional networks. However, this research is about how internationalising SMEs in MedTech create social capital, therefore my major contributions reflect the particularities of that context. Therefore, as this study adopts Adler and Kwon's SC model, they state: "Social capital's sources lie—as do other resources'—in the social structure within which the actor is located." (2002, p.18), I rephrased their argument based on my theoretical findings:

Social capital's sources lie—as do other resources'— in the social and institutional structures within which the actor is located.

As depicted in Phase I of Figure 19 on p.290. This study unfolds “who I know” by categorising contacts into four types of institutionalised contexts in order to network and create social capital that facilitates MedTech SMEs internationalisation. This is consistent with Powell et al. (2005), who argued from an institutional perspective that specialised industries (e.g., complex life science) require differentiated networks with diverse partners. Few studies have explained “who” to interact and how networking and social capital are created in a given complex industry from an institutional perspective. This research fills the gap and applies it to SC creation in order to distinguish the contexts in which the networking contacts locate in regard to SC creation fostering MedTech SMEs internationalisation. As different actors have different backgrounds, play different roles, serve different purposes, and inhabit different knowledge domains (Powell et al., 2005, Veilleux and Roy, 2015), and informal institutions (e.g. norms) affect formal institutions' actions and interactions (e.g. firms and organisations) to have cross-cutting networking (Casson, Della Giusta, and Kambhampati, 2010), my research is one of few studies on internationalisation that

takes this approach (institutionalisation suggested by Scott (2014) and Child et al. (2017) into the analysis helps to explain how and why SC creation is different.

Powell et al (2005) found the existence of small firms in the life science industry and the importance of networking diversely, but they did not consider why it is difficult for small firms in the life science to network, especially in today's world, where international networks that span nations, such as INVs, play the key role in those firms' activities. My study extends Powell et al. (2005) by including SMEs internationalisation into the social capital theory, which explains why firms could be restrained from networking in terms of who/where the focal actors in the MedTech industry operates. This not only contributes to the emerging institutional focus in studies of international entrepreneurship, it also opens an interesting avenue for future research on how institutionally specific knowledge can be effectively shared in networks that like eco-systems depend on communication across different institutional logics (Thornton, Ocasio, Lounsbury, 2012, Autio and Levie, 2017).

This study offers a well-timed response to social capital theory by moving the focus from the static description of networks structure to a verb-action view of networking (Hoang and Antoncic 2003; Slotte-Kock and Coviello 2010; Jack, 2010, Bizzi and Langley, 2012). Similarly, while Adler and Kwon have recognised the different types of network relations in the social structure, they do not explain how these network relations are developed or formed, leaving them with a rudimentary understanding of how to build a network to create SC. By responding to Jack (2010) and Agostini and Nosella (2019), who stated that how to develop a network is under-addressed, this study further advances their contributions and overcomes the shortcomings of Adler and Kwon (2002)'s model. This study addresses "how to network" by discussing the networking activities that might lead to the development of diverse relationships to create SC, and approaches of interacting with extant relationships and of building new ones. This study adds to previous studies (e.g. Hite and Hesterly, 2000, Coviello, 2006, Jack, 2010, Puthusserry et al., 2020) by revealing new insights that extant relationships are the quicker and easier sources of relationship development, while new relationships are the sources of relationships expansion. Therefore, it proposes that network activities

that create SC take place with contacts in four institutionalised contexts, with new relationships being formed through unplanned/planned and incoming/outgoing approaches, as well as engaging with extant relationships.

Besides, as shown in section 6.2 and Phase II of Figure 19, social capital theory is extended since this study introduces IE to this field, e.g. the role of entrepreneurs and high-tech SMEs, including internationalised entrepreneurial firms. As Jack (2010) argues, even the context of studying network development is important - the bonds between actors are important (as discussed in Phase I), but the actors themselves are also important, thus the actors and their interdependencies are crucial in network development (Parkhe, Wasserman, and Ralston, 2006, Jack, 2010). According to Leenders and Gabbay (2013), it is doubtful that all relationships would benefit SMEs internationalisation, thus it is necessary to distinguish the advantageous ones in order to create SC that supports SME internationalisation. Similarly, Adler and Kwon (2002) propose that there are prerequisites for accessing social capital. However, there are few descriptions of situations that make it easier to access SC in the existing literature.

This study links SC to internationalisation by supporting that relationships development is requiring two parties to collaborate in order to achieve successful internationalisation (Johanson and Vahlne, 2009), and then explicating SC creation from the perspectives of entrepreneurs and their networking counterparts. Similarly, Coviello, Kano and Liesch (2017) agree that actors in the firm's context play an essential role in internationalisation. According to Jack (2010), this research fills this gap and extends Adler and Kwon (2002) social capital model from the perspectives of both actors in network - entrepreneurs and networking contacts - to identify the conditions of the useful ones to access SC that overcomes SMEs internationalisation liabilities. This study contributes to their research (Adler and Kwon, 2002) by elucidating entrepreneurs' networking motivations in terms of trust in internationalisation (affective trust and cognitive trust in e.g. Johanson and Vahlne, 2009) and in social capital (position in e.g. Tasi and Ghoshal, 1998), which are the new insights of explaining what motivates the entrepreneurs engage in external networking to exchange resources that result in SC.

What is more, in line with Adler and Kwon's (2002) ability aspect in the SC model, and in response to Child, Karmowska, and Shenkar's (2022) call for more qualitative research on "*the precise roles that different external networks links play in assisting SME internationalization*" (p.17), this study contributes to their work on the networking actors' abilities by revealing three roles of connecting actors in terms of their abilities and knowledge domains (Adler and Kwon 2002, Powell et al., 2005). The findings of three roles help this research in comprehending the examined high-tech SMEs' insufficiency in internationalisation and what they require from their connections.

Thus, this study not only explain why entrepreneurs network (motivation), but also reflect how these contacts, in terms of their abilities, can meet a variety of entrepreneur's needs and overcome SMEs operational insufficiency, and then identify beneficial relationships (Powell et al., 2005, Jack, 2010) (roles of networking contacts).

Third, as shown in Phase III of Figure 19 on p.290, this study makes contributions to Nahapiet and Ghoshal's (1998) conceptualisation of social capital. Few studies have examined all three dimensions of social capital, as stated in the literature review. Additionally, it has been proposed that social capital is not always intentionally and actively developed (Cohen and Prusak, 2001), and that as an intangible asset, focal actors may not even realise it exists, resulting in ineffective usage of social capital. As Nahapiet and Ghoshal (1998) argue, social capital is not a "universally beneficial resource" (p.245), but rather a financial investment that does not always convey the expected outcomes (Adler and Kwon, 2002, Kwon and Adler, 2014, Pillai et al., 2017).

Consequently, despite previous research on network relationships and SME internationalisation (e.g. Coviello and Munro, 1995, 1997, Oviatt and McDougall, 1994, Madsen and Servais, 1997, Knight and Cavusgil, 2004, Coviello, 2006, Prashantham and Dhanaraj, 2010, Tian et al., 2017, Menzies et al., 2020), this study, which aligns with structural, cognitive and relational social capital (Nahapiet and Ghoshal, 1998), links SC to SME internationalisation and builds on Nahapiet and Ghoshal (1998) and Adler and Kwon (2002) by including IE, e.g. entrepreneurs and time (Oviatt and

McDougall, 2005, Jones and Coviello, 2005, Freixanet and Renart, 2020), into social capital theory.

This study therefore adds to Jack's (2010) assertion that network development over time requires more attention by elucidating how networking occurs over time and how time influences the benefits of social capital. This study is one of few in that it examined three dimensions of social capital are created at different interaction stages as result of the efforts of entrepreneurs' skills, cognitions, trust, and time spent on networking, resulting in specific values facilitating SME internationalisation, which increases social capital utilisation and obtain the desired benefits for SME internationalisation.

More importantly, despite the importance of entrepreneurs' international experience (e.g. Hilmersson, 2013, Child et al., 2017), networking ability (Baron and Markman, 2003), and SME decision-makers' international connections (Elbanna, Hsieh and Child, 2020), my finding of entrepreneurs' skills in relating to prior experience/experiential knowledge extends social capital theory with specificity to the process of its creation. The findings imply that SC creation is not only a networking process that requires interactions and exchanges between focal actors and connecting actors over time, but also involves learning from experience. Because the learning process is critical in both international business (e.g. learning from the partners in Johanson and Vahlne, 2009) and entrepreneurship (e.g. experiential learning in Welch and Welch, 1996), this study makes a contribution to social capital theory by incorporating 'learning' into the process of creating social capital (e.g. Welch and Welch, 1996, Loane and Bell, 2006, Fletcher and Harris, 2012). Accordingly, by considering SME internationalization, this study finds the SC creation process involves feedback loops, which are underpinned by a learning process that accumulates the entrepreneur's experience (e.g. knowledge and networks), in which past experience influences current decisions and actions to move from one stage of development to the next.

Moreover, while trust is not a focal concept in this study, it has been discussed in the literature on SME internationalisation, where trust is defined as the willingness to commit resources exchange to the market (Johanson and Vahlne, 2009, Geneste and

Galvin, 2015, Fiedler, Fath and Whittaker, 2017, Couper, Reuber and Prashantham, 2020), as well as in social capital (see Chapter 2), which is based on trust. This study adds to previous studies on trust in relationships facilitating internationalisation by identifying the entrepreneurs' networking motivations to exchange resources, and leveraging SC from existing relationships and trusted relationships that prevail in the mature interaction stage, where SC has in-depth values to SME internationalisation.

This study provides further evidence to support Adler and Kwon (2002)'s claim regarding the confusion of trust and social capital - trust and social capital are mutually enforced, by suggesting that interpersonal trust-based relationships may help networking actors exchange high-level information and knowledge and social capital can in turn build and enhance trust. As a result, trust is identified as one of the key efforts in utilising SC from mature relationships in this study, and in turn the social capital creation highlights trusting-building as relationships strengthen from the initial to the mature.

Thus, it indicates that trust in a boundary-spanner allows him or her to network in inter-institutional contexts, which subsequently facilitates resource exchange across institutions, because interpersonal trust increases actors' commitment to relationships and behaviours utilising SC to facilitate SME internationalisation (Johanson and Vahlne, 2009). This study then reveals that SC creation also entails trust that accumulates resources exchanging (e.g. knowledge and information).

To summarise this section, social capital creation includes not just networking to build relationships where resources reside, but also involves learning and trust that enhance the networking process by which SC is created to facilitate SME internationalisation.

7.1.2 Contributions to SME internationalisation

This study contributes to the theory of SME internationalisation by suggesting that social capital from networking with contacts in institutionalised contexts is more important than networking with business organisations in starting up a firm. In SME

internationalisation, the critical role of context (from macro, meso, and micro levels) also has been identified by Child, Karmowska and Shenkar (2022). Besides, Child et al. (2017) suggested institutionalisation in SME internationalisation models, however, I found there are few studies that have applied institutionalisation to different business contexts where differences in business behaviours, networking, and way of thinking. Thus, this research fills the gap by applying institutionalisation to SC creation to differentiate contexts where networking contacts locate. Networking with institutional networks (e.g., university, hospital, and government) plays a critical role for early internationalising MedTech SMEs, according to my research.

Previous studies have shown that SMEs develop various types of relationships with various actors in the internationalisation process, e.g. social networks of relationships of an organisation (e.g. Tsai and Ghoshal, 1998, Kostova and Roth, 2003, Arenius, 2005, Oviatt and McDougall, 2005), business networks (e.g. Slotte-Koch and Coviello, 2009, Johanson and Vahlne, 2009), and institutional network (Lehtinen and Penttinen, 1999). In a similar vein to Li and Fleury (2020), Child, Karmowska and Shenkar (2022) claimed that networking that facilitates SME internationalisation is dependent on who the SME networks with. However, the simplified network categories listed above are too general to sufficiently indicate “who” to interact with in order to create social capital in international business.

Subsequently, this main finding of who to interact with (actors in university, government, business organisation, and hospital) resolves Li and Fleury’s (2020) and Child, Karmowska and Shenkar’s (2022) concerns about who to interact with when developing relationships in the foreign market to facilitate internationalisation, and adds to previous studies by implying that institutional networks are more important than simple business networks to start international business. According to previous research, internationalisation reveals how to ensure operational activities e.g., financing in various institutional contexts (e.g., Bruton et al., 2015), therefore, an institutional perspective is of core for examining internationalised and entrepreneurial activities (Child et al., 2017, Child, Karmowska and Shenkar, 2022). The previous research has provided a deeper knowledge of institutional networks in SME internationalisation, as

well as theoretical and empirical insights (e.g. Costa et al., 2017, Narooz and Child, 2016, Child et al., 2017). Overall, this study employs an institutional perspective to unfold networking activities within institutionalised contexts, contributing to a nuanced perspective of networking and social capital creation in the IB field, in accordance with earlier streams in internationalisation.

This study adopts the revisited Uppsala model and the INV model to set the internationalization extent, which is early internationalizing SMEs from both business networks and entrepreneur's networks. The selected revisited model and the INV model, on the other hand, are insufficient to explain the process of networking in the given industry. The MedTech firms are usually newly established start-ups, and the role of entrepreneurs in internationalization is critical as emphasised in the INV model, whereas the revisited Uppsala model emphasises only business networks that are geographically bounded (e.g., country), and pays less attention to the individual level, or other networks including institutional networks in the industry (Powell et al, 2005, Child et al., 2017). Until today, the life-science industry has become more globalised, internationalization could happen before a firm is established because entrepreneurs may have international connections, e.g., an entrepreneur in my case company has established international connections with hospitals to legitimise his product before its first international operation; or it could stem from the pursuit of knowledge when institutions from different countries interact. The Uppsala model's attention to the institutional environment was found to be lacking.

By responding to Welch and Paavilainen-Mäntymäki (2014)'s suggestion for further study on micro-processes of internationalisation from a relationship-based perspective, this study addresses a shortcoming in Johanson and Vahlne's internationalisation model by incorporating an analysis of individual level (entrepreneurs) networks and my findings of institutionalised network, which go beyond the geographically bounded business networks to better understand and grasp the networking activities that create social capital in MedTech SMEs.

This research also adds to the body of knowledge in the field of international business by extending the revisited Uppsala model by unfolding specific networking activities for overcoming the liability of outsidership and becoming a network insider who contributes to internationalisation (Johanson and Vahlne, 2009, Vahlne and Johanson, 2017). Previous research has shown that a network insider is critical for entrepreneurial and internationalised firms to explore and create opportunities (Johanson and Vahlne, 2009, Vahlne and Johanson, 2017, Engel et al., 2017), but few studies have explored how firms network to become network insiders and then create social capital to enable internationalisation (Hilmersson and Jansson, 2012, Schweizer, 2013). As a result, this study contributes to the internationalisation of the Uppsala model (Johanson and Vahlne, 2009) by demonstrating how to become a network insider to benefit their internationalisation by interacting with existing relationships and building new ones in a variety of contexts. Hence, this research fills the gap and opens up the black box of overcoming the liability of outsidership in internationalisation. Therefore, one of the important contributions of my study is to show that the concept of outsidership (Johanson and Vahlne, 2009) is important and merits further research regarding the boundaries of nets and subnets that comprise the organizational field.

7.1.3 Contributions to International Entrepreneurship literature

According to the literature, traditional internationalisation theories were developed when the world was less global, whereas the international players of SMEs in the current world indicate that internationalisation may appear early, that some international actors may exist in local networks, and that the internationalisation process may occur at a subliminal level in the entrepreneurs' perceptions or may not be a critical part of their start-up and development strategies (Jones, 1998, 1999). Also, the role of top managers and/or entrepreneurs in networking and internationalisation has been examined in various IE studies (e.g., Galkina and Chetty, 2015, Musteen, Datta and Francis, 2014, Schwens et al, 2018, Chittoor, Aulakh and Ray, 2019, Puthusserry et al., 2020). My findings support previous assertions about the importance of entrepreneurs and adds greater specificity to the fact that in industries (e.g. MedTech) that are now very interconnected across countries, the process of entrepreneurial

internationalisation may stem from an entrepreneurs' involvement with an overseas-based form or institution, from which he/she brings the benefits of social capital developed there to new contacts and networks, resulting in the establishment of nascent firms that from the outset have resources, or access to resources in the form of social capital in other countries (outsidership). This aligns with and adds to Oviatt and McDougall's determination of International New Venture as a *business organisation that from inception, seeks to derive significant competitive advantage from the use of resources and the sale outputs in multiple countries* (1994, p.49).

Besides, the complexity of new technologies necessitates increasingly faster interactions between firms to bring their different technological specialisations together to create products and services. Its importance has been demonstrated by various IB/IE studies in the context of medical device firms, e.g. Andersson et al (2013) and Holm, Johanson and Kao (2015). Accordingly, this study brings networking and SC to the IE field and by proposing a new type of MedTech firm that is internationalised early and rapidly, inter-related MedTech firms that are legally independent but share common directors, which aligns with "business angels" (Madill et al 2005) and "co-directorship" (e.g. Myint and Vyakarnam, 2004, Myint, Vyakarnam and New, 2005, Van Egeraat and Curran, 2014), as explained in Chapter 6. While previous studies have barely explained how networking happens to create SC in inter-related firms to boost internationalisation, my study then makes a unique contribution to INV/entrepreneurial companies by revealing the role of co-director/common shareholder in networking activity conducted between inter-related MedTech firms. My findings show that networking in inter-related firms is a quicker networking approach with more social capital available to facilitate internationalisation (as Figure 19 on p.290 demonstrates).

In summary, this study combines two different internationalisation models (The revisited Uppsala Model, Johanson and Vahlne, 2009 and INV model, Oviatt and McDougall, 2005) to examine early internationalised MedTech SMEs by proposing networking and social capital creation from both business and social relationships at the firm and individual levels, and then overcomes its internationalisation liabilities. The proposed theoretical social capital creation framework (Figure 19) is in line with

the current business world's rapid and early internationalisation trend, and it addresses the shortcoming that one traditional internationalisation model can barely explain internationalisation in the current world inclusively. This study implies that incorporating the concept of social capital from networking with entrepreneurs and outsidership perspectives into the context of high-tech industry will improve understanding of the internationalisation process for small new established MedTech firms.

7.2 Managerial Implications

This research examines how social capital creation for UK MedTech SME internationalisation makes potential managerial implications to UK high-tech, especially the medical device, SME's managers and/or entrepreneurs to conduct internationalisation. It is indicated that network relationships and social capital it created are essential to a firm's internationalisation. While many managers or entrepreneurs of SMEs lack experience in networking to build useful relationships that benefit their business, e.g. who they connect with, how they connect, where to meet?

Entrepreneurs of MedTech SMEs could learn to build relationships that benefit their business. This study suggests that institutional networks are critical for MedTech firms to start their business internationally. This study found that firms could diversify their contacts into research institutions, hospitals, universities, both locally and internationally, where they have specialised expertise (see detailed discussion in section 6.1). For example, this study, incorporating institutional perspective into data analysis, found that high-tech SMEs may need to interact with diverse institutional contacts due to the specific knowledge domains.

Therefore, I suggest that high-tech SMEs, especially the specialised sector like MedTech SMEs, could build diverse contacts in different institutional contexts to satisfy their business needs, e.g. prestigious people in hospital, university, government agencies, and business companies. For example, entrepreneurs and managers could connect with embassies and British offices located in the foreign markets, which are

more accessible to connect and lead to the local contacts and build useful relationships, and diverse their contacts to access expertise to facilitate their business development. High-tech firms might have unique and specialized requests to the contacts, e.g. people who are specialists and experts in certain product areas. Therefore, managers and entrepreneurs could go to universities and hospitals that are able to test their product/technology and have similar projects and programmes with own core product, in order to know someone who has expert knowledge that help and build useful relationships with these contacts and have opportunity to get access to their contacts (indirect relationships) in the academia and industry worldwide. Collaboration with universities and hospitals are the approach to increase their credibility and trustworthiness to attract customers.

Besides, in terms of research findings of how entrepreneurs and high-tech SMEs connect that are discussed in 6.1, this study suggests how entrepreneurs and SME make contacts in different institutional contexts. For example, referring to the finding of entrepreneurs (see section 5.3), trust and their experiential knowledge are of significance when developing relationships in the internationalisation, e.g. extant ties of entrepreneurs and SMEs could offer quickly and easier access to useful relationships and SC. Thus, managers and entrepreneurs are suggested to connect with their personal relationships in the relevant fields and then the wider relationships (indirect) can be further pointed to the right and trust contacts without spending much time on searching appropriate contacts, especially in the countries where have great cultural difference and language difference hindering networking activities and business operation. Besides, new ties could offer more networks and SC, becoming network insider to access resources (e.g. information, market knowledge, etc). The emphasis assigned to each of these two kinds of relationship should thus reflect the demands of both firms and international markets. This calls for a thorough analysis of internal and market requirements.

Also, this study found that firms who are at their initial stage of business can build relationships with government or department, e.g. chambers of commerce, in order to have access to foreign market information and knowledge, certain financial support,

and other critical resources. SMEs generally have a limited number of people, which might not be able to access a large network of relationships. Except for the networking activities that SMEs actively conduct to build direct relationships, it is well accepted that referrals are the most effective approach when they attempt to do business in the foreign markets. Thus, government agencies that held tailored events are an appropriate target that points the firms to the right contacts.

Along with building relationships with external contacts, this study advises that entrepreneurs and top managers could improve and enhance their own capabilities while networking and internationalising. The findings of entrepreneurs' efforts in creating SC suggest that networking skills, experience, and background are the critical elements in building relationships (see detailed discussion in section 6.3). Therefore, entrepreneurs and top managers are suggested to learn from partners, prior business experience, and networking experience, which not only improve self-confidence, also strengthen self-skills in networking and then successfully build relationships to access resources.

What is more, this study identifies trust as another key effort in creating SC and having trust when building relationships enables the success to cross different institutional boundaries where there are different institutional cultures, diverse knowledge domains, and mindsets (referring back to the discussion in section 6.3). Therefore, trust building is the key task for entrepreneurs and firms that are outside a certain boundary to access resources that are specific to this setting. I then suggest that entrepreneurs could spend time interacting with the potential partners both socially and commercially in order to enhance their trust, and this interaction, and repeated interaction between the parties reinforces trust through the generation of learning loops in which the parties, over time, negotiate and reinforce their mutual understanding of each other, and their shared experience (Fletcher, Harris, Richey, 2021).

Additionally, my findings found that in the MedTech company, the experts e.g. doctors, and professors tend to attend conferences. Thus, managers and entrepreneurs are suggested to attend conferences to meet some critical contacts, e.g. doctors and

potential customers. Because a number of key opinion leaders in certain fields are important relationships to high-tech, especially medical device SMEs, which help to raise brand awareness and offer more credibility. One important aspect found in this study that is specific to the high-tech firms, especially to the medical device company, is the value of their product would be increased and accepted after rigorous publications and clinical trials. Also, this study suggests that attending exhibitions and trade fairs are good opportunities for new and small firms to exhibit and introduce their product to the wider audience to receive extensive recognition, as well as having clinical trials and publications with the research institutions. These activities, increasing reliability, credibility and trustworthiness of the company and its product, are critical to high-tech medical device companies. Because this study found that even though SME conduct various networking activities to build a number of potential business relationships who are interested to partner, few of them are actually collaborating or it takes longer time to operate business with partners in the foreign markets. Prestigious contacts that offer credibility to the company and their product facilitate the business process.

7.3 Implications for Policy Makers

There are some recommendations for policy makers about how they could support UK high-tech SMEs to conduct internationalisation, and these suggestions are in line with and based on the research findings.

The findings suggest that governmental organisations are one of the important supporters to promote and encourage firms to expand their business in the international area, especially in the initial stage of internationalisation (see section 5.1). While it lacks specific and focused programmes to match the needs of high-tech firms, especially those who are small and new. In particular, the governmental support in the UK is not sufficient as thought to the high-tech firms. For example, several case companies have stated that DIT provides help to their business at the beginning of their business, e.g., financial support of market visits, tailored programmes to expand business, and business registration. However, their support has faded when the

companies have started their business, at which they still struggle with securing critical resources, lacking credibility and contacts at the foreign markets.

Therefore, I suggest that policy makers could have tailored advice or programmes that are specific to SMEs at different stages of development in order to satisfy their different needs. Besides, policy makers could establish task forces specific to each development stage of high-tech SMEs to regularly meet with firms and troubleshoot issues of the companies.

Also, this study found the importance of government agencies that offer general help and information to the newly established internationalising firm and government agencies are able to point SMEs to the right contacts (see for example in the discussion in section 6.1). Therefore, I suggest policy makers could organise regular webinars with policy specialists for firms and entrepreneurs, which could be a good channel for networking and learning. Also, this study suggests that policy makers could organise networking events in the home country and internationally to connect with people in hospitals, business fields, university, and government, to help entrepreneurs and managers in the MedTech firms to build their network of relationships and therefore access more resources and professional advice. This is because SMEs cannot manage every aspect in business operation and require experts across a range of areas to assist with trade continuity, and one of the critical barriers hindering their internationalisation process is that they lack sufficient and useful relationships in the domestic and international countries. Therefore, policy makers could be the door-opener to assist high-tech companies to connect foreign contacts.

Besides, this study found that SMEs are usually constrained from limited cash reserves, especially high-tech firms that need financial support to conduct R&D, and international firms that need financial support to travel abroad (see exemplar cases of case companies A and B). Thus, this study suggests that policy makers could support high-tech SMEs with financial support and provide a Support Fund for SMEs that are specific to early internationalising high-tech firms to apply for based on their needs.

Besides, the case companies in this study stated that it is difficult for these new and small high-tech companies to be granted funds investment from domestic investors (UK). Thus, this study suggests that policy makers could organise international fund events and/or lead UK SMEs to attend similar events, at which worldwide investment companies will be attended. Therefore, these events would help SMEs to get access to the international investment companies/business angels and are able to interact confidently and credibly under the UK policy makers' organisation and create international investing relationships that benefit their business and therefore, have the opportunity to access financial resources and receive international funds.

Last but not the least, Kahiya (2020) reviewed previous studies in regard to entrepreneurial internationalisation of SMEs and noticed that as Gao et al (2016) found, New Zealand Post offers “brokered insidership” to reduce uncertainty and cost of experiential learning for SMEs. Government agencies in different countries implement policies to support SMEs in competing internationally. I then suggest that in a similar vein, UK policy makers could learn from other countries' stimulative actions and establish hybrid forms e.g. online platforms for UK SMEs to present and sell their products internationally, particularly, under the situation of the pandemic attending in-site conferences and trade shows in other countries is difficult.

7.4 Limitations and Avenues for future research

7.4.1 Limitations

I theoretically selected four case companies, which might limit the internal validity and generalisation of findings (Eisenhardt, 1989, Mile and Huberman, 1994). As suggested by Yin (2014), this study combines theoretical framework, social capital theory (Adler and Kwon, 2002), to analyse the observed phenomenon, which indicates that the theoretical ideas are embedded in the observed phenomenon and in turn build on the current theory to have new insights via critical discussion of the emergent findings with existing literature. Therefore, in-depth analysis and rich detailed case descriptions assist to generate generalisable patterns of social capital creation process (Lincoln and

Guba,1985). This research adopted different approaches to minimise this limitation, but there is a certain bias in my sample due to the fact that my contacts are mainly from one local city and through my supervisors' links, it is necessary to test the findings in a wider population.

Besides, this study focused on well-defined types of SMEs provides a specific and unique insight of networking activities and social capital creation and SME internationalisation considering the sector-specific factors' influence. While specific selection of sectors limits its generalisation to wider population, which is considered as a major goal of the research. The high-tech sector, with particular on medical device companies, is examined in this study, due to the complexity and uniqueness of this specialised industry, the major point of this study is not generating a representative framework that applicable for the whole industry, instead, it aims at generating findings that help to understand the difference and unique characteristics of the industry by collecting specific and rich data from in-depth interviews with entrepreneurs and managers repeatedly.

This research focused on the network relationships from ego's perspective, instead of exploring dyadic relationships from both sides of relationships. The limited participants, e.g. entrepreneurs and managers, are the major actors to be interviewed, which could be considered as lacking in-depth information, therefore, this study conducted several follow-up interviews with the participants and tried to interview multiple informants within the company. Besides, Coviello (2006) also suggested the important role of "entrepreneur" played in the research, as SMEs usually have a limited number of employees, entrepreneurs have sufficient information and are responsible for its networking process. However, given the difficulty of accessing the foreign contacts that the focal actors have and out of data confidentiality, this study suffered from limited comprehensive understanding of their counterparts' views and opinions.

Finally, this study adopts real time data along with the companies' internationalisation. However, it is evitable to have retrospective data when the interview is conducted to cover the full range of their networking activities. Therefore, a limitation of

retrospective data lies in the possibility of inaccurate details of calling back to the previous phenomenon/experience. To overcome this limitation and increase research validity, this study triangulated data through collecting secondary data and follow-up interviews to ensure the evidence is sufficient and accurate.

7.4.2 Suggestions for future research

This exploratory research leads several directions to future research. First of all, as this study has developed arguments/statements with theoretical grounds that stem from the discussion of findings with literature in Chapter 6, these arguments/statements provide a novel relationship between concepts (e.g. social capital, institutional perspective, entrepreneurs, learning from experience, trust, etc), which can guide future research directions.

Particularly, in complex industries such as medical science, SMEs play different and often specialised roles e.g. MedTech SMEs in this study by their nature, they need to interact not only with business networks, but also with different institutional players. Their entrepreneurs and the external connecting actors are found to be the key actors in networking and facilitating social capital creation and utilising social capital for MedTech SMEs internationalisation, as their abilities, learning experience and trust between actors are identified in enhancing networking and SC creation. Subsequently, the implications of this for future research is that more attention should be paid to empirically observe:

- a) Having a common director (e.g. Madill et al 2005, Myint and Vvakarnam, 2004, Myint et al., 2005, Egeraat and Curran, 2014) can make social capital creation more efficacious, faster, and valuable in terms of potential values for MedTech SMEs.
- b) MedTech SMEs with extant relationships in institutionalised contexts (Powell, et al., 2005, Scott, 2014, and Child et al., 2017), including government, business organisation, university and hospital are able to produce social capital more efficiently (see p. 270-273).

- c) More social capital is available when the external connecting actors can play the role of experts, maven (Feick and Price, 1987) or collaborators in the network relationships (see p.277-280).
- d) MedTech SMEs having entrepreneurs/directors with prior experience, not just in e.g. in internationalisation (Johanson and Vahlne, 2009), but also in different industries (Powell et al., 2005) that they could learn from and extend knowledge across boundaries that enable interactions in different institutionalised contexts are likely to use social capital quickly towards internationalisation.
- e) MedTech SMEs having cognitive understanding (e.g. shared goals and common language) (Nahapiet and Ghoshal, 1999) with external connecting actors in different institutionalised contexts are likely to form formal relationships and internationalise quickly.
- f) Developing trust (Johanson and Vahlne, 2009) is an effort that needs to be made when utilising social capital in MedTech SMEs internationalisation: MedTech SMEs building interpersonal trust with an actor who is boundary-spanner are likely to utilise in-depth values (e.g. knowledge transfer) of social capital towards internationalisation.

This study found the importance of developing trust and learning in utilising social capital when SME internationalising, however, trust-developing and learning are implicit elements in this study that how trust is built and how to learn are unclear. Therefore, future research could examine how to build trust and learn from the contacts that enable social capital to facilitate SME internationalisation.

Besides, this study builds on the existing theory regarding social capital and SME internationalisation in the MedTech sector, its application could be examined in the wider population. Quantitative research, e.g. survey-based, could be conducted based on the current research to test the social capital creation process, including networking activities, conditions making social capital availability and the stages of social capital realisation, in a larger sample of firms to ensure the findings' generalisability.

Out of the limitations that this study has, the future research could examine dyadic views of relationships to have complete understanding of the networking process that creates SC. For example, other researchers could collect information from the informants within the case companies, as well as their critical contacts in the domestic and foreign markets, which could generate a holistic insight of networking and social capital creation.

Additionally, this research found that the focal actors build relationships with their contacts cannot ensure the expected outcomes to their internationalisation, as it takes time to build trust and commit business activities due to its self-limitations, e.g. liability of small and newness. Therefore, future research could explore how high-tech SMEs could speed up the process of commitment from their counterparts.

Besides, this study examined the initial stage of their internationalisation, the subsequent stage is not considered in this study. The future research could further investigate a whole internationalisation process to explore whether or not the difference of networking process is exerted according to the different stages of internationalisation that follows Kazanjian (1988)'s growth stage model which includes conception and development, commercialisation, growth, and stability, so that have a comparative study between firms at different stages.

Furthermore, it is well accepted that social capital possesses benefits as well as costs. Given the time limitation, this study put emphasis on the benefits of social capital to internationalisation, it is worthwhile to explore its costs of networking and social capital and find the approaches to overcome its liabilities in the whole process of internationalisation.

Finally, one of the key areas for the future research is cultural and/or institutional difference. The data collection and analysis process indeed presented the influence of cultural difference and institutional influence, especially those contacts who come from psychic distant countries. Therefore, the influence of cultural and institutional differences on their networking process and internationalisation could be further

explored. A comparison of domestic networking behaviours and foreign contacts networking behaviours influenced by cultures and institutional environments could be examined.

ABBREVIATIONS

BG	Born Global
BusOrg	Business Organisational actors
Gov	Governmental actors
Hosp	Hospital actors
IB	International Business
IE	International Entrepreneurship
INV(s)	International New Ventures (s)
Int.	International
MedTech	Medical Technology sector
MNE(s)	Multinational Enterprise(s)
SC	Social Capital
SME(s)	Small and Medium-sized Enterprise (s)
Univ	University actors

APPENDICES

Appendix 1. Ethic approval letter



Downloaded: 16/05/2019
Approved: 13/08/2018

Peixin Zuo
Registration number: 160262676
Management School
Programme: PhD of Management

Dear Peixin

PROJECT TITLE: Exploring the Creation of Social Capital and Its Utilisation for High-tech SMEs Internationalisation
APPLICATION: Reference Number 017829

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 13/08/2018 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

- University research ethics application form 017829 (dated 13/07/2018).
- Participant information sheet 1042356 version 5 (13/07/2018).
- Participant consent form 1042357 version 3 (13/07/2018).

The following optional amendments were suggested:

please make sure you justify your research following my comments below and making reference to literature

If during the course of the project you need to [deviate significantly from the above-approved documentation](#) please inform me since written approval will be required.

Yours sincerely

Lucy Bartrick
Ethics Administrator
Management School

Appendix 2. Consent form



Exploring the Creation of Social Capital and Its Utilisation for High-tech SMEs Internationalisation

Consent Form

<i>Please tick the appropriate boxes</i>	Yes	No
Taking Part in the Project		
I have read and understood the project information sheet dated 21/09/2018 or the project has been fully explained to me. (If you will answer No to this question please do not proceed with this consent form until you are fully aware of what your participation in the project will mean.)	<input type="checkbox"/>	<input type="checkbox"/>
I have been given the opportunity to ask questions about the project.	<input type="checkbox"/>	<input type="checkbox"/>
I agree to take part in the project. I understand that taking part in the project will include being interviewed, and being recorded (audio)	<input type="checkbox"/>	<input type="checkbox"/>
I understand that my taking part is voluntary and that I can withdraw from the study at any time; I do not have to give any reasons for why I no longer want to take part and there will be no adverse consequences if I choose to withdraw.	<input type="checkbox"/>	<input type="checkbox"/>
How my information will be used during and after the project		
I understand my personal details such as name, phone number, address and email address etc. will not be revealed to people outside the project.	<input type="checkbox"/>	<input type="checkbox"/>
I understand and agree that my words may be quoted in publications, reports, web pages, and other research outputs. I understand that I will not be <u>named in</u> these outputs unless I specifically request this.	<input type="checkbox"/>	<input type="checkbox"/>
I understand and agree that other authorised researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.	<input type="checkbox"/>	<input type="checkbox"/>
I understand and agree that other authorised researchers may use my data in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form.	<input type="checkbox"/>	<input type="checkbox"/>
I give permission for the members of research team that I provide to be deposited in encrypted hard drive and google drive so it can be used for future research and learning	<input type="checkbox"/>	<input type="checkbox"/>
So that the information you provide can be used legally by the researchers		
I agree to assign the copyright I hold in any materials generated as part of this project to The University of Sheffield.	<input type="checkbox"/>	<input type="checkbox"/>

Name of participant [printed] Signature Date

Name of Researcher [printed] Signature Date
 Peixin Zuo 16/08/2019

Project contact details for further information:
 Contact number of lead researchers: Prof. Marian V Jones: m.v.jones@sheffield.ac.uk. Tel: 0114 222 3490
 Dr Melanie E Hassett: melanie.hassett@sheffield.ac.uk. Tel: 0114 222 0984
 Research Officer: Ms Lucy Bartrick; l.e.bartrick@sheffield.ac.uk
 Researcher: Peixin Zuo; pzu01@sheffield.ac.uk. Tel: 07592304562

Appendix 3. Interview Guide Sample

Section A. General information

- Could you please tell me about yourself and your position/role in the company? ↵
- How do you know the people in the company? ↵
- What competitive advantage that firm has in the foreign markets? / or what is the basis of the firm's commercial existence?↵

↵

Section B Networking activities in foreign markets

- Are there any contacts you have in the foreign markets in which your business operated?↵
 - Could you please give me an example of how did you meet them, and can you tell me about **the circumstances** in which you met?↵
 - Was there any particular person you met you think are **easy to communicate**? **What** made communication with them easy?↵
 - What **types of networks** were you and the firm involved in these markets? E.g. with local supplier, buyers, government, academy, etc.↵
- How were these relationships with local partners initiated? /How did you search and select your partner?↵
 - Whether this initiation came because of **careful planning or did it occur accidentally**?↵
 - What were **the key domestic relationship or personal relationships** that your company had that support its networking in the foreign markets? e.g. Chambers of Commerce, government, etc.↵
 - What were **the motivations** for networking with these local partners (why)? For example, are you looking for information or business deal?↵
- How would you get in touch with these relationships? (Both formally and informally)↵
 - In what **occasion** you would meet each other? ↵
 - How **frequently** do you meet with each key relationship? ↵
 - **What** are you usually talking about? ↵
 - **How long** does it take to meet? ↵
- Do you find it is hard to communicate effectively with those from **different cultures** in some extent? If yes, how did you handle it?↵
 - What is the **difference** when you communicate with those from different cultures, compared with those from same background?↵
 - What are the important aspects to communicate with people from different cultures from your point of view?↵

Section C The process of networking and social capital creation

- Do you think the networks you have in foreign countries are **important** to the firm's business?
 - **Whom** did you interact with that you think important to the firm business? (&why). Please tell us about the relationships in the history of the firm, that you see as major or critical contacts for your business during the firm's developmental process.



- Do you think your business **benefit** from these relationships in foreign markets? Have its costs been offset by its benefits?
 - What **difficulties** have you experienced when you **do business** in these markets?
 - ◆ How did you deal with it? Could you give an example when a network/partnership held the company back?
 - **When** did you realise that your company and business has benefited from these relationships, at the beginning, during or after your interaction process with these key contacts? And Under what occasions you notice that your business is benefiting from these relationships?
- Has the firm's social capital been a crucial **facilitator** behind your firm's survival in foreign markets? E.g. helped your company to expand and sustain a competitive advantage in these markets?
 - How did these relationships **assist** your company to do business in foreign market? Please give an example. (E.g. offering advice, facilitating introduction to other local partners, increase knowledge, expand sales, exploit opportunities, mutual understanding, trust etc.)
- Has the social capital or network relationships been a **key reason** behind the company's expansion into foreign markets?
 - Do you think that your networks could be part of your firm's **resource**?
 - ◆ If yes, what kind of resources do your networks offer you, if any? E.g. market information, market knowledge, or financial support, etc.
 - Do you think that your networks could make your firm be **powerful or influential** on doing business in these markets?
 - ◆ If yes, please give an example.
- How would you **describe** your relationship with them? E.g. Long-term/short-term; Close/distant relationship, etc.
- What **factors** would make a successful relationship from your point of view? E.g. commitment, trust, value added, obligations etc.
- What **activities or approaches** would you do to develop and maintain the key relationships? or Do you have **strategy** to build relationships?
- What **difficulties** have you encountered when trying to **build a new relationship** in foreign markets?

- **How** did you deal with these difficulties (what have you done)?↵
- So far, do you think you are becoming **cultural agile** in communicating and doing business in foreign markets?↵
 - Could you provide with an example that you are able to adapt or minimise or integrate the cultural differences?↵
 - What factors would make you become cultural agile from your point of view?↵
- So far, would you assess **the performance** of firm as successful? ↵
 - To **what extent** do you think social capital contribute to your business? on a scale of 1-10, with 1 being the lowest, 10 being the largest? ↵

1 2 3 4 5 6 7 8 9 10 ↵

↵

↵

Section D Closed questions↵

1. When was the firm established? _____ ↵
2. When the firm started to do international business in foreign market?
_____ ↵
3. How would you rate the performance of this firm in its foreign market, on a scale of 1-10, with 1 being unsuccessful, 10 being successful? ↵

Unsuccessful 1 2 3 4 5 6 7 8 9 10 Successful↵

4. What is your firm's current percentage of profits is derived from foreign operations? _____% of total profits?↵
5. What is your firm's current percentage of sales is derived from foreign operations? _____% of total sales?↵
6. Would you mind telling us the approximate total sales of your firm in the last financial year £_____?↵
7. Would you mind telling us the profitability of your firm in the last financial year as a percentage of total sales_____ %↵
8. How many staff, including working directors does your firm currently employ_____↓

↵

Thank you very much for your time and valuable insights. ↵

Is there anything you would like to add, or you think is important that I did not mention?↵

Appendix 4. Some examples showing the process of within-case analysis findings

It is part of the analysis progress and illustrate how my analysis proceed to arrive the final stage.

4.1 Quotes of social capital-Case company A

People	Type pf relationship	Locatio n	Social capital/networking activities		
			Structural activities	Relational activities	Cognitive activities
Professor of EEG	Personal friend (International)	Int	Being introduced by Participant R's neighbour	Participant R stated that the professor is a trustworthy man. The professor is willing to lab testing. For now, only three times meetings	The professor immediately recognised the value of Participant R's product
P from local government S	Adviser (Local)	Local	Participant R came to local government S for advice and he was being introduced by local government S		Participant R stated that the meeting with patent agent arranged by P were more productive
Company WR	Business relationship (Local)	Local	Being introduced through P		The prospect of new business is attractive to the patent agent
Local university A JM	Institutional relationship (Local)	Local	Being introduced through P		
Local hospital Prof of Epilepsy and JH	Hospital relationship (Local)	Local	Being introduced		They believed the product is acceptable, while the Prof said the technology of the product is too complex to execute

Business Director	Adviser/business relationship (Local)	Local	Met at the Medlink Conference	Just two meetings, but Participant R confirmed that he can trust.	The business director recommended to have a discussion with Participant R
French government	Business relationship (International)	Int	They came to Participant R	They invited Participant R to set up business in France	Since they met Participant R at the first time, they seem enthusiastic
French life science manager	Business relationship (International)	Int	Being introduced through the embassy		

Source: the author

4.2 Quotes of social capital-case company B

People	Type of relationship	Social capital/networking activities		
		Structural activities	Relational activities	Cognitive activities
Founder personal friends in US	social relationship		R expresses trust on these friends	
His person friend in other countries	social relationship		R expresses trust on these friends	
Local government	Business relationship	approached the local government		
Regulatory consultant	Business relationship	Being introduced	Respect and trust existed within referral,	
Professor from Brisbane	Business relationship (One-transaction)	He approached case company B		He searched the company and purchased the product.
Uni of G	Business relationship			
A company and an	social relationship	Met at the conference		It did not achieve the business cooperation

individual				
Distributors in US	Business relationship	Being introduced and expanded	There is respect and trust if it is a referral	Shared language, market similar
Prof from HMS	Mixed	The professor was approached case company B, and a UK customer was the bridge	There is respect and trust if it is a referral	Shared language and similar cultures, but there is culture difference that case company B benefited from

Source: the author

4.3 Quotes of social capital-Case company C.

People	Role	Location	Social capital/networking activities		
			Structural activities	Relational activities	Cognitive activities
Prof A.D	Local children hospital	Local	The founder was introduced to Prof A.D	The influential people case company C built trust with	She has interests in supporting case company C
Prof A.K	President of company b	Int	The founder was introduced to the Prof	Commitment: company B and case company C signed the memorandum of understanding	The prof and the founder have the same vision towards their career; shared cultural background;
PD	Local hospital	Local	Being introduced to local hospital through Prof AD	The influential people case company C built trust with	Shared technical interests: He is involved with children's medical technologies which will be developing devices that help the children health
UHY	Accountant	Local	B was introduced to AH at UHY through NP from local government SY	They worked in a long-term vision.	

Company T	Indian partner	Int	Being introduced to company Through a Finnish company	The actual business takes time, very slow process to deliver, but case company C have to trust them	
Prof Dame PS	The head of local Medical School, and the director of company S	Local	Founder's university contacts	Company S and case company C have worked together	
Local government H	Government organisations	Local	Being introduced through Prof Dame PS	The relationship is being strengthen through the connection with PS and AD	
Major D.	The Head of BD military hospital	Int	Being introduced by Prof AK	It takes time, you can't actually get achievement made. While after continuing dialogues, they built close relationship with them, AD and SD spent sufficient in Bangladesh and built strong relationship with them	Shared cultural background with the founder
Company A	American firm	Int	Active search		

Source: the author

Appendix 5. Some examples illustrating the process of cross-case analysis findings

It is part of the analysis progress and illustrate how my analysis proceed to arrive the final stage.

Appendix 5.1 Summary of cross-case findings-Types and number of contacts in each of the case company

Networking activities		Case companies				
		A	B	C	D	
Types of Contacts	incoming	Gov (1) Hospital (1)	Hos (2)	none	BusOrg (3)	
	outgoing	Gov (1) BusOrg (2) Univ (1) Hospital (2)	Gov (1) BusOrg (1) Hospital (1)	Hos (4) BusOrg (3) Gov (1)	Univ (4) Gov (1) BusOrg (1)	
	unplanned	BusOrg (2) Univ (1) Gov (1) Hos (1)	Hos (2) BusOrg (2)	Hospital (3) BusOrg (1) Gov (1)	Univ (4) Gov (1) BusOrg (4)	
	planned	Gov (1)	Gov (1) Hos (2)	BusOrg (2) Gov (1) Hos (1)		
Extant relationships	Independent companies	Univ (1)	BusOrg (2)	Univ (1)	Gov (1) Univ (2)	
	Inter-related companies	none	None	Gov from D (2) Hos from D (1)	BusOrg from C (1) Hos from C (1)	
<p>Key:</p> <p>Case companies: A, B, C & D</p> <p>Type of Actors: Gov = governmental; BusOrg = business organizational actors; Hosp = hospital actors; Univ = university actors</p> <p>Number in Brackets shows the number of reported instances. This is not quantifiable in analytical terms but shows the prevalence for each company.</p>						

Source: the author

Appendix 5.2 Cross-case findings matrices of building new relationships

	Unplanned	Planned
Outgoing	A, B, C & D	A, B, C,

incoming	A, B, D	*No planned incoming
Key: Case companies: A, B, C & D		

	Unplanned	Planned
Outgoing	Gov, BusOrg, Hos, Univ	Gov, BusOrg, Hos,
incoming	Gov, BusOrg, Hos	*No planned incoming
Key: Type of Actors: Gov = governmental; BusOrg = business organizational actors; Hosp = hospital actors; Univ = university actors, Social = family and friends		

Source: the author

Appendix 5.3 Cross-case findings matrices of social capital conditions

	Cognitive motivation	Emotional motivation	Organisational motivation
Collaborator	B, D	A, B, C	D
Expert	A, B, C, D	A, B, C	D
Investor		D	
Maven	B, D	A, D	C
Key: Case companies: A, B, C & D			

	Cognitive motivation	Emotional motivation	Organisational motivation
Collaborator	BusOrg, Hosp, Univ	BusOrg	BusOrg
Expert	BusOrg, Social, Hosp, Univ,	Gov, Hosp, Univ, Gov	Hosp
Investor		BusOrg	Gov, BusOrg, Hos,
Maven	Bus, Hosp, Univ	Gov,	Gov, Hosp, Univ
Key: Type of Actors: Gov = governmental; BusOrg = business organizational actors; Hosp = hospital actors; Univ = university actors, Social = family and friends			

Source: the author

Appendix 5.4 Summary of findings-Conditions of social capital availability

Conditions	Engage in new relationships		Re-activate relationships
Opportunity has been found to exist in	-Government -Business organisation -Hospital -University		
Motivation	Cognitive motivation	Emotional motivation	Organisational motivation

Whose abilities is expected to ensure resource mobility	-Expert -Maven -Collaborator
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Source: the author

Appendix 6. Summary of case analysis findings

RQ a

Appendix 6.1 Cross-case analysis of networking activities

	Actors	Networking activity	Mode (NB for new ones)	Direction (NB for new ones)	
Government					
1	Adviser from local government S, Case company A	Building new relationship	Planned: actively approach	Outgoing	Planned outgoing
2	French government, Case company A	Building new relationship	Unplanned	Incoming through third party	Enter incoming new network path-determinant
3	Local government D, Case company B	Building new relationship	Planned: actively approach	Outgoing	Enter outgoing new network intentionally
4	Local government H, Case company C	Building new relationship	Unplanned: Introduction	Incoming through third party introduction	Enter outgoing new network intentionally
5	High commission in Bangladesh	Engaging with new relationships	Planned: to network with high position	Outgoing	
6	Y.A., Case company D	Interacting with extant personal friends, Overlapped			Interact with extant network intentionally
7	N.P. Case company D	Newly established Overlapped	Unplanned	Incoming through third party	Enter outgoing new network intentionally
Business organisation					
1	Company WR, case company A,	Engaging with new relationships	Unplanned through third party introduction	Incoming	Enter outgoing new network intentionally
2	A business director, case company A,	Engaging with new relationships	Unplanned met at a conference	Incoming	Enter incoming network path-determinant

3	Personal friends, case company B	Interacting with extant	Interact with purpose		Interacting with extant network intentionally
4	Regulatory consultant, case company B	Engaging with new relationships	Unplanned through third party introduction	Incoming	Enter outgoing new network intentionally
5	A company and an individual, case company B	Engaging with new relationships	Unplanned met at a conference	Incoming	Enter outgoing new network intentionally
6	Distributors in US, case company B	Engaging with new relationships	Planned with third party	Incoming	Enter outgoing new network path-determinant
7	Prof A.K. (the present of company B), case company C	Engaging with new relationships	Unplanned: at a business visit	Incoming	Enter outgoing new network path-determinant
8	Company UHY , case company C	Engaging with new relationships	Unplanned	Incoming through third party Introduction	Enter outgoing new network intentionally
9	Indian company T, case company C	Engaging with new relationships	Unplanned:	Incoming through third party Introduction	Enter outgoing new network intentionally
10	Company A, case company C	Engaging with new relationships	Planning to search	Outgoing	Enter outgoing new network intentionally
11	Company APV, case company D	Interacting with extant			Interact with extant network intentionally
12	Company FE, case company D	Engaging with new relationships	Planned to search	Incoming (third party introduction)	Enter outgoing new network intentionally
13	Company ALVC, case company D	Engaging with new relationships	Unplanned	Incoming	Enter incoming new network path-determinant
14	Company WC, case company D	Engaging with new relationships	Unplanned	Incoming	Enter outgoing new network intentionally
Hospital					
1	Local hospital, case company A	Building new relationship	Unplanned	Outgoing	Enter outgoing new network intentionally
2	French life science manager, case company A	Building new relationship	Unplanned	Incoming through third party	Enter outgoing new network intentionally
3	Professor from Brisbane, case company B	Building new relationship	Unplanned	Incoming directly	Enter incoming new network path-determinant

4	Prof from USA, case company B	Building new relationship	Unplanned	Incoming through third party introduction	Enter incoming new network path-determinant
5	Hospitals in New York, case company B	Building new relationship	Planned search and attend conference with target	Outgoing	Enter outgoing new network intentionally
6	Prof A.D., case company C	Engaging with new relationships	Unplanned through introduction	Incoming through third party introduction	Enter outgoing new network path-determinant
7	Professor P.D., case company C	Engaging with new relationships Overlapped	Unplanned through introduction	incoming	Enter outgoing new network path-determinant
8	Major D, case company C	Engaging with new relationships	Planned to search	Outgoing	Enter outgoing new network intentionally
9	Prof R.C. , case company D	Extant			Interact with pre-existing network intentionally
University					
1	Professor of EEG, case company A	Interacting with extant			Interact with extant relationship intentionally
2	Local university A, case company A	Engaging with new relationships	Unplanned through introduction	Incoming	
3	Uni of G, case company B	Engaging new relationships			
4	Prof Dame P.S., case company C	Extant			Interact with extant network intentionally
5	Local university B, case company D	Engaging new relationships	Unplanned by introductions	Incoming through third party	Enter outgoing new network intentionally
6	International university W, case company D	Engaging new relationships		Incoming through third party introduction	Enter outgoing new network intentionally
7	Local university A, case company D	Engaging new relationships	Unplanned through introductions	Incoming through third party introduction	Enter outgoing new network intentionally
8	Prof S.H., case company D	Engaging new relationships	Unplanned	Incoming through third party	Enter outgoing new network intentionally

9	Dr C.L., case company D	Engaging new relationships	Unplanned	Incoming	Enter outgoing new network intentionally
10	Professor R. CP, case company D	Engaging new relationships	Unplanned	Incoming	Enter outgoing new network intentionally
11	Prof A.G. , case company D	Extant Overlapped			Interact with extant network intentionally

Source: the author

RQ b

Appendix 6.2 Conditions of social capital availabilities-Cross case analysis

	Actors	Motivations	Competent	Resource mobility
Government				
1	Adviser from local government S, Case company A	Emotional motivation	Maven	Yes
2	French government, Case company A	Emotional motivation	Maven	Yes
3	Local government D, Case company B	Emotional motivation	Expert	Yes
4	Local government H, Case company C	Emotional motivation	Expert	Yes
5	Y.A. Case company D Case company C	Emotional motivation Organisational motivation	Maven	Yes
6	N.P. Case company D Case company C	Emotional motivation Organisational motivation	Maven	Yes
Business organisation				
1	Company WR, Case company A,	Emotional motivation	Collaborator	Yes
2	A business director, Case company A,	Cognitive motivation	Collaborator	Yes
3	Personal friends, Case company B	Cognitive motivation	Expert	Yes
4	Regulatory consultant Case company B	Emotional motivation	Collaborator	Yes
5	A company and an individual Case company B	Cognitive motivation	Maven	Yes
6	Distributors in US Case company B	Cognitive motivation	Collaborator	Yes
7	Prof A.K. Case company C	Cognitive motivation	Collaborator	Yes
8	Company UHY Case company D Case company C	Emotional motivation Organisational motivation	Collaborator	Yes

9	Company T Case company C	Cognitive motivation	Collaborator	Yes
10	COMPANY A Case company C	Cognitive motivation	Collaborator	Yes
11	Company APV Case company D	Emotional motivation	Collaborator	Yes
12	Company FE Case company D	Emotional motivation	Collaborator	Yes
13	Company ALVC Case company D	Emotional motivation	Collaborator	Yes
14	Company WC Case company D	Emotional motivation	Collaborator	No
Hospital				
1	Local hospital, Case company A	Emotional motivation	Expert	Yes
2	French life science manager, Case company A	Emotional motivation	Expert	Yes
3	Professor from Brisbane hospital	Cognitive motivation	Collaborator	Yes
4	Hospitals in New York	Cognitive motivation	Collaborator	Yes
5	Prof A.D.	Cognitive motivation	Expert	Yes
6	P.D. Case company C Case company D	Cognitive motivation Organisational motivation	Expert	Yes
7	Major D.	Cognitive motivation	Expert	Yes
8	Prof R.C. Case company D Case company C	Cognitive motivation Organisational motivation	Maven	Yes
University				
1	Professor of EEG, Case company A	Cognitive motivation	Expert	Yes
2	Local university A, Case company A	Emotional motivation	Expert	Yes
3	Prof from HMS, Case company B	Cognitive motivation	Expert	Yes
4	University G Case company B		Expert	Yes
5	Prof Dame P.S. Case company C	Cognitive motivation	Expert	Yes
6	Local university B Case company D	Cognitive motivation	Collaborator	Yes
7	International university Case company D	Cognitive motivation	Collaborator	Yes
8	Prof R.CP. Case company D	Cognitive motivation	Expert	Yes
9	Prof S.H. Case company D	Cognitive motivation	Expert	Yes
10	Dr C.L. Case company D	Cognitive motivation	Expert	Yes
11	Prof A.G. Case company C Case company D	Cognitive motivation Organisational motivation	Maven	Yes

Source: the author

RQ c

Appendix 6.3 Interaction stages that SC and its benefits are realised

	Contacts	Stage	Evidence of stages	Benefits	
Government					
1	Adviser from local government S, Case company A	Initial	Short-term after seeking advice	Referrals,	
2	French government, Case company A	Initial	get-acquainted after first meeting	Business invitation	
3	Local government D, Case company B	Initial	Short-term after seeking advice	Market information, financial support	
4	Local government H, Case company C	Initial	Working on collaboration	Referral, credibility	
5	High commission in Bangladesh	Initial	Look for collaboration	Referral, credibility	
6	Y.A., Case company D	Mature	Interpersonal relationships with mutual trust after communications	Referrals	
7	N.P. Case company D	Mature	Interpersonal relationships with mutual trust after communications	Referrals and advice	
Business organisation					
1	Company WR, case company A,	Development	Consulting partnership	Legitimacy enhancement through patent registration in EU	
2	A business director, case company A,	Development	Business collaboration because of cognitive efforts	Product and market information, and referrals	
3	Personal friends, case company B	Mature	Interpersonal friends with mutual trust and support after time spent	Information	
4	Regulatory consultant, case company B	Development	Business collaboration	Legitimacy enhancement through FDA clearance	
5	A company and an individual, case company B	Mature	Interpersonal friends after social communications	Referrals	
6	Distributors in US, case company B	Development	Business partner due to cognitive efforts and was strengthened after business communications	Business opportunities and referrals	

7	Prof A.K. (the present of company B), case company C	Development	Business collaboration due to common goals and was strengthened after communications	Referral, credibility, market presence	
8	Company UHY , case company C	Mature	Business partner	Find investments	
9	Indian company T, case company C	Initial	Entrepreneur networking skills lead to Working on collaboration but slow	Confidence and credibility	
10	Company A, case company C	Development	Business partner after cognitive efforts	Business opportunity	
11	Company APV, case company D	Development	Business partner after cognitive efforts	Investment	
12	Company FE, case company D	Development	Business partner after cognitive efforts	Investment	
13	Company ALVC, case company D	Development	Business partner after cognitive efforts	Investment	
14	Company WC, case company D	Initial	Did not success because of lacking shared understanding	No benefits	
Hospital					
1	Local hospital, case company A			Expert product knowledge	
2	French life science manager, case company A			Referrals and investment opportunities	
3	Professor from Brisbane, case company B	Initial	Weakened due to lacking communications	Business opportunity and legitimacy enhancement	
4	Prof from USA, case company B	Mature	Interpersonal friends after social communications	Expert product knowledge, credibility	
5	Hospitals in New York, case company B	Development	Business collaboration due to cognitive efforts	Business opportunities	
6	Prof A.D., local children hospital, case company C	Development	Business partner due to the common goals	Reputation and Referrals	
7	Professor P.D. , local children hospital, case company C	Mature	Interpersonal relationships with mutual trust after time spent	Expert and specialized knowledge, referrals	
8	Major D, case company C	Initial	Entrepreneurs' networking skills	Physical presence, power, influence,	

			to work on future collaboration	business opportunities	
9	Prof R.C. , case company D	Mature	Interpersonal friends after communications	Referrals	
University					
1	Professor of EEG, case company A	Mature	Interpersonal relationships with mutual trust after shared understanding	Expert product knowledge and referrals	
2	Local university A, case company A			Product market knowledge	
3	Uni of G, case company B			Market knowledge	
4	Prof Dame P.S., case company C	Development	Business collaboration due to common goals	Credibility, Referral, financial benefits	
5	Local university B, case company D	Development	Business partner due to shared interest	Technology provision	
6	International university W, case company D	Development	Business partner due to shared interest	Technology provision	
7	Local university A, case company D	Development	Business partner due to shared interest	Technology provision	
8	Prof S.H., case company D	Development	Business partner due to shared interest	Experience, credibility	
9	Dr C.L., case company D	Development	Business partner due to shared interest	Experience, credibility	
10	Professor R. CP, case company D	Development	Business partner due to shared interest	Expert advise	
11	Prof A.G. , case company D	Mature	Interpersonal friends after communications	Referrals	

Source: the author

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